FINAL DRAFT REPORT

FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE PROPOSED AGRO PROCESSING AND AGGREGATION DEVELOPMENT CENTRES, ENUGU STATE, NIGERIA

FOR

THE ENUGU STATE AGRO PROCESSING, PRODUCTIVITY ENHANCEMENT, AND LIVELIHOOD IMPROVEMENT SUPPORT PROJECT (APPEALS). No.11/13 UBOSI STREET BEHIND FIRE SERVICE ENUGU

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LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	-	Acquired Immuno-Deficiency Syndrome
APPEALS	-	Agro-Processing, Productivity Enhancement and Livelihood Improvement Support Project
ARAR	-	Applicable or Relevant and Appropriate Requirements
BAT	-	Best Available Technology
BOD	-	Biochemical Oxygen Demand
CADP	-	commercial Agriculture Development Project
CBO	-	Community Based Organizations
CITES	-	Convention on the Prevention of the international trade in Endangered Species
COD	-	Chemical Oxygen Demand
CSOs	-	Civil Society Organizations
DO	-	Dissolved Oxygen
EA	-	Environmental Assessment
ESS	-	Environmental and Social Specialists
EHS	-	Environmental, Health and Safety
EIA	-	Environmental Impact Assessment
EO	-	Environmental Officer
ESIA	-	Environmental and Social Impact Assessment
EMS	-	Environmental Management System
ESMF	-	Environmental and Social Management Framework
ESMP	-	Environmental and Social Management Plan
ESME	-	Enugu State Ministry of Environment
FCO	-	Federal Coordinating Office
FEPA	-	Federal Environmental Protection Agency
FGD	-	Focus Group Discussion
FGN	-	Federal Government of Nigeria
FI	-	Financial Intermediary
FMEnv	-	Federal Ministry of Environment
FPMU	-	Federal Project Management Unit
FRN	-	Federal Republic of Nigeria

FRSC	-	Federal Road Safety Commission
GBV	-	Gender Based Violence
GHGs	-	Greenhouse Gases
GPS	-	Global Positioning System
GRA	-	Government Reserved Area
H_2S	-	Hydrogen Sulphide
HIV	-	Human Immuno-Deficiency Virus
HND	-	Higher National Diploma
HSE	-	Health, Safety and Environment
IDI	-	In-Depth Interviews
ITCZ	-	Inter Tropical Continental Zone
IUCN	-	International Union for Conservation of Nature
KII	-	Key Informant Interviews
ISO	-	International Standard Organization
LGA	-	Local Government Area
MDAs	-	Ministries, Departments and Agencies
M&E	-	Monitoring and Evaluation
MEPU	-	Ministry of Environment and Public Utilities
MoU	-	Memorandum of Understanding
MSDS	-	Material Safety Data Sheet
NAP	-	National Agricultural Policy
ND	-	Not Detected
NEWMAP	-	Nigeria Erosion and Watershed Management Project
NPE	-	National Policy of the Environment
NESREA	-	National Environmental Standards and Regulations Enforcement Agency
NIWA	-	Nigeria Inland Waterways Authority
NPC	-	National Population Commission
NS	-	Not Specified
NTU	-	Nephelometric Turbidity Unit
OP	-	Operational Policies
PAP	-	Project Affected Persons

PEM	-	Project Environmental Management
PMU	-	Project Management Unit
POI	-	Point of Interest
PPE	-	Personal Protective Equipment
PVC	-	Poly vinyl chloride
RAP	-	Resettlement Action Plan
SCO	-	State Coordinating Office
SEA	-	Sexual Exploitation and Abuse
SLM	-	Sustainable Land Management
SSO	-	Social Safeguards Officer
SOP	-	Standard Operation Procedures
SPM	-	Suspended Particulate Matter
SPMU	-	State Project Management Unit
STD	-	Sexually Transmitted Diseases
TA	-	Technical Assistance
TC	-	Tropical Continental
TDS	-	Total Dissolved Solids
TM	-	Tropical Maritime
ToR	-	Terms of Reference
TSS	-	Total Suspended Solids
VOC	-	Volatile Organic Compounds
WHO	-	World Health Organization

STATEMENT OF COMMITMENT/CONFIDENTIALITY

DR. DIDIGU, SUNDAY OKECHUKWU Ph.D. *that the services:*

DRAFT REPORT FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) FOR THE PROPOSED AGRO PROCESSING AND AGGREGATION DEVELOPMENT CENTRES, ENUGU STATE, NIGERIA

This service was conducted in line with the approved quality assurance and quality control plan for this work. There was no deviation whatsoever from the quality standard prescribed for this exercise.

Signature…….

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EXECUTIVE SUMMARY

ES 1 Project Overview

Agriculture in Nigeria has been another great attention at adding value to farm produce in order to ensure food sustainability and livelihood improvement of small holders' peasants. The government of Enugu State has keyed into the opportunity offered by the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support (APPEALS) Project in the State. The APPEALS intervention is one of the various steps taken at improving agriculture in Nigeria to encourage development projects that will enhance farm produce across the country. It is an initiation of the Federal Government of Nigeria through the Federal Ministry of Agriculture and Rural Development (FMARD) and substantially support or finance by the International Development Association (IDA) – a component of the World Bank Group. This initiative by FMARD is made available to interested States. Basically, the project is intended at transforming both the small-scale subsistence farmers and middle size farming enterprises into market-tailored agricultural systems by addressing identified constraints that prevent their engagements in the produce up-scaling and value chains.

The APPEALS initiative is hinged on the fact that the typical level of value-added production of primary agricultural output across the Nigeria States is grossly insufficient. Simply put, peasant's harvests have remained at the primitive low with little or value addition. The inability of farmers to add value to their produce is one the reasons most farmers struggle economically. This makes Nigeria to remain a staple crop producer with potential opportunities that could be harnessed to the benefit of both the farmer and the government. This further means that the economic benefits of value addition in form of increased profits, livelihood strengthening, adoption of advanced agricultural technology, reduction of out-of-farm losses and increased farm output to mention a few, has been out of the reach of Nigerian farmers. The current low agricultural productivity in Nigeria, however, could be attributed to a number of factors. Some of these include: insufficient and low access to inputs; lack of seed funds for establishing suitable processing plants by producer cooperatives; lack of access to supportive infrastructure including aggregation facilities; challenging business environment; limited access to different strata of markets; low level of improved technology adoption; weak quality control mechanism which makes suppliers plus the government unable to deliver quality inputs to farmers; low capacity at all levels, bridging the bottlenecks between the policies and the farmers, poor adaptation of international technical materials to local scenarios, among others.

At the moment, there are six States APPEALS project; these are Cross River, Enugu, Kaduna, Kano, Lagos, and Kogi State. It is expected that additional States will join the programme depending on various significant factors that may include but not limited to: level of readiness, funding, potential for agribusiness clusters, expansion of agricultural status quo, and linkage with the World Banks's governing principles on the project. It is basically anticipated that the Enugu APPEALS projects will drive agricultural productivity enhancement of small and medium scale farmers and improve the value addition along the priority value chains in the states.

The series of activities to be carried out under the project, however, trigger the World Bank Safeguard Policies including the Environmental Assessment OP 4.01; Natural Habitats OP 4.04; Cultural Property OP 11.03; Involuntary Resettlement OP 4.12; Pest Management Safeguard Policy OP 4.09; and Projects on International Waterways OP 7.50. Thus, all the World Bank Environmental and Social Standards applied to the project, however, some are more relevant to the project. The project has five (5) components as follows: Production and Productivity Enhancement; Primary Processing; Value Addition, Post-Harvest Management and Women and Youth Empowerment; Infrastructure Support to Agri-Business Clusters; Technical Assistance, Knowledge Management and Communication and Project Management and Coordination. The Sub-component 5.3. Environmental and social safeguards and grievance redress mechanism deals with the issues of safeguards including the Grievance Redress Mechanism (GRM).

The environmental and social safeguard concerns are to be addressed through two national instruments already prepared under the project: An Environmental and Social Management Framework (ESMF), Integrated Pest Management Plan (IPMP) and a Resettlement Policy Framework (RPF). These framework instruments have to be translated into specific costed, measurable, and actions that could be monitored for specific intervention sites through the preparation of site-specific management and action plans ESMP.

ES 2 Proposed Intervention

The proposed intervention includes construction of buildings for cottage processing and aggregation centres. It will also include: Construction camp and crew set up, digging and foundation layout of the canter, use of heavy equipment and hazardous materials, cutting and filling, structural development and brickworks, carpentry works, electrical works, water supply system, hazardous materials storage and disposal, waste management, office equipment supply and basic installations of storage and processing equipment.

ES 3 Proposed Intervention

Agricultural sector's capacity and capability at providing direct and indirect empowerment and job opportunities is very evident. Hence, there is an urgent need for the development of primary processing of agricultural produce through value addition, post-harvest management, and women and youth empowerment. Two of the key aspects of this will be realized through the construction/rehabilitation of aggregation facilities, procurement and installation of equipment for the cottage processing centers. It is expected that the commodity aggregation centers and cottage processing units will address post-harvest crop losses, increase farmers' productivity and contribute to:

i. Improving the capacity of produces' cooperative through training and TA, especially for targeted women and youth groups;
ii. Supporting productivity enhancement through the introduction of new technologies and agricultural inputs;
iii. Improving access to infrastructure by supporting investment;
iv. Facilitating market linkage through, up-takers, out-growers' schemes; and
v. Facilitating on-farm value addition by targeting limited value chains and linking farmers to the supply chain.

ES 4 Need for the ESMP

The ESMP consists of a well-documented set of mitigation, monitoring, and institutional actions to be taken before and during project implementation to eliminate the adverse environmental and social impacts, and or reduce them to an acceptable level. The ESMP also includes the measures required to implement these actions. Basically, primary objective of the ESMP is to simplify valuable decision-making and to ensure that the implementation processes of the proposed project activities are thoroughly sustainable. Some of the activities to be carried out during ESMP preparation include; ensuring that agricultural and agro-processing activities are environmentally-sound, culturally-appropriate, encouraging community consultations and participation and enhancing social wellbeing of the stakeholders. Specifically, the ESMP seeks to provide a clear process including action plans that integrates environmental and social considerations into the proposed interventions.

ES 5 ESMP Study Procedures

The ESMP study procedures will include the following activities:

- site assessment visit;
- desktop study (literature review);
- review of project building design reports;
- public/stakeholder consultations and engagement;
- field data collation, analysis (including laboratory) and reporting;

- identification and assessment of environmental and social impacts;
- mitigation measures; and
- monitoring and management plan.

ES 6 Policy, Legal, Regulatory and Administrative Frameworks

Relevant Federal/Enugu State Policies, Legislation, Regulations and Guidelines

Federal Policies			
S/N	**Policy Instrument**	**Year**	**Provision**
1	National Policy on the Environment	1989 revised 1991	This describes both the conceptual and theoretical framework and strategies for achieving sustainable development in Nigeria
2	Agricultural Promotion Policy-The Green Alternative	(APP-2016-2020)	The policy develops the framework for facilitating business alliances, promotion of greater farmers-agri-business linkages, and support for critical infrastructure in the value chain development.
3	National Gender Policy	*2006*	The goal of the National Gender Policy is to build a just society devoid of discrimination, harness the full potentials of all social groups regardless of sex or circumstance, promote the enjoyment of fundamental human rights and protect the health, social, economic and political well-being of all citizens in order to achieve an equitable rapid economic growth; evolve an evidence based planning and governance system where human, social, financial and technological resources are efficiently and effectively deployed for sustainable development.
Federal Legal/Regulatory Instrument			
1	Environmental Impact Assessment Act No. 86,	*1992 (FMEnv)*	This provides the guidelines for regulating the activities of development projects for which EIA is mandatory in Nigeria. The Act also stipulates the minimum content of an EIA as well as a schedule of projects that require mandatory EIAs.
2	The National Guidelines and Standards for Environmental Pollution Control in Nigeria	1991	These represent the basic instrument for monitoring and controlling pollution in Nigeria
3	National Guidelines on Environmental Management Systems	*(1999)*	This establishes the requirements for an Environmental Management System (EMS) in all organizations/facilities in Nigeria.
4	National Air Quality Standard Decree No. 59 of	*1991*	This defines the levels of air pollutants that should not be exceeded in order to protect public health.
5	The National Environmental Standards and Regulations Enforcement Agency Act (NESREA Act)	*2007*	This makes provision for solid waste management and its administration and prescribes sanctions for offences or acts, which run contrary to proper and adequate waste disposal procedures and practices.
6	Child Rights Act	*2003*	The Act serves as a legal documentation and protection of Children rights and responsibilities in Nigeria. It also serves as a legislation against Human trafficking since it forbids children from being "separated from parents against their will, except where it is in the best interests of the child.
7	Employee's Compensation Act	*2010*	The Act make provisions for compensations for any death, injury, disease or disability arising out of or in the course of employment; and for related matters.
8	Land Use Act	*1978 Modified 1990*	This is the primary legal means to acquire land in the country. The Act vests all land in the territory of each state in the federation in the Governor of the State and requires that such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act
9	*Criminal Code*		The Nigerian Criminal Code makes it an offence punishable with up to 6 months' imprisonment for any person who: • Violates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carry-on business in the neighbourhood, or passing along a public way: or • Engages any act which is, and which he knows or has reason to believe to be likely to spread the infection of any disease dangerous to life, whether human or animal.

10	Endangered Species Act	1985	This provides for conservation and management of wild life in Nigeria and the protection of some of her endangered species from extinction as a result of over exploitation.
11	FEPA/ FMEnv. EIA Procedural guidelines	1995	These indicate the steps to be followed in the EIA process throughout project life cycle.
12	S115 National Environmental Protection (The Management of Solid and Hazardous Wastes Regulations)	1991	Regulates the collection, treatment, and disposal of solid and hazardous waste for municipal and industrial sources and give the comprehensive list of chemicals and chemical waste by toxicity categories
13	S19 National Environmental Protection (The NEP (Pollution Abatement in Industries and Facilities Generating Waste) Regulations)	1991	These are the imposed restrictions on the release of toxic substances and requirements of Stipulated Monitoring of pollution to ensure that permissible limits are not exceeded during and after the project.
14	S18 National Environmental Protection (National Effluents Limitations Regulation)	1991	This makes it mandatory for industrial facilities to install anti-pollution equipment. It also makes provision for further treatment, prescribe maximum limit of effluent parameters allowed for discharge, and spells out penalties for contravention.
15	Public Health Law		This deals with public health matters.
16	Environmental Sanitation Edits, Law and Enforcements		This deals with the general environmental health and sanitation. Implementation and enforcement in the state.
17	Workmen Component Act	1987 Revised 2010	This provides for occupational health and safety.
Federal Institutional Framework			
1	The Federal Ministry of Environment (FMEnv)		The FMEnv is the government agency charged with the responsibility to administrate and enforce environmental laws in Nigeria. The FMEnv prohibits public and private sectors from embarking on major developmental projects or activities without due consideration, at early stages, for environmental and social impacts. In addition to the EIA Act, the Ministry has produced sectorial including sectorial guidelines on infrastructure development which will be duly considered in the implementation of this project.
2	Federal Ministry of Agriculture and Rural Development		The Federal Ministry of Agriculture and Rural Development (FMARD) has the responsibility of optimizing agriculture and integrating rural development for the transformation of the Nigerian economy, with a view to attaining food security and positioning Nigeria as a net food exporter for socio-economic development.
3	The Federal Project Coordinating Unit.		The Federal Project Coordinating Unit. headed by a National Coordinator and hosted by the FMAgric is responsible for the overall coordination of the project.
Enugu State Environmental Legislations			
1	Enugu State Policy on Environment	2010	The policy emphasizes state government efforts to sustainable environmental management. The policy functions are to: ▪ Seek intervention of Federal Government of Nigeria and other partner agencies on erosion control to compliment the State's efforts; ▪ Embark on aggressive afforestation programmes involving the LGAs and CSOs; ▪ Sponsor relevant environmental bills to the state assembly for enactment; ▪ Enforce environmental laws through LGAs and CSOs; and ▪ Procure necessary refuse disposal equipment.
2	Enugu State Waste Management Policy		The policy enables commencement of integrated management of natural resources of land, water, vegetation etc to ensure resource conservation.
Enugu State Institutional Framework			
1	Enugu State Ministry of		Some of the functions of the Enugu State Ministry of Environment

	Environment and Mineral Resources		are to: • Liaise with the FMEnv. to achieve a healthy and better management of the environment via development of National Policy on Environment • Monitor the implementation of ESMP studies and other environmental studies for all project development; • Execute programmes relating to the control of droughts, desertification, flood, erosion and management of forests estate; • Ensure bio-diversity conservation and sustainable ecosystem; • Ensure institutional reforms for effective environmental management; • Ensure qualitative and healthy environment; • Conserve, protect and enhance the environment, the ecosystem and ecological processes; and • Reduce land degradation, and develop alternative and renewable energy. • Liaise with the FMEnv. to achieve a healthy and better management of the environment via development of Policy on Environment
2	Enugu State Environmental Protection Agency (ESEPA) Law		The objective of this agency law focuses on protection of rural and urban environment in Enugu State. It is also within the functions of the agency to support and ensure that monthly environmental sanitation is observed.
3	Enugu State Agricultural Development Programme		The programme objectives of Enugu State Agricultural Development Programme (ENADEP)include: • Training of agricultural extension officers; and • Provision of extension services to farmers. • Improvement of infrastructures; • increase food production and incomes of small-scale farmers; and • Provision of credit facilities to farmers etc.

World Bank Operational Safeguard Policies triggered by Enugu State APPEALS Projects

S/N	Environmental and Social Standards	Applicability to Enugu Sites		Applicability to Project due to	How this Project will Address Policy Requirements
		Yes	No		
1	**Environmental Assessment (OP/BP 4.01)**	[x]	[ ]	Civil works under the project including construction of farm houses, Fish ponds and construction of drainage channel to drain effluents and safely discharge such will have adverse effect on the environment.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
2	**Natural Habitats (OP/BP 4.04)**	[x]	[ ]	Civil works and agricultural activities may disturb biodiversity in the project areas. However, the project is not within a biodiversity reserve area.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
3	**Pest Management (OP 4.09)**	[x]	[ ]	There is the likelihood of the use of pesticide during the project implementation and operation.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
4	**Physical Cultural Resources (OP/BP 4.11)**	[x]	[ ]	Civil works, including excavations channelization will be most unlikely to avoid all cultural heritage sites as well as presently unknown sites that can be expected to be found in any area rich in cultural and historical values.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
5	**Involuntary Resettlement (OP/BP 4.12)**	[x]	[ ]	Although Enugu APPEALS will only support existing clusters and existing right of ways. The activities under infrastructure development may require the acquisition of land (some with economic trees and farms) surrounding intervention area. This will lead to economic and potentially physical displacement. Also, there will be newly empowered farmers who may require green area to start-up.	A resettlement policy framework (RPF) has been prepared for APPEALS. Due to the potential impacts to economic trees and farmland that may be located around the intervention sites especially for infrastructures development, standalone RAP(s) may be prepared, and measures implemented before project implementation.
6	**Indigenous Peoples (OP/BP 4.36)**)	[ ]	[x]	The people in the area are by the World Bank guidelines not considered as indigenous peoples/ sub-Saharan African historically underserved communities.	N/A
7	**Forests (OP/BP 4.10)**	[ ]	[x]	Civil works will not extend to forest area	N/A
8	**Safety of Dams (OP/BP 4.37)**	[ ]	[x]	The proposed project does not involve the design, construction or rehabilitation of any dam of whatever kind.	N/A
9	**Projects in Disputed Areas (OP/BP 7.60)**	[ ]	[x]	The proposed project area is not known for any dispute (local, national, international) of whatever magnitude.	N/A
10	**Project on International Waterways (OP/BP 7.50)**	[ ]	[x]	The project is not within any international waterways	N/A

NB: Where there is a gap of conflict between the National Law and World Bank OP 4.12, the higher OP shall prevail which in this case is the World Bank Policy

International Conventions and Agreements Applicable to Enugu APPEALS

International conventions, agreements and protocols	Applicable to APPEALS		Applicable to Enugu APPEALS		Applicability to project due to	How project address issues raised
	Yes	No	Yes	No		
Both the Vienna convention for the protection of the Ozone Layer and the Montreal protocol for Control of Substances that deplete the ozone layer.	[x]	[ ]	[x]	[ ]	Agricultural works may extend to the forest area. There will be reduction in tree taxonomy and biomass leading to reduction in carbon sink and release of ODS gasses. Some of the crops may also be emitting or when burnt transmit ODS substances	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Basel convention on the prevention of trans-boundary movement of hazardous wastes and their disposal.	[x]	[ ]	[x]	[ ]	Hazardous chemical might be used as pesticides	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on the prevention of the international trade in endangered species (CITES).	[x]	[ ]	[ ]	[x]	No endangered species(s) of any kind was identified in the project area.	NA
Convention on Biodiversity.	[x]	[ ]	[x]	[ ]	Agricultural activities may extend to forest area. This will disturb biodiversity in the area.	ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on climate change.	[x]	[ ]	[x]	[ ]	Proposed activities will result in both systemic and cumulative environmental change; thereby contributing to a sustained increase in temperature.	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on Desertification.	[x]	[ ]	[x]	[ ]	Proposed activities may result in deforestation.	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on Persistent Organic Pollutants.	[x]	[ ]	[x]	[ ]	Organic pollutant may be used for agricultural activities.	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
World Health Organization (WHO) Health and Safety Component of EIA, 1987.	[x]	[ ]	[x]	[ ]	Proposed activities may be injurious to man and the environment	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.

ES 7 **Institutional Framework**

Several federal and state ministries, department, agencies, and civil society organizations are involved in implementing APPEALS projects. The involvement of these bodies/organizations basically is to ensure coordination, collaboration, and information sharing at all levels which is aimed at effective implementation of projects. Consequently, each component, sub-component and activity is to be implemented through the relevant federal and state MDAs. The various MDAs include those responsible for agriculture, planning, economy and finance, works, environment and water resources. The funds for Enugu State APPEALS are made through the Enugu State APPEALS. However, the Enugu State government has the primary responsibility for land management and land allocation for agriculture purpose. The Federal Ministry of Agriculture (FMAgric) is the lead implementing agency for APPEALS projects. The Federal Project Coordinating Unit, headed by a Federal Coordinator and hosted by the FMAgric is responsible for the overall coordination of the project. The Enugu State Project Coordinating Unit (Enugu-SPC), headed by the State Coordinator and hosted by the Enugu State Ministry of Agriculture is responsible for the coordination in Enugu State. Therefore, the Enugu State-SPC is directly responsible for coordinating the activities of APPEALS projects within the State, including the implementation of this ESMP. Both the federal and state level coordinating units have environmental officers who take responsibility for mainstreaming environmental issues into the Enugu State APPEALS sub-projects.

ES 8 **Biophysical Environment Baseline Study**

Enugu State is located at south-eastern part of Nigeria stretches from longitude 6^0 54'14.23" to 7^0 52' 1.38" East of the Greenwich Meridian and from latitude 5^0 55'17.73" to 7^0 6' 59.57" North of the Equator, with a landmass of 7,534Sqkm. Enugu State estimated human population as at 2006 and its projected population for 2016 was 3,267,837 and 4,411,119, respectively (NPC Census 2006 and NBS 2017).

Nevertheless, the proposed farm produce aggregation and processing centres in Enugu State are spatially distributed across its local government areas based on peculiarity and comparative advantage. This phase of the APPEALS project for the Enugu State Coordinating Office is proposed at nine (9) aggregation/processing centers (Table 3.1). The spread of the centers reflect representation across the length and breadth of the state to ensure that every region within it benefit from the intervention, however, two centers (an aggregation and a cottage processing) are situated within the Nsukka LGA of the State.

The summarized details of the distribution of these facilities are presented below.

S/N	Project Community	Longitude (⁰ E)	Latitude (⁰ N)	LGA	Value Chain	Proposed project
1	Adani	7° 0'59.69"	6°43'37.06"	Uzo-Uwani	Rice	Aggregation/Processing Center
2	Amechi	7°30'39.51"	6°22'54.76"	Enugu South	Poultry	Processing Centre
3	Eha Amufu	7°46'5.63"	6°39'33.59"	Isi-Uzo	Rice	Aggregation/Processing Center
4	Eha Etiti	7°30'8.29"	6°48'38.38"	Nsukka	Cashew	Aggregation Center
5	Ezeagu	7°16'55.88"	6°22'39.86"	Ezeagu	Cashew	Aggregation/Processing Center
6	Ikpa	7°24'50.54"	6°50'28.43"	Nsukka	Poultry	Processing Centre
7	Umuiba Nara	7°39'25.74"	6°13'10.52"	Nkanu East	Rice	Aggregation/Processing Center
8	Orba	7°27'48.31"	6°50'41.68"	Udenu	Cashew	Aggregation/Processing Center
9	Oduma	7°37'41.27"	6° 5'23.78"	Aninri	Rice	Aggregation/Processing Center

Source: ESMP Fieldwork, September 2021

The Climate of Enugu State is generally tropical and it is expressed as the contrast between a dry season and a wet season. It rains almost in every of the year in Enugu State, however, the amount varies greatly from one month to another. Peak of ainfall regime is between April and October. Annual total rainfall pattern for 43 years (1971-2013) of the project area shows that annual rainfall amount is 1,800 mm. The temperature is usually higher during the dry season and lower during the wet season. The mean maximum temperature of the area ranges from 35.84^{o} C during the dry season to as low as to 28.65^{o} C in the wet season while the mean minimum temperature ranges 24.91^{o}C to 20.05 ^{o}C for the dry and wet seasons respectively. Solar Radiation is the amount of solar energy incidence on the earth surface, at Enugu, the long term means monthly solar radiation characteristic of the study area ranges between 15.55–21.95 kW/m^{2}. Dominant strong wind direction in the project area is south south-western (SSW).

Geologically, Enugu State is dominated by tertiary Undifferentiated Sedimentary rock. The state covers a small portion Cretaceous sedimentary rock of the Asu River Group at the southern part. the study area watershed (proposed project site) falls completely within the tertiary Undifferentiated sedimentary rocks of Anambra Basin. Hydro-geologically, of the eleven hydrogeological provinces of Nigeria based on geology and water availability, the study area falls within the Anambra Basin. The hydrogeology of the basin is dominated by the occurrence of highly porous false bedded sandstones which outcrop over a vast area, this condition makes water table around the region to be sloppy and deep (about 152m); therefore, artisanal and or household hand-dug wells are not common in the project environments, even boreholes projects are very scare at the immediate project area.

Mean of ambient air quality observed across the project sites are CO (4.30 ppm), CO_2 (0.37%), H_2S (0.30 ppm), highest value of H_2S was observed at Oduma project site. Other measured gaseous pollutants such as oxides of nitrogen (NO_2 and NO), poisonous Hydrogen Cyanide and Ammonia were below their respective equipment readable limit of <0.01 ppm. On the suspended particulate matter which was relatively low across the site, observed concentration however ranged from 128 ug/m^2 to 161 ug/m^2 and a mean value of 142.33 ug/m^2. Average minimum ambient noise level of 39.4 dB(A) was recorded at the Eha Etiti project site while the average maximum noise level of 54.1 dB(A) was observed at the proposed Amechi poultry processing centre.

On soil quality, Hydrogen Ion Concentration (pH) values recorded in the soil samples ranged from 5.10 to 6.09 (distinctly acidic). These are within pH range value (4.5 to 9.0) in natural soil. TOC of the study area is generally low as it ranged from low 0.09% 0.54%, the organic matter plays a significant role in the dynamic of soils as it stores water, provides a living environment for organisms, promotes structural stability, supplies and stores nutrients; similarly, the soil Carbon also ranged from 0.07 mg/kg to 1.00 mg/kg. Concentrations of exchangeable cations (Mg, Ca, Na, and K) recorded in sampled soils of the study area fall within the natural occurrence levels for tropical soils as prescribed by Alloway (1991). Of the analysed anions, only Ammonia (NH_3) was not detected across the project sites. As baseline information, the soil of the project possesses the necessary soil nutrients that support plants growth and suitable for cultivation/farming and this was evident as most project site such as Adani, Amechi, Orba, Ikpa etc were observed to be cultivated with various plants. No heavy metals and hydrocarbon pollution was observed across the site. The population of hydrocarbon degraders (HUB and HUF) observed in the soil samples is generally relatively low.

The dominant economic plants observed around the project areas include *Anacardium occidentale, Elaeis guineesis, Oryza sativa, Musa spp, Manihot esculenta etc.* The populations and distribution pattern of the encountered species may likely be affected by d removal due to the proposed project. However, none of the species belong to any of the IUCN endangered categories.

Socioeconomic Characteristics

Indicators	Options	Respondents (%)									Summary of Findings
		Adani	Amechi	Eha Etiti	Eha Amufu	Ezeagu	Ikpa	Orba	Oduma	Nara	
Gender	Male	77.78	87.2	66.4	88.23	93.4	90	91.67	71.43	100	Across the project communities, there are more (68.95%) male respondents(farmers) compared to female. None of the respondent was a female at Nara.
	Female	22.22	12.8	33.6	11.76	6.6	10	8.33	28.57	-	
Age	18-45 years	234.1	57.4	36.1	47.06	23.2	40	33.33	57.14	43.2	Most respondents age groups fall within 18-45years (51.44%), indicate an appreciable number of active group(workforce) in farming or have shown interest in agriculture, hence, the sustainable production of inputs to the proposed facilities. Other age groups indicated are 46-65 years (39.21%) and above 65 years (8.26%).
	46-65years	56.3	30.6	46.2	52.94	59.4	50	66.67	28.57	45.0	
	Above 66 years	9.6	12	16.7		17.4	10	-	14.29	11.8	
Marital status	Single	12.24	17.8	21.4	17.65	9.3	10	8.33	28.57	47.1	Most (60.69%) of the respondents indicated that they are married while singles and widows account for 15.51% and 5.11% respectively.
	Married	78.6	82.2	66.4	76.47	80.1	80	83.33	71.43	55.9	
	Widowed	8.8	-	12.2	5.88	10.1	10	8.33	-	1.5	
Religion	Christianity	100	100	100	100	100	100	91.66	100	100	Except at Orba community where only about 8% of the sample population indicated that they practice traditional religion, all other respondents practice Christianity.
	Islam	-	-	-	-	-	-	-	-	-	
	Others	-	-	-	-	-	-	8.33	-	-	
HH size	Less than 5	22.22	19.4	23.5	35.29	29.6	60	40	10.8	17.8	Common household (HH) size across the project community is between 6 to 10 persons (54.53%). Other household indicated are less 1 to 5 persons (23.29) while those that are above ten persons in their HH account for 3.2%.
	6-10	77.78	73.4	65.3	64.70	66.2	40	50	89.2	79.3	
	Above 10	-	7.2	11.2	-	4.2	-	10	-	2.9	
Ethnic	Igbo	100	100	100	100	100	100	100	100	100	As indicated by the respondents, all sampled population belong to the Igbo ethnic group of South-eastern Nigeria. However, there are other ethic nationalities such as Yoruba, Hausa etc observed

											across each project communities particular Eha Amufu where there is a colony of Hausa community living and business at the town.
Education	Primary school	11.12	7.84	23.4	9.41	7.0	10	8.33	42.86	13.2	Respondents education attainment are secondary school leaving certificate (29.03%), OND/HND/NCE (19.22%) while those that indicated that they are graduate and those that attained only primary school leaving certificates account for 17.94% and 11.98% respectively. As shown, highest number of those that are graduate was at Orba project community.
	Secondary school	33.33	25.1	20.1	20.01	52	20	41.67	42.86	67.5	
	Tertiary (Excluding university)	33.33	47.06	32.2	58.82	13.8	10	8.33	-	10.0	
	University Graduate	-	20.1	24.8	11.95	27.2	50	41.67	14.28	9.3	
Occupation	Farmer	100	56.9	42.9	64.70	47.9	63.4	29.4	85.71	67.2	As expected, most of the respondents in the sampled population are farmers (52.23%). Farming practices within the project area include cashew farming, poultry and rice cultivation. However, other crops such as cocoyam, yam, maize, vegetables are also cultivated in Enugu. Apart from farming, other means livelihood indicated are civil servant (8.67%), artisans (6.90%), and shop keeping/trading (12.85%). It is not uncommon for people to have more than one means of earning a living among the rural and semi-urban dwellers.
	Civil Servant		13.1	23.4	5.88	8.2	23.2	13.11	-	9.4	
	Artisan/Daily labour	-	16.8	11.2	7.28	16.6	13.4	11.4	-	-	
	Trading/Business	-	13.2	12.5	5.88	27.3	-	46.1	14.28	23.5	
Residential Status	Permanent resident	66.67	100	97.1	94.12	100	100	100	85.71	91.4	About 75.15% claimed they are permanent residents in the project areas while others are returnees (11.5%) and non-residents who come to inspect their farms (5.85%). This shows that the sample population are tied to their respective localities for livelihoods and living.
	Back-home (returnee)	33.33	-	2.9	5.88	-	-	-	14.28	8.6	
Residential Years	0-2 years	-	-	-	-	-	-	-	-	-	Almost all the respondents have lived in their respective localities for more than ten years. Some claimed they have been living at the project areas since birth. This shows that the communities are stable and information by the respondents about the project areas is reliable.
	3-5 years	-	-	-	-	-	-	-	-	-	
	6-9 years	12.79	-	-	-	-	-	-	-	-	
	10 years above	87.21	100	100	100	100	100	100	100	100	

Most people are often not comfortable disclosing their income status due to one reason or another. It is even more difficult among non-salary earners due to irregular income and poor record keeping of finances. However, indicated respondent's monthly income are less than N10,000 (12.50%), N11,000 - N20,000 (8.33%), N21,000 – N30,000 (16.67%), N31,000 – N40,000 (10.42%), N41,000 – N50,000 (6.25%), N51,000 – N60,000 (20.83%), N61,000 – N70,000 (4.17%), N71,000- N80,000(2.08%), N81,000-N90,000(4.17%), N91,000- N100,000(2.08%), above N100,000 (12.50%). Generally, the farmers/respondents could be categorized as low to middle income earners. About 23.7% indicated that they receive remittances from family members who live elsewhere while others (76.3%) indicated the contrary. As indicated, remittances by received by respondent's ranges from less than N10,000 (13.2%), N10,000 - N20,000 (8.9%), N21,000 – N30,000 (1.9%), N41,000 – N50,000 (2.87%) and above N50,000 (1.1%) while others (71.2%) did not disclose how much they receive. However, receiving remittance from family member living elsewhere could be highly irregular. Majority of the respondents living around the proposed Aggregation and Cottage Processing Centers across the state indicated that they live in block cemented houses (82.8%) while others indicated plastered mud houses (17.2%). The roofing materials are a mixture of corrugated iron sheets (75.3%), aluminium (34.7%). The floor of the houses is majorly cemented (88.4%) while a few used tiles (12.3%). Respondents' number of rooms include: 1-2 rooms (11.8%), 3-4 rooms (47.3%), 5-6 rooms (31.8%), 6-8 rooms (3.6) while those who live in houses with 8-10 rooms and more than 10 rooms represent 2.7% each. The common toilet facility among the respondents is the pit latrine (51.8%). Others include: water closet (41.7%), toilet dwelling outside facility and pier latrine jointly account for 6.5%. However, open defecation is not uncommon among rural dwellers. Other structures on the plot as indicated are animal pen (40.0%), shops (9.1%), kiosks (2.7%) and security house (1.8%). As indicated, the most used/common sources of energy for lightening at the project community are public electricity from national through Enugu Electricity Distribution Company (EEDC) (41%), rechargeable lamp/lantern (21%), Kerosene (16%), power generator and dry cell torchlight/cell phone are 13.1% and 8% respectively. As shown in the figure, sources of drinking water indicated by the respondents are River/stream (77.4%), sachet/packed water (18.4%), and truck water supply (4.2%).

ES 10 **Stakeholders Consultations**

The main objective of the consultations with stakeholders was to discuss the proposed project environmental and social implications and to identify the alternatives for consideration. Specifically, the consultations sought to achieve the following objectives:

- to provide information about the proposed project;
- to provide opportunities for stakeholders to discuss their opinions and concerns;

- to effectively communicate key project information such as construction timelines and work schedules to stakeholders, particularly project affected communities and persons;
- to provide and discuss the alternatives considered to reduce anticipated impacts with stakeholders;
- to identify and verify the significances of environmental, social and health impacts;
- to establish a mechanism for receiving and addressing grievances in a timely manner; and
- to inform stakeholders about the process of developing appropriate mitigation and management options.

The details of the consultation with stakeholders are presented in the Table below.

Summary of Minutes of meetings with Stakeholders

Cluster/Beneficiary community	Venue	Date	Project Category	Contact Person	Responses and Concerns raised by stakeholders.
Adani Rice Cultivation Cluster	Community centre	12.09.2021	Processing Centre	Mr. Idu Bernard (Cluster Head) 080xxxxxxx	• The rice farmers in this community operate under an umbrella-**Adarice Farmers Association**; • The proposed APPEALS development/intervention was highly welcome; • Eight plots of land have been reserved for the project; • "About 70% of Adani population are farmers and rice is a major crop cultivated"; • They acknowledged that government has been assisting the cluster farmers right from FADAMA, CADA, RAMP etc particularly on farm access road and bridge construction; • It was noted that customers coming to the community to buy rice produce get robbed of their money due to lack of bank at the community; • They pointed out that community youths have developed great interest in farming; • Pressing challenges encountered by the farmers include: o Threshing and storage of harvested rice; o Land development/land clearance for more youths to farm; o Lack of commercial banks (financial institution) where farmers and buyers could carry out transaction seamlessly; o Lack of modern equipment for harvesting(combine-harvester), drying, and milling.
Orba Cashew Cluster	Frontage of Community Hall	10.09.2021	Aggregation Centre	Mr. Odoh Charles (Palace Secretary) 07034546801	• The community acknowledge that they are aware of the project and are early expecting its implementation; • Chairman of the Cashew nuts dealer at community (Mr. Anthony)

					believes that the project would boost cashew business in the area; • The chairman further noted that the project location is central to the community; • Youth leader (President of Orba Youth Assembly) promised to mobilize community youths to support and provide security for contractors during construction; • It was also mentioned that Orba people are very hospitable and welcome developmental projects of this nature (APPEALS project) that benefit the entire community; • They promised to support the project in their own capacity to make it a reality; • Adultery and stealing is prohibited at the community; • There are no sacred places around the project site and within the community in general; • The only challenge and concern raised are: i. Inadequate commercial banks for transaction for the cashew business merchants, ii. early completion of the project as approved in the engineering drawing
Ikpa Community	Community town hall	10.09.2021	Cottage Processing Centre	Igwe Atanike 08060219007	• The Igwe of Ikpa and community members welcomed the development and have waiting for the implementation of the project; • The project land was donated by the community, there is no issue on land acquisition for the project; • The community believes the project will come to reality; • No concern of whatsoever was raised; • The community envisaged that the project will further improved the economy of the community through direct and indirect employment; • The community promised to own and protect the project; • As an urban area and sub section of Nsukka, there was no traditional issue of concern governing the town, however, the traditional leader noted that contractors should be law abiding.

Umuiba Nara Rice Farmers	Igwe's Palace	11.09.2021	Cottage Processing	Palace's Secretary (08125215565)	• The community traditional leader on behalf of the rice farmers appreciated the proposed APPEALS project in the community, however, he expressed his displeasure that the project is taken too long to be implemented; • They have received various group of consultant in respect of the project including letters from Enugu State ministry of Agriculture; • It was anticipated that the project construction would have started before now; • The Nara community, according to one of the attendees, is the largest rice cluster in Enugu State; • The project land was donated by the community for the development, so, there is no land issue concerning the project; • The concerns raised by the community in this regard are outlined as follows: i. How to mill cultivated rice for this season since a lot of the farmers have increased their cultivated rice farm with the hope that the mill would have been put in place; ii. How soon will be the project be completed and functional?.
Oduma Rice farmer cluster	Community centre	11.09.2021	Aggregation and Cottage Processing	Ukpai Michael 08020789626	• The cluster farmers welcomed the proposed cottage processing and aggregation centre for the community; • They expressed no concerns about the project, however, suggestions were made; • Suggestions made by the cluster members are: i. foundations of the facilities should be considered due to the terrain of the project site which was noted to be a waterlogged area during the raining periods; ii. Adequate drainage to convey storm water to the natural water body to avoid annual flooding was also suggested; iii. Access road to the facilities should be considered since there is none connecting location to the main road.
Amechi Poultry Cluster	Project Site	11.09.2021	Cottage Processing	Mr. Nnam 08034084289	• The proposed APPEALS poultry processing centre was welcomed by the cluster farmers and community members;

					• The project land was dominated by the community; • The size of the project land was increased 100m by 250m to 100 by 300m in order to accommodate vehicular parking during operations and to avoid parking on the community road, in other words, about eight (8) plots of land was donated for the project; • The community members and farmers expressed no concern about the project including its location, however, they appealed that the project should not be delayed.
Ezeagwu Cashew cluster	Project site and cluster office	15.09.2021	Aggregation Centre	Hon Steohen Anibueze 08034712472	• They expressed their joy and were in full support of the APPEALS project and its location; • No form of challenge or concern was raised, however, they are hoping the implementation would not be delayed beynd necessary; • In addition to the proposed aggregation centre, they further seek help of the APPEALS in constructing an access road to their farms which was observed to be presently threatened by severe gully erosion; • Generally, the farmers are open to any form of assistance that would improve their activities for economic development.
Eha Etiti Cashew Farmers Cluster	Palace of traditional leader of Eha Etiti	10.09.2021	Aggregation Centre	Chief Odo (Cluster Chairman) 08033112821	• The community members and cluster farmers are in support of the project; • The youths and women expressed their wiliness to work at facility both during construction and operational stages; • They further solicited for the completion of access road connecting the three communities around the location of the projection; • They are ready to support the project by ensuring that contractors are protected during construction.
Eha Amufu Ricer Farmers	Project site and cluster office	15.09.2021	Processing Centre	Hon. Francis Ede Community/SSA to Gov. (070301837830	• Eha Amufu is a grain community and railway town and the proposed development was highly welcomed by the cluster farmers; • The project site is within an existing silo which belongs to the government, so there is no issue regarding land acquisition for

					the project; • There is no marketing challenge, we are only requesting for modern facility such as the proposed APPEALS project to boost our production capacity; • We are farmers at Eha Amufu where every available land is cultivated with crops such as rice, maize, cassava, plantain etc; • As noted, the cluster farmers concerns/challenges about their farming activities are: i. Cost of inputs particularly fertilizer which was said to have been affected by foreign exchange rate; and ii. Lack of modern equipment as they rely mainly on manual labour; • They however further requested if a short road connecting the project site to the community main market (Eke Market) could be fixed along the proposed processing centre. The road gets flooded during raining seasons.

ES 11 Potential Impacts of the Proposed Project Activities

Potential Positive Environmental Impacts

- Reduction of post-harvest losses and wastages;
- Agro-processing expansion enhances better environmental resource management;
- Drives investment in rural infrastructure which aid better environmental planning
- Exposure of the rural communities to better governance;
- Upgraded environment and aesthetics of the area.

Potential Positive Social Impacts

- Strengthening of the existing crop cultivation clusters;
- Communal ownership of agricultural facilities creates unity amongst farmers and other stakeholders;
- Improved produce price at demand-driven rate;
- Secured platform for cooperative seedling production;
- Involvement of new generation of farmers;
- Application of technology at cooperative level;
- Collective market access.

Potential Negative Impacts of the Proposed Project Activities

Pre-Construction Phase: Potential Negative Social Impacts

- Expectations of improvement in livelihood;
- Proposed project induced development;
- Heightened expectation on swift vertical development in agriculture;

Construction Phase: Potential Negative Environmental Impacts

- Impacts on air quality;
- Impacts on flora and fauna;
- Impacts on water bodies and water resources;
- Impact on biodiversity;
- Soil, land excavation and sites construction;
- Noise;
- Disruption to communication and transportation routes;
- Disruption to public utility;
- Disruption of access to farmlands;
- Occupational health and safety;
- Impact on settlements and community residents;
- Solid waste;
- Sanitation issues.

Construction Phase: Potential Negative Socio-Cultural Impacts

- Immigration of new comers;
- Impact on ambient air and traffic;
- Disturbance of farming and marketing activities;
- Impact on cultural beliefs;
- Increase in crime and insecurity issues.

Operations and Maintenance Phase: Potential Negative Environmental and Social Impacts

- Air quality;
- Noise and vibration;
- Water quality issues;
- Traffic and transportation.

ES 12 **Analysis of Alternatives**

The choice will be centered on the fundamentals of achieving the threshold of the set criteria concerning all considered environmental and social variables that are vital to the project (i.e. Applicable or Relevant and Appropriate Requirements (ARAR)). Upon assessment of the possibilities, two project alternatives opportunities and prospects surface – "No Action" and "Go Ahead" alternatives were identified. After assessment, the features and traits of the "No Action" do not exceed the project objectives as strongly observed in the "Go Ahead" alternative. Therefore, the Go-Ahead alternative was selected as the most appropriate for the projects.

ES 13 Environmental and Social Mitigation Measures

Environmental and Social Mitigation Measures were prepared for all the identified potential impacts.

Pre-Construction: Amongst mitigation measures proffered include: Proper awareness/sensitization of the host community on the project and involvement of the community during preparation and implementation. Keep equipment and machineries in good conditions, Continuous community engagement/consultation, Establishment of grievance redress mechanism and development of an induction programme including a code of conduct for all workers.

Construction: The proposed mitigation measures include: reduction of possible noise levels that machineries and vehicles might attract to the project communities. Other measures should include keeping engine combustion low, use of PPE, and ensuring that the ground is wet to avoid raising of dust during civil work, limiting of construction activities to during the day time, and ensuring that all regulations on wild animals and their related habitats are strictly adhered to, enhance proper handling and disposal of wastes (especially contaminated soil or water, concrete, demolition materials, oils, grease, lubricants, metals, etc.), Engage competent security personnel. In addition, GBV/SEA, HIV/AIDS and STD awareness programme should be prioritized and Speed limits signboards should be placed at strategic locations. Implement site

specific Transport Management Plan (TMP) and OHS Plan. Also, the Contractor and Consultants should hire, to the maximum extent, skilled and unskilled workers from communities in the project area.

Operation: Maintenance operations should be designed according to environmental safety guidelines, periodic checks on ambient environmental quality particularly air and provision of speed limits signboards should also be ensured. Implement the Waste Management Plan (WMP) and promote waste avoidance; reduction; reuse and recycling as applicable.

ES 14 Grievance Redress Mechanism (GRM)

The Enugu State APPEALS has put in place a Grievance Redress Framework following the World Bank approach to GRM and FPMU guidelines. The framework has five levels of addressing grievances (Level 1: Cluster Level of Grievance Redress; Level 2: Local Government Area Grievance Redress Committee (LGRC); Level 3: State Grievance Redress Committee (SGRC); Level 4: National Grievance Redress Committee (NGRC) and Level 5: The Courts). However, all grievances must first of all be addressed at the First Level. It might however be escalated to the second Level if the first level agreement was not acceptable to the party/parties involved and then to the third then to the fourth level under similar situation. If a party is not satisfied with the outcomes of Levels I, 2, 3, & 4 then he/she can take the case to the Law Courts (the last resort/Level).

ES 15 Labour Influx and Child Labour

The project may face the challenge of the influx of non-local labour and working conditions issues as some required skilled and technical labourers/worker might not be available in the local community of the project sites. The project should therefore take concrete measures to mitigate potential labour influx-related risks such as workers' sexual relations with minors and any possible resulting pregnancies, presence of sex workers in the community, the spread of HIV/AID, sexual harassment of female employees, child labour and abuse, increased dropout rates from school, inadequate resettlement practices, and fear of retaliation after conflicts, failure to ensure community participation, poor labour practice, and lack of road safety. These risks require a careful consideration to improve social and environmental sustainability, resilience and social cohesion. To this end, the project will include mitigation measures such as: (a) assessing the living conditions of workers' camps and ensuring appropriate living conditions; (b) establishing and enforcing a mandatory Code of Conduct for the company, managers and workers, and an Action Plan for implementation; (c) ensuring appropriate location for camps; (d) taking countermeasures - indicated in the Social Management Plan - to reduce the impact of labour influx on the

public services; and, (e) devising and implementing a strategy for maximizing employment opportunities for the local population, including women.

ES 16 Occupational Health and Safety

During the construction and operation phase of any World Bank support project, health and safety concerns are very vital. For this set of projects, the key reference document is the World Bank Group's Environmental, Health, and Safety (EHS) Guidelines (April 2007) and the essential industry safety guidelines that are extended and applicable to project communities' safety. The plan will address issues such as:

- The proper provision and use of personnel protective equipment (PPE) such as safety boots, respirators, eye protection, hearing protection, gloves, and hardhats;
- Analysis of risks associated with job activities in order to develop standard requirements for PPE on a job-specific and station-specific basis;
- Provision of training on the proper use of PPE and penalties for the improper use of PPE;
- Training on the proper and safe use of all equipment in workshops, garages, the plantation, nurseries, and mills;
- Physical barriers so that unauthorized personnel are not admitted to areas where dangerous equipment is in use;
- Training related to job-specific risks and activities, including:
- Electrical installations (e.g. electric shock on direct contact with conductors and indirect contact with masses powered up, burns, fire and explosion);
- Mechanical equipment (e.g. tool blasting or matter risk, crushing of fingers, wounds, equipment shock);
- Lifting devices (e.g. crushing risk, injury caused by appurtenances, falling, collision); machinery and vehicles (e.g. risk of accident on contact with other materials, collision with or knocking down of persons, obstacle shock, fall by the operator, collision with a vehicle or machine);
- Hand tools, electric or other welding equipment (e.g. risk of injury, electrocution, poisoning, dazzle);
- Workshops and garages (e.g. risk of mechanical injury, shock and collision with machines);
- Sterilizers and boilers (e.g. risk of burns due to heat and steam from furnace, explosion risk); and
- Power plant, processing lines and workshops (e.g. noise-related risks, electrocution risk) provision of properly trained and equipped first aid personnel including a well-stocked pharmacy, a treatment room with beds, and an ambulance for any worksite injuries.

ES 17 Community Health and Safety Management Plan

The respective mitigation measures include:

- Construction activities can draw significant numbers of unmarried (single) men and others attracted by the opportunity to provide goods and services to construction workers and project beneficiaries with disposable income. Some of these activities such as alcohol, drugs, and sex trade can lead to increased crime and diseases, including HIV/AIDS, thus the project contractor is expected to recruit most of the construction workers from the immediate area to minimize the number of single men migrating for work;
- The Project Contractor shall ensure that adequate training and enforcement of code of conduct to curtail workers' participation in sensitive activities such as sex trade, drugs and alcoholism;
- The Project Contractor is expected to conduct sensitization across the frontiers of the project community with the villages therein regarding the potential impact of the project and the workers' code of conduct;
- The Project Contractor shall conduct community training and awareness programmes to ensure that the local population understands the risks of participating in risky economic activities for short-term economic gain; and
- The Project Contractor will work closely with the Enugu State Ministry of Health promote sensitization campaigns to help the local population avoid risky activities; and to monitor the incidence of diseases and other health measures that has indicated a need for further intervention to protect community health and safety as may be connected to the proposed intervention project in the project community.

ES 18 Worker's Training and Orientation Plans on COVID-19

The details of the workers training plans for the consideration of the COVID-19 pandemic is expected to take a spectrum steps such as COVID-19 awareness training, precautionary steps, curtailing exposure to the virus, managing access and spread, daily routine activities, and personal care. A comprehensive detail of the steps, actions and possible case management of the pandemic are provided in the following web portals:

- World Health Organization - WHO
  https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public
- United States Centre for Disease Control
  https://www.cdc.gov/coronavirus/2019-nCoV/index.html
- Nigeria Centre for Disease Control (NCDC)
  https://covid19.ncdc.gov.ng/report/

ES 19 Workers Training and Precautions

- Train all staff and workers in the signs and symptoms of COVID-19, how it is spread, how to protect themselves and the need for them to be tested if they have symptoms. Allow questions and answers to dispel any unfounded information about the virus;
- Use existing grievance procedures to encourage reporting of co-workers if they show outward symptoms, such as severe coughing accompanied with fever, and do not want to voluntarily submit to testing;
- Supply face masks and other relevant PPE to all project workers at the entrance to the project site. Any persons with signs of respiratory illness that is not accompanied with fever should be mandated to wear a face mask;
- Provide hand-wash facilities, hand soap, alcohol-based hand sanitizer and mandate their use on entry and exit of the project site and during breaks, via the use of simple signs with images in local languages;
- Train all workers in respiratory hygiene, cough etiquette and hand hygiene using demonstrations and participatory methods;
- Train cleaning staff in effective cleaning procedures and disposal of rubbish.

ES 20 Minimize Chance of Exposure

- Any worker showing symptoms of respiratory illness (fever + cold or cough) and has potentially been exposed to COVID-19 should be immediately isolated from the site and tested for the virus at the nearest local hospital;
- Close co-workers and those sharing accommodations with such a worker should also be isolated from the site, isolated and tested for to ascertain their COVID-19 status;
- Project management must liaise with the Enugu State COVID-19 Task Force on testing facilities for modalities on testing and proper case and contagion management;
- Persons under investigation for COVID-19 should not return to work at the project site until cleared by test results;
- If a worker is found to have COVID-19, wages should continue to be paid during the worker's convalescence (whether at home or in a hospital);
- Any worker who lives at home with a family member who has a confirmed or suspected case of COVID-19 should be quarantined from the project site for 14 days.

Managing Access and Spread

- Should a case of COVID-19 be confirmed in a worker on the project site, visitors should be restricted from the site and worker groups should be isolated from each other as much as possible.

Daily Routine Management for Workers

- Consider ways to minimize/control movement in and out of construction areas/site;
- If workers are accommodated on site mandate them to minimize contact with people outside the construction area/site or prohibit them from leaving the area/site for the duration of their contract;
- Implement procedures to confirm workers are fit for work before they start work; pay special attention to workers with underlying health issues or who may be otherwise at risk;
- Check and record temperatures of workers and other people entering the construction area/site or require self-reporting prior to or on entering;
- Provide daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures.
- Require workers to self-monitor for possible symptoms (fever, cough) and to report to their supervisor if they have symptoms or are feeling unwell;
- Prevent a worker from an affected area and from anyone who has been in contact with an infected person from entering the construction area/site for 14 days;
- Prevent a sick worker from entering the construction area/site, referring them to local health facilities if necessary or requiring them to isolate at home for 14 days.

Personal Care

1. *Hand hygiene and hand-washing practices*:

- If hands are not visibly dirty, the preferred method of hygiene is to perform hand hygiene with an alcohol-based hand rub (hand sanitizer) for 20–30 seconds using the appropriate technique. When hands are visibly dirty, they should be washed with soap and water for 40–60 seconds using the appropriate technique;
- Functional hand hygiene facilities should be made available to all workers at vantage points around the construction areas. A corresponding mobile

hand-washing facilities with secured wastewater collector should also be provided. In addition, functional hand hygiene facilities should be available for all visitors, site assessors and others.

2. *Social distancing*:

- Workers should stay at least 6 feet (about 2 arms' length) from one another, visitors and others on and off work site.
- Social distancing should be practiced in combination with other daily preventive actions to reduce the spread of COVID-19, including wearing of masks, avoiding touching the face with unwashed hands, and frequently washing your hands with soap and water for at least 20 seconds.

ES 21 Institutional Arrangements, Responsibilities and Accountabilities

Pre-Construction Phase

Key Agencies

The main governmental and non-governmental agencies charged with major roles in the implementation of the ESMP during the pre-construction phase are:

- The Consultants;
- The Federal APPEALS-FCO;
- The Enugu APPEALS-SCO;
- Enugu State Ministries, Departments and Agencies (Health, Environment, Information, Finance, and Agriculture);
- Community Based Organisations; and
- The executive members of the priority crop clusters

Construction Phase

Major Actors / Key Agencies during Construction Phase

Given that the construction phase of the project is filled with intensive civil activities, various players in different categories must be involved. For the proper implementation of the provisions of the ESMP, the key players include:

- The Engineering supervising firm;
- The Contractor;
- Enugu State APPEALS- SCO;
- The Federal APPEALS-FCO;
- Enugu State Ministries, Departments and Agencies (Works, Health, Environment, and Agriculture);
- Federal Ministry of Environment (FMEnv), NESREA; and
- World Bank (will provide guidance during support and supervision tasks).

Operational and Maintenance Phase

The Enugu APPEALS and the Federal APPEALS as the managing entities of the proposed projects have the responsibility to consider the stated monitoring measures. They must, however, inform other government agencies, especially the State Ministry of Health and Environment for proper action, where necessary, at the operation and maintenance phase.

Key Agencies

At this phase of the project, the main governmental institutions which Enugu APPEALS will co-operate with are the following:

- The Enugu State Ministry of Ministry of Environment;
- The Enugu State Ministry of Health;
- The Enugu State Ministry of Transport;
- The Enugu State Ministry of Works; and
- The Nigerian Police.

ES 22 Enugu APPEALS GRM Process

In line with the World Bank requirement for sustainable project activities, the Enugu APPEALS has developed its GRM procedure in 2019. Considering that the three-value chain being supported by the Enugu APPEALS have similar operational attributes, a one-size-fits-all approach was adopted for the design of its GRM, especially for the uptake of grievances at the project beneficiaries' (Cluster) level.

The core institutional blocks for the Enugu APPEALS GRM include the following:

- Farmers Cluster/CDA/Cooperative/CAMs;
- Traditional leader's/Community heads;
- Women leaders in the various beneficiary communities;
- Youth leaders in the various beneficiary communities;
- Local council representative;
- Field Officers/Enumerators;
- Value Chain Facilitators;
- Environmental/Safeguard Specialist (GRM Coordinator);
- Environmental officer;
- Agro-processing specialist;
- Communication officer;
- Rural infrastructure engineer;
- M&E officer;
- Rural Infrastructure Engineer;
- Training officer;
- State Project Coordinator;

- Enugu State Citizens' Mediation Centers;
- Department of Women Affairs in the state Ministry of Women Affairs;
- Women's right focused NGOs; and
- Nigeria Police.

Stages of Complaint and Appeal Levels

An effective GRM must provide the opportunity for a complainant to seek a higher level of redress if they are not satisfied at the lower level. In this case, six stages of complaint with five appeal levels have been developed for the Enugu APPEALS GRM.

These include:

1. Cluster-based GRC;
2. Community-based GRC;
3. Enugu State Coordinating office/SCO GRC;
4. National Coordinating Office GRC;
5. Citizen Mediation Centre;
6. Law Court.

ES 23 Training Programmes

S/N	Capacity Needs	Participants	Subject	Resource Person	Duration	Cost (US $)
1	Personnel require knowledge of WB, Federal/State environmental policies and standards, and application of these policies and standards in implementing the World Bank support for the project.	**SCO Training** SCO, Environmental Safeguards Specialist, Project Engineer, Social Safeguards Specialist, Livelihood Officer and other associated support staff from the Enugu APPEALS SCO. The expected number of participants is Ten (10) persons	In-depth consideration of the mitigation measures proffered by the ESMP.	Environmental Science Specialist (ESMP, Remote Sensing & GIS)	2 days' seminar	3,900
2	Training on GBV/SEA, Labour Influx Issues and other Social Safeguards and Livelihood Issues as it affect project.	**Community Training** The executive members of the crop clusters and PAPs. The estimated number of participants is Twenty-Five (25)	GBV/SEA, Labour Influx and Social Livelihoods	GBV/SEA specialist, Social Livelihood Specialist. Environmental specialist	1-day workshop	3,500

		persons.				
3	APPEALS institutional arrangements concerning the aggregation and cottage processing facilities project sites	**Community Training** The executive committee of the project beneficiaries and PAPs, Contractors and their staff. The estimated number of participants is Fifty (50) persons.	General environmental awareness; seminars that will include ecological and social science principles, as it affects the project sites. Understanding Environmental Checklist for monitoring contractor's compliance to the mitigation measures proffered in the ESMP.	Environmental science specialist	1-day workshop	3,400
Total						**10,800**

ES 24 Mitigation Timeline

	Mitigation measures for:	Mitigation Timeline (Weekly)																						
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th
1.	**Pre-construction phase** i. Land Acquisition																								
	ii. Community sensitivity of the project																								
2.	**Construction phase** 1. Environmental impacts																								
	2. Biological impacts																								
	3. Socioeconomic impacts including Labour Influx, Child Labour etc																								
	4. Public health including GBV/SEA																								
3.	**Operation and maintenance phase** Air quality, noise and vibration, water quality, traffic & transportation, and health and safety																								

ES 25 ESMP Costing and Cost Analysis

S/N	ESMP Activities (Monitoring)	Cost Estimate ($)
1	***Pre-Construction Phase***	**10,710**
2	***Construction Phase***	
	Environmental Impacts	4,220
	Biological Impacts	1,300
	Socioeconomic Impacts	9,550
	Public Health Impacts	3,640
	Sub-Total	**18,710**
3	***Post-Construction/Operation Phase***	**7,720**
	Total for Construction Impact Mitigation Monitoring	**44,860**
4	***Institutional Capacity Reinforcement Programme***	
	Enugu State APPEALS including the purchase of satellite imageries	3,900
	Community	6,900
	Total for Institutional Capacity	**10,800**
Total for Mitigation Monitoring		**55,660**
	10% Contingency	**5,566**
Grand Total		**61,226**

Foreign Exchange Rate Used: 411 Naira to 1 United States (U.S.) Dollar

ES 26 ESMP Disclosures

After a review and clearance by the World Bank, the ESMP will be disclosed at the FMEnv, Enugu APPEALS-SCO and the LGA offices of the beneficiary communities and at the World Bank online web portal (www.worldbank.org). The purpose will be to inform stakeholders about the project activities, impacts, anticipated and proposed environmental management actions as well as to obtain the certificate of conformity from the FMEnv.

CHAPTER ONE
BACKGROUND

1.0 Project Overview

Agriculture in Nigeria has been another great attention at adding value to farm produce in order to ensure food sustainability and livelihood improvement of small holders' peasants. The government of Enugu State has keyed into the opportunity offered by the Agro-Processing, Productivity Enhancement and Livelihood Improvement Support (APPEALS) Project in the State. The APPEALS intervention is one of the various steps taken at improving agriculture in Nigeria to encourage development projects that will enhance farm produce across the country. It is an initiation of the Federal Government of Nigeria through the Federal Ministry of Agriculture and Rural Development(FMARD) and substantially support or finance by the International Development Association (IDA) – a component of the World Bank Group. This initiative by FMARD is made available to interested States. Basically, the project is intended at transforming both the small-scale subsistence farmers and middle size farming enterprises into market-tailored agricultural systems by addressing identified constraints that prevent their engagements in the produce up-scaling and value chains.

The APPEALS initiative is hinged on the fact that the typical level of value-added production of primary agricultural output across the Nigeria States is grossly insufficient. Simply put, peasant's harvests have remained at the primitive low with little or value addition. The inability of farmers to add value to their produce is one the reasons most farmers struggle economically. This makes Nigeria to remain a staple crop producer with potential opportunities that could be harnessed to the benefit of both the farmer and the government. This further means that the economic benefits of value addition in form of increased profits, livelihood strengthening, adoption of advanced agricultural technology, reduction of out-of-farm losses and increased farm output to mention a few, has been out of the reach of Nigerian farmers. The current low agricultural productivity in Nigeria, however, could be attributed to a number of factors. Some of these include: insufficient and low access to inputs; lack of seed funds for establishing suitable processing plants by producer cooperatives; lack of access to supportive infrastructure including aggregation facilities; challenging business environment; limited access to different strata of markets; low level of improved technology adoption; weak quality control mechanism which makes suppliers plus the government unable to deliver quality inputs to farmers; low capacity at all levels, bridging the bottlenecks between the policies and the farmers, poor adaptation of international technical materials to local scenarios, among others.

The APPEALS project will aid the efforts of the Federal Ministry of Agriculture and the Federal Government at large to achieve its sets goals; particularly on food security, enhancement of livelihood and boosting of export potentials, thus, transforming low-income farmers to full-fledged businessmen and businesswomen. The value chains to be supported will be aligned towards the achievement of these priority goals in the immediate, short and medium-terms.

It is anticipated also that the APPEALS project will not only address these myriad of challenges but also provide the platform to address those yet to emerge. Some of the benefits derivable from this project include: enhancement of the inherent capacity of producer cooperatives through training, better access to seed capital, introduction of new technologies and agricultural inputs;, added extension services, and seamless agro-knowledge transfer, improvement of critical agrarian infrastructure, mainstreaming gender issues into agricultural development initiatives, market linkage and facilitation with up-takers, establishment of business alliances and creation of out-grower schemes, provision of farm-based value addition through establishment of profit-oriented clusters and value chains and connecting farmers to the demand-high value chains to improve farm profits amongst several others.

At the moment, of the thirty-six state of the federation, six States have signed up with the APPEALS intervention. These states are Enugu, Cross River, Kaduna, Kano, Lagos, and Kogi State, which was the foundational pivot for the preparation of this project in its initial design. Details of the participating States and their respective priority value chains are presented in Table 1.1. It is expected that additional States will join the initiative. This will, however, depend on various significant factors including but not limited to: level of readiness, funding, potential for agribusiness clusters, expansion of agricultural status quo, and linkage with the World Bank governing principles on the project.

Table 1.1: States Participating in APPEALS Project and their Priority Value Chain

SN	Project State	Value Chain		
		Food Security	Export Potential	Livelihood
1	Cross River	Rice	Cocoa	Poultry
2	Enugu	Rice	Cashew	Poultry
3	Kano	Rice	Maize	Tomatoes
4	Kogi	Cassava	Cashew	Rice

5	Kaduna	Maize	Ginger	Dairy
6	Lagos	Rice	Aquaculture	Poultry

Furthermore, it is anticipated that the project will drive agricultural productivity enhancement of small and medium scale farmers and improve the value addition along the priority value chains in the participating states. The critical Project Development Objective (PDO) will be attained by aiding farmers' productivity and their connection to markets, facilitating the consolidation of agricultural products and cottage processing, enabling clustering of farmers and small and medium businesses and linkage to infrastructure networks and business services, providing adequate technical assistance (TA) and institutional support both to stakeholders and beneficiaries, federal and state governments in the value chain development. These are further expected to boost increased productivity, production, and improve processing and marketing of the targeted value chains and by extension, to foster job creation along the value chain. The project support will, in addition, leverage on the priority value chains identified in the Agricultural Promotion Policy-The Green Alternative (APP-2016-2020). This will be made possible through facilitating business alliances, promotion of greater farmers-agribusiness linkages, and support to critical infrastructure in the value chain development.

The various activities to be carried out under the project trigger the World Bank Safeguard Policies including the Environmental Assessment OP 4.01; Natural Habitats OP 4.04; Cultural Property OP 11.03; Involuntary Resettlement OP 4.12; Pest Management Safeguard Policy OP 4.09; and Projects on International Waterways OP 7.50. To this end, all the World Bank Environmental and Social Standards applied to the project.

The project has five (5) components as follows: Production and Productivity Enhancement; Primary Processing; Value Addition, Post-Harvest Management and Women and Youth Empowerment; Infrastructure Support to Agri-Business Clusters; Technical Assistance, Knowledge Management and Communication and Project Management and Coordination. The Sub-component 5.3. Environmental and social safeguards and grievance redress mechanism deals with the issues of safeguards including grievance redress mechanism (GRM).

The environmental and social safeguards concerns are to be addressed through two national instruments already prepared under the project. These include the Environmental and Social Management Framework (ESMF) and a Resettlement Policy

Framework (RPF). These framework instruments need to be translated into specific costs, measurable with actions that can be monitored for specific intervention sites through the preparation of site-specific management and action plans. In general, the ESMF specifies the measures to be applied in preparing, approving and implementing the following: (i) environmental and social impacts assessments (ESIAs, or alternately either SA or EA) and/or (2) environmental/social management plans (ESMPs, or alternately both an EMP and SMP) for activities at the state level. The RPF applies when land acquisition will lead to the temporary or permanent physical displacement of persons, and/or loss of shelter, and /or loss of livelihoods and/or loss, denial or restriction of access to economic resources due to project activities. It sets out the resettlement and compensation principles, organizational arrangements and design criteria to be applied in order to meet the needs of the project-affected people, and specify the contents of a Resettlement Action Plan (RAP) for each package of investments.

The ESMP is site-specific and consists of well-documented set of mitigation, monitoring, and institutional activities to be taken prior and during project implementation with a view to completely eliminate adverse environmental and social impacts (where possible), offset them, or reduce them to standardised acceptable levels. The ESIA contains an ESMP which documents the measures required to implement these actions, and address the adequacy or otherwise of the monitoring and institutional arrangements for the project sites. The ESIA report shall contain studies on the Baseline inventory, Stakeholders identification and consultation, Labour influx and Gender issues, Citizens Engagement, Gender Based Violence (GBV) issues and GRM.

1.2 Proposed Intervention

The proposed intervention includes construction of buildings for cottage processing and aggregation centres. This will include: Construction camp and crew set up, digging and foundation layout of the canter, use of heavy equipment and hazardous materials, cutting and filling, structural development and brickworks, carpentry works, electrical works, water supply system, hazardous materials storage and disposal, waste management, office equipment supply and basic installations of storage and processing equipment.

1.3 Proposed Project Justification

Agricultural sector's capacity and capability at providing direct and indirect empowerment and job opportunities is very evident. Hence, there is an urgent need for the development of primary processing of agricultural produce through value addition, post-harvest management, and women and youth empowerment. Two of the key aspects of this will be realized through the construction/

rehabilitation of aggregation facilities, procurement and installation of equipment for the cottage processing centers. This is built as part of the support for the common good for cooperatives, produce clusters, producer organizations across the gender and demographic divide. This is also expected to facilitate appropriate post-harvest handling, storage and quality management, clearing, sorting, processing and packaging for organized group beneficiaries in target production clusters. It is based on these that the Government of Enugu State, through the Enugu APPEALS project office has identified and established three production clusters covering rice, cashew and poultry which entails selected agrarian communities across every region of the State. It is expected that the commodity aggregation centers and cottage processing units will address post-harvest crop losses, increase farmers' productivity and contribute to:

vi. Improving the capacity of produces' cooperative through training and TA, especially for targeted women and youth groups;
vii. Supporting productivity enhancement through the introduction of new technologies and agricultural inputs;
viii. Improving access to infrastructure by supporting investment;
ix. Facilitating market linkage through, up-takers, out-growers' schemes; and
x. Facilitating on-farm value addition by targeting limited value chains and linking farmers to the supply chain.

1.4 Need for the ESMP

The ESMP consists of a well-documented set of mitigation, monitoring, and institutional actions to be taken before and during project implementation to eliminate the adverse environmental and social impacts, and or reduce them to an acceptable level. The ESMP also includes the measures required to implement these actions. Basically, primary objective of the ESMP is to simplify valuable decision-making and to ensure that the implementation processes of the proposed project activities are thoroughly sustainable. Some of the activities to be carried out during ESMP preparation include; ensuring that agricultural and agro-processing activities are environmentally-sound, culturally-appropriate, encouraging community consultations and participation and enhancing social wellbeing of the stakeholders. Specifically, the ESMP seeks to provide a clear process including action plans that integrates environmental and social considerations into the proposed interventions.

1.5 Objective and Scope of the Consultancy

The objective of the consultancy service is to prepare site specific Environmental and Social Management Plan (ESMP) for Aggregation Centre construction under the APPEALS sub- projects. Each ESMP is site-specific and consists of a well-documented set

of mitigation, monitoring, and institutional actions to be taken before and during implementation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. Each ESMP also includes the measures needed to implement these actions, addressing the adequacy of the monitoring and institutional arrangements in the intervention site.

1.6 Scope of the ESMP

The scope of work (tasks) of the consultancy includes the following:

i. Review existing documents relevant to the proposed project;
ii. Review Environmental Assessment procedures of the World Bank safeguards policies especially Environmental Assessment (OP 4.01);
iii. Describe the proposed project by providing a synoptic description of the project relevant components and presenting plans, maps, figures and tables;
iv. Identifying the policy, legal and administrative framework relevant to the project.
v. Defining and justifying the project study area for the assessment of environmental and social impacts;
vi. Describe and analyze the physical, biological and human environment conditions in the study area before project implementation;
vii. Identifying sub-project activities that may have negative environmental and social impact on the environment and social wellbeing of the society;
viii. Identify all risk/hazards associated with the proposed activities and identify mitigation measures to reduce, offset, or eliminate adverse impacts
ix. Engage in consultations with primary stakeholders in order to obtain their views on, and preoccupations about the project. These consultations shall occur during the preparation of the Reports to identify key environmental and social issues and impacts on the proposed mitigation/enhancement measures;
x. Work in reference to the feasibility and site design for a harmonized appropriate baseline indicator;
xi. Develop a smart work plan template for mitigating environmental and social risks associated with construction and operation in consultation with the relevant government agencies;
xii. Evaluate the potential impacts, and the extent of labor influx that the project will generate on the people and the community at large;
xiii. Develop an Environmental and Social Management Plan (ESMP) for the work.

1.7 ESMP Study Procedures

The ESMP study procedures will include the following activities:

- site assessment visit;
- desktop study (literature review);
- review of project building design reports;

- public/stakeholder consultations and engagement;
- field data collation, analysis (including laboratory) and reporting;
- identification and assessment of environmental and social impacts;
- mitigation measures; and
- monitoring and management plan.

1.7.1 Documents Review

In line with other relevant information and documents from the project proponents, and other documents on agricultural development, the key documents that will be reviewed for this study include:

- APPEALS Environmental and Social Management Framework (ESMF)
- APPEALS Resettlement Policy Framework (RPF)
- APPEALS Pest Management Plan (PMP)
- APPEALS Project Appraisal Document (PAD)
- APPEALS Project Implementation Manual (PIM)
- World Bank safeguards policies / Environmental and Social Standards (ESS)
- Intervention Locations

1.7.2 Data Gathering and Site Assessment

Data gathering for the preparation of the ESMP report commenced immediately after the contract signing, inception meeting with the State Project Coordinator and the Project Implementation Units and training of the field assistants. So far, the visits included inspections of the proposed intervention sites in order to confirm the environmental and social issues and conditions to be affected or are likely to develop from the implementation of the project. This will enable the ESMP consultant to appraise the project area of influence, the nature of the biophysical environment to be affected particularly the status of land, air, and water uses as well as other relevant baseline data were also obtained. The socio-economic characteristics of the environment to be potentially impacted by the project including the neighboring rural communities, current infrastructural status in the project area were also observed.

1.7.3 Identification and Consultations with Stakeholder

The Enugu APPEALS has identified and meet with some stakeholders on the project particularly concerning the land acquisition among others. However, it is part of the ESMP assignment to further engage with key stakeholders as consultation is expected to last throughout the project lifecycle.

1.7.3 Public/Stakeholder Identification and Consultations

The project proponents were engaged to understand the project scope, design and implementation and to obtain relevant project documents. Key stakeholders have also been consulted to obtain their comments and concerns on the proposed project with respect to the potential environmental and socio-economic issues. Details of consultations are provided in Chapter 4.

1.8 ESMP Report Structure

This ESMP Report was presented in a concise format containing all studies, processes, analyses, tests and recommendations for the APPEALS intervention. The report focused on the findings, conclusions and recommended actions, supported by a summary of the data collected and citations for references used. Below is the indicative Table of Contents and description of the contents embedded for the ESMP final report:

Cover Page
Table of Contents
List of Acronyms and their Definitions
Executive Summary

The executive summary provides an overview of the project objectives and a brief project component description; in addition to a brief non-technical description of the significant findings and recommendations for environmental management that will be adopted by the investor.

Chapter 1: Introduction: This chapter provides the basic information about the APPEALS project and the Enugu State intervention projects. The sub-headings will include but not limited to:

- Background;
- Rationale for Proposed Project;
- Purpose of the ESMP;
- Objective and Scope of the Consultancy;
- Scope of Work for the ESMP;
- Approach / Methodology for the ESMP.

Chapter 2: Institutional and Legal Framework for Environmental Management: This section describes the applicable environmental legal, regulatory and policy requirements and associated regulations and standards of the Enugu State Government, Nigerian Government, and the World Bank. The sub-headings include the following:

- A discussion of the World Bank safeguard policies / Environmental and Social Standards relevant to APPEALS and the proposed project activities in Enugu State;
- A summary of relevant local and federal policies, legal, regulatory, and administrative frameworks.

Chapter 3: Description of Biophysical Baseline Environment Conditions:

- Location of the proposed Intervention Projects;
- Description of the area of influence and environmental baseline conditions including but not limited to the climatic elements, soil and geology, vegetation, drainage, water and air quality will be discussed;
- Baseline information on the biophysical and human settings of Enugu State are discussed in this chapter. Emphasis is given to the agriculture cluster areas that will benefit from the State APPEALS intervention;
- There will be one season (dry season) data collection of bio-physical environment of sample clusters.

Chapter 4: Socio-Economic Characteristics and Consultation with Stakeholders:

Socio-Economic Characteristics: This chapter discusses themes and topics on population, land use, planned development activities, settlement and community structures, employment, distribution of income, goods, and services, recreation, health, and cultural properties. General information about the types of health concerns that are potentially connected to the proposed projects and required to be integrated into the project details are also presented in the chapter. The socioeconomic assessment will provide the platform for mainstreaming issues of key socioeconomic variables at the level of stakeholders, project-affected persons, community and individual into the project details are also provided in the chapter. This will be integrated as part of the impact evaluation and integration as well as suitable measures for impact evaluation. The precinct of this chapter will also include:

- Analysis of the existing livelihood opportunities, income, gender characteristics, age profile, health, transport access, existing community structures at the watershed, community, household, and individual levels;
- Analysis of the existing formal and informal grievance redress mechanisms in and around the intervention area; and
- Presentation of consultations with relevant stakeholders and affected persons.
- Analysis of the status of GBV/SEA in the project community and related issues
- Other relevant topics.

Chapter 5: Assessment of Potential Adverse Impacts and Analysis of Alternatives:

This chapter provides a discussion on the cumulative effects (as they affect both the tangible and intangible human values) and investigates the potential trans-boundary impacts of the existing agricultural clusters and the proposed Enugu-APPEALS interventions. The section also includes a review of the current and potential impacts from the proposed investment. This analysis is supported by figures, tables and maps as necessary.

Furthermore, this section also specifically comprises:

- The procedure for impacts identification, impact prediction and impact evaluation from the proposed project activities;
- Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed project.
- Discussion of alternatives to the current project and reasons for their rejection, including short description of likely future scenario without intervention;
- Discussion of the potentially significant adverse environmental and social impacts of the proposed project including GBV/SEA.

Chapter 6: Environmental and Social Management Plan (ESMP) Including Mitigation Measures: In this chapter, types of mitigation measures, summary of significant potential adverse impacts and mitigation measures for significant potential adverse impacts are presented with associated illustrations.
Basically, various themes that are discussed in the chapter include:

- Discussion of the proposed environmental and social management plans;
- Institutional responsibilities and accountabilities;
- Capacity building plan;
- Public consultation plan;
- Description of grievance redress mechanism (in alignment with the ESMF, RPF, PIM and Enugu State APPEALS GRM) to address situations of conflicts or disagreements about some of the project activities;
- Monitoring and evaluation plan, including suitable indicators for the proposed project;
- Specific ways that GBV risks are to be addressed in the project by identifying mitigation measures including development of a GBV Action plan with accountability and response from work;
- COVID 19 Procedure and Awareness;
- Costs of implementing the ESMP.

Chapter 7: Conclusion: This is the final chapter and it provides the conclusion and recommendation from the study.

Appendix and Annexure: This section provides a collage of referenced documents and materials not presented in the main report but contribute substantially to the completion of the ESMP document.

CHAPTER TWO
INSTITUTIONAL AND LEGAL FRAMEWORK

2.1 Introduction

Applicable national policy, legal, regulatory and administrative frameworks of Nigeria that guide the environmental sustainability of developmental activities in the country are outlined and discussed in this section. It also provides the Enugu State policies, legislation, regulations and guidelines on environmental issues that are applicable to the proposed interventions by the Enugu State APPEALS. The World Bank Safeguard Policies (OPs) were also identified and those triggered by APPEALS Projects and relevance / applicable to proposed road intervention were discussed.

2.2 Federal/State Policy, Legal, Regulatory and Administrative Frameworks

The various national and local environmental guidelines applicable to the operations of the APPEALS have been identified. A brief discussion of these is provided in **Table 2.1**.

Table 2.1: Relevant Federal/Enugu State Policies, Legislation, Regulations and Guidelines

Federal Policies			
S/N	**Policy Instrument**	**Year**	**Provision**
1	National Policy on the Environment	1989 revised 1991	This describes both the conceptual and theoretical framework and strategies for achieving sustainable development in Nigeria
2	Agricultural Promotion Policy-The Green Alternative	(APP-2016-2020)	The policy develops the framework for facilitating business alliances, promotion of greater farmers-agri-business linkages, and support for critical infrastructure in the value chain development.
3	National Gender Policy	*2006*	The goal of the National Gender Policy is to build a just society devoid of discrimination, harness the full potentials of all social groups regardless of sex or circumstance, promote the enjoyment of fundamental human rights and protect the health, social, economic and political well-being of all citizens in order to achieve an equitable rapid economic growth; evolve an evidence based planning and governance system where human, social, financial and technological resources are efficiently and effectively deployed for sustainable development.
Federal Legal/Regulatory Instrument			
1	Environmental Impact Assessment Act No. 86,	*1992 (FMEnv)*	This provides the guidelines for regulating the activities of development projects for which EIA is mandatory in Nigeria. The Act also stipulates the minimum content of an EIA as well as a schedule of projects that require mandatory EIAs.
2	The National Guidelines and Standards for Environmental Pollution Control in Nigeria	1991	These represent the basic instrument for monitoring and controlling pollution in Nigeria
3	National Guidelines on Environmental Management Systems	*(1999)*	This establishes the requirements for an Environmental Management System (EMS) in all organizations/facilities in Nigeria.
4	National Air Quality Standard Decree No. 59 of	*1991*	This defines the levels of air pollutants that should not be exceeded in order to protect public health.
5	The National Environmental Standards and Regulations	*2007*	This makes provision for solid waste management and its administration and prescribes sanctions for offences or acts, which

	Enforcement Agency Act (NESREA Act)		run contrary to proper and adequate waste disposal procedures and practices.
6	Child Rights Act	*2003*	The Act serves as a legal documentation and protection of Children rights and responsibilities in Nigeria. It also serves as a legislation against Human trafficking since it forbids children from being "separated from parents against their will, except where it is in the best interests of the child.
7	Employee's Compensation Act	*2010*	The Act make provisions for compensations for any death, injury, disease or disability arising out of or in the course of employment; and for related matters.
8	Land Use Act	*1978 Modified 1990*	This is the primary legal means to acquire land in the country. The Act vests all land in the territory of each state in the federation in the Governor of the State and requires that such land shall be held in trust and administered for the use and common benefit of all Nigerians in accordance with the provisions of this Act
9	*Criminal Code*		The Nigerian Criminal Code makes it an offence punishable with up to 6 months' imprisonment for any person who: • Violates the atmosphere in any place so as to make it noxious to the health of persons in general dwelling or carry-on business in the neighbourhood, or passing along a public way: or • Engages any act which is, and which he knows or has reason to believe to be likely to spread the infection of any disease dangerous to life, whether human or animal.
10	Endangered Species Act	1985	This provides for conservation and management of wild life in Nigeria and the protection of some of her endangered species from extinction as a result of over exploitation.
11	FEPA/ FMEnv. EIA Procedural guidelines	1995	These indicate the steps to be followed in the EIA process throughout project life cycle.
12	S115 National Environmental Protection (The Management of Solid and Hazardous Wastes Regulations)	1991	Regulates the collection, treatment, and disposal of solid and hazardous waste for municipal and industrial sources and give the comprehensive list of chemicals and chemical waste by toxicity categories
13	S19 National Environmental Protection (The NEP (Pollution Abatement in Industries and Facilities Generating Waste) Regulations)	1991	These are the imposed restrictions on the release of toxic substances and requirements of Stipulated Monitoring of pollution to ensure that permissible limits are not exceeded during and after the project.
14	S18 National Environmental Protection (National Effluents Limitations Regulation)	1991	This makes it mandatory for industrial facilities to install anti-pollution equipment. It also makes provision for further treatment, prescribe maximum limit of effluent parameters allowed for discharge, and spells out penalties for contravention.
15	Public Health Law		This deals with public health matters.
16	Environmental Sanitation Edits, Law and Enforcements		This deals with the general environmental health and sanitation. Implementation and enforcement in the state.
17	Workmen Component Act	1987 Revised 2010	This provides for occupational health and safety.
Federal Institutional Framework			
1	The Federal Ministry of Environment (FMEnv)		The FMEnv is the government agency charged with the responsibility to administrate and enforce environmental laws in Nigeria. The FMEnv prohibits public and private sectors from embarking on major developmental projects or activities without due consideration, at early stages, for environmental and social impacts. In addition to the EIA Act, the Ministry has produced sectorial including sectorial guidelines on infrastructure development which will be duly considered in the implementation of this project.
2	Federal Ministry of Agriculture and Rural		The Federal Ministry of Agriculture and Rural Development (FMARD) has the responsibility of optimizing agriculture and

	Development		integrating rural development for the transformation of the Nigerian economy, with a view to attaining food security and positioning Nigeria as a net food exporter for socio-economic development.
3	The Federal Project Coordinating Unit.		The Federal Project Coordinating Unit. headed by a National Coordinator and hosted by the FMAgric is responsible for the overall coordination of the project.
Enugu State Environmental Legislations			
1	Enugu State Policy on Environment	2010	The policy emphasizes state government efforts to sustainable environmental management. The policy functions are to: ▪ Seek intervention of Federal Government of Nigeria and other partner agencies on erosion control to compliment the State's efforts; ▪ Embark on aggressive afforestation programmes involving the LGAs and CSOs; ▪ Sponsor relevant environmental bills to the state assembly for enactment; ▪ Enforce environmental laws through LGAs and CSOs; and ▪ Procure necessary refuse disposal equipment.
2	Enugu State Waste Management Policy		The policy enables commencement of integrated management of natural resources of land, water, vegetation etc to ensure resource conservation.
Enugu State Institutional Framework			
1	Enugu State Ministry of Environment and Mineral Resources		Some of the functions of the Enugu State Ministry of Environment are to: • Liaise with the FMEnv. to achieve a healthy and better management of the environment via development of National Policy on Environment • Monitor the implementation of ESMP studies and other environmental studies for all project development; • Execute programmes relating to the control of droughts, desertification, flood, erosion and management of forests estate; • Ensure bio-diversity conservation and sustainable ecosystem; • Ensure institutional reforms for effective environmental management; • Ensure qualitative and healthy environment; • Conserve, protect and enhance the environment, the ecosystem and ecological processes; and • Reduce land degradation, and develop alternative and renewable energy. • Liaise with the FMEnv. to achieve a healthy and better management of the environment via development of Policy on Environment
2	Enugu State Environmental Protection Agency (ESEPA) Law		The objective of this agency law focuses on protection of rural and urban environment in Enugu State. It is also within the functions of the agency to support and ensure that monthly environmental sanitation is observed.
3	Enugu State Agricultural Development Programme		The programme objectives of Enugu State Agricultural Development Programme (ENADEP)include: • Training of agricultural extension officers; and • Provision of extension services to farmers. • Improvement of infrastructures; • increase food production and incomes of small-scale farmers; and • Provision of credit facilities to farmers etc.

2.3 World Bank Operational Safeguard Policies triggered by Enugu State APPEALS Projects

The World Bank Environmental and Social Standards are the cornerstones of the Bank's support for sustainable poverty reduction. The main objective of these policies is to prevent and mitigate undue harms to people and their respective environment in the

developmental processes. These policies also provide the guidelines for the Bank and the borrower staff in the identification, preparation, and implementation of programs and projects. The World Bank Operational Policies triggered by APPEALS and those applicable to Enugu project sites are shown in **Table 2.2**.

Table 2.2: World Bank Environmental and Social Standards Applicable to Enugu-APPEALS Agriculture Intervention Clusters

S/N	Environmental and Social Standards	Applicability to Enugu Sites		Applicability to Project due to	How this Project will Address Policy Requirements
		Yes	No		
1	**Environmental Assessment (OP/BP 4.01)**	[x]	[ ]	Civil works under the project including construction of farm houses, Fish ponds and construction of drainage channel to drain effluents and safely discharge such will have adverse effect on the environment.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
2	**Natural Habitats (OP/BP 4.04)**	[x]	[ ]	Civil works and agricultural activities may disturb biodiversity in the project areas. However, the project is not within a biodiversity reserve area.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
3	**Pest Management (OP 4.09)**	[x]	[ ]	There is the likelihood of the use of pesticide during the project implementation and operation.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
4	**Physical Cultural Resources (OP/BP 4.11)**	[x]	[ ]	Civil works, including excavations channelization will be most unlikely to avoid all cultural heritage sites as well as presently unknown sites that can be expected to be found in any area rich in cultural and historical values.	An ESMF has been prepared for APPEALS and site-specific mitigation measures have been developed in the ESMP.
5	**Involuntary Resettlement (OP/BP 4.12)**	[x]	[ ]	Although Enugu APPEALS will only support existing clusters and existing right of ways. The activities under infrastructure development may require the acquisition of land (some with economic trees and farms) surrounding intervention area. This will lead to economic and potentially physical displacement. Also, there will be newly empowered farmers who may require green area to start-up.	A resettlement policy framework (RPF) has been prepared for APPEALS. Due to the potential impacts to economic trees and farmland that may be located around the intervention sites especially for infrastructures development, standalone RAP(s) may be prepared, and measures implemented before project implementation.
6	**Indigenous Peoples (OP/BP 4.36)**)	[ ]	[x]	The people in the area are by the World Bank guidelines not considered as indigenous peoples/ sub-Saharan African historically underserved communities.	N/A
7	**Forests (OP/BP 4.10)**	[ ]	[x]	Civil works will not extend to forest area	N/A
8	**Safety of Dams (OP/BP 4.37)**	[ ]	[x]	The proposed project does not involve the design, construction or rehabilitation of any dam of whatever kind.	N/A
9	**Projects in Disputed Areas (OP/BP 7.60)**	[ ]	[x]	The proposed project area is not known for any dispute (local, national, international) of whatever magnitude.	N/A
10	**Project on International Waterways (OP/BP 7.50)**	[ ]	[x]	The project is not within any international waterways	N/A

NB: Where there is a gap of conflict between the National Law and World Bank OP 4.12, the higher OP shall prevail which in this case is the World Bank Policy

2.3.1 International Conventions and Agreements

Several international regulations, protocols, treaties and conventions have been signed by countries of the World. The conventions are aimed at halting environmental degradation thus protecting human health against possible adverse effects. Nigeria expectedly subscribes to a number of these International Regulations and Conventions relating to Environmental Protection. Some of the international conventions, agreements and protocols to which Nigeria is signatory and applicable to the Enugu State APPEALS project sites is presented in Table 2.3.

Table 2.3: International Conventions, Agreements and Protocols to which Nigeria is Signatory and Applicable to the Enugu State APPEALS Sites

International conventions, agreements and protocols	Applicable to APPEALS		Applicable to Enugu APPEALS		Applicability to project due to	How project address issues raised
	Yes	No	Yes	No		
Both the Vienna convention for the protection of the Ozone Layer and the Montreal protocol for Control of Substances that deplete the ozone layer.	[x]	[ ]	[x]	[ ]	Agricultural works may extend to the forest area. There will be reduction in tree taxonomy and biomass leading to reduction in carbon sink and release of ODS gasses. Some of the crops may also be emitting or when burnt transmit ODS substances	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Basel convention on the prevention of trans-boundary movement of hazardous wastes and their disposal.	[x]	[ ]	[x]	[ ]	Hazardous chemical might be used as pesticides	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on the prevention of the international trade in endangered species (CITES).	[x]	[ ]	[ ]	[x]	No endangered species(s) of any kind was identified in the project area.	NA
Convention on Biodiversity.	[x]	[ ]	[x]	[ ]	Agricultural activities may extend to forest area. This will disturb biodiversity in the area.	ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on climate change.	[x]	[ ]	[x]	[ ]	Proposed activities will result in both systemic and cumulative environmental change; thereby contributing to a sustained increase in temperature.	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on	[x]	[ ]	[x]	[ ]	Proposed activities may	An ESMF has been

Desertification.					result in deforestation.	prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
Convention on Persistent Organic Pollutants.	[x]	[ ]	[x]	[ ]	Organic pollutant may be used for agricultural activities.	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.
World Health Organization (WHO) Health and Safety Component of EIA, 1987.	[x]	[ ]	[x]	[ ]	Proposed activities may be injurious to man and the environment	An ESMF has been prepared for APPEALS and site-specific mitigation measures developed in the ESMP.

2.4 Institutional Framework

Several federal and state ministries, department, agencies, and civil society organizations are involved in implementing APPEALS projects. The involvement of these bodies/organizations basically is to ensure coordination, collaboration, and information sharing at all levels which is aimed at effective implementation of projects. Consequently, each component, sub-component and activity is to be implemented through the relevant federal and state MDAs. The various MDAs include those responsible for agriculture, planning, economy and finance, works, environment and water resources. The funds for Enugu State APPEALS are made through the Enugu State APPEALS. However, the Enugu State government has the primary responsibility for land management and land allocation for agriculture purpose.

The Federal Ministry of Agriculture (FMAgric) is the lead implementing agency for APPEALS projects. The Federal Project Coordinating Unit, headed by a Federal Coordinator and hosted by the FMAgric is responsible for the overall coordination of the project. The Enugu State Project Coordinating Unit (Enugu-SPC), headed by the State Coordinator and hosted by the Enugu State Ministry of Agriculture is responsible for the coordination in Enugu State. Therefore, the Enugu State-SPC is directly responsible for coordinating the activities of APPEALS projects within the State, including the implementation of this ESMP. Both the federal and state level coordinating units have environmental officers who take responsibility for mainstreaming environmental issues into the Enugu State APPEALS sub-projects.

APPEALS Environmental Officer in Enugu State is saddled with the responsibility of coordinating the implementation of the ESMP on behalf of the SPC. At the community level, the Farmers Cluster/Cooperative will actively partake in ensuring full compliance during project implementation.

CHAPTER THREE
BIOPHYSICAL ENVIRONMENT BASELINE STUDY

3.0 Background

This chapter describes the characteristics of the existing biophysical environment of the project area. The data were obtained from both primary and secondary sources. The primary data source includes a one-season field sampling obtained through the environmental baseline survey of air quality and noise, soil sampling and land use and terrestrial flora and fauna studies conducted 10th to 15th of September, 2021. The data collected during technical team site visit between 6th and 7th of April, 2021 were also incorporated and subsequent analysis of the field samples (soil and groundwater) was conducted at the Divine Concept Laboratory, Port-Harcourt, Rivers State. Secondary data sources (desktop studies/literature review) include review of published literature, maps and textbooks related to the proposed project area. The specific biophysical baseline information relevant to the proposed intervention project area includes:

i. Location;
ii. Climate;
iii. Geology and hydrogeology;
iv. Relief and drainage;
v. Air quality and noise;
vi. Soil;
vii. Hydrology of the area;
viii. Vegetation; and
ix. Wildlife and biodiversity

3.1 Project Location

3.1.1 Enugu State

The proposed aggregation centres and cottage processing facilities for agricultural produce is located at several communities Enugu State. As shown in Fig. 3.1, Enugu State is located at south-eastern part of Nigeria and it is bounded to the north-east and north-west by Benue and Kogi States respectively while Anambra and Ebonyi States are its respective bounds to west and east; and Abia State formed its southern boundary. Geographically, the project State stretches from longitude 6^0 54'14.23" to 7^0 52' 1.38" East of the Greenwich Meridian and from latitude 5^0 55'17.73" to 7^0 6' 59.57" North of the Equator. Its total landmass is about 7,534Sqkm and this make it the largest landmass among the five south-eastern Nigeria states, hence, it possesses great a landmass for agricultural activities. Enugu State estimated human population at 2006 and its projected population for 2016 was 3,267,837 and 4,411,119, respectively (NPC Census 2006 and NBS 2017). Based on this figures, the project State is the second most populated state within the region and it is predominantly dominated by Igbo ethnic group.

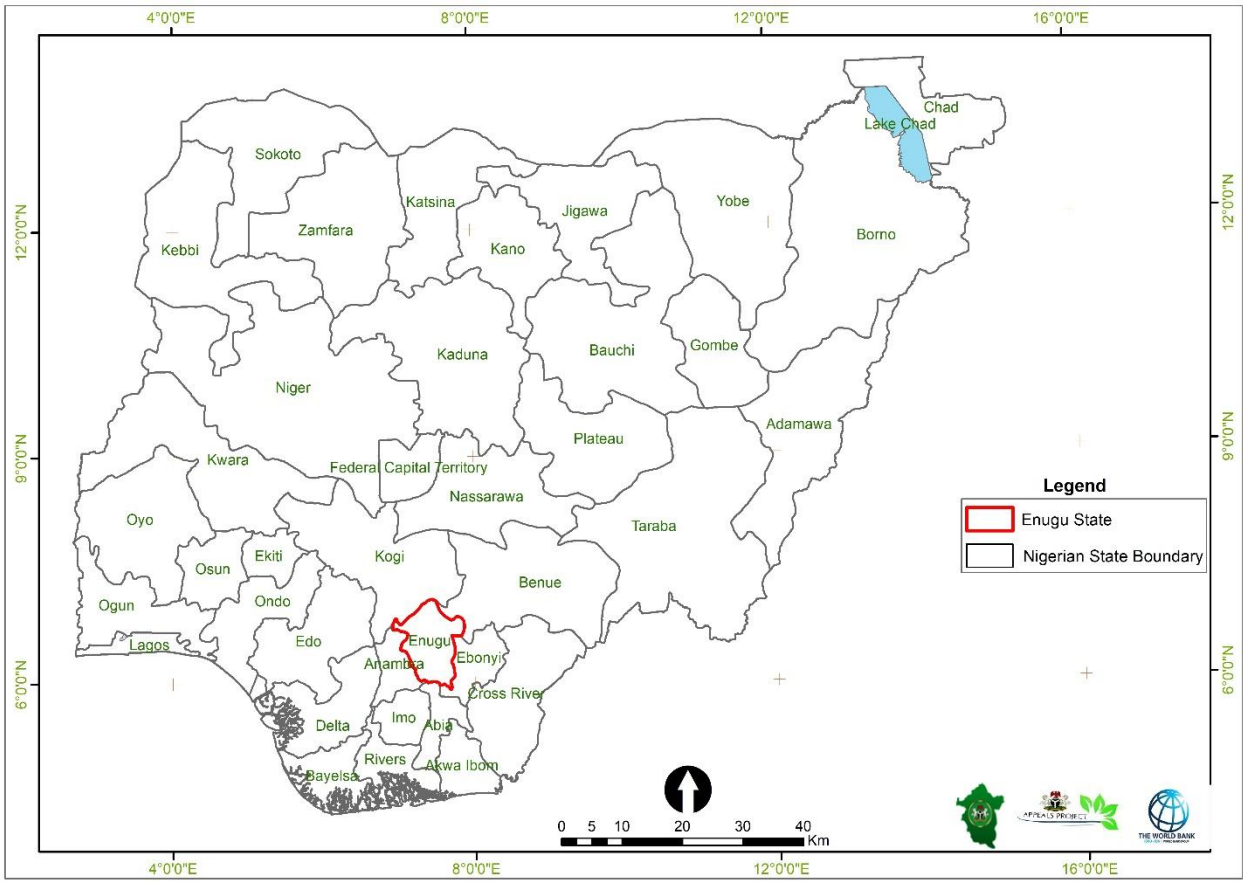


Fig. 3.1: Nigeria Depicting Location of Enugu State

Administratively and for ease of spreading development across its geographical boundary, Enugu State is further sub divided into seventeen local government areas(LGAs), Figure 3.2. Given its large natural resource deposit of coal, the State is commonly known as the Coal city and it is often referred to as the Capital of the Eastern region of Nigeria. In addition to the natural resource deposit, the socioeconomic development of the Enugu state is also link to the Nigerian railway services before it became moribund. However, apart from the State Capital dwellers, agriculture is the mainstay of the local economy. Common farm produces are Cashew nuts, Rice, livestock, cassava, among others. This makes the proposed intervention a welcome development as it will contribute greatly to the economy of the State and Nigeria in general.

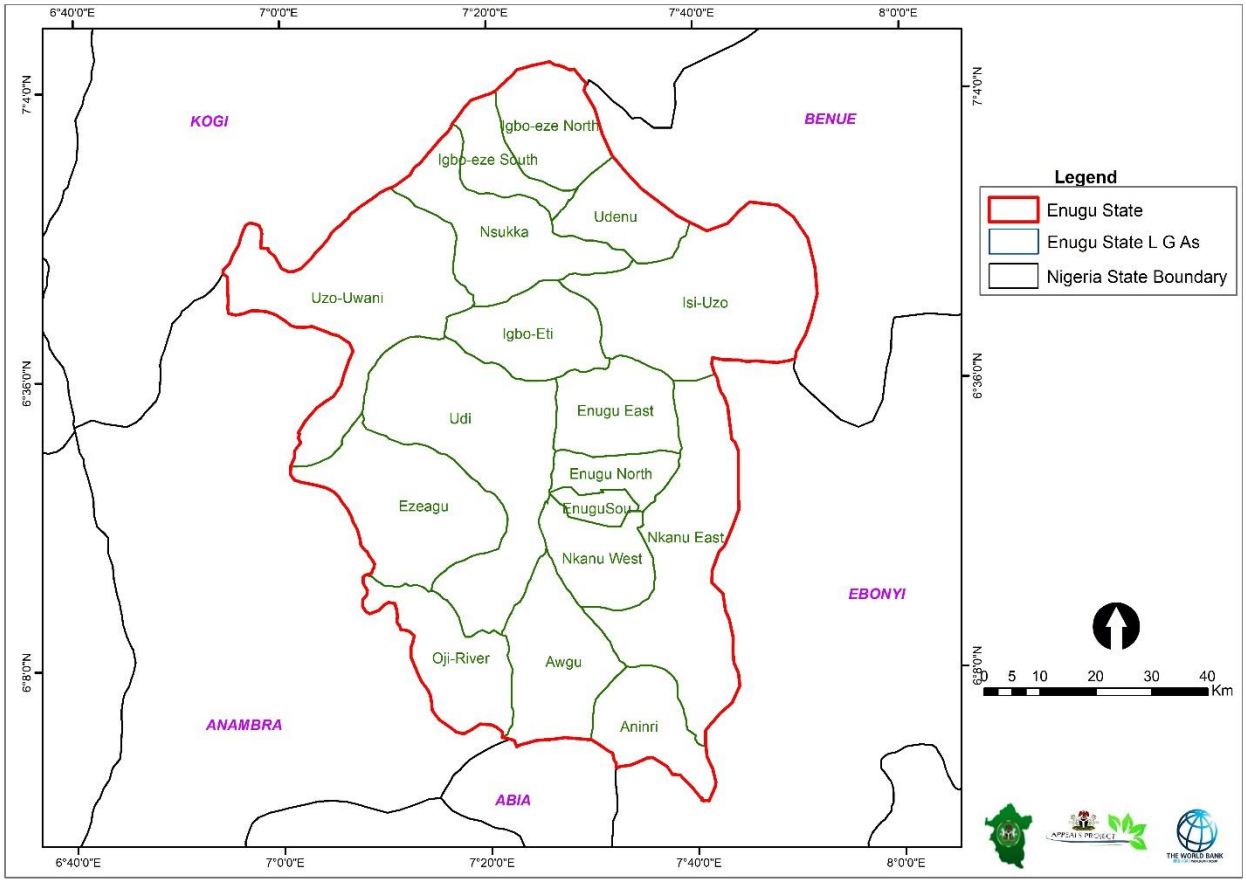


Fig. 3.2: Enugu State Depicting LGAs and Neighboring States

3.1.2 The Proposed Farm Produce Aggregation and Processing Centers

The proposed farm produce aggregation and processing centers in Enugu State are spatially distributed across its local government areas based on peculiarity and comparative advantage. This phase of the APPEALS project for the Enugu State Coordinating Office is proposed at nine (9) aggregation/processing centers (Table 3.1). The spread of the centers reflect representation across the length and breadth of the state to ensure that every region within it benefit from the intervention, however, two centers (an aggregation and a cottage processing) are situated within the Nsukka LGA of the State (Fig. 3.3). The summarized details of the distribution of these proposed facilities and their specific value chain are provided in Table 3.1.

Table 3.1: Cluster Location and Proposed Intervention Category

S/N	Project Community	Longitude (⁰ E)	Latitude (⁰ N)	LGA	Value Chain	Proposed project
1	Adani	7° 0'59.69"	6°43'37.06"	Uzo-Uwani	Rice	Aggregation/Processing Center
2	Amechi	7°30'39.51"	6°22'54.76"	Enugu South	Poultry	Processing Centre
3	Eha Amufu	7°46'5.63"	6°39'33.59"	Isi-Uzo	Rice	Aggregation/Processing Center
4	Eha Etiti	7°30'8.29"	6°48'38.38"	Nsukka	Cashew	Aggregation Center
5	Ezeagu	7°16'55.88"	6°22'39.86"	Ezeagu	Cashew	Aggregation/Processing Center
6	Ikpa	7°24'50.54"	6°50'28.43"	Nsukka	Poultry	Processing Centre
7	Umuiba Nara	7°39'25.74"	6°13'10.52"	Nkanu East	Rice	Aggregation/Processing Center
8	Orba	7°27'48.31"	6°50'41.68"	Udenu	Cashew	Aggregation/Processing Center
9	Oduma	7°37'41.27"	6° 5'23.78"	Aninri	Rice	Aggregation/Processing Center

Source: ESMP Fieldwork, September 2021

- **Adani** is one of the beneficia=ry community of the APPEALS intervention. The community is predominantly an agrarian located at the western region of Uzo-Uwani community. Adani is a border community between Enugu and Anambra States its main agricultural produce is Rice, hence, this prompted the siting of the aggregation and processing center at the community. Specifically, the facility is proposed to be sited on a piece of land along a recently tarred asphalted Adani – Omashi(a community in Anambra State) road at the outskirt of the project community. The project land (8 plots) is presently a mixed cultivated maize, garden egg, and cassava farm dotted by palms and raffia plants (Plate 3.1).
- The proposed poultry processing center at **Amechi** is sited opposite the independent national electoral commission's (INEC's) office for Enugu South LGA. A civic center is also proposed beside the project site. The land area for the processing center which is located along a tarred access road linking Enugu – Aba- Port-Harcourt road was estimated at 8 plots. Meanwhile, as shown in Plate 3.2, a part of the project land was fallow while some part is cultivated with a mixed maize and cassava farm. The Amechi is a sub comm unity of the Enugu city capital.

- **Eha Amufu** proposed rice processing center is on existing/moribund government facility land. Specifically, it is located on an abandoned silo at the outskirt of the town. Meanwhile, as shown in Plate 3.3, the site has an existing standing structures with damaged and roof. In addition, a recently completed building (market) of five shops is located within the project site premises.

Eha Amufu (a railway station town) which is located within Isi-Uzo LGA is a border community between Enugu, Benue, and Ebonyi States. As observed, the immediate project surrounding (i.e perimeter boundary of the abandoned Silo) is cultivated with rice while some grown/canopy-like trees were also observed. The main access road to the site from the community is threaten by erosion (surface asphalt wash away) and may soon become impassable to vehicles if palliative measures are not put in place.

- Plate 3.4 shows the location of the proposed aggregation and processing center for **Eha Etiti**. Eha Etiti is an agrarian community in Nsukka LGA of the Enugu State. It is border community between the Nsukka and Udenu LGAs. As shown, the site is along a recently constructed storm drainages and graded road linking Odobudo - Ugwu Atu -Eha Etiti and Eha Alumuna settlements. However, the access road to the could be faced with erosion after two or more rainy seasons if the road surface is not solidified with concrete or asphalt. The project site and its immediate surrounding is composed of shrubs and light forest vegetation. Some of these economic trees will be affected by the proposed intervention.

Plate 3.1: Proposed Site for the Processing centre Adani

Plate 3.2: Proposed Site for the Processing centre at at Amechi

Plate 3.3: Proposed Site for the Processing centre at Eha Amufu

Plate 3.4: Proposed Site for the Processing centre at Eha Etiti

- The proposed Cashew aggregation/processing center at **Ezeagu** is located opposite a nonfunctional construction company site along Aguobu Owa and Eziowa Owa communities' road in Ezeagu LGA. It is about 3km from the Ezeagu LGA secretariat. There is an old uncompleted building within the project land area. The site terrain is relatively flat and largely covered by shrubs vegetation with gravel surface. Access to the project is good, graphical view of the site is shown in Plate 5.

- **Ikpa** is a sub community of Nsukka town in Nsukka LGA. Nsukka is a commercial and University town in Enugu north. The site opposite the existing livestock/poultry slaughter market/sheds at Ikpa market. The specific land for the proposed processing site is already fenced with concrete blocks and gated with iron gate. Although, there is no existing building/structure within the perimeter fenced land however, the land is cultivated with cocoyam and dotted by palms (Plate 3.6) Furthermore, there is a stir residential building behind the proposed site. The site is accessible through an earthen road and a police locate at about 100 meters to the site.

- The proposed APPEALS rice processing center at Nkanu East LGA of the state is located at **Umuiba Nara** community. The site represents the spread of the intervention to the southern part of the state. The region if famous for rice cultivation among other food crops. Generally, the Nkanu LGA area is pride as the food basket of Enugu State. Specifically, Umuiba Nara is largely an agrarian community with rice as the major farm produce. Selected site for the project is beside a moribund Third National Development Project (FADAMA III AF) building (Plate 3.7). Presently, access road to the proposed site is in deplorable condition. A bungalow residential building and uncompleted structure was observed at about 30 meters and 40 meters to the proposed site, respectively. Meanwhile, the proposed site is presently characterized by shrubs vegetation.
- The **Orba** is a community in Udenu LGA. The community is well known for Cashew plantation hence, the siting of the cashew aggregation and cottage processing center for this beneficiary community. The site is proposed to be located by a newly completed cottage government hospital with an isolation wing along Enugu - Orba – Makurdi road (Plate 3.8). In addition to the hospital, other major landmark around the site is a Total Filling station. As at the time of the site visit, the project land was cultivated with yam and several economic trees including palm plants were observed. The site is easily accessible through the Enugu - Orba – Makurdi road.

- The proposed aggregation and rice processing sites at Aninri LGA is located at **Ezineri Oduma** community which is along Ukete Oduma and Amankanu communities' road. The community is known for rice farming due to its favorable wet land environment. Specifically, the project site is located behind a market (Orie market) at it was observed to be a waterlogged area and highly prone to flooding during rainfall seasons. Hence, a special consideration that will aid effective drainage system should be given to the design on the aggregation and cottage processing centers. In addition, access to the proposed project is not in good condition and it requires consideration as well.

Plate 3.5: Ezeagu Proposed Processing Centre

Plate 3.6: Proposed Processing center at Ikpa Market

Plate 3.7: Umuiba Nara Processing Centre

Plate 3.8: Proposed Orba Processing Centre

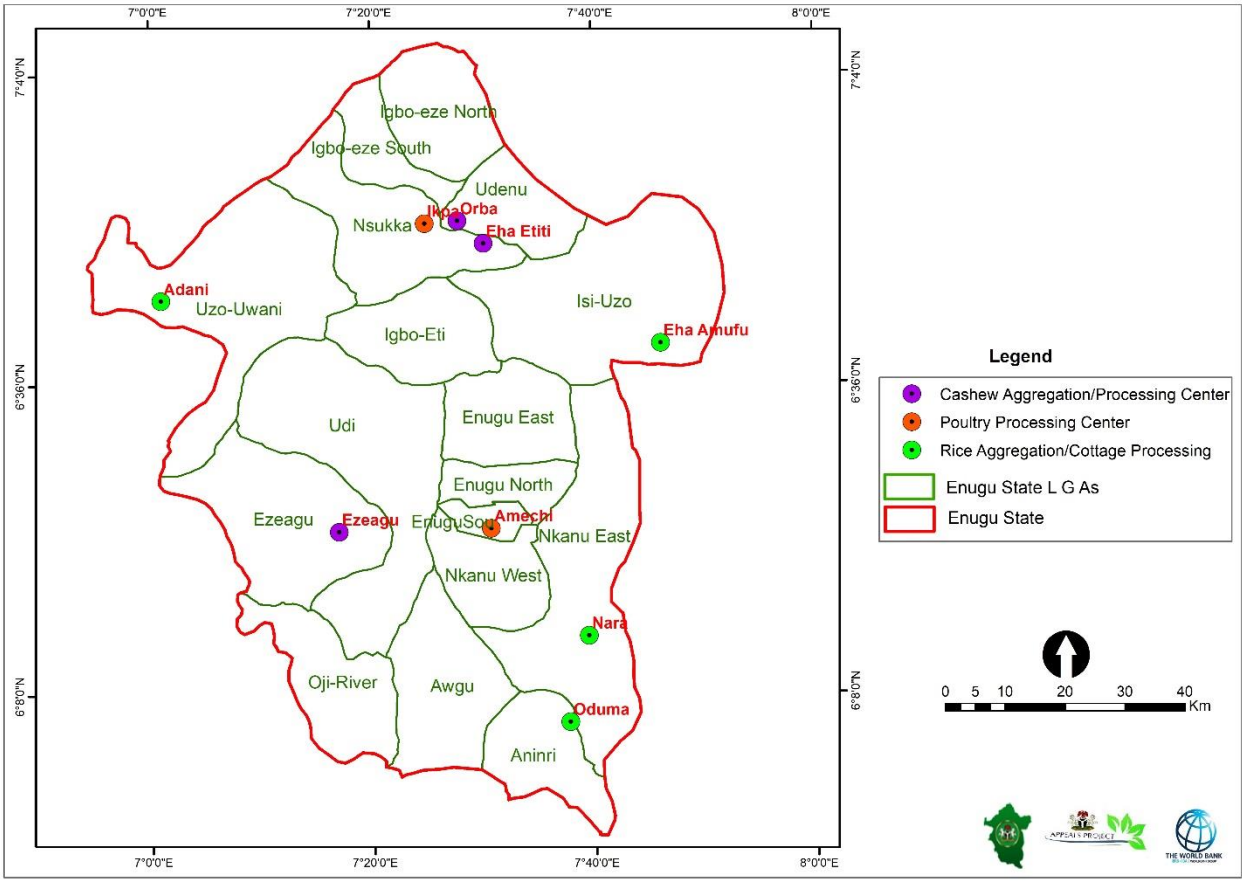


Fig. 3.3: Spatial Distribution of the Proposed Aggregation/Cottage Processing Centres

3.2 Climate

The Climate of Enugu State is generally tropical and it is expressed as the contrast between a dry season and a wet season. These two seasons of the climate are very dependent on the two prevailing air masses blowing over the country at different times of the year; the dry north-easterly air mass of Saharan origin, and the humid maritime air mass blowing from over the Atlantic. The Micro-Climatic elements that define the climate include rainfall, temperature, relative humidity, wind speed and direction and each of these is described in the following subsections.

3.2.1 Rainfall Characteristics

Rainfall is the primary climatic element in Enugu State as it is in every other part of the country. The rainfall regime is principally controlled by the two major air-masses: the moist tropical maritime (TM) with its associated westerlies and the dry tropical continental air mass (TC) with its associated easterlies. The analysed data shows that it rains almost in every of the year in Enugu State, however, the amount varies greatly from one month to another. As shown in Fig. 3.6, rainfall regime is between April and October. During the intensive rainfall months, rainfall total could be as high as 400.4 mm in a month. The rainfall amount rises gradually from April and peak at July/August and nose dive continuously through December. The light rainfall months (November - March) could be explored for project implementation schedule activities in order to have less disturbance from heavy rainfall months.

Annual total rainfall pattern for 43 years (1971-2013) of the project area is shown in Fig. 3.7. As shown, the yearly total is highly irregular however, as observed, highest annual rainfall amount recorded for the period was 2983.4 mm (in 1990) while lowest annual total was 917.1 mm (in 1983). However, computed annual rainfall amount for the area is about 1,800 mm. As shown in the Fig, records show that it rains in every month at Enugu with varying amount. However, the wettest month is September. The monthly rainfall is often exploited by rainfed agriculture to grow plants throughout the year particularly the rice farmers at the southern part of the state with an extensive wetland. As shown in Fig. 3.6, total number rain days in a year could be as high as 146 days could be as low 75 days. Computed mean number of annual rain days therefore is 120days. In other words, it could rain in Enugu State for 120days of the 365/366days in a year with a single rainfall event(day) amount that could be high as 162.4mm or as low as 0. 2mm.Generally, the rainfall characteristics in the project state encourage agricultural practices all year round. In addition, the information is very useful in designing drainages for storm water around the proposed facilities to avoid flooding of the premises.

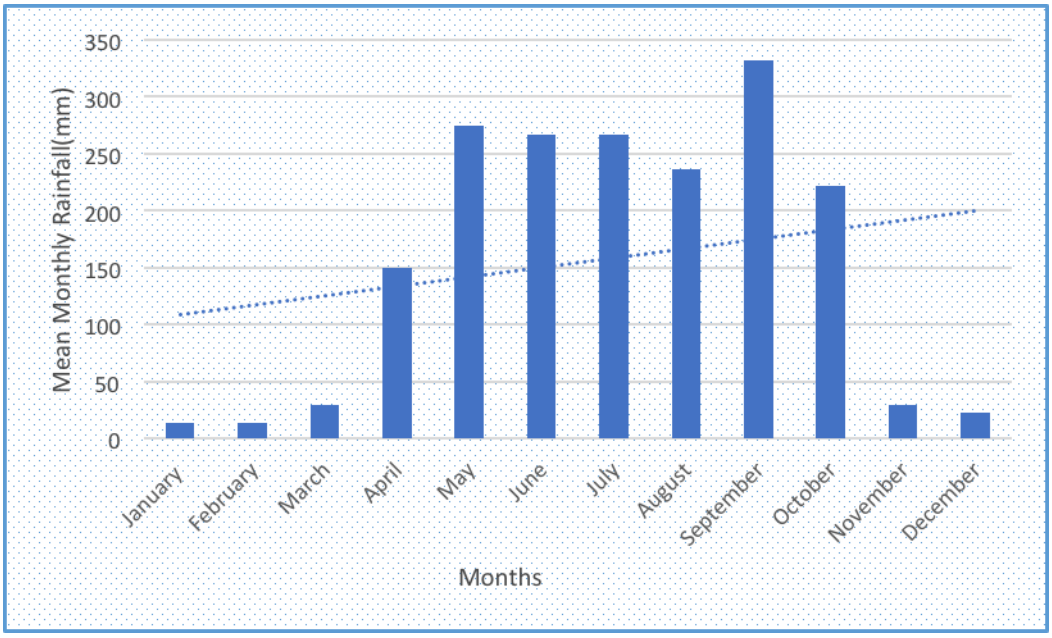


Fig. 3.4: Mean Monthly Rainfall Characteristics of project area

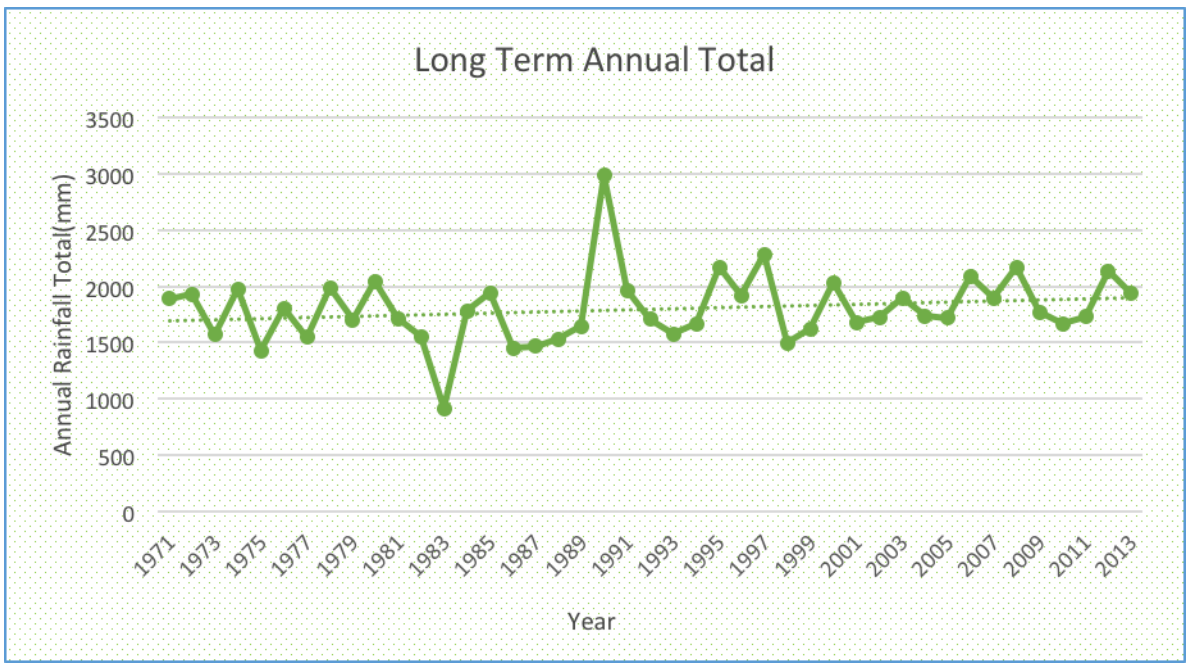


Fig. 3.5: Annual total rainfall characteristics of the project area (1971–2013)

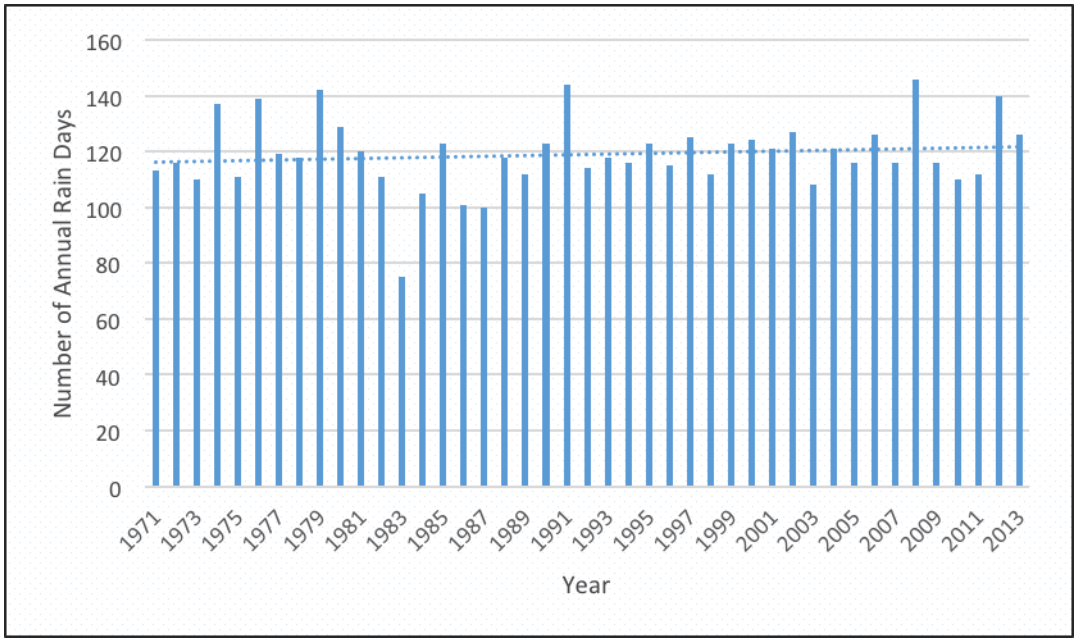


Fig 3.6: Annual number of rain days in the Project area

3.2.2 Temperature

Temperature of Enugu State is typical of a tropical area which is high and relatively stable though the year with an indication of seasonal fluctuations. The temperature is usually higher during the dry season and lower during the wet season. The mean maximum temperature of the area ranges from 35.84^{o} C during the dry season to as low as to 28.65^{o} C in the wet season while the mean minimum temperature ranges 24.91^{o} C to 20.05 ^{o} C for the dry and wet seasons respectively. As shown in Fig.3.7, an average temperature of the area depicts a double maximum as it peaks in the months of March and nose dive continuously through August; while it rises again from September and peak in November as the second maxima. Unlike the rainfall, the temperature characteristics of the show a regular pattern.

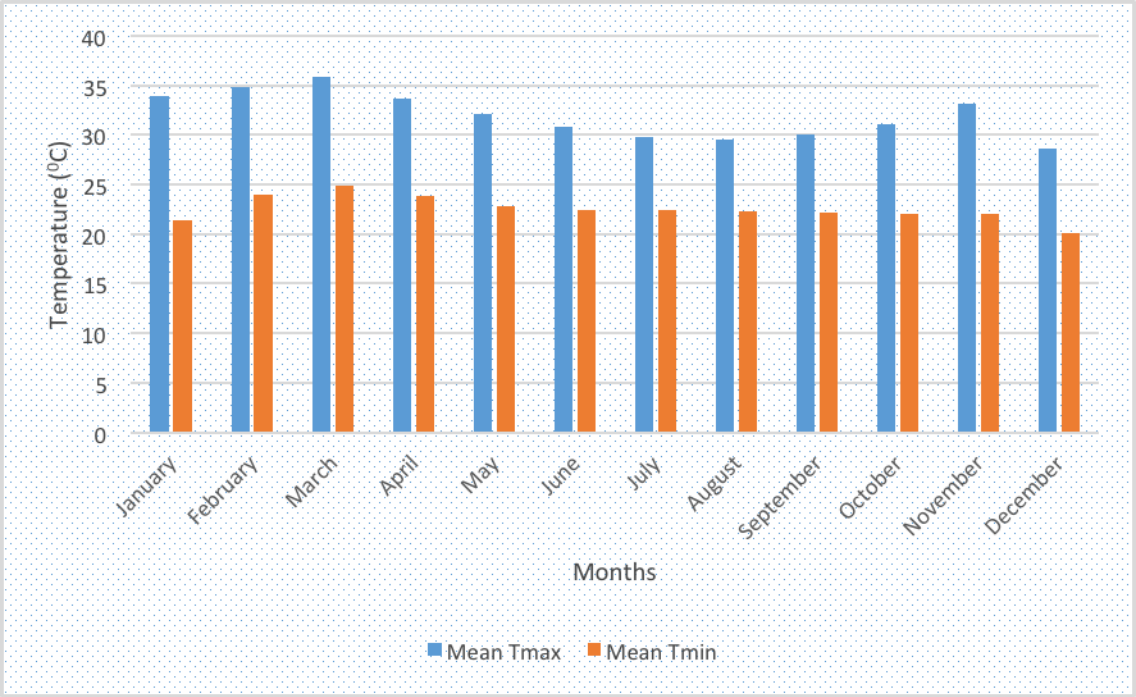


Fig. 3.7: Mean Minimum and Maximum Temperature Characteristics of the Project Area

3.2.3 Solar Radiation

Solar Radiation is the amount of solar energy incidence on the earth surface and it depends on the intensity and duration of sun rays as well as the angle at which the sun rays' strike the earth. Northern Nigeria states/regions generally received high amount of incident solar radiation throughout the year. Specifically, the long term means monthly solar radiation characteristic of the study area ranges between 15.55– 21.95 kW/m^2. The mean incident solar radiations around the study area follow closely the reverse pattern of rainfall, however, unlike the rainfall, the pattern of solar radiation is bi-modal. As shown in the Fig. 3.8, the amount of radiation reaching the surface peaks in January and reduces continuously through July. It started increasing continuously from August and then peak again in December. As shown in the Figure, there is no significant difference in the amount of monthly solar radiation received in Enugu throughout the year (wet and dry season).

The daily weather data analyzed shows that the daily average insolation during the dry season could be high as about 27.9 kW/m^2 while the least daily solar radiation recorded during wet season was about 4 kW/m^2. This solar energy is often used by the rice farmers to open dry their rice paddy after harvesting and after parboiling. In respect of the planned intervention, instead of burning fuel for electricity particularly at night, the solar energy could also be harnessed to power the facility surrounding during project construction and operation.

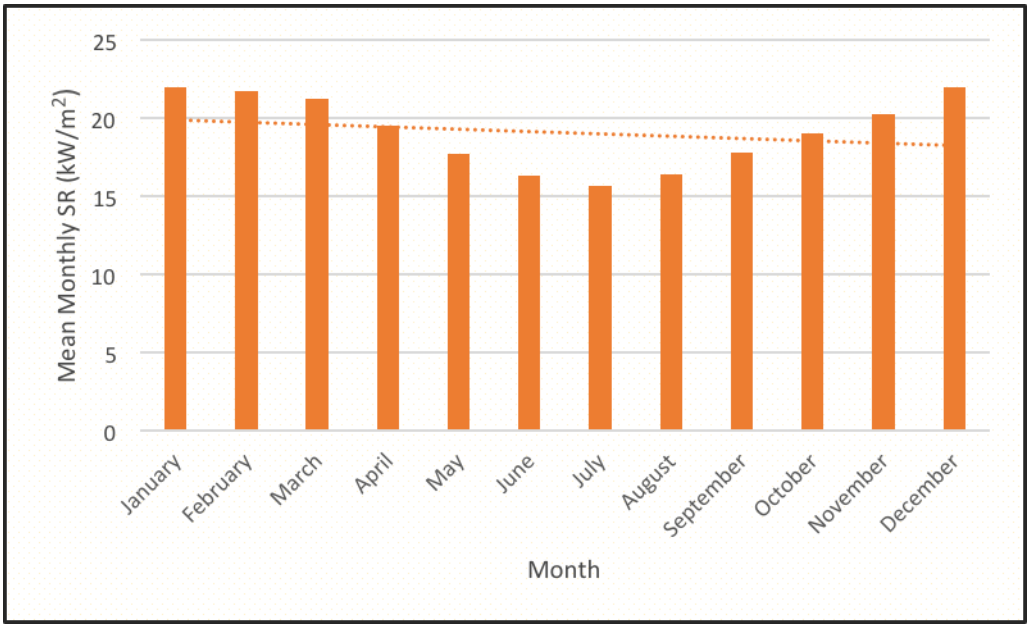


Fig. 3.8: Long term mean solar radiation of the Enugu State

3.2.4 Relative Humidity

The relative humidity (RH) within the tropics is generally high especially in areas influenced by the maritime air mass. Notably, is the diurnal range which is largely high with maximum values recorded in the early hours of the day while the lowest values are recorded during the noon time. Also detected is the seasonal influence; such that the highest values are recorded during the wet season compared to what is recorded during the dry season.

As shown in Fig.3.9, the yearly RH shows a regular pattern as it rises gradually from January through July where the highest value of 71.3% was recorded, from the month of August, the cumulative monthly RH values nose dive continuously through to December with a value of 38.7%. The RH pattern a show an inverse of temperature trend and similar pattern to rainfall characteristics.

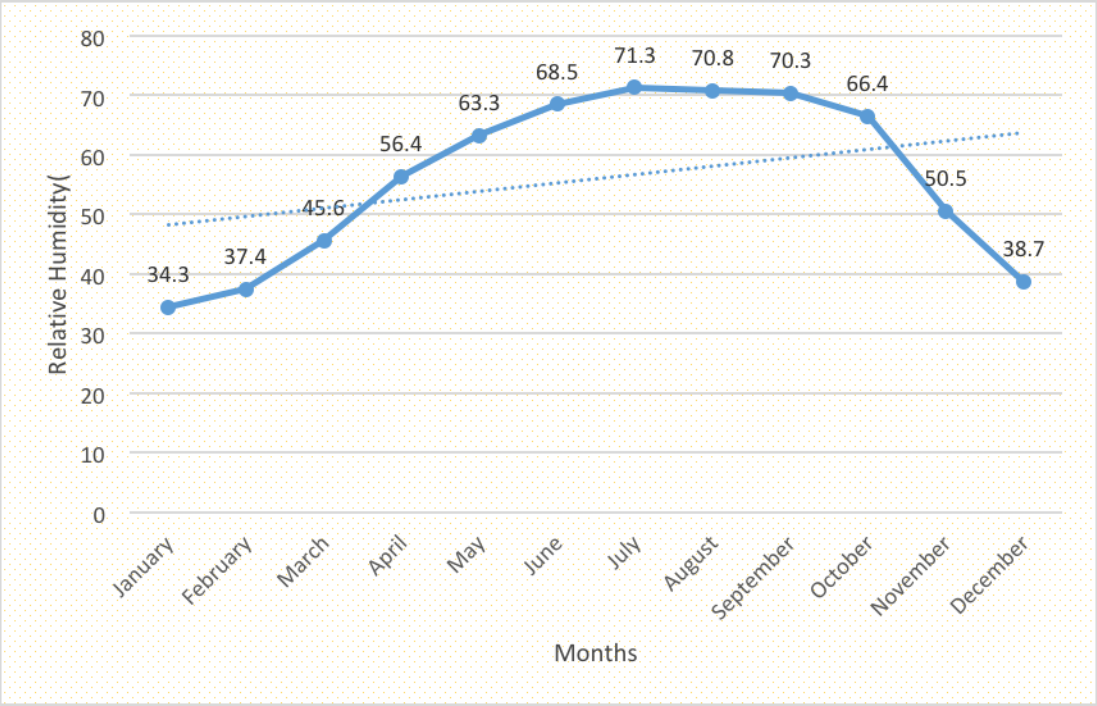


Fig. 3.9: Mean Relative Humidity Pattern of the Project area

3.2.5 Wind Speed and Direction

Wind speeds are greatly influenced by the creation of cyclonic and anti-cyclonic vortices that have logical connection with the various seasons. Analysis shows that the wind speed is relatively high throughout the year (Fig. 3.10). As shown, mean monthly wind speed ranges from 6.1 km/h to 9 km/h. High wind speed is common at the onset of rainy season while it is low during the dry season. However, an hourly wind speed could be high as 12 km/h

Dominant strong wind direction in the project area is south south-western (SSW) depicting the influence of the north-east trade wind which usually heads south-westerly towards the Atlantic Ocean. On the other hand, mild winds are mostly southwards parallel with the direction of flow of the Niger River. In summary, the wind direction indicates the influence of the air mass over the area. This shows that wind pattern varies with seasons rising from the onset of the wet season and falls during the dry season (Fig. 3.10). The wind rose for the project area is depicted in Fig. 3.11.

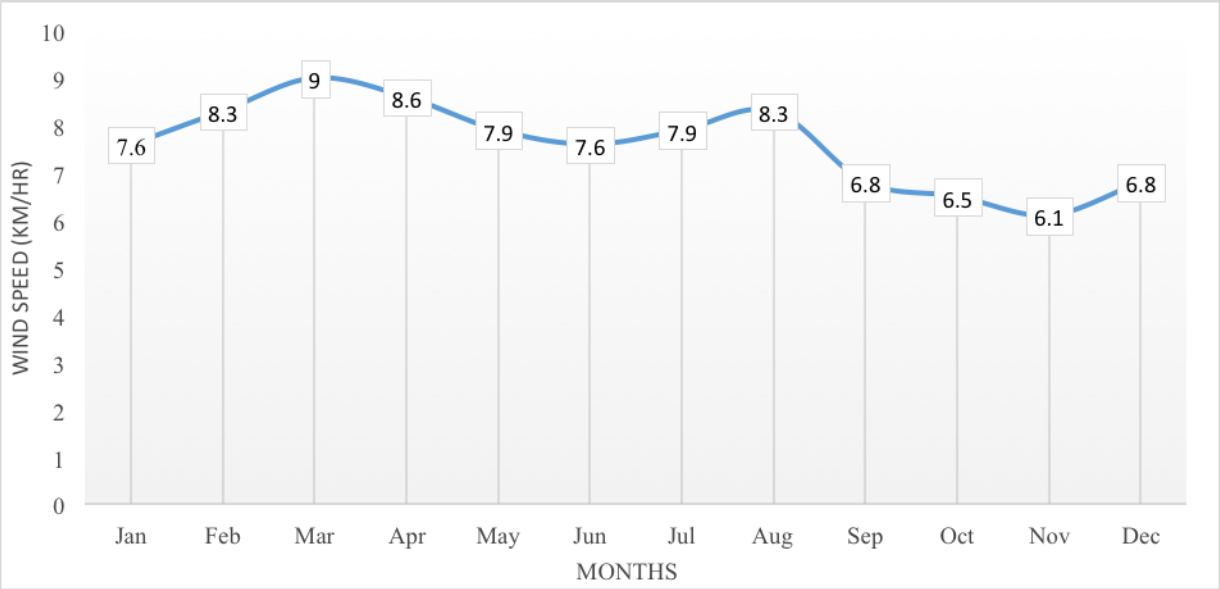


Fig. 3.10: Average Monthly Wind Speed of the Project Area

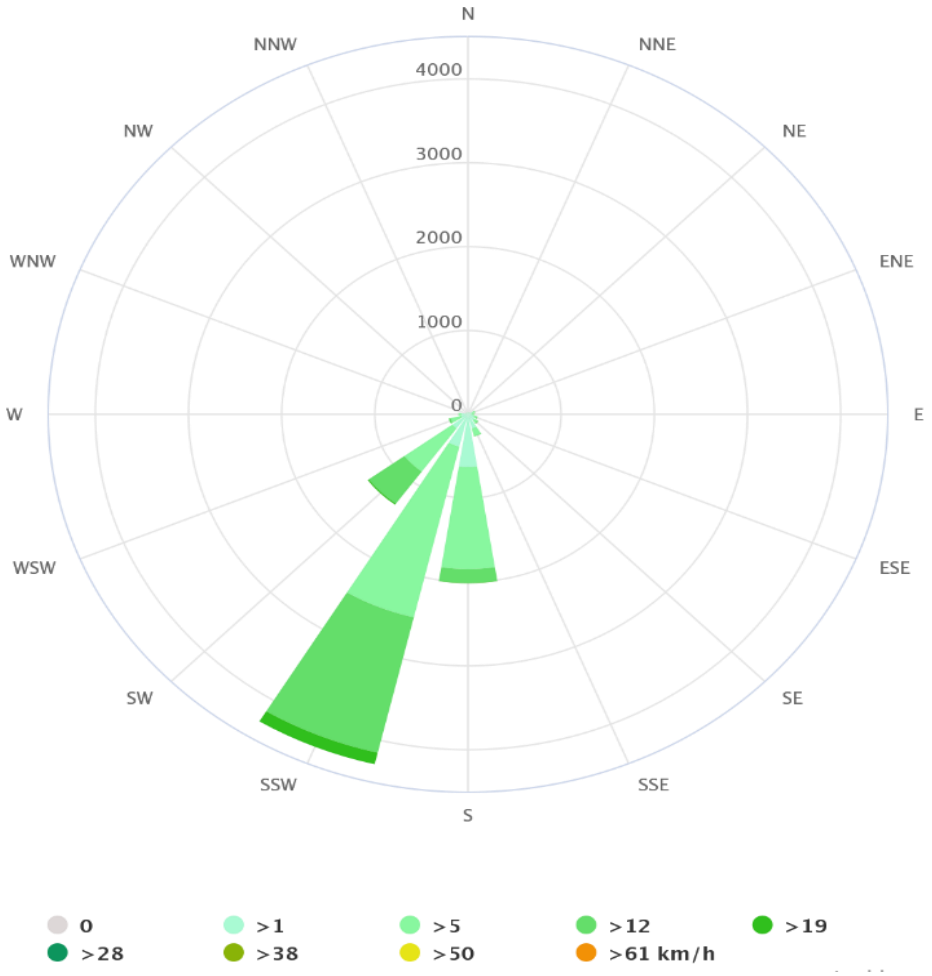


Fig. 3.11: Wind Pattern around the proposed project area

3.3 Geology and Hydrogeology of Enugu State

Geologically, Enugu State is dominated by tertiary Undifferentiated Sedimentary rock. As shown in Figure 3.12, the state covers a small portion Cretaceous sedimentary rock of the Asu River Group at the southern part. the study area watershed (proposed project site) falls completely within the tertiary Undifferentiated sedimentary rocks of Anambra Basin (Fig. 3.12). The tertiary undifferentiated sedimentary rock belongs to the Paleocene and Eocene and it is further characterized by shales and sandstones. The presence of shales and sandstones in the geology of the project area often make groundwater abstraction particularly getting water from hand-dug wells often difficult, hence, the reliance on surface water resource.

Groundwater is one of the most important natural resources. Hydro-geologically, of the eleven hydrogeological provinces of Nigeria based on geology and water availability, the study area falls within the Anambra Basin (Fig. 3. 12). The Anambra Basin hydrological province is bounded to the north by Benue Basin and to east and west by Cross-River and River Niger Basins respectively. The hydrogeology of the basin is dominated by the occurrence of highly porous false bedded sandstones which outcrop over a vast area (National Atlas, 1978). This condition makes water table around the region to be sloppy and deep (about 152m); therefore, artisanal and or household hand-dug wells are not common in the project environments, even boreholes projects are very scare at the immediate project area.

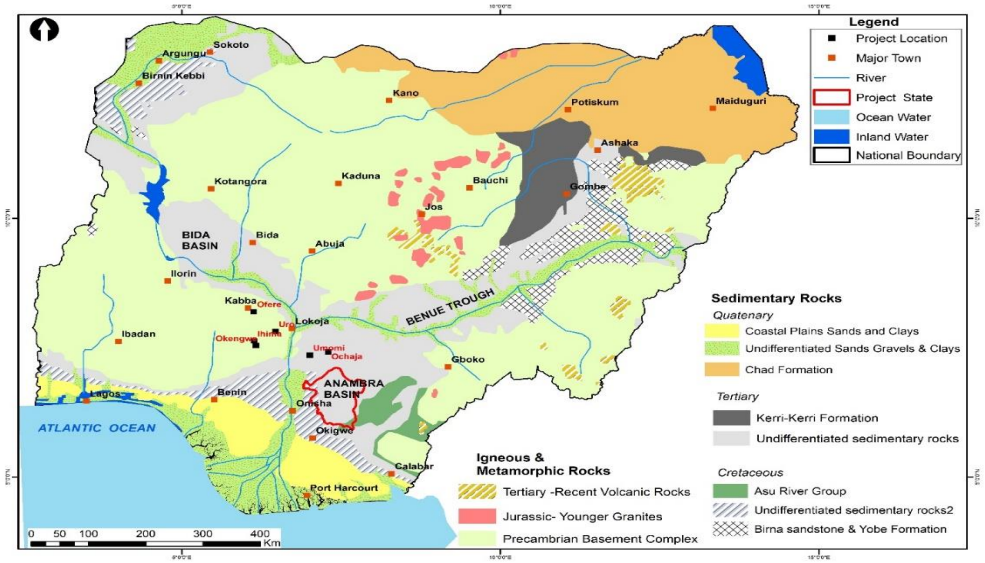


Fig. 3.12: Geology of Nigeria Depicting Project(Enugu) State

3.4 Relief and Drainage

3.4.1 Relief

Enugu State is characterized by high relief from the central north to the south while the western and eastern regions of the State is characterized by relatively low terrain at the east and western regions. As shown in Fig. 3.10, the high relief central ridge divided the State into two sections. The central ridge relief where cashew and poultry processing are located ranges 285 – 601 meters while the elevation of where rice processing center are located ranges 221-17 meters. All the project location for rice processing center are within a low relief environment. This shows that the rice clusters are greatly influence by the terrain nature. Hence, based on the terrain characteristics the project sites for rice processing could be prone to flood during operational state, hence, foundation of these particular project sites for rice processing should be given a special consideration during construction.

3.4.2 Drainage

The high central relief ridges of the project area greatly influence its surface drainages. As shown in Fig.11, the central ridges shed the surface water draining the State towards the west and eastern regions. However, the major surface water draining the region to east are Abonyi river while Orji River drains the western region. Generally, the project area is poorly drain at the central and well drained on the western and eastern regions. None of the project location is located close to a river bank however, consideration should be given rice processing locations due to the nature of the surrounding terrain which could saturated with water during the raining months.

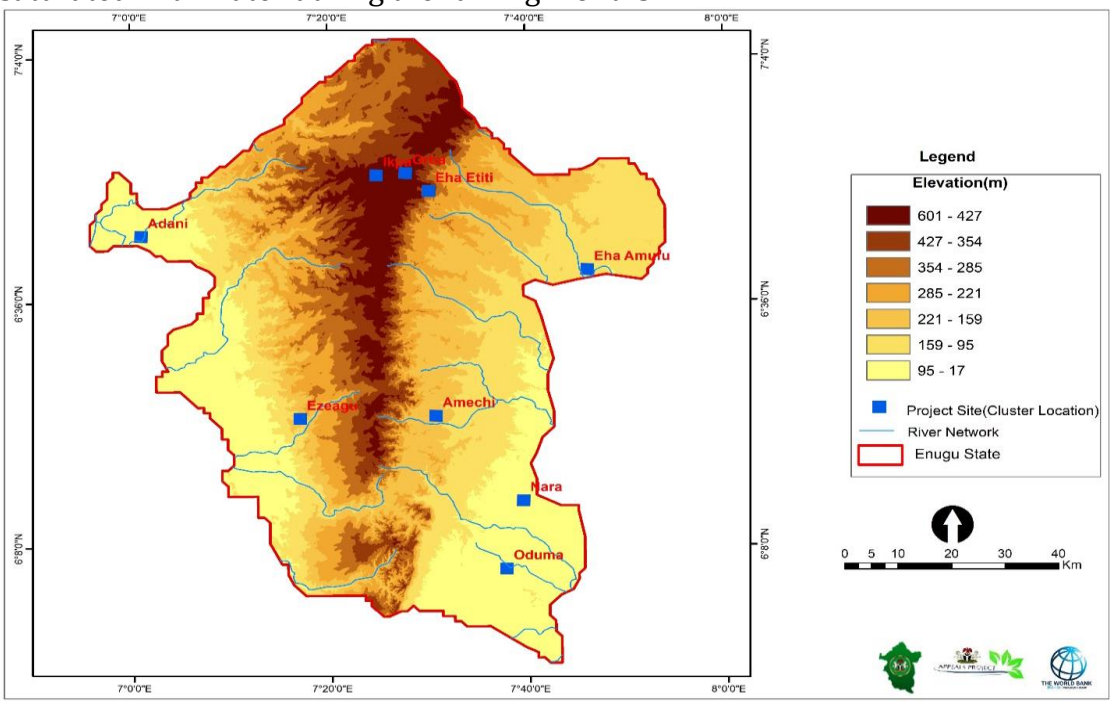


Fig. 3.8: Relief and Drainage of Enugu State

3.5 Ambient Air Quality Assessment

At each beneficiary selected cluster, an in-situ air quality measurement was carried out to establish the baseline information. The air quality sample stations were established within the project site land area. In all, nine sampling stations were established across the proposed intervention sites that is, one station per project site. The air quality sampling code, location coordinates, and description of the environment are presented in **Table 3.1** while the spatial distribution of the sampling locations is shown in **Fig. 3.15**. Similarly, photographs of air quality sampling activities in the project area are shown in **Plates 3.9 to 3.12.** The measured gaseous pollutants are Nitrogen oxide (NO), Nitrogen dioxide (NO_2), Carbon monoxide (CO), Carbon dioxide (CO_2), Ammonia (NH_3), Hydrogen Cyanide (HCN), and Hydrogen Sulphide (H_2S). A calibrated YesPlus Air Quality meter with model number YP030800006 was used to measure the atmospheric gaseous pollutants. Further, suspended particulate matters(SPM) was measured at the same locate. The in-situ air quality and SPM recorded are presented in **Table 3.3**

In addition, at each sample station of the air quality measurement, in-situ ambient noise level was also measured. The average noise levels at each monitored location were taken with a digital, battery-powered, Sound Pressure Level (SPL) meter (Extech 407730 Sound Meter). The results of the ambient noise measurements are presented in **Table 3.4.**

Table 3.2: Air quality sample locations and description

Sample Code	Cluster Name	Long.(⁰E)	Lat. (⁰N)	Remarks/Description of environment
ENAPS/AGC&PCC/AQ&N1	Adani	7° 0'59.69"	6°43'37.06"	On a garden egg and maize farm within the project site land.
ENAPS/AGC&PCC/AQ&N2	Amechi	7°30'39.51"	6°22'54.76"	On the frontage of the project site
ENAPS/AGC&PCC/AQ&N3	Eha Amufu	7°46'5.63"	6°39'33.59"	Within perimeter fence of the existing Silo
ENAPS/AGC&PCC/AQ&N4	Eha Etiti	7°30'8.29"	6°48'38.38"	On the proposed project site by the host community
ENAPS/AGC&PCC/AQ&N5	Ezeagwu	7°16'55.88"	6°22'39.86"	On the proposed project site opposite a construction site
ENAPS/AGC&PCC/AQ&N6	Ikpa	7°24'50.54"	6°50'28.43"	By the perimeter fence of the project site opposite the slaughter market
ENAPS/AGC&PCC/AQ&N7	Nara	7°39'25.74"	6°13'10.52"	By the moribund FADAMA II building adjacent to the site
ENAPS/AGC&PCC/AQ&N8	Oduma	7°27'48.31"	6°50'41.68"	On the site behind the Ezineri market.
ENAPS/AGGCPCC/AQ&N9	Orba	7°37'41.27"	6° 5'23.78"	On a cultivated yam farm by the cottage hospital opposite the Total filling station.

EN- Enugu; APS- APPEALS; AGC-Aggregation Center; PCC- Processing Center; AQ&N- Air Quality & Noise

Plate 3.9: Air sample collection at Ezeagu

Plate 3.10: Air sample collection at Orba

Plate 3.11: Gaseous sample collection in Nara

Plate 3.12: Air data collection in Adani

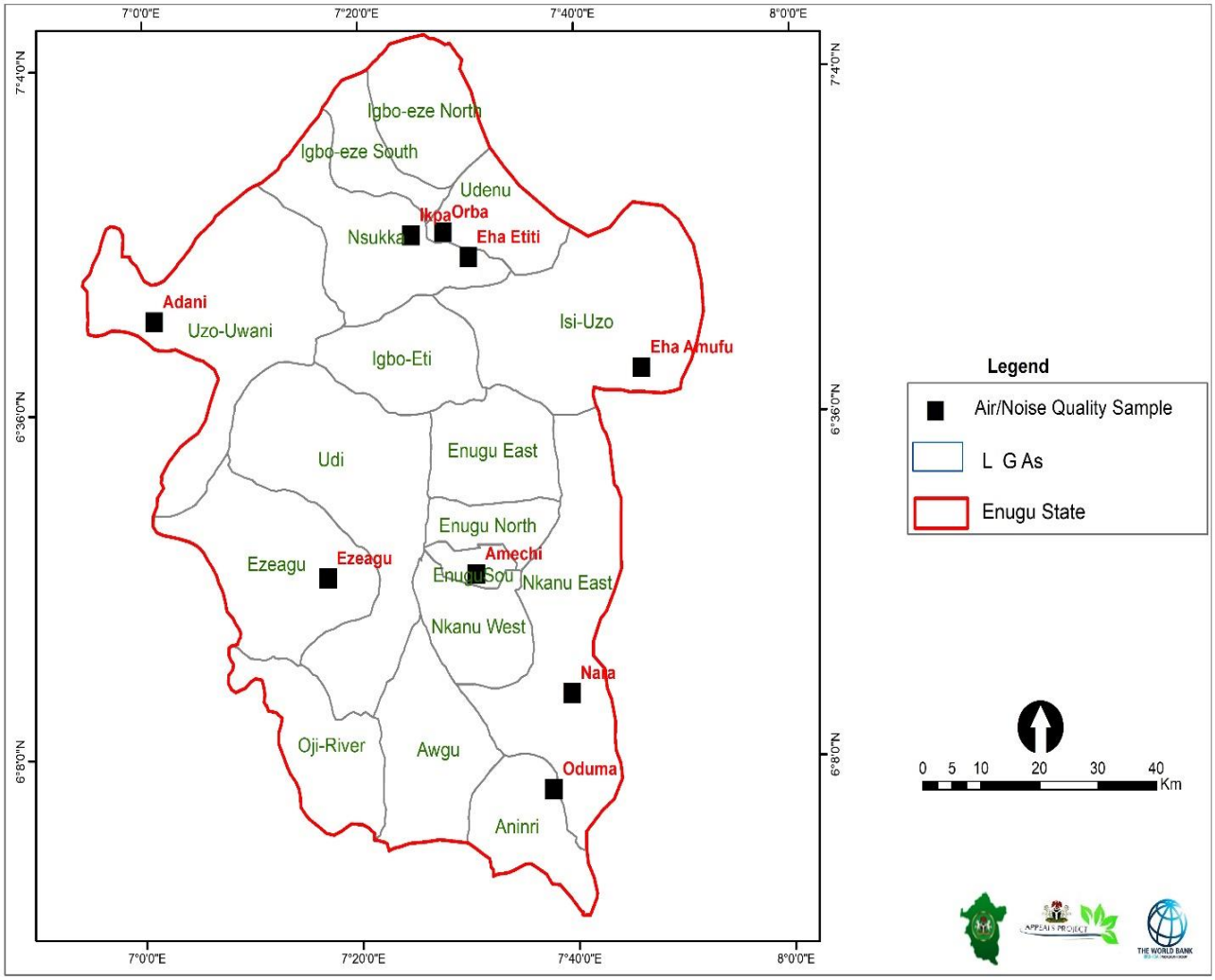


Fig. 3.14: Distribution of air quality and noise sampling locations

3.5.1 Gaseous Pollutants Concentration

Table 3.3 shows the results of the in-situ measured air pollutants concentration across the project sites. As shown, mean Carbon Oxide(CO) concentration was 4.30 ppm; highest CO value of 6.12 ppm was recorded at Ikpa project site and this may be as a result of the regular vehicular movement in out and out of the Ikpa market. The Carbon dioxide (CO_2) concentration ranged from 0.22% to 0.46% with a mean of 0.37%. On the other hand, Hydrogen sulphide mean was 0.30 ppm and the highest value of H_2S was observed at Oduma project site. Other gaseous pollutants such as the oxides of nitrogen (NO_2 and NO), poisonous Hydrogen Cyanide and Ammonia were below their respective equipment readable limit of <0.01 ppm.

On the suspended particulate matter which was relatively low across the site, observed concentration ranged from 128 ug/m^2 to 161 ug/m^2 and a mean value of 142.33 ug/m^2. Of the measured gases, there was no site where their concentrations breach the

established FMEnv maximum permissible limits as shown in the Table 3.3. Also, the 250 ug/m^2 of the FMEnv maximum permissible limit for SPM was also not exceeded as the time the baseline study was conducted. This indicates that the ambient air of the proposed aggregation/cottage processing project area is not polluted as at when the study was carried out. Therefore, measures should be put in place to monitor and maintain the status quo during the project implementation activities and operational phase.

Table 3.3: Measured gaseous concentrations around the project area

Sample Location Code	NO_2 (ppm)	NO (ppm)	CO (ppm)	HCN (ppm)	CO_2 (%)	NH_3 (ppm)	H_2S (ppm)	SPM (ug/m^3)
			Mean					
ENAPS/AGC/PCC/AQ1	<0.01	<0.01	3.00	<0.01	0.40	<0.01	0.12	161
ENAPS/PCC/AQ2	<0.01	<0.01	5.00	<0.01	0.38	<0.01	0.40	107
ENAPS/PCC/AQ3	<0.01	<0.01	5.00	<0.01	0.22	<0.01	0.33	134
ENAPS/AGC/PCC/AQ4	<0.01	<0.01	6.01	<0.01	0.43	<0.01	0.11	128
ENAPS/AGC&PCC/AQ5	<0.01	<0.01	2.91	<0.01	0.46	<0.01	0.20	155
ENAPS/PCC/AQ6	<0.01	<0.01	6.12	<0.01	0.38	<0.01	0.50	142
ENAPS/AGC&PCC/AQ&7	<0.01	<0.01	3.1	<0.01	0.39	<0.01	0.40	149
ENAPS/AGC&PCC/AQ&N8	<0.01	<0.01	4.0	<0.01	0.38	<0.01	0.51	156
ENAPS/AGC&PCC/AQ&N9	<0.01	<0.01	3.6	<0.01	0.34	<0.01	0.11	149
Minimum Value	<0.01	<0.01	2.91	<0.01	0.22	<0.01	0.11	128
Maximum Value	<0.01	<0.01	6.12	<0.01	0.46	<0.01	0.51	161
Mean	0.00	0.01	4.30	<0.01	0.37	<0.01	0.30	142.33
FMEnv. Limit	**0.04 -0.06**	**NS**	**10.00**	**1.6**	**1.6**	**0.10**	**10.00**	250

ENAPS-Enugu APPEALS; AQ- Air Quality; AGC- Aggregation Center, PCC –Processing Centre

Source: ESMP Field Survey, September 2021

3.5.2 Ambient Noise Level

Table 3.4 shows the result of the ambient noise levels recorded at all the sampled locations. Average minimum ambient noise level of 39.4 dB(A) was recorded at the Eha Etiti project site while the average maximum noise level of 54.1 dB(A) was observed at the proposed Amechi poultry processing centre. Meanwhile, the FMEnv maximum noise level limit of 90 dB(A) for 8-hour exposure limit and the 70 dB(A) Industrial area noise limit of the World Bank were not breached at any of the sampling locations. Therefore, the baseline ambient noise level of the project locations as at the time of the study is bearable and should be maintained during the project implementation. Commercial activities and vehicular movement are the major sources of noise identified during the study.

Table 3.4: Measured ambient noise levels in the area

Sample Location Code	dB(A)	Longitude (⁰ E)	Latitude (⁰ N)
	Background (Mean)		
ENAPS/AGC/PCC/AN1	48.1	7° 0'59.69"	6°43'37.06"
ENAPS/PCC/ AN2	54.1	7°30'39.51"	6°22'54.76"
ENAPS/PCC/ AN3	39.8	7°46'5.63"	6°39'33.59"
ENAPS/AGC/PCC/AN4	39.4	7°30'8.29"	6°48'38.38"
ENAPS/AGC&PCC/AN5	49.6	7°16'55.88"	6°22'39.86"
ENAPS/PCC/AN6	48.4	7°24'50.54"	6°50'28.43"
ENAPS/AGC&PCC/AN7	46.4	7°39'25.74"	6°13'10.52"
ENAPS/AGC&PCC/AN8	51.8	7°27'48.31"	6°50'41.68"
ENAPS/AGC&PCC/AN9	52.4	7°37'41.27"	6° 5'23.78"
Minimum Value	39.4	7° 0'59.69"	6°43'37.06"
Maximum Value	54.1		
Mean	47.78		
FMEnv. Limit (8 hrs duration/day)	**90**		

ENAPS-Enugu APPEALS; AGC- Aggregation Centre, PCC –Processing Centre; AN- Ambient Noise
Source: ESMP Field Survey, September 2021

3.6 Soil Quality

Soil plays significant roles in man's quest for sustainable development. The quality (chemical composition) of soil is particularly essential for agriculture/farm practices. The physic-chemical characteristics of soil reflect the nature, properties, as well as the degree of interaction with other environmental components. It (soil physicochemical) also reflects both its potentials and vulnerability to extraneous factors.

3.6.1 Sample Design and Field Activities

At each project site, a representative soil sample was taken for analysis. Table 3.8 shows the soil sample code, location coordinates and sample station description which include the condition of the sample environment. Soil sampling spatial distribution is shown in Figure 3.15 while field sampling activities are presented in Plates 3.20 to Plate 3.24. The sample was collected at two depths; the top soil was collected at 0-15cm while the subsoil was from 15cm to 30cm.

In addition, appropriate quality assurance and quality control (QA/QC) measures were observed during the sampling activities. The QA/QC measures included: regular cleaning of the soil auger after each sampling event to avoid cross-contamination, wrapping of sample in foil paper, and separation of sample meant for microbiology. In addition, soil samples were properly labelled with a unique code to avoid a possible mix-up while in transit particularly during the transportation of sample to the laboratory.

Analysis of the soil samples was conducted at Divine Concept Laboratory, an accredited laboratory by both Federal Ministry of Environment (FMEnv) and DPR. The phsico-chemical and microbial characteristics of the soil samples from the study area are presented in Table 3.7. Generally, the soil study focused mainly on nutrients (chemical properties) and pollution analysis of the project sites.

Table 3.6: Soil Sampling Locations and Description

Sample Code	Cluster	Long.	Lat.	Sample Station description
ENAPS/AGC/PCC/SS1	Adani	7° 0'59.69"	6°43'37.06"	Within fallow land adjacent to the project site, brownish
ENAPS/PCC/SS2	Amechi	7°30'39.51"	6°22'54.76"	On open filed within existing Bagwai Fadama II facility
ENAPS/PCC/ SS3	Eha Amufu	7°46'5.63"	6°39'33.59"	Within perimeter fence of Bichi Multiplication of Improved Groundnuts seeds facility
ENAPS/AGC/PCC/SS4	Eha Etiti	7°30'8.29"	6°48'38.38"	Loose and sandy, within a fallow land by the project site
ENAPS/AGC&PCC/SS5	Ezeagwu	7°16'55.88"	6°22'39.86"	Within a shrub vegetation behind the proposed project site
ENAPS/PCC/SS6	Ikpa	7°24'50.54"	6°50'28.43"	Within a fallow land (within the proposed project site)
ENAPS/AGC&PCC/SS7	Nara	7°39'25.74"	6°13'10.52"	Within a fallow land behind rice processing centre
ENAPS/AGC&PCC/SS8	Oduma	7°27'48.31"	6°50'41.68"	Soil sample was not taken at this site. The area is highly built-up environment.
ENAPS/AGC&PCC/SS9	Orba	7°37'41.27"	6° 5'23.78"	Within a fallow land, greyish in colour

Plate 3.20: Soil sample collection in Orba

Plate 3.21 Nature of Ezineri Oduma Soil

Plate 3.20: Soil sample collection in Eha Etiti

Plate 3.21 Collection of soil sample at Nara

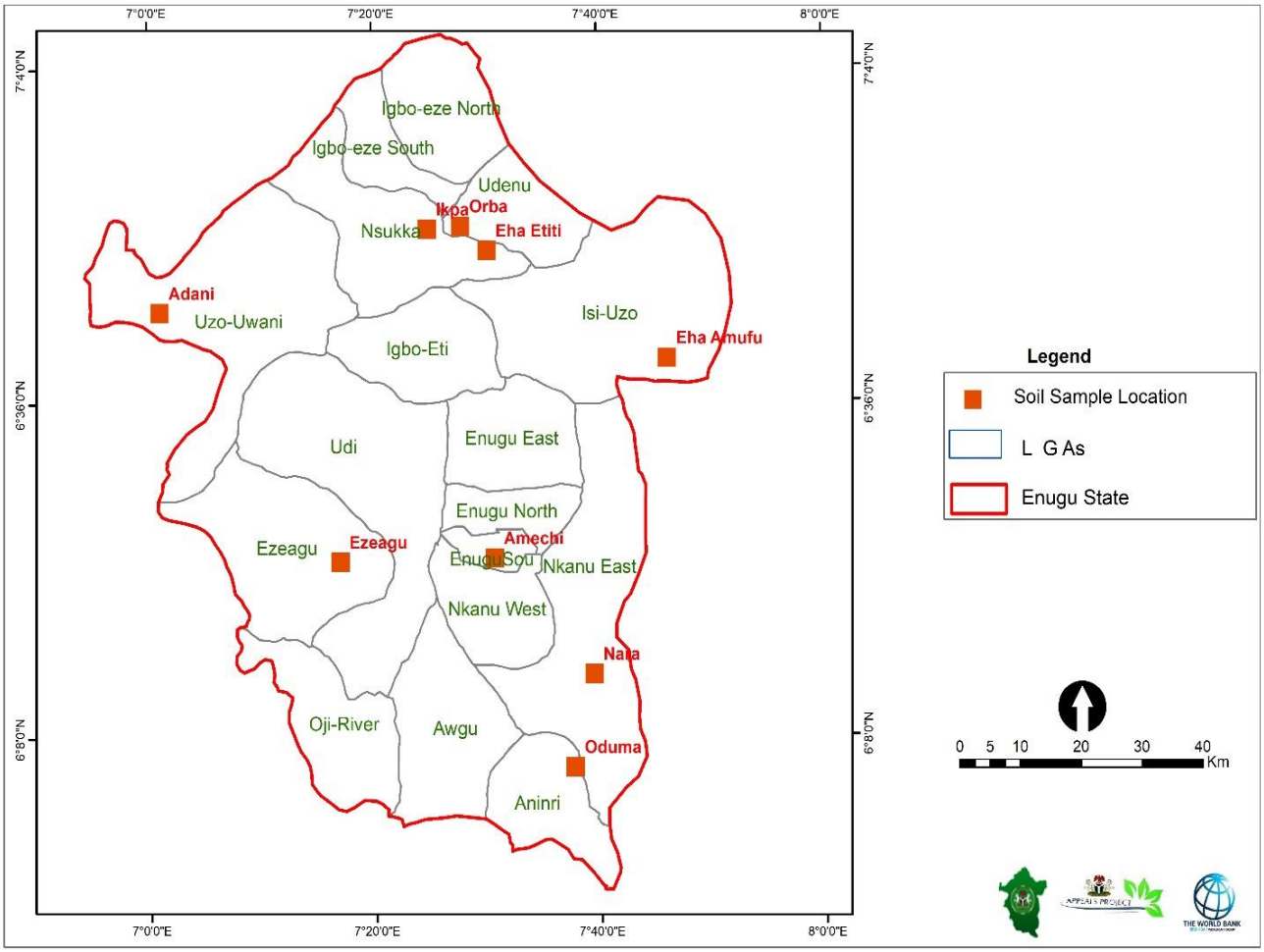


Fig 3.15: Soil Sample Spatial Distribution

3.6.2 Results of Laboratory Analysis

The results of the laboratory soil analysis show that Hydrogen Ion Concentration (pH) values recorded ranged from 5.10 to 6.09 (distinctly acidic, as indicated in Table 3.7), which are within pH range value (4.5 to 9.0) in natural soil as shown in the Table. Highest and lowest values were observed at sampling Amechi and Eha Etiti project sites, respectively. pH value is a measure of the free H+ and OH- concentration of soil solutions. Significance of soil reaction lies in the fact that it provides a variety of useful information such as extent of H+ formation by hydrolysis of aluminum and degree of dissociation of H+ from cation exchange sites. The effect of pH is to remove from the soil or to make available certain ions. Soils with high acidity (8.5) tend to disperse the aforementioned elements. Soil organisms are hindered by high acidity and most agricultural crops do best with mineral soils of pH 6.5(FAO, 1974).

The electric conductivity (EC) values are also relatively low when compared to maximum limit of 2000µS/cm stipulated by FAO, 1974; however, the EC values ranged from 55.2 μScm^{-1} to 162.5 μScm^{-1}. Across the project site, soil phenols value was below the equipment resolution (readable) limit of less than 0.001 mg/kg.

The TOC values ranged from 0.09% to 0.54% while the Carbon ranged from 0.07 mg/kg to 1.00 mg/kg. As shown in the Table 3.8, the TOC of the study area is generally low and its mean is also below the critical limit of 0.8% specified by Snapp, 1998 for optimum yield in most arable crops. Organic matter plays a significant role in the dynamic of soils as it stores water, provides a living environment for organisms, promotes structural stability, supplies and stores nutrients

3.6.3 Soil Anions and Nutrients

Concentrations of exchangeable cations (Mg, Ca, Na, and K) recorded in sampled soils of the study area fall within the natural occurrence levels for tropical soils as prescribed by Alloway (1991). Of the analysed anions, only Ammonia (NH_3) was not detected across the project sites. As baseline information, the soil of the project possesses the necessary soil nutrients that support plants growth and suitable for cultivation/farming and this was evident as most project site such as Adani, Amechi, Orba, Ikpa etc were observed to be cultivated with various plants.

3.6.4 Soil Metals

Of the six (6) analysed traced metals, only Iron (Fe) and Zinc (Zn) were observed and their values ranged from 0.03 mg/kg to 4.86 mg/kg and from 0.02 mg/kg to 0.53 mg/kg respectively. Higher Fe and Zn values was observed at Ikpa project site. However, these values were below their respective limits as shown in **Table 3.7**. Other metals such as Lead (Pb), Mercury (Hg), Vanadium (Vd) and Arsenic (As) were all below equipment readable limits of <0.001 mg/kg. Therefore, the chemical properties of the soils of the project sites are not contaminated or polluted with heavy metals as at the time the study was conducted.

3.6.5 Soil Hydrocarbon Properties

Analysed soil hydrocarbon properties are Polycyclic aromatic hydrocarbon (PAH), Total Hydrocarbon Content (THC), Total petroleum hydrocarbon (TPH), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), and Oil & Grease(O&G). As shown, only Oil & Grease was observed at five of the nine project sites. Observed values ranged from 0.002 mg/kg to 0.02 mg/kg. It is therefore noted that there was no evidence of hydrocarbon pollution in soils of the study area as at the time of the study.

3.6.4 Soil Microbial

Microorganisms are one of the major components of soil. Microbial community in soil make important contributions to biogeochemical cycling of carbon, nitrogen, sulfur, iron and manganese cycle. Bacteria and fungi also act as agents of degradation, with bacteria assuming the dominant role in marine ecosystem and fungi becoming more important in freshwater and terrestrial environment Microbes are generally found in soil. The population of hydrocarbon degraders (HUB and HUF) observed in the soil samples is generally relatively low. The relatively low values of the hydrocarbon degraders (2.75 x $10^4$for bacteria and 2.67 x 10^3 for Fungi) of the sampled soils are an indicative of unpolluted environment.

Table 3.7: General Soil pH Classification

Range	Class
4.5-5.5	Very Acidic
5.5-6.0	Distinctly Acidic
6.0-7.0	Acidic
7	Neutral
7.0-7.5	Faintly Alkaline
7.5-8.0	Alkaline
8.0-8.5	Strongly Alkaline
8.5-9.0	Extremely Alkaline

Source: Udo (1986)

Table 3.8: Organic Matter Classification (Classes)

Organic (%)	Class
< 1.50	Low
1.50-2.50	Medium
>2.50	High

Table 3.9: Mean values of Sampled Soil Physico-chemical and Microbial Properties

Parameter		SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	Limits
	pH	5.37	6.09	5.15	5.1	6.05	5.89	5.78	5.92	5.22	4.5 – 9.0*
	E.C (μScm^{-1})	83.5	111.5	61.65	59.95	162.5	55.2	88.8	63.05	59.45	2000***
	Phenols(mg/kg)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NS
	TOC (%)	0.21	0.08	0.21	0.24	0.09	0.54	0.06	0.09	0.22	NS
	C(%)	0.07	0.42	0.55	0.54	0.24	1	0.11	0.07	0.55	
	CEC(meq/100gm)	5.1	6.21	5.23	4.85	4.73	5.9	6.09	5.64	5.23	
Anions and Nutrients(mg/l)	Ca(mg/kg)	0.23	0.04	0.24	0.23	0.05	0.29	0.36	0.04	0.24	NS
	Mg(mg/kg)	0.06	0	0.1	0.08	0.03	0.09	0.03	0.04	0.1	NA
	K(mg/kg)	0.03	0.02	0.04	0.05	0.04	0.07	0.05	0.02	0.04	725****
	Na(mg/kg)	0.22	<0.001	0.12	0.1	0.4	0.08	0.04	0.04	0.12	NA
	SO_4^{2-}	12.7	19.35	10.8	11.9	28.15	10.6	12.6	28.15	10.9	300
	PO_4^{3-}	4.6	0.39	2.75	2.69	3.76	4.14	3.48	5.83	2.89	150
	NO_3^-	1.44	0.21	3.78	4.01	4.55	2.52	3.65	3.93	4.11	NA
	NO_2^-	0	<0.001	0.02	0.01	0.02	0.01	0.01	0.04	0.01	NA
	NH_3	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NA
	TN	0.06	0.06	0.02	0.04	0.07	0.06	0.09	0.1	0.04	NA
Metals(mg/kg)	Fe	0.07	0.29	3.72	3.97	0.03	4.86	0.22	0.48	4.02	NS
	Pb	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	20*
	Vd	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NS
	As	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NS
	Zn	0.02	0.02	0.31	0.32	0.03	0.53	0.39	0.24	0.31	50*
	Hg	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	NS
Hydrocarbon (mg/kg)	PAH	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	TPH	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	THC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	BTEX	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
	O/G	0.002	0	0.01	0.01	0.01	<0.001	<0.001	0.02	<0.001	
Microbial (cfu/g)	THB	$2.05x10^4$	$2.44x10^4$	$2.55x10^4$	$2.6x10^4$	$2.53x10^4$	$2.75x10^4$	$2.6x10^4$	$2.68x10^4$	$2.52x10^4$	NS
	THF	$2.07 x10^4$	$2.21 x10^4$	$1.95 x10^4$	$2.15 x10^4$	$2.53 x10^4$	$2.22 x10^4$	$2.38 x10^4$	$2.81 x10^4$	$2.21 x10^4$	NS
	THUB	$2.9 x10^3$	$2.58 x10^3$	$2.29 x10^3$	$2.29 x10^3$	$2.51 x10^3$	$2.41 x10^3$	$2.25 x10^3$	$2.68 x10^3$	$2.38 x10^3$	NS
	THUF	$1.8 x10^3$	$1.68 x10^3$	$1.88 x10^3$	$1.82 x10^3$	$2.34 x10^3$	$2.11 x10^3$	$2.67 x10^3$	$2.64 x10^3$	$2.59 x10^3$	NS

NA- Not Available, NS- Not specified; Alloway (1991) *; Brady, (2002) **; FAO,1974***

Source: Laboratory Results, September 2021

3.7 Surface and Groundwater Quality

Across the project sites, there was no existing Well and borehole water within the immediate project site perimeter boundary. Also, none of the proposed site is located on or close to any river bank for surface water quality study. Therefore, there will be need for water provision in all the sites particularly ground water extraction during the facilities construction works and operational stages for daily running of the centres. In this case, an industrial borehole is highly suggested particularly at the rice and poultry processing centres.

3.8 Biological Environment

3.8.1 Vegetation Component

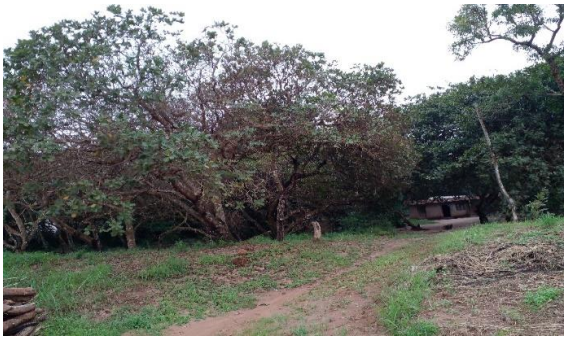
The observed vegetation of the project area is savanna woodland, which is a mosaic of vegetation of the southern and northern guinea savanna. In this ecological zone, the vegetation is a mixture of trees, shrubs, ferns, grasses and herbs. The flora is essentially made up of tall trees (about 10 meters high) within the hillsides and lower canopy trees.

The plant species which were found in the study area have medicinal, commercial and culinary importance. Their common and scientific names, uses, and IUCN status were established. Plate 3.6 shows some vegetation identified within and immediate surrounding of the project sites. As shown, some of the dominant economic plants observed around the project areas include *Anacardium occidentale, Elaeis guineesis, Oryza sativa, Musa spp, Manihot esculenta etc.* The populations and distribution pattern of the encountered species may likely be affected by d removal due to the proposed project. However, none of the species belong to any of the IUCN endangered categories (Table 3.11). Exact area of land for the proposed development only should be cleared to avoid unnecessary economic plants removal.

Table 3.11: Flora Species in the Project Area

Sn	Scientific Name	Common Name	Abundance Status	Uses	IUCN Status
1	*Anacardium occidentale*	Cashew	+	Medicinal/Food	Not endangered
2	*Manihot esculenta*	Cassava	+	Food	Not endangered
3	*Bambusa vulgaris*	Bamboo (Raffia)	+	Economy	Not endangered
4	*Elaeis guineesis*	Oil-palm	+	Food/Economy	Not endangered
5	*Mangifera indica*	Mango	+	Food	Not endangered
6	*Pennisetum purpureum*	Elephant grass	+	Medicinal	Not endangered
7	*Megathyrsus maximus*	Guinea grass	+	Medicinal	Not endangered
8	*Lophira lanceolata*	Iron wood	+	Economy	Not endangered
9	*Daniella oliverii*	Butter plant	+	Food	Not endangered
10	*Zea mays*	Maize	+	Food	Not endangered
11	*Citrus* spp	Oranges	+	Food	Not endangered
12	*Piliostigma thornigii*	Monkey bread	+	Medicinal	Not endangered
13	*Musa paradisiaca*	Plantain	+	Food	Not endangered
14	*Hollarhena floribunda*	False rubber tree	+	Medicinal	Not endangered
15	*Ficus asperifolia*	Fig		Medicinal	Not endangered
16	*Ficus capensis*	Fig	+	Medicinal	Not endangered
17	*Ficus exasperata*	Sand paper plant	+	Medicinal	Not endangered
18	*Ficus sur*	Fig	+	Medicinal	Not endangered
19	*Gliricidia sepium*	Quickstick	+	Medicinal	Not endangered
20	*Hollarhena floribunda*	False rubber tree	+	Medicinal	Not endangered
21	*Tectona grandis*	Teak	+	Medicinal / Commerce	Not endangered
22	*Cocos nucifera*	Coconut		Food	Not endangered
23	*Oryza sativa*	Rice	+	Food	Not endangered
24	*Musa* spp	Plantain and Banana	+	Food	Not endangered
25	*Colocasia esculenta*	Cocoyam	+	Food	Not endangered

***Source**: Field Survey, September, 2021*



(a)

(b)

(c)

(d)

(e)

(f)

Plate 3.6: Some of the Plant Species within and around the project locations: (a) A*nacardium occidentale; (b)Bambusa vulgaris & Elaeis guineesis, (c) Oryza sativa (d) Musa* spp *(e) Colocasia esculenta (f) Manihot esculenta*

Source: Field Work, September 2021

3.8.2 Wildlife and Biodiversity

A study of the fauna was based on in-depth literature search, observation, and interviews with the community members especially the local hunters and farmers. Sound recording, sighting and track monitoring were other methods employed for identifying and tracking the birds and animals that live within and around the proposed project area. Table 3.12 presents the types of animals around the proposed project area. The wild life found in the state are dominated by birds (such as crows, black kites, ravens, crows, hornbills, doves and weaver birds), reptiles (including snakes and lizards) and mammals (including rats, rodents, squirrels, grass cutters, small deer, antelopes and monkeys. The fauna of the study area is not IUCN threat status classified.

Table 3.12: Fauna Species in the Project Area

S/N	Local Names	Species	Family	Group	Status
1.	Bush fowl	*Francolinus bicalcaratus*	Phasianidae	Aves	Not evaluated
2.	African Barn Owl	*Tyto alba*	Tytonidae	Aves	Least concern
3.	African giant millipede	*Archispirostreptus gigas*	Spirostretidae	Arthropoda	Not evaluated
4.	Little African Swift	*Apus affinis*	Apodidae	Aves	Least concern
5.	African Palm Swift	*Cypsivurus parvus*	Apodidae	Aves	Not evaluated
6.	Green fruit Pigeon	*Treron australis*	Columbidae	Aves	Least concern
7.	Village weaver	*Ploceus cucullatus*	Ploceidae	Aves	Least concern
8.	Cattle egret	*Ardeola ibis*	Ardeidae	Aves	Least concern
9.	Black Kite	*Muluus migrans*	Accipitridae	Aves	Least concern
10.	African green pigeon	*Treton calvus*	Columbidae	Aves	Least concern
11.	Black ant	*Lasius niger*	Formicidae	Insecta	Not evaluated
12.	Soldier ant	*Strongylognathus alboini*	Formicidae	Insecta	Least concern
13.	Termite	*Trinervitermes trinervoides*	Termitidae	Insecta	Least concern
14.	Dragon fly	*Acanthaeschna victoria*	Aeishnidae	Insecta	Least concern
15.	Giant African mantis	*Sphodromantis viridis*	Mnatidae	Insecta	Not evaluated
16.	Red patch butterfly	*Chlosyne Rosita*	Nymphalidae	Insecta	Not evaluated
17.	White patch butterfly	*Chiomara asychis*	Hesperiidae	Insecta	Not evaluated
18.	Moth	*Chrysiridia rhipheus*	Uraniidae	Insecta	Not evaluated
19.	Africa cotton stainer	*Dysdercus fasciatus*	Pyrrhocoridae	Insecta	Not evaluated
20.	Snail	*Achatina achatina*	Achatinidae	Mollusca	Not Listed
21.	Land Slug	*Limax maximus*	Limacidae	Mollusca	Not evaluated
22.	Toad	*Bufo bufo*	Bufonidae	Amphibia	Least concern
23.	Tree frog	*Litoria caerulea*	Hylidae	Amphibia	Least concern
24.	Sebe	*Naja melanoleuca*	Viperidae	Reptilia	Not evaluated
25.	Monitor lizard	*Varanus albigularis*	Varanidae	Reptilia	Not evaluated
26.	African yellow bat	*Scotophilus dinganii*	Vespertilionidae	Mammal	Least concern
27.	Striped ground squirrel	*Xerus erythropus*	Sciuridae	Mammal	Least concern
28.	Grass cutter	*Thryonomys swinderrianus*	Thryonomyidae	Mammal	Least concern
29.	African tree squirrel	*Heliosciurus gambianus*	Sciuridae	Mammal/	Least concern

				Rodent	
30.	African giant rat	*Crecetomys gambianus*	Nesomyidae	Mammal/ Rodent	Least concern
31.	Crested Porcupine	*Hystrix cristata*	Hystricidae	Mammal/ Rodent	Least concern
32.	Earthworm	*Lumbricus terrestris*	Acanthodrilidae	Annelida	Not evaluated
33.	Millipedes	*Archispirostreptus* sp.	Spirostretidae	Arthropoda	Least concern
34.	Centipedes	*Scutigera* sp.		Arthropoda	Least concern

Plate 3.7: Observed *Archispirostreptus* sp. at Orba Site

CHAPTER FOUR
SOCIOECONOMIC CHARACTERISTICS AND STAKEHOLDERS CONSULTATION

4.0 Socioeconomic Characteristics

This chapter discusses themes and topics on population, land use, planned development activities, settlement and community structures, employment, distribution of income, goods, and services, recreation, health, and cultural properties. Specifically, it entails the following:

- Socio-Economic Assessment: Analysis of existing livelihood opportunities, income, gender characteristics, age profile, health, transport access, existing community structures at the watershed, community, household, and individual levels;
- Grievance Redress Mechanism: Analysis of existing formal and informal grievance redress mechanisms in and around the intervention area; and
- Public Consultation: Presentation of consultations with relevant stakeholders and affected persons;
- Gender Based Violence: This entails analysis of the status of GBV/SEA in the project community and related issues;
- Other topics as relevant to the vital socioeconomics of the host communities.

4.1 Study Methodology

A socioeconomic assessment of the study area was carried out through the administration of structured questionnaires. Specifically, target population are cluster farmers who are the direct beneficiaries of the proposed projects. In addition, Focus Group Discussion (FGD) and in-depth interviews(IDIs) for stakeholders was also conducted. Generally, a combination of research methods that includes the following were used to acquire the socioeconomic baseline information:

- A review of secondary data (existing literature);
- A reconnaissance survey to identify all communities that will be directly or indirectly affected and to alert the communities' leaders and residents on the proposed project;
- A Key Informant Interview (KII) with key officers and including clusters head, liaisons officers between the host communities and Enugu APPEALS etc;
- Focus Group Discussions (FGDs) and IDIs with stakeholders (traditional leaders and women leaders); and
- Field observations and measurements by the consultant;

A simple random sampling was used for the administration of the questionnaire. The required number of questionnaires was administered to respondents and the exact number was returned. In all, a total of 450 questionnaires were administered and all were returned. Plate 4.1 shows research assistants administering questionnaire on the field. The criteria defined specific to the proposed project area is shown as follows:

- Sufficient representation from the relevant social groups;
- Addition of groups and persons with varying socio-economic status;

- Engagement of persons with access to relevant information such as culture and history;
- Proof of diverse types of livelihood activities; and
- Inclusion of all gender to ensure gender balance and extraction of gender-based information as well as issues of violence, rape and sexual exploitation.

A sample of the questionnaire, the details of the meetings held, attendance for contacts details of the attendees have been fully documented and added as part of the Annexure section of this ESMP report.

Plate 4.1: Field data enumerators engaging and administering questionnaires to respondents

4.2 Enugu State Human Population Characteristics

Enugu State is the twenty second and third most populated State in Nigeria and south-eastern region respectively (NPC, 2006). According to the published 2006 National Census, Enugu State has a population of 3,267,837 people and this represent about 2.33% of the country's total population. As shown in the **Table 1**, the total population of the project State is distributed /shared among its seventeen (17) LGAs. At an annual population growth rate of 0.029 for the LGAs, estimated population of the State as at 2016 is 4, 411,119 people. Apart from the natural birth increase, it is expected that the proposed intervention will further attract people to the state during operational phases of the project. The increase in the population also means that there are markets for products from the processing centers.

Table 4.2: Population of Enugu State by Local Government Area, 1991, 2006 and 2016

S/N	LGA	1991	LGA	2006	2016*
1	Abakaliki	219,415	Aninri	136,221	190,187
2	Awgu	232,245	Awgu	197,292	266,220
3	Enugu North	327,464	Enugu East	277,119	372,464
4	Enugu-south	137,050	Enugu North	242,140	325,909
5	Ezeagu	112,754	Enugu South	198,032	267,205
6	Ezza	195,810	Ezeagu	170,603	230,699
7	Igbo-Etiti	138,401	Igbo-Etiti	208,333	280,915
8	Igbo-Eze North	139,290	Igbo-Eze North	258,829	348,121
9	Igbo-Eze South	75,641	Igbo-Eze South	147,364	199770
10	Ikwo	154,396	Isi-Uzo	148,597	201411
11	Ishielu	128,720	Nkanu East	153,591	208057
12	Isi-Uzo	197,395	Nkanu West	147,385	199797
13	Izzi	161,349	Nsukka	309,448	415491
14	Nkanu	209,444	Orji - River	128,741	174984
15	Nsukka	220,411	Udenu	178,687	241458
16	Ohaukwu	169,622	Udi	238,305	320805
17	Oji-River	86,361	Uzo -Uwani	127,150	172866
18	Udi	160,500			
19	Uzo-Uwani	88,112			
		3,154,380		**3,267,837**	**4,411,119**

*Projected

Source: Computed from NBS Abstract, 2017

4.3 Respondents Socioeconomic Characteristics

Basics socioeconomic variables of the sampled population which largely represent economic situation at the study communities are described in this section. The importance of this appraisal is to examine the economic and human dimension of the host community. As shown in **Table 2**, the details discussed include gender, age distribution, marital status, ethnic group, religion, literacy level, occupation, household size, residential status with duration of stay in the project area, income level, health status etc.

Table 4.4: Respondent's Demographic Characteristics

Indicators	Options	Respondents (%)									Summary of Findings
		Adani	Amechi	Eha Etiti	Eha Amufu	Ezeagu	Ikpa	Orba	Oduma	Nara	
Gender	Male	77.78	87.2	66.4	88.23	93.4	90	91.67	71.43	100	Across the project communities, there are more (68.95%) male respondents(farmers) compared to female. None of the respondent was a female at Nara.
	Female	22.22	12.8	33.6	11.76	6.6	10	8.33	28.57	-	
Age	18-45 years	234.1	57.4	36.1	47.06	23.2	40	33.33	57.14	43.2	Most respondents age groups fall within 18-45years (51.44%), indicate an appreciable number of active group(workforce) in farming or have shown interest in agriculture, hence, the sustainable production of inputs to the proposed facilities. Other age groups indicated are 46-65 years (39.21%) and above 65 years (8.26%).
	46-65years	56.3	30.6	46.2	52.94	59.4	50	66.67	28.57	45.0	
	Above 66 years	9.6	12	16.7		17.4	10	-	14.29	11.8	
Marital status	Single	12.24	17.8	21.4	17.65	9.3	10	8.33	28.57	47.1	Most (60.69%) of the respondents indicated that they are married while singles and widows account for 15.51% and 5.11% respectively.
	Married	78.6	82.2	66.4	76.47	80.1	80	83.33	71.43	55.9	
	Widowed	8.8	-	12.2	5.88	10.1	10	8.33	-	1.5	
Religion	Christianity	100	100	100	100	100	100	91.66	100	100	Except at Orba community where only about 8% of the sample population indicated that they practice traditional religion, all other respondents practice Christianity.
	Islam	-	-	-	-	-	-	-	-	-	
	Others	-	-	-	-	-	-	8.33	-	-	
HH size	Less than 5	22.22	19.4	23.5	35.29	29.6	60	40	10.8	17.8	Common household (HH) size across the project community is between 6 to 10 persons (54.53%). Other household indicated are less 1 to 5 persons (23.29) while those that are above ten persons in their HH account for 3.2%.
	6-10	77.78	73.4	65.3	64.70	66.2	40	50	89.2	79.3	
	Above 10	-	7.2	11.2	-	4.2	-	10	-	2.9	
Ethnic	Igbo	10	10	10	10	10	100	10	100	100	As indicated by the respondents, all sampled population belong to the Igbo ethnic

		0	0	0	0	0		0			group of South-eastern Nigeria. However, there are other ethic nationalities such as Yoruba, Hausa etc observed across each project communities particular Eha Amufu where there is a colony of Hausa community living and business at the town.
	Igala	-	-	-	-	-	-	-	-	-	
	Idoma	-	-	-	-	-	-	-	-	-	
	Others	-	-	-	-	-	-	-	-	-	
Education	Primary school	11.12	7.84	23.4	9.41	7.0	10	8.33	42.86	13.2	Respondents education attainment are secondary school leaving certificate (29.03%), OND/HND/NCE (19.22%) while those that indicated that they are graduate and those that attained only primary school leaving certificates account for 17.94% and 11.98% respectively. As shown, highest number of those that are graduate was at Orba project community.
	Secondary school	33.33	25.1	20.1	20.01	52	20	41.67	42.86	67.5	
	Tertiary (Excluding university)	33.33	47.06	32.2	58.82	13.8	10	8.33	-	10.0	
	University Graduate	-	20.1	24.8	11.95	27.2	50	41.67	14.28	9.3	
	University Postgraduate	-	-	-	-	-	-	-	-	-	
Occupation	Farmer	100	56.9	42.9	64.70	47.9	63.4	29.4	85.71	67.2	As expected, most of the respondents in the sampled population are farmers (52.23%). Farming practices within the project area include cashew farming, poultry and rice cultivation. However, other crops such as cocoyam, yam, maize, vegetables are also cultivated in Enugu. Apart from farming, other means livelihood indicated are civil servant (8.67%), artisans (6.90%), and shop keeping/trading (12.85%). It is not uncommon for people to have more than one means of earning a living among the rural and semi-urban dwellers.
	Civil Servant		13.1	23.4	5.88	8.2	23.2	13.11	-	9.4	
	Artisan/Daily labour	-	16.8	11.2	7.28	16.6	13.4	11.4	-	-	
	Trading/Business	-	13.2	12.5	5.88	27.3	-	46.1	14.28	23.5	
Residential Status	Permanent resident	66.67	100	97.1	94.12	100	100	100	85.71	91.4	About 75.15% claimed they are permanent residents in the project areas while others are returnees (11.5%) and non-residents who come to inspect their farms (5.85%). This shows that the sample population are tied to their respective localities for livelihoods and living.
	Back-home (returnee)	33.33	-	2.9	5.88	-	-	-	14.28	8.6	
	Non-resident (visiting)	-	-	-	-	-	-	-	-	-	
Residential Years	0-2 years	-	-	-	-	-	-	-	-	-	Almost all the respondents have lived in their respective localities for more than ten years. Some claimed they have been living at the project areas since birth. This shows that the communities are stable and information by the respondents about the project areas is reliable.
	3-5 years	-	-	-	-	-	-	-	-	-	
	6-9 years	12.79	-	-	-	-	-	-	-	-	
	10 years above	87.21	100	100	100	100	100	100	100	100	

4.2.1 Income Characteristics of Respondents

Most people are often not comfortable disclosing their income status due to one reason or another. It is even more difficult among non-salary earners due to irregular income and poor record keeping of finances. However, indicated respondent's monthly income are less than N10,000 (12.50%), N11,000 - N20,000 (8.33%), N21,000 – N30,000 (16.67%), N31,000 – N40,000 (10.42%), N41,000 – N50,000 (6.25%), N51,000 – N60,000 (20.83%), N61,000 – N70,000 (4.17%), N71,000- N80,000(2.08%), N81,000- N90,000(4.17%), N91,000-N100,000(2.08%), above N100,000 (12.50%). Generally, the farmers/respondents could be categorized as low to middle income earners. About 23.7% indicated that they receive remittances from family members who live elsewhere while others (76.3%) indicated the contrary. As indicated, remittances by received by respondent's ranges from less than N10,000 (13.2%), N10,000 - N20,000 (8.9%), N21,000 – N30,000 (1.9%), N41,000 – N50,000 (2.87%) and above N50,000 (1.1%) while others (71.2%) did not disclose how much they receive. However, receiving remittance from family member living elsewhere could be highly irregular.

4.2.2 Housing Characteristics

Housing types and materials used in housing construction is a measure of the quality of housing and standard of living within a particular community. Majority of the respondents living around the proposed Aggregation and Cottage Processing Centers across the state indicated that they live in block cemented houses (82.8%) while others indicated plastered mud houses (17.2%). The roofing materials are a mixture of corrugated iron sheets (75.3%), aluminum (34.7%). The floor of the houses is majorly cemented (88.4%) while a few used tiles (12.3%). Respondents' number of rooms include: 1-2 rooms (11.8%), 3-4 rooms (47.3%), 5-6 rooms (31.8%), 6-8 rooms (3.6) while those who live in houses with 8-10 rooms and more than 10 rooms represent 2.7% each. The common toilet facility among the respondents is the pit latrine (51.8%). Others include: water closet (41.7%), toilet dwelling outside facility and pier latrine jointly account for 6.5%. However, open defecation is not uncommon among rural dwellers. Other structures on the plot as indicated are animal pen (40.0%), shops (9.1%), kiosks (2.7%) and security house (1.8%).

4.2.3 Respondents Land and House Tenure

The tenure of the housing and land is presented in Fig. 4.1. As shown in the figure, 88.90% of respondents living within the proposed project community across the state claimed they own the house they live. About 4.5% live in rented apartments while 6.6% of the respondent indicated they occupied rent free

houses. Similarly, the land tenure followed same pattern as that of housing tenure with about 93.2% owned by the respondents, 6.8% is family owned. However, land on where to farm is not an issue among the farmers while some farmers at Adani rice cluster claimed they pay rents to government annually since they farm on public land. They (the Adani rice farmers) are willing that more lands be prepared by government so that the community youths that are interested in rice farming could spaces as well.

Fig. 4.1: Respondents Land and House Tenure

4.2.4 Household Solid Waste Management

The waste management methods adopted by the respondents in communities where the proposed projects are located include: burning after gathering of wastes (53.6%) and dumping of wastes in the community refuse/garbage pit/dumpsite (20.0%). As shown in Fig. 4.3, some respondents dump their refuse in the waterbody (7.3%) while others indiscriminately deposit refuse at the backyard of the house (12.7%). Only 6.4% of the respondents employ the services of waste collectors. This category of people are mostly the people living at urban areas such as Nsukka and Amechi.

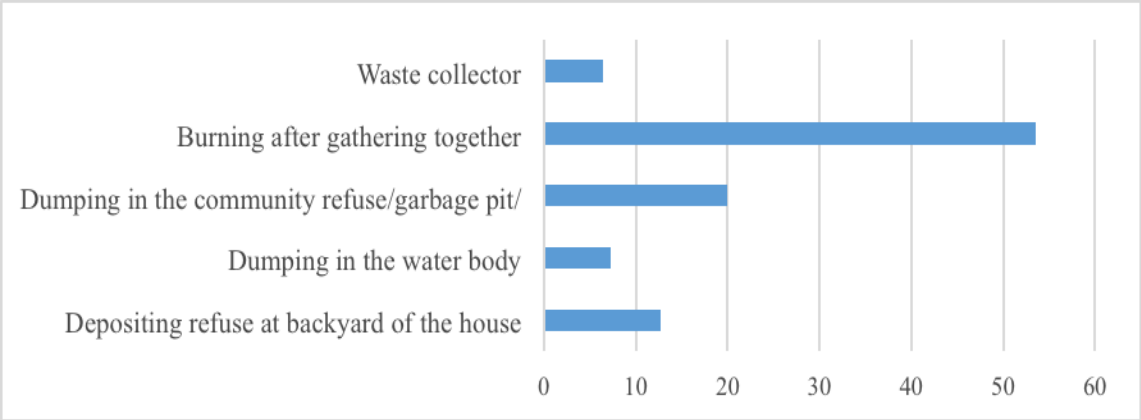


Fig. 4.3: Waste Management Methods

4.2.5 Sources of Energy

The diversity of the households and their energy sources for daily activities and series of consumptive purposes are listed in Table 4.7. As indicated, the most used/common sources of energy for lightening at the project community are public electricity from national through Enugu Electricity Distribution Company (EEDC) (41%), rechargeable lamp/lantern (21%), Kerosene (16%), power generator and dry cell torchlight/cell phone are 13.1% and 8% respectively. The possibility of energy mix for lighting is not uncommon throughout Enugu State and the country in general. All the project communities are connected to the national grid. On the other hand, as typical of rural dwellers, wood ranked the highest source of energy for cooking across the project community. About 79% of the respondents depend primarily on wood as their major source of energy for cooking (Plate 4.5). Other sources of energy for cooking are kerosene (13%) and gas (8%). This also shows that there is over reliance on nature stock of wood as fuel for cooking in the project area and this has implications forest resources.

Table 4.7: Household Energy Sources within the Project Area

Energy source	Lighting	Cooking	Total
Public electricity supply	42	-	42
Generator	13	-	13
Lantern/Lamp	21	-	21
Candle	-	-	0
Torchlight	8	-	8
Wood	-	61.8	61.8
Kerosene	16	23.7	39.7
Charcoal	-	-	0
Gas	-	13.7	13.7
Saw dust	-	-	0

Source: Fieldwork, September 2021

4.2.6 Sources of Water

Sources of Water

Importance of water for human existence, sustenance, and survival remains sacrosanct. Plate 4.6 show sources of water for household uses in the project area. Three (3) water use ranges were tested. As shown in the figure, sources of drinking water indicated by the respondents are River/stream (77.4%), sachet/packed water (18.4%), and truck water supply (4.2%). Similarly, River/Stream water ranked highest among sources of water for cooking. As shown, distribution of respondent's source of water for cooking are River/stream (69%), truck supply (17%), and rain harvesting (14%). Water sourced for daily cleaning, i.e. bathing and washing are sourced as follows: River/Stream (74.2%), rain harvesting (17.6%), and truck water supply (4%).

Ground water abstraction (such as Wells and Boreholes) is not common in most rural communities in Enugu State generally due to the nature geology and hydrogeological structure of the region, hence, surface water is therefore an important resource/feature that must be protected from pollution at the project community.

Plate 4.6: Sources of households' water at the study area
***Source**: Fieldwork, September 2021*

4.2.7 Health Status

The prevailing ailment/sickness mostly affecting the residents of the project communities is malaria (49.1%). This ailment occurs across the various age brackets; this is not unusual as malaria occurs very commonly in all parts of Nigeria. Majority of the respondents also indicated typhoid (27.3%) and whooping cough while other ailments such as cholera, pile, eye pains and stomach ulcer account for 2.7% each. Of those suffering from these ailment/sicknesses, 18.2% affirmed that their health issue could be worsened by the proposed intervention through contamination of ground/surface water, potential breeding site for vector diseases and increase in noise/air pollution. About 81.8% stated that the intervention would not worsen their prevailing health issue.

4.2.8 Health Management Methods

According to the respondents within the proposed Aggregation Centre, most of these illnesses they suffer from are treated mostly by visiting a hospital/clinic (91.8%), buying drugs from the local pharmaceutical stores (6.4%) and traditional methods (1.8%). Of those that visit the hospital, 71.8% here visited within the last six months followed by 16.4% in the last one year. About 2.7% of the sampled population have visited within the last five years while 9.1% had visited more than five years ago.

4.2.9 Standard of Living

As shown in Fig. 4.7, 78.2% of the respondents in the proposed project area claimed that their standard of living has been the better over the previous three years. About 11.8% affirmed that it has been the same over the years while 10.0% indicated that it has got worse. Of those that claimed that the situation has got worse, only 19.1% indicated that it was propelled by state of the environment while 80.9% of the respondents stated otherwise. Although, only a few of the respondents (20.9%) believed that the proposed intervention will improve their situation by making them to have better standard of living (12.7%), income generation (3.6%), employment for locals (1.8%) and improved crop productivity (0.9%)

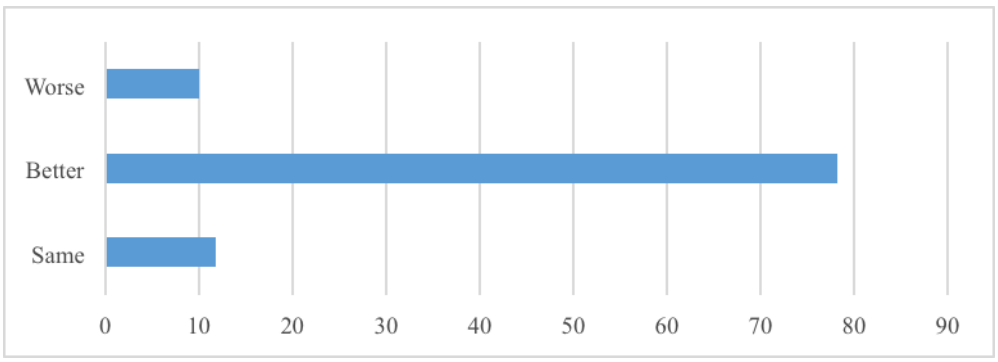


Fig. 4.7: Standard of Living in the Project Communities

4.2.10 Community Environmental Concerns

The environmental challenges facing the respondents vary from one cluster/community to another. Presently, in the proposed Aggregation Centre communities, the common environmental challenges indicated by respondents are: poor drainage system (17.3%), flooding, (17.3%), erosion (12.7%), pest and fly issues (10%). On the other hand, major environmental challenges indicated by respondents in communities within the proposed Cottage Processing Centre are: bad roads (56.3%), poor drainage system (28.1%), destruction of infrastructures (9.4%) and erosion (6.3%).

The environmental problems envisaged during proposed project construction and operation are shown in Table 4.4 below. These challenges were expressed by respondents based on their general understanding of the proposed projects; therefore, their views/fears should be allayed as much as possible during the phases of the intervention project.

Table 4.4: Environmental problems envisaged at phases of the intervention project

During Construction	Response (%)	During Operation	Response (%)
Erosion problems	8.2	Erosion Problems	12.7
Flooding	9.1	Flooding	6.4
Destruction of infrastructures	0.9	Destruction of infrastructures	4.5
Encroachment of land properties	4.5	Encroachment of land properties	1.8
Pollution	14.5	Pollution	18.2
Poor drainage system	5.5	Poor drainage system	5.5
Bad road	-	Soil infertility	-

4.2.11 Perception of the Respondents

The level of awareness about this project was tested among the residents of the proposed Aggregation Centre communities through major sources which include community meetings and the media. It was gathered that 81.8% of the respondents in the survey population have heard about the proposed project via community meetings (67.3%), media (10.9%) and word of mouth (3.6%). Most of the respondents (98.2%) indicated that the proposed project would not cause away from or restiveness in the community while 1.8% shared the contrary view and attribute likely cause of restiveness to disrespect to the norms and culture of the communities by contractors and loss of farmland. However, the respondents indicated their expectations on the activities of the APPEALS Aggregation Centre intervention. They include: employment of locals during construction (53.6%), compensation for those whose properties will be affected (41.8%) and capacity building for the maintenance during implementation (2.7%).

4.2.12 Perceived Impacts of the Proposed Intervention Project

The envisaged positive impacts of the proposed Aggregation Centre Intervention project on the community include: employment of locals (33.6%); improved crop productivity (22.7%); high income from increased sales of farm produce (23.6%) and improved standard of living (6.4%). The negative impacts envisaged include: outright loss of farmland without due compensation (11.8%) and pollution (7.3%) when not properly managed.

As indicated by the respondents in the proposed Cottage Processing Centre project communities, positive impacts envisaged from the proposed intervention are employment opportunities for locals (43.8%), improved standard of living (21.9%), improved crop productivity (12.5%) and income generation through increased sales of farm produce (9.4%). Others (12.5%) were indifferent even though they will benefit indirectly from the project. The negative impacts envisaged include: outright loss of farmland without due compensation (3.1%).

4.3 Gender-Based Violence (GBV)/Sexual Exploitation and Abuse (SEA) Analysis of the Status of the GBV/SEA in the Project Community and Related Issues

Integrating and mainstreaming gender issues into environmental development projects is at the crux of global developments, including the Sustainable Development Goals (SDGs) of the United Nations. It is therefore important to ensure that sensitive gender interests and matters, particularly the female is fully integrated into any development project irrespective of its scope. This is because equal participation of all gender orientations halt inequality barriers, guarantee inclusiveness, and boost full engagements of all concerned within the social, economic, and political spheres. As noted in "Voice and Agency: Empowering Women and Girls for Shared Prosperity," the World Bank Inter Agency Standing Committee defines GBV as "*an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (gender) differences between males and females*" (Klugman et al. 2014). GBV affects both males and females even though unequally as womenfolk are much more susceptible because violence evokes physical abuse and damage in which women are mostly victims. In some societies, there are some existing customs, traditions with gender-based inequitable duties, performance and acts. Arango et al. (2014) established the fact that, GBV could be extended to include the following:

- Intimate partner violence;
- Non-partner sexual assault;
- Female genital mutilation;
- Sexual exploitation and abuse;
- Child abuse; and
- Child marriage.

Some surreptitiously adopted approaches to gender discrimination and abuse against the women and girl child, will include but not limited to the following:

- Widowhood discrimination and secluded practices;
- Female disengagement from selected sociocultural and economic activity;
- Shielding the female folks from reaching career peaks by through deliberately or localized policy; and
- Exclusion of women from participating in leadership recruitment exercise across board.

Where such practices are rife, aggregated violence against women will intensify the outcome in which women are often prevented from participating in some cultural events and even completely alienated from enjoying some family benefits. Thus, experiencing gender violence impedes individuals from contributing to or benefiting from development initiatives by limiting their choices and ability to act (UN General Assembly 2006).

It has been shown in the series of public consultations, questionnaire administration and other series of engagements concerning the project area of Obollo Orie community that incidents and issues of GBV/SEA are rare. This is not unexpected as cases of GBV are often denied publicly by under-reporting and where such cases are reported the victims suffer societal stigmatization hence there is the absence of institutional support for case-based reporting. Hence there must be the strengthening of the reporting mechanisms and protection services for victims at the community level (Odimegwu & Okemgbo, 2003). At the global scale, one (1) in three (3) women has suffered gender-based abuse during their lifespan (Duru et al., 2018). In the same vein, Nwabunike and Tenkorang (2015) affirmed that two-thirds of Nigerian women have experienced domestic violence with specific ethnic differences when closely examined. According to the National Demographic and Health Survey (2008) in Nigeria, the percentage of women who have experienced violence was around 30% in 2008. The percentage is higher in the urban areas (30.2%) than in the rural areas (26.3%).

In 2018, the National Bureau of Statistics (NBS) published a Statistical Report on Women and Men in Nigeria. The report indicated that rape incidence in Nigeria against women was 63.04% in 2015, it increased to 72.13% in 2016 and decreased in 2017 to 69.33%. To argue the intensity of these issues, diverse approaches have been investigated in the literature that connect sociocultural values to versions of GBV in Enugu State and eastern Nigeria. Culturally, the male is seen as superior to the female and this knowledge is passed down to the younger generations. Therefore, this gender order spirals into marriage

suggesting women must take permission from men, particularly husbands to get medical treatment, and before they engage in social activities with fellow women and colleagues. It becomes obvious that gradually, women are culturally passive, forced to be humble, submit and generally inferior with less decision-making power (Oduenyi et al., 2017). This is a clear-cut gender dichotomy which often triggers GBV that are found in marriages. Although, it might not have been indicated, there is a clear culturally-induced gender dichotomy which relegates the women (Oduenyi et al., 2015; George, 2015).

A study by Ezeudu et al. (2019) revealed that the prevalence of intimate partner violence (IPV) and types of IPV in Enugu state is high. The 2013 Nigeria Demographic and Health Survey (DHS) reported that women in Enugu state had the highest proportion of emotional intimate partner violence (IPV) among women in the South East zone and the fourth highest among the 36 states of Nigeria. GBV was found to be commonest amongst females within the age range of 20 to 35 years (88.5%). Intimate Partner Violence was the commonest type of GBV experienced by the respondents in the study population (77.2%) followed by Rape (43.3%). The assessment also identified that there is low level of reporting GBV cases at the healthcare centers. The existing government structure for social services through the social welfare departments is skeletal and not properly coordinated. The strong socio-cultural factors surrounding GBV also make isolated medical care inadequate therefore, there is the need to strengthen the capacity of the service providers on GBV case management and massive sensitization of all stakeholders and multi-sectoral collaboration amongst GBV actors to ensure optimal health outcome of GBV survivors.

Recently as published in a national dallies, the Enugu State Traditional Rulers Council has outlawed girl-child marriage and other forms of gender-based harmful practices in the state. This is a follow up to efforts of the Enugu State ministry of Gender Affairs and other NGOs including the 50/50 Action Women and Women Aid Collective. The obnoxious practices such as sacrificing of the girl child to shrines, violence against women and girl child, abrogation of harmful traditional widowhood practices, including disinheritance of widows have now been jettison in Enugu State.

4.4 Grievance Redress Mechanisms: Assessment of the Strengths and Weaknesses

The APPEALS project is designed to have numerous positive outcomes among which are the transformation of small subsistence farmers' production system, creation of a market-oriented agricultural undertaking and support for middle size farmers to address the constraints in enhancing productivity and their effective participation in value chains, nevertheless, the proposed project activities will lead

to among others; the acquisition of land, various construction and installation activities and capacity-building, which could result in the displacement of persons, restriction of access or loss of livelihood, increased-production related pollution and labour-influx that can lead to conflicts. Outlined below are the existing Grievance Redress Mechanism that could be explored in Enugu state concerning the proposed development:

- *Enugu State Ministry of Agriculture*

Presently, there is no specific department and agency designated to resolve disputes relating to agricultural activities. This shows that any escalation of conflicting issues within the context of agricultural practice will either rely on other grievance mechanism or be subjected to informal means of resolution. Also, the total absence of such a vital office creates a lacuna in the comprehensive management of issues that are likely to develop owing to the interventions of APPEALS. Consequently, the Enugu-APPEALS project establish a GRM to tackle issues relating to their respective interventions.

- *Enugu State Ministry of Justice*

Out of the nine departments within this very essential ministry, the Public Persecution office is charged with the responsibility of prosecuting criminal cases in courts, on behalf of the Attorney General of the State. The department also issues legal advice on criminal matters to the police. Moreover, it overlooks and continue with any such criminal proceedings that may have been instituted by any other authority or person. It is in line with the responsibility attached to this department and for the convenience of official task that the department is divided into units i.e. Homicide, Fraud, Robbery, and General section, which includes the mediation centres. Mediation Centres are part of the GRM resolution platforms that are available for resolution of cases prior to straight court proceedings. The availability of the full function of this department rests at the office located at the Enugu city which is inaccessible to farmers who are located in remote villages across the State.

- *Enugu State Ministry of Environment and Mineral Resources*

General issues of environmental management are handled by the Enugu State Ministry of Environment. Under this ministry are several department and agencies saddled with environmental protection and pollution issues, afforestation (, refuse management and sanitation board, sustainable Enugu project and school of hygiene. All these sub agencies are engaged with environmental issues where grievances can emanate. The resolution of grievances requires a series of visits to the main ministry office located within the State Secretariat which is some distances away from the remote communities.

- *National Environmental Standards and Regulations Enforcement Agency (NESREA)*

The NESREA's office in Enugu is located at the State capital. This location though accessible within the Enugu city is however, some distance away from the remote communities who are essentially agrarian; some rural people may require the services of agents to resolve environmental issues under the umbrella of NESREA.

The strength and weaknesses of other existing grievance redress institutions are outlined in Table 4.9. However, the Enugu State APPEALS has developed a functioning Grievance Redress Mechanism which the project operates.

Table 4.9: Strengths and Weaknesses of some existing Grievance Redress Mechanisms in Enugu State

S/N	Dispute Resolution Systems	Strengths	Weaknesses
1	Law Courts	The formal law court system meets majority of the technical requirements for the resolution of most agriculture-related grievances.	There is constant pressure on the courts which makes formal litigation in courts unattractive, cumbersome, technical, time-consuming and expensive. Reliance on the court for the resolution of all disputes will cause long delays for the project.
2	Enugu State Multi-Door Courthouse (ESMDC)	The practice of alternative dispute resolution (ADR) initiates the concept of MDC in the country. The ESMDC, established in 2018, offers 4 focal routes through which disputes can be resolved. This include; arbitration, mediation, hybrid ADR services and early neutral evaluation.	There is only one ESMDC in Enugu State. situated in the premises of the State High Complex, Independence Layout, Enugu city. Access to this facility will be challenging for parties located at remote communities.
3	Citizens' Rights and Mediation Centre (CMC)	The CMC was established to provide almost-free dispute resolution services to concerned and interested citizens who might be indigent to afford commercial legal services. The purpose of its establishment was to provide alternative dispute resolution mechanisms with a view to decongesting the courts in Enugu. The Enugu CMC is located at Collery street, off Opara Avenue, Enugu metropolitan city.	Of the 17 LGAs of Enugu State, only about two makes up the city capital where the CMC is located. Hence, there is an obvious need to increase the number of CMCs in the State. Much more resolution of issues concerning agricultural activities requiring CMCs is expected to be more at these remote LGAs.

4	Public Complaints Commission (PCC)	The Public Complaints Commission has offices in the thirty-six (36) state of the federation and Abuja (FCT) with five (5) zonal offices in each state of the federation. The Enugu PCC office is located at federal secretariat building at Indpendent layout Enugu city with four (4) area offices at Udi, Awgu, Nsukka, and Nkanu West LGAs.	The functions, powers, and jurisdiction of the commission is unknown to a lot of people. The commission is also defectively staffed with men and women of integrity. Funding is equally a major challenge as it hampers the operations of the Commission.
5	Nigeria Security and Civil Defence Corps (NSCDC)	As a supporting agency to the Nigeria Police, the NSCDC supports in maintenance of law and order at the local community level. Across Nigeria, there are eight (8) zones of the NSCDC with the Enugu State Command as part of the Zone H. the organogram of the defence corps takes the following shape: ▪ Zonal Command ▪ State Commands ▪ Divisional Offices ▪ NSCDC Posts	The NSCDC is not as equipped as the Nigeria Police hence their role is complimentary to the police. Conflict of jurisdiction is another drawback of the NSCDC. Other challenges include funding, frequency of personnel training and re-training.
6	The Nigeria Police	The Nigeria Police have offices in all parts of the State. They are widespread and well structured. The organizational structure of the Police Force in Enugu State is represented below: ○ Zonal Headquarters ○ State Commands Headquarters ○ Divisional Police Headquarters ○ Police Station ○ Police Post ○ Village Police Post.	The Police is mostly seen by the public as an appendage of the government in power and very often ineffective to provide sufficient and acceptable resolutions that would be favourable to the citizen. There is also the perception that issues are often escalated by the Police as such the police is not often the best point of call for a project-based complainant.
7	National Human Rights Commission (NHRC)	The NHRC presently has State offices in all the 36 states of the country and the FCT. The Enugu Office is located at 3, Ezeagu Street, New Haven, Enugu City.	The major weakness of the NHRC is its accessibility especially to farmers in the remote communities of Enugu State. Indeed, farmers located at remote areas such as Adani, Eha Amufu, Ezeagwu etc will have a difficult time having their concerns addressed.
8	Farmers' Cooperatives and Groups	All executives and ex-officio members of the Farmers' Cooperative/Groups are charged with the responsibility of resolving conflicts within their group. These individuals are well-positioned to resolve disputes using the group's constitution, guiding principles and rules and regulation where they exist.	There are a lot of instances where members decide to flout the rules and regulation of the group without penalties imposed on them. This makes the grievance redress roles of the groups ineffective

9	Traditional rulers, community and religious heads	The traditional rulers, by virtue of the Traditional Institution having been in existence for long, and traditional rulers being the custodian of the people's culture and tradition give their subjects confidence, assurance, reliability and continuity. The subjects see these rulers as paramount pillars of their existence. Their powers even though seen in abstracts form, are still strong and enduring. In fact, it is believed that failure to adhere to the advice given by traditional rulers can spell doom on whoever rejects such. The methods of conflict resolution employed by the traditional rulers are more cost effective than the conventional ones used in the law courts. These are also applicable to religious leaders who are seen as messengers of the divine message. So, their advice on resolution of disputes come with a tonnes of respect and value.	These institutions do not have the constitutional backing to carry out this function. In addition, while the grievance redress approach adopted by the traditional rulers, community and religious heads may be effective in the rural and semi-urban areas of Enugu State where members of the community adhere to the general ethics and governance structure of rural communal living, it is almost inefficient within the city centres. There is also the view of the lack of human and material capacity to record and maintain dispute resolution system on a continuing basis by these institutions.

Source: Field survey, September 2021

4.5 Stakeholders Consultations

The Stakeholders participations during project planning, design and implementation is widely recognized as an integral part of the environmental and social impact assessment for projects. It is a two-way flow of information and dialogue between project proponents and stakeholders, which is specifically aimed at developing ideas that can help shape project design, resolve conflicts at an early stage, assist in implementing solutions and monitor ongoing activities. Stakeholders consultation is a process and continues throughout the project implementation period to provide information to identified stakeholders. Key stakeholders to the proposed APPEALS Project have been consulted and these include some traditional leaders of the project communities, opinion leader's/farming executives and farmers, across the three (3) selected value chain.

4.5.1 Objectives of Stakeholders Consultations

The main objective of the consultations with stakeholders was to discuss the proposed project environmental and social implications and to identify the alternatives for consideration. Specifically, the consultations sought to achieve the following objectives:

- to provide information about the proposed project;
- to provide opportunities for stakeholders to discuss their opinions and concerns;
- to effectively communicate key project information such as construction timelines and work schedules to stakeholders, particularly project affected communities and persons;
- to provide and discuss the alternatives considered to reduce anticipated impacts with stakeholders;
- to identify and verify the significances of environmental, social and health impacts;
- to establish a mechanism for receiving and addressing grievances in a timely manner; and
- to inform stakeholders about the process of developing appropriate mitigation and management options.

4.5.2 **Stakeholders** Consultation

Stakeholders consultations play a vital role as a key aspect of any ESMP. Stakeholders consultations facilitate local ownership of proposed project particularly within the local communities and the direct project concerned persons who are direct beneficiaries. Hence, the Enugu APPEALS Coordinating Office had prepared a list of concerned crop cluster groups who are the direct beneficiaries of the proposed aggregation center and cottage processing facilities for this exercise. As earlier stated, there are nine locations with proposed agrarian development projects aimed at scaling up the economies of scale of production from small-scale to medium scale through farmer's advancement and produce/harvest management.

4.5.3 COVID 19 Awareness and Prevention during ESMP Field Work

Large gatherings have been discouraged in most meetings as demanded by the emergency measures taken by the federal government to curb the spread of the COVID-19 pandemic. Thus, the stakeholder's consultations were conducted in a series of separate meetings with each beneficiary community/cluster groups. However, the following COVID-19 awareness and prevention activities were carried out during the ESMP fieldwork.

- Keeping of social/physical distances;
- Mandatory use of nose mask; and
- Hand-washing/sanitization with alcohol-based sanitizer before and after meetings.

4.5.4 Outcome of Stakeholder Consultations

The summarized details of the series of consultations across the listed communities are presented in Table 4.11. It shows that the communities are prepared to have the series of projects proposed for their respective clusters. The common concern enunciated during the consultations was delay in kick start the construction of the proposed facilities;

Highlights of issues discussed during the consultations and responses are outlined in Table 4.11. Photographs and participants' attendances list at the consultations with the various stakeholders have been attached as part of the Annex section of this ESMP report.

Table 4.11: Summary of Minutes of meetings with Stakeholders

Cluster/Beneficiary community	Venue	Date	Project Category	Contact Person	Responses and Concerns raised by stakeholders.
Adani Rice Cultivation Cluster	Community centre	12.09.2021	Processing Centre	Mr. Idu Bernard (Cluster Head) 080xxxxxxx	• The rice farmers in this community operate under an umbrella- **Adarice Farmers Association**; • The proposed APPEALS development/intervention was highly welcome; • Eight plots of land have been reserved for the project; • "About 70% of Adani population are farmers and rice is a major crop cultivated"; • They acknowledged that government has been assisting the cluster farmers right from FADAMA, CADA, RAMP etc particularly on farm access road and bridge construction; • It was noted that customers coming to the community to buy rice produce get robbed of their money due to lack of bank at the community; • They pointed out that community youths have developed great interest in farming; • Pressing challenges encountered by the farmers include: o Threshing and storage of harvested rice; o Land development/land clearance for more youths to farm; o Lack of commercial banks (financial institution) where farmers and buyers could carry out transaction seamlessly; o Lack of modern equipment for harvesting(combine-harvester), drying, and milling.
Orba Cashew Cluster	Frontage of Community Hall	10.09.2021	Aggregation Centre	Mr. Odoh Charles (Palace Secretary) 07034546801	• The community acknowledge that they are aware of the project and are early expecting its implementation; • Chairman of the Cashew nuts dealer at community (Mr. Anthony) believes that the project would boost cashew business in the area; • The chairman further noted that the project location is central to the community; • Youth leader (President of Orba Youth Assembly) promised to mobilize community youths to support and provide security for contractors

					during construction; • It was also mentioned that Orba people are very hospitable and welcome developmental projects of this nature (APPEALS project) that benefit the entire community; • They promised to support the project in their own capacity to make it a reality; • Adultery and stealing is prohibited at the community; • There are no sacred places around the project site and within the community in general; • The only challenge and concern raised are: iii. Inadequate commercial banks for transaction for the cashew business merchants, iv. early completion of the project as approved in the engineering drawing
Ikpa Community	Community town hall	10.09.2021	Cottage Processing Centre	Igwe Atanike of Ikpa 08060219007	• The Igwe of Ikpa and community members welcomed the development and have waiting for the implementation of the project; • The project land was donated by the community, there is no issue on land acquisition for the project; • The community believes the project will come to reality; • No concern of whatsoever was raised; • The community envisaged that the project will further improved the economy of the community through direct and indirect employment; • The community promised to own and protect the project; • As an urban area and sub section of Nsukka, there was no traditional issue of concern governing the town, however, the traditional leader noted that contractors should be law abiding.
Umuiba Nara Rice Farmers	Igwe's Palace	11.09.2021	Cottage Processing	Palace's Secretary (08125215565)	• The community traditional leader on behalf of the rice farmers appreciated the proposed APPEALS project in the community, however, he expressed his displeasure that the project is taken too long to be implemented; • They have received various group of consultant in respect of the project including letters from Enugu State ministry of Agriculture; • It was anticipated that the project construction would have started before now;

					• The Nara community, according to one of the attendees, is the largest rice cluster in Enugu State; • The project land was donated by the community for the development, so, there is no land issue concerning the project; • The concerns raised by the community in this regard are outlined as follows: i. How to mill cultivated rice for this season since a lot of the farmers have increased their cultivated rice farm with the hope that the mill would have been put in place; ii. How soon will be the project be completed and functional?.
Oduma Rice farmer cluster	Community centre	11.09.2021	Aggregation and Cottage Processing	Ukpai Michael 08020789626	• The cluster farmers welcomed the proposed cottage processing and aggregation centre for the community; • They expressed no concerns about the project, however, suggestions were made; • Suggestions made by the cluster members are: i. foundations of the facilities should be considered due to the terrain of the project site which was noted to be a waterlogged area during the raining periods; ii. Adequate drainage to convey storm water to the natural water body to avoid annual flooding was also suggested; iii. Access road to the facilities should be considered since there is none connecting location to the main road.
Amechi Poultry Cluster	Project Site	11.09.2021	Cottage Processing	Mr. Nnam 08034084289	• The proposed APPEALS poultry processing centre was welcomed by the cluster farmers and community members; • The project land was dominated by the community; • The size of the project land was increased 100m by 250m to 100 by 300m in order to accommodate vehicular parking during operations and to avoid parking on the community road, in other words, about eight (8) plots of land was donated for the project; • The community members and farmers expressed no concern about the project including its location, however, they appealed that the project should not be delayed. •

Ezeagwu Cashew cluster	Project site and cluster office	15.09.2021	Aggregation Centre	Hon. Stephen Anibueze 08034712472	• They expressed their joy and were in full support of the APPEALS project and its location; • No form of challenge or concern was raised, however, they are hoping the implementation would not be delayed beynd necessary; • In addition to the proposed aggregation centre, they further seek help of the APPEALS in constructing an access road to their farms which was observed to be presently threatened by severe gully erosion; • Generally, the farmers are open to any form of assistance that would improve their activities for economic development.
Eha Etiti Cashew Farmers Cluster	Palace of traditional leader of Eha Etiti	10.09.2021	Aggregation Centre	Chief Odo (Cluster Chairman) 08033112821	• The community members and cluster farmers are in support of the project; • The youths and women expressed their wiliness to work at facility both during construction and operational stages; • They further solicited for the completion of access road connecting the three communities around the location of the projection; • They are ready to support the project by ensuring that contractors are protected during construction.
Eha Amufu Ricer Farmers	Project site and cluster office	15.09.2021	Processing Centre	Hon. Francis Ede Community/SSA to Gov. (070301837830	• Eha Amufu is a grain community and railway town and the proposed development was highly welcomed by the cluster farmers; • The project site is within an existing silo which belongs to the government, so there is no issue regarding land acquisition for the project; • There is no marketing challenge, we are only requesting for modern facility such as the proposed APPEALS project to boost our production capacity; • We are farmers at Eha Amufu where every available land is cultivated with crops such as rice, maize, cassava, plantain etc; • As noted, the cluster farmers concerns/challenges about their farming activities are: i. Cost of inputs particularly fertilizer which was said to have been affected by foreign exchange rate; and ii. Lack of modern equipment as they rely mainly on manual labour; • They however further requested if a short road connecting the project site to the community main market (Eke Market) could be fixed along the proposed processing centre. The road gets flooded during raining seasons.

CHAPTER FIVE
POTENTIAL ENVIRONMENTAL/SOCIAL IMPACT IDENTIFICATION AND EVALUATION

5.0 Introduction

The details of potential socio-economic and environmental impacts of the proposed project activities are presented in this chapter. The methodology employed involves a description of the identified significances of the impacts with respect to the magnitude and sensitivity of receptors, which are the various aspects of the socioeconomics and aspects of the environment. Included also within this assessment are the resources of the environment that might be affected in any direction and magnitude. The details of these are described as follows.

5.1 Methodology for Impact Identification and Evaluation

The potential environmental and social impacts that are likely to arise as a result of the Enugu State APPEALS intervention project were assessed by harmonizing the project components with the surrounding environmental, social and cultural resources. This chapter presents the potential impacts that may result from the proposed intervention projects. A combination of methods was employed in assessing the potential impacts of the proposed intervention across the project State. These methods include: the use of checklists, matrix, public consultation, professional experience and judgment. The phases of impacts assessment include:

i. Impact Identification: to specify the impacts associated with each phase of the project activities;
ii. Impact Prediction: to forecast the nature, magnitude, extent and duration of the impacts; and
iii. Impact Evaluation – to determine the significance of the impacts

5.1.1 Impact Identification

A checklist that is based on an in-depth understanding of the local environment, existing baseline information and the key project activities was used to develop a list of the potential impacts of the project. The following were appraised:

- The source and/or the cause of the problem (project activity/environment aspect);
- The receptor of the impact (environment component i.e. existing ecological and socioeconomic condition of the project environment);
- The way in which the effect is transmitted from the source to the receptor (pathway); and
- The potential consequences (environmental impact).

5.1.2 Impact Prediction

In order to further qualify the impacts of the various project activities on the environment, the identified impacts were characterized based on the nature, duration, and reversibility of the impacts as follows:

- *Beneficial Impacts* – these are impacts that have positive and beneficial effects;
- *Adverse Impacts* – these are impacts that have negative and untoward effects;
- *Direct Impacts* – these are impacts that are most obvious and are directly related to the proposed project and can be connected to the actions that caused them;
- *Indirect Impacts* – these are secondary impacts that occur later in time or further away from the impact source;
- *Cumulative Impacts* – these typically occur from the incremental impacts of an action when combined with impacts from projects that have been undertaken recently or would be carried out in the near future;
- *Reversible Impacts* – these are impacts over which the components involved have the ability to recover after the disturbances caused by the impact;
- *Irreversible Impacts* – these are impacts whose effects are such that the environmental component cannot be returned to its original state even after adequate mitigation measures are applied;
- *Residual Impacts* – these are impacts whose effects remain after mitigation measures have been applied;
- *Short Term Impacts* – these are impacts whose effects remain over a short period of time and are removed after the application of mitigation measures;
- *Long Term Impacts* – these are impacts whose effects remain over a long period of time, even after the application of mitigation measures.

5.1.3 Impact Evaluation

The third stage in the assessment procedure involved the evaluation of the concerns, issues and impacts identified. At this stage an assessment of the significance of impacts that may result from the proposed intervention was carried out. This also includes outlines of the general assessment methods and a presentation of the criteria for determining the receptor sensitivity, impact magnitude and impact significance. This is based on the following:

- Duration of the Impact:
  - A temporary impact can last days, weeks or months, but must be associated to the notion of reversibility;
  - A permanent impact is often irreversible. It is observed permanently or may last for a very long term.
- Extent of the Impact:

- The extent is regional if an impact on a component is felt over a vast territory or affects a large portion of its population;
- The extent is local if the impact is felt on a limited portion of the zone of study or by a small group of its population;
- The extent is site-specific if the impact is felt in a small and well-defined space or by only some individuals.

- Intensity of the Impact:
  - The intensity of an impact is qualified as strong when it is linked to very significant modifications of a component;
  - An impact is considered to be of average intensity when it generates perceptible disturbance in the use of a component or of its characteristics, but not in a way to reduce them completely and irreversible;
  - A weak intensity is associated with an impact that generates only weak modifications to the component considered, without putting at risk some of its utilization or its characteristics.
- Impacts Probability and Severity

  Once the Probability of the impact and sensitivity of a receptor have been characterized, the significance can be determined for each impact. The impact significance in this project rating was determined, using the matrix provided in Table 5.1a to 5.1c.

Table 5.1a: Probability of Occurrence

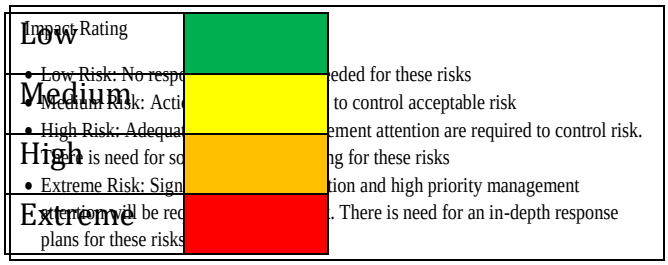
Probability	Attributes
Certain	Impacts that can reasonably be expected to occur during the project
Likely	Impacts that are likely to occur during the project
Possible	Impacts that might occur sometime during the project
Unlikely	Impacts that can reasonably be expected NOT to occur during the project
Rare	Impacts that are unlikely to occur except in exceptional circumstances

Table 5.1b: Consequence Severity

Severity	Attributes
Negligible	No detectable environmental and socio-economic impact
Marginal	Minimum environmental and socio-economic impact. Localized reversible habitat loss or minimal long-term effects on habitat species or media/public health and safety
Critical	Significant environmental and socio-economic harm. Significant widespread and persistent changes in species, habitat and media (e.g., widespread habitat degradation/public health and safety)
Catastrophic	Detrimental environmental and socio-economic impact. Loss of a significant portion of a valued species or effective ecosystem function on a landscape scale/injury and death is possible

Table 5.1c: Likelihood Ranking and Risk Matrix

	Severity			
Probability	Negligible	Marginal	Critical	Catastrophic
Certain				
Likely				
Possible				
Unlikely				
Rare				



The following environmental indicators, receptors or resources affected by potential impacts were also considered:

Biophysical environment:

- Air quality;
- Noise, and vibration;
- Soils and geology;
- Water resources;
- Ecology.

Socio-economic Environment:

- Visual amenities;
- Community level impacts;
- Gender;
- Vulnerable;
- Community health, safety and security;
- Labour and working conditions;
- Infrastructure;
- Employment and economy; and
- Cultural heritage.

5.2 Potential Impacts of the Proposed Project Activities

5.2.1 Potential Positive Environmental Impacts

- *Reduction of post-harvest losses and wastages:* Commodity aggregation centres provide the facilities for storages which help to reduce post-harvest wastages and losses from the cultivation year. The usual experience of post-harvest losses will become a thing of the historic accounts for the cultivation clusters, particularly for perishables such as tomato whose lifespan is short. Aggregation Centres will thus curtail environmental depletions and increase farmers' profits.
- *Agro-processing expansion enhances better environmental resource management:* The adoption of a joint cottage processing facility drives cooperatives function for better resource management such that installation of several individual cottage processing will aid the management of environmental issues such as air and water issues such as contamination and pollution. It also helps to reduce the network of likely sources and facilitates monitoring of such occurrence.
- *Drives investment in rural infrastructure which aid better environmental planning*: The provision of aggregation centres and cottage processing facilities is usually accompanied by allied facilities and resources that aid their optimal functioning and performance. Rural roads and drainages are often constructed for accessibility to the location of these facilities and the availability of these often drives a better management of environmental problems such as flooding and poor air quality in areas with earthen roads. Hence, associated infrastructure are anticipated for the location of these facilities.
- *Exposure of the rural communities to better governance:* Agrarian communities are often left at the backdoor of infrastructure development including environmentally-friendly facilities that ensure a good governance. The provision of the proposed Enugu-APPEALS projects will ensure better resource governance especially through the environmentally-sensitive facilities. Hence governance focus will be shifted to these areas where allied environmental challenges can be addressed forthwith.
- *Upgraded environment and aesthetics of the area:* Sequel to the provision of these facilities, additional environmental benefit will be accrued to the provision of the projects especially on the rural communities who are the direct beneficiaries of the project. Better environmental aesthetics, and upgraded land use are obvious merits that can be derived from the project.

5.2.2 Potential Positive Social Impacts

The all-encompassing and all-embracing purpose of any environmental and social oriented project is to improve the environment and enhance the social wellbeing of the people. This is usually achieved using the knowledge of the socioeconomic profile of the people and their connexion with the environment. The progressive impacts of the project as regards the social life of the people are therefore explained as follows:

- *Strengthening the existing crop cultivation clusters:* The existing crop clusters will become strengthened when smallholder farmers have a sense of belonging which will be triggered by the provision of the facilities. The aggregation and cottage processing which create a sense communal ownership for common good will strengthen the existing productivity bond between the farmers. As such, cooperatives can be built on the existing platform such that the facilities are kept intact because any damage can reverse the gains and return the clusters to the undesirable pre-facility periods.
- *Communal ownership of agricultural facilities creates unity amongst farmers and other stakeholders:* Often community facilities which do not have a sense of local ownership are often left to rot away without care. Since aggregation centres and cottage processing facilities will drive up the personal incomes of farmers, the sense of collective growth the proposed project brings will scale up a sense of unity of purpose. Hence farmers collectively will ensure the provided facilities are well-kept and maintained to deliver optimum value to all concerned.
- *Improved produce price at demand-driven rate:* Lack of storage encourages immediate farm-gate sales and reduces the size of profit; presenting a huge difficulty for produce marketability with good pricing. When external storages such as warehouses are employed, they increase the cost outlay. Thus an aggregation centre helps in price stabilisation especially during the periods of glut and possible seasonal scarcity of produce like tomato and wheat. This is also applicable to cottage processing where value addition to produce generates an added advantage of a marginal processed price. Thus economies of scale become enlarged and the smallholder farmer can scaled-up to become a medium-size farmer.
- *Secured platform for cooperative seedling production:* Planning for the next planting season is usually a herculean task for farmers especially when sudden circumstances occur that could disrupt the existing value chain. Aggregation centres provide opportunities for local methods and means of sourcing cooperative seedling for the next planting season. Even when such is not available at the local level, the existing group provides a large pool of requests to be made; which eliminates the rigour of individual system which may not yield the maximum results.
- *Involvement of new generation of farmers:* Involvement of the new generation of farmers becomes easy with value-added processing facilities and aggregation centres in place. Information transfer at the aggregation level also becomes easy and prepares the next generation for the task of improving upon the prevailing systems. Such community of farmers with similar production system makes the inter-generational transfer of knowledge and wherewithal on agriculture very easy.

- *Application of technology at cooperative level:* Agriculture, like many other human activities, requires the level of technology that can match the demands of the growing market. The facilities proposed by the Enugu-APPEALS possesses the potential for the adaptation of technologies such as precision agriculture, adaptation of climate change projections, usage of early warning systems and improved seedling systems. The information on these can be better transferred to stakeholders at the aggregation levels. It also creates rooms for field monitoring of crops such that early detection of pests and diseases that could impede mega harvest can be detected.
- *Collective market access:* Farmers have direct access to joint markets especially off-takers who have arranged commercial distribution ventures with the facility users. For instance, members of a particular cluster's aggregation centre can benefit from organised market for their product which has been established as a vital part of a distribution value chain. This reduces the over-reliance on direct traditional market supplies which rely on irregular patronage when compared to off-takers advantage.

5.3 Potential Negative Impacts of the Proposed Project Activities

5.3.1 Pre-Construction Phase: Potential Negative Social Impacts

- *Expectations of improvement in livelihood*: Typically, a project in this fold is tied to attracting intensified expectations. Such expectations are often tied to the expectation of better infrastructure provision to the rural communities, possible rise in economic activities including provision of employment opportunities, and many more. Often times, these expectations are not in any way directly linked to the project. Thus, when such expectations are not provided, residents often get disappointed. Because they expect a sudden change in their livelihood such that people's imaginations may not materialise as they anticipate. Consequent upon then, project proposals should be presented before the community and cluster leaders to check and clarify any issue that is capable of having an adverse imprint on the project.
- *Proposed project induced development*: Civil works and other cottage processing facilities installations may not exceed 6 months. Such a period is sufficient to drive the hope that other infrastructural deficits within the rural communities will be provided alongside the facilities. These often lead to a gross development of infrastructure development in the communities. This is also erroneous and inimical to the cooperative support these proposed projects require for sustainability. To address this progressively, the farmers and the agrarian communities need to be properly educated about the specific project details such that their expectations will match the offerings of the projects.

- *Heightened expectation on swift vertical development in agriculture*: The pre-project promises of facilities such as the aggregation centres and cottage processing could raise the expectations that smallholders will swiftly transform to agro-industrialisation. This is actually possible in the long run of the facilities but require painstaking efforts to achieve within a short period. Given that vertical integration drives rural infrastructure development and enhances employment generation, it does take integrated efforts to achieve. Some of the disadvantaged farmers who may lack the economies of scale to scale-up to the export-oriented agro-industrialisation will require to be given balanced information on the delivery potentials of the projects prior to the commencement of civil works.

5.3.2 Construction Phase: Potential Negative Environmental Impacts

- *Impacts on air quality*

  The ambient air quality will be disrupted at this phase of the project. The extent of disruption would depend on the prevailing air quality status prior to the construction phase. The possible negative impacts will be in the form of an assessment of the air quality parameters such as SPM, CO, HCL, SO_x, NO_x and other emissions from plant and machinery, vehicles and other emission-generating gadgets which might be in use for some period during this phase across project-concerned communities.

  With the possible length of the construction phase slated for a season (6 months), ~90% of this is therefore expected to be fully dedicated to civil works in which dust, airborne suspended fine particles will be released, and it will affect some receptors which are highly sensitive to this adverse impact. Hence, prior to mitigation, the impact of dust on these receptors is considered to be *major* while the impact of the potential emissions from the different project-based sources will be considered *significant*. It is therefore vital to ensure that adequate steps are taken to curtail the effects of these stated parameters.

  During the operation phase however, the negative air quality impacts predicted could be associated to the following:

  i. Process emissions (NO_x and CO);
  ii. Cumulative process emissions (NO_x and CO); and
  iii. Greenhouse Gases (GHGs).

- *Impacts on flora and fauna*

  Owing to the nature of the rural communities where the proposed project will be implemented mostly, some plants, animals, and micro-organisms will be affected regardless of their nature, size, importance, footprints and other traits. Micro-

organisms that burrow in the soil and large animals that depend on grasses, herbs, ferns and shrubs will be displaced during land clearance and other civil works. Birds and other large animals that built their habitats on shrubs and forest vegetation of Enugu State will not be spared as they will be displaced from their natural habitat. This will also be extended to other crawling and climbing animals. During the civil works phase, the ecosystem, goods and services and other functions that help the flora and fauna of the semi-arid ecosystem to survive will be severely disrupted, inhibiting their survival and adaptation to a new environment.

- *Impacts on water bodies and water resources*
  None of the project is located near or on the bank of a river. In addition, none of the has existing borehole at the moment. However, there is the possibility of groundwater contamination from construction activities that could constitute direct, secondary impact. In terms of duration, impacts range from short term to medium and long term if not properly handled and treated within the period of incident.

- *Impact on biodiversity (Flora and Fauna)*
  Construction works will involve the concretisation of surfaces, installations of machinery and other critical equipment that will cause a displacement of the biodiversity, particularly within the project area perimeter. Areas with quasi-pristine native trees, grasses, shrubs and other botanical life which hitherto serve as habitat and microclimatic drivers could be removed and replaced with regrowth in the long run. These natural ecosystem resources and services will be disrupted or displaced while some will be partly affected. Some of these also provide ornithological resources including habitats, burrowing surfaces, surficial and sub-surficial territories which form key components of the biodiversity. These will be completely or moderately disordered. Due to the nature of replenishment of the semi-arid zone biodiversity, the impact might be moderate but loss of habitat will be total. However, measures must be taken to limit the impact to the barest minimum.

- *Soil, land excavation and sites construction*
  The proposed project activities will encompass land clearance, excavations, soil removals and infilling with civil concretes and cemented constructions. These will disrupt the pristine soil characteristics such as soil profile, soil habitat for microorganisms, soil water and nutrients and other natural surficial soil traits in many ways. First, the topsoil removal will alter the natural drainage and surface run-off regime in situ especially during water flow in the rainy season. Second, soil fertility at the point of construction may be affected if the nature of work involves a complete removal and replacement with concrete; so the soil becomes

less useful for food cultivation. Therefore, soil deterioration is unavoidable in this instance. The cumulative impacts of these will be negative, direct and indirect as some of the changes in situ will be permanent lasting beyond the project phase. Notably, the scale of the impacts will be at the local level with respect to the natural governing conditions of the area. Thus, the magnitude of the impacts is in this case considered to be *high*.

Considering the nature of the selected project communities the sensitivity of the receptor is also considered to be *high*. This is also shaped by the immediate use of the soil for agriculture. Prior to mitigation, the significance of the impacts is therefore considered to be *high*. The construction phase for aggregation centre for instance is 6 months and the construction site camp will also take the same period or less. The working camp is thus anticipated to range from small to medium in capacity. To this end, the working camp should be located with the consideration for a smooth and sustainable clean-up mechanism that will have minimum impacts on the soil. In other words, the post-project clean-up should be seamless. Consequently, the significance of the impacts at this level is considered to be *moderate* prior to mitigation.

- *Noise*

  Noise as an environmental issue does not possess any overt merit that can be attached to the construction phase of the project. Series of activities identifiable with the project that will instantaneously generate high octave sounds could pose deleterious effect to the environment in general including human health. Going by the nature of the project duration, which is proposed to last for 6 months, active hours of 0700–1800 Monday to Saturday with active movement of trucks and other required heavy-duty equipment permissible/acceptable, human noise levels will be temporarily exceeded particularly within the working area. Testing of machines, installation, pre-completion assessments, and some machines could also require the use of power generators given the nature of public power supply in the country. All these could generate some level of noise beyond the usual environmental status. Therefore, noise abatement measures including noise safety and adequate work scheduling must be taken into consideration. The negative noise impacts during construction are therefore considered to be of *significance* at the nearest receptors.

- *Disruption to communication and transportation routes*

  The consideration of possible disruption of communication and transportation routes is inevitable, owing to the fact that transportation in Enugu State is mainly road-based. Construction activities around the construction sites will also affect the usual traffic pattern. The usual road traffic may be slowed down or diverted during construction works, thereby impacting plans on travel time and road-

based services. Specifically, farmers' and residents' access to their respective farms and homes or destinations within the construction buffer will be obstructed. Hence, from the time of construction till the time of completion, the overall impact upon these communities would be characterized by obstruction to road accessibility apart from the altered flow of road traffic flow. The impact on vehicular movement will generally be felt in the form of an increase in trip time and other costs associated with delays that may result in minor inconveniences for the road users. The disruption to communication routes during construction are therefore considered to be of *significance*.

- *Disruption of access to farmlands*
  Apart from general disruption of communications and public utilities, farmers' access to their respective farmlands will be disrupted. This is because some of the sites selected for the establishment of these facilities (aggregation centres and cottage processing) will require daily movement of materials and equipment along the roads used by farmers. Farmers and residents will experience some form of interruptions as increased journey time could be extended. To address this, alternative routes should be created in cases of severe disruption. The disruption to farmlands during construction are therefore considered to be of less *significance;* depending on the location-specific mitigation measures adopted.

- *Occupational health and safety*
  Occupational uncertainties usual characterise civil works. Movement and operation of volatile materials and equipment such as heavy materials, concretes, plant, machinery of different sizes during construction could lead to varying degrees of injuries. It is therefore expected that measures that will curtail or eliminate injuries and unwanted occurrences such as permanent injuries and death are put in place and strictly adhered to in situ. Some job specifications such as iron benders, iron welding, lifting of heavy objects, closeness of electrical materials such as heavy-duty generators, crane and others will require specified safety outfits such as coverall, safety booths, safety helmets, gloves, goggles etc. similarly, noise from vehicles and plants will require specific safety measures from injurious exposure to vehicles and plants. Safety measures must be put in place therefore for all categories of staff, visitors and administrators including assessors from the relevant agencies of government saddled with observation and oversight functions. Irrespective of the phase of the construction works, safety measures on the job must be fully observed to avert loss damages and high intense injuries and even to avert loss of human lives.

- *Impact on settlements and community residents*
  Some benefits of the proposed project across the recipient communities will include the immediate communities, particularly those providing food for in situ staff, employment of local youths in different capacities and others. However, some adverse effect on the community could stem from the attitudes of employed staff. These adverse effects will include alcohol abuse, engagement in unwholesome acts such as abuse of local women. The spread of diseases such as HIV/AIDS cannot also be ruled out. Apart from these, land clearance will affect cultivated lands and disrupt some of the farmers' activities and limit their access to farmlands. Evidence of agricultural expansion is also high in the concerned communities. The construction phase of the project might lead to distortions in the daily routine of a typical farmer who needs to plant, weed, nurture, and harvest the cultivated crops. A number of community facilities such as open ground for prayers and the community activities will be disrupted. It is therefore vital to mitigate these to curtail the impacts of the project on them.

- *Solid waste*
  Construction wastes will be generated from excavation, earthworks and concretes will form a vital part of the solid wastes in the area. Other solid wastes that will be generated include metallic pieces, wooden planks, stones and related construction debris. If not properly disposed and managed, these solid wastes will constitute a threat to the residents and the environment in general. When this is added to the existing poor waste management in the communities within the watershed, environment will degenerate further to environmental nuisance. Solid management practices across the construction sites should therefore be put in place such that the post-construction assessment will indicate adherence to sustainable environmental measures at this phase of the project. Since the areas are agrarian, the impact of solid waste is considered to be of moderate significance. Also, waste dumping impact on the life span of the constructed area by blocking access to farm may be an issue during construction.

- *Sanitation issues*
  There is a close connection between water, sanitation and human health. Most of the communities where the proposed projects will be situated have poor sanitation culture as observed during the fieldwork from poor waste management. Wastes, debris and other wind-blown waste materials can be seen hanging by branches of trees and traces of open defecation will be observed in virtually all the locations. This situation raises some concerns about sanitation and water management with respect to urinary and defecation wastes. Significant health concerns might arise as regards workers on site hence provision of mobile toilets, hand-washing base, and water provision are all

essential. This is more important under the COVID-19 guidance of proper hand-washing and the use of hand sanitizers. Sanitation, in other words, must be taken very seriously. The impact of sanitation is therefore considered *high* in consideration of the measures to mitigate the impacts of the observed sanitation issues in the project communities.

5.2.3.3 Construction Phase: Potential Negative Socio-Cultural Impacts

The proposed project communities are mostly agrarian with pockets of small-scale trading and with dominance of Christian population. The local populace consists of farmers, some petty traders, and artisans. The communities are also mono-cultural as people are mostly from within Enugu State and very few migrants from adjoining States of Kogi, Ebonyi, Anambra, Benue and Abia who speak the indigenous Igbo language. There are chances of considerable negative impacts that will occur due to the constructions works of the project. These include:

1. *Immigration of new comers*

Apart from the people within the community, new comers from other parts of Enugu State will be employed to work on the project sites. The possibility of negative social behaviours such as sexual immorality, drug use, alcohol abuse, insecurity, banditry, theft, STD, HIV/AIDS, COVID-19 and many others cannot be ruled out during the project construction phase. There is a high tendency that this will become rampant. The influx of new comers could infiltrate into the communities in many ways

2. *Impact on ambient air and traffic*

The air emissions from the construction machineries will be moderate and they may have significant impacts on the ambient air quality. In other words, the extent of traffic noise that is likely to be generated during the construction phase is a source of concern. Movement of heavy-duty machinery, trucks, lorries and other construction works might have harmful impacts on the ambient air quality and this will affect the road users. Key roads within the communities and those connecting other major roads will also be affected at this phase of the project.

3. *Disturbance of farming and marketing activities*

Owners of farmlands close to the site of constructions will be affected. This is place-based and not widespread. In some locations, particularly at the Ikpa Market, Nsukka where processing centre will be constructed, some parts of the market will be partly affected during the construction phase of the project. This is because some of the road side sellers in the market could be displaced or

forced to move temporarily pending the completion of the project. This should not be unexpected as the comunity leaders have affirmed that the market leaders and members are well-aware of such impacts as soon as the project commences. Thus, to curtail the gross impact, communication with the concerned parties should be ensured.

4. *Impact on cultural beliefs*

The influx of workers from other parts of Enugu State and Nigeria generally will require workers' personal adjustments and adaptations to norms, values and belief system of the residents and people living within areas of the project. Traditional and religious norms and values must be respected including festivals and various religious beliefs. Issues regarding women and children must be regarded as sacred, sacrosanct and sanctified as much as possible while forbidden acts and taboo must be completely avoided. To ensure this, a cooperative mechanism must be developed to ensure that these cultural values are mainstreamed into the workforce core values in interacting with the local community. If this is not properly coordinated and maintained, some workers could flout these cultural beliefs. However, the project site is unforeseen to cause any damage to historical, archaeological and cultural sites in the community. Nonetheless, the Enugu State APPEALS will have to consult widely in order to monitor the operations of the contractors throughout the construction phase to ensure that no archaeologically or culturally valuable areas and valuables are destroyed. Special attention must be paid to the valuable local resources such as rivers and dams which are of immense values to the local communities.

5. *Increase in crime and insecurity issues*

The people of the communities are semi-urban and rural in nature. The road connections to the urban centres show that inflow of people is easy, as people can quickly access most of the locations by major and inner roads while some of the rural areas do not have direct road access. The urban areas such as Ikpa(Nsukka), Amechi,, Ezeagu and others may experience inflows who might flout some of the local security issues. This could potentially build up the cases of crime and security issues. Adequate sensitization and other localised measures can reduce this significantly.

5.2.3.4 Operations and Maintenance Phase: Potential Negative Environmental and Social Impacts

Activities at this will include; regular inspection, storage and processing of farm produce, training of operators, maintenance of equipment used, sanitation and waste management, maintenance of vegetation activities around the project area, increased vehicular traffic, increased housing and facility density around project area, etc. These activities could arouse issues such as air quality diminishing,

noise and vibration, water quality, traffic and transportation, occupational health and safety issues among others.

1. *Air quality*

An increase in vehicular traffic in the project area might simultaneously increase the rise in dust and other air-borne particles, which might have negative impacts on the visibility of the area. Also, maintenance and repairs activities including servicing of machines and metallurgical maintenance could lead to increased air pollution level. Solid wastes generation could lead to foul odour, mostly from slurry waste and leachates formed by rain, Also, dust emissions from milling/machine operations could cause air pollution. Residents of the community might feel these occurrences and such event might also be observed from hospital records within the area. It therefore becomes imperative to put a structure in place to check the air quality of the project during this phase of the project.

2. *Noise and vibration*

This is a likely phenomenon. It can be related to the idea of an increase in traffic and air quality issues as well as vibration of machinery during production/processing. Also, intensified vehicular operations will likely compound the pre-project decibels. Apart from the noise and vibration from the machinery during processing, the noise level generated may not be beyond residential permissible threshold of 90 ɖB(A) for an 8-hour working period as regulated by the FMEnv.

3. *Water quality issues*

Runoff from the roadway, community solid wastes, agricultural wastes and lubricants oil and grease used in equipment maintenance could drive an increase in water quality issues within the site and the watershed in general. It is vital therefore to certify that water quality measures such as pH level, turbidity, water colour and other physical measures are examined and well monitored on timely basis at the time of the project implementation. More importantly, soil contamination from accidental leakage/spillage of fuel and oil and lubricants during maintenance might lead to water quality issues.

4. *Traffic and transportation*

Traffic congestion and increased risk of road traffic accidents and injuries due to increase in cottage and processing activities. This is expected during the operation phase of the project. It should be noted that the attraction for increased vehicular density must be anticipated and proper public safety measures against road vehicular accidents associated with this must be implemented during this phase of the project.

5. *Labour Influx:*

Exacerbation of the risk of transmission of HIV/AIDS and other STIs due to potential labour influx. Also, Community Health and Safety issues especially risk of COVID-19 and that of occupational and social accidents and injuries during processing are potential negative environmental and social Impacts.

Table 5.3: **Characterization and Evaluation of Potential Impacts Pre-Construction Phase**

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification										Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	probability	Severity	
1	Land acquisition for the intervention project	All the project-concerned communities have excised lands for the project, hence; issues have been addressed prior to the project initiation. Therefore A(RAP) issues have been eliminated.	X						X				Possible	Catastrophic	Extreme
2	Public Awareness	Pessimistic community perception can disrupt the proposed project activities	X		X				X		X		Possible	Marginal	Medium
3	Site clearing	• Ambient air pollution from release of dusts and gaseous emissions • Soil contamination from accidental leakage/spillage of fuel, oil and lubricants • Loss of soil quality from de-vegetation and erosion • Impact on flora and fauna and wildlife. Risk of diseases arising from indiscriminate waste disposal	X		X				X		X		Possible	Marginal	Medium
4	Installation of the contractor's base camp/construction yard.	• Impact on water quality • Generation of vegetal wastes and other cleared materials	X		X				X		X		Possible	Marginal	Medium

Table 5.4: Characterization and Evaluation of Potential Environmental Impacts in the Construction Phase

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification										Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
1	Foundation construction, bricks, metal/iron rod setting, building construction, machinery installation	Vibration from movement of vehicles, machinery, spillage of oil from machinery installation and fitting, safety issues	X		X				X		X		Likely	Critical	High
2		Soil impacts on activities mainly on construction, etc.	X		X				X		X		Possible	Marginal	Medium
3		In situ waste management	X		X				X		X		Possible	Marginal	Medium
4		Issues of seasonal flood waters	X		X				X		X		Likely	Critical	High
5		Air Quality Issues (Dust)	X		X				X		X		Possible	Marginal	Medium
6		Water Quality Concerns	X		X				X		X		Possible	Critical	High
7		Air Quality (Noise)	X		X				X		X		Possible	Marginal	Medium

Table 5.5: Characterization and Evaluation of Potential Impacts for the Biological Impacts in the Construction Phase

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification										Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
1	Clearing of farmland, shrubs, grasses, etc. for project	Impact on flora and fauna	X		X			X			X		Certain	Marginal	Medium

Table 5.6: Characterization and Evaluation of Potential Impacts for the Socio-Economic Impacts during Construction Phase

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification										Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
1	Mobility of machineries and materials	Traffic and transportation Impact	X		X				X		X		Possible	Negligible	Low
2	Foundation construction, bricks, metal/iron rod setting, building construction, machinery installation etc.	Accidents and Road Crashes	X		X				X		X		Possible	Critical	High
3		Employment Opportunities	X		X				X	X			Possible	Critical	High
4		Human displacement	X		X				X		X		Possible	Critical	High
5		Aesthetics	X		X				X		X		Possible	Negligible	Low
6		Shrines and Cultural sites	X		X				X		X		Possible	Negligible	Low
7		Potential increase in GBV/SEA cases	X		X				X		X		Possible	Critical	High

Table 5.7: **Characterisation and Evaluation of Potential Impacts for the Public Health Impacts during the Construction Phase**

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification									Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
1	Sexual Activities	HIV/AIDS and STDs	X		X				X		X		Possible	Critical	High
2	Domestic Water Usage	Water-borne diseases	X		X				X		X		Possible	Critical	High
3	Increase mosquito vector breeding sites	Malaria Issues	X		X				X		X		Likely	Critical	High
4	Construction Activities	COVID 19	X		X				X		X		Likely	Critical	High

Table 5.8: **Characterisation and Evaluation of Potential Impacts for Operation Phase**

S/N	Project Activities	Potential Environmental and Social Impact	Impact Qualification										Risk		Impact Category
			Direct	Indirect	Reversible	Irreversible	Cumulative	Long term	Short term	Beneficial	Adverse	Residual	Probability	Severity	
1	General maintenance operations • Regular inspection • Repair of damaged part of the building and machinery, • Training of operators, • Maintenance of equipment used, • Sanitation and waste management system	Generation of waste, spill of oil from equipment, loss of vegetation.	X		X				X	X			Possible	Marginal	Medium
2	Air quality	Poor visibility, Increase air pollution level / dust	X		X				X		X		Possible	Negligible	Low
3	Noise and vibration	Noise and vibration from machinery	X		X				X		X		Possible	Negligible	Low
4	Water quality	Spill from equipment could pollute surface and ground water	X		X				X		X		Possible	Marginal	Medium
5	Traffic and transport	Obstruction to free flow of traffic during maintenance.	X		X				X		X		Certain	Marginal	Medium
6	Health and Safety	Health and safety Issues	X		X				X		X		Possible	Critical	High

5.3 Project Alternatives

All developmental projects, including agricultural upgrading and farm output improvement schemes aimed by the APPEALS project, require scenario assessment in terms of the assessment and weighing of project development options. This will enable project proponents as well as the counterpart funders to examine the impact of the various project development scenarios vis-à-vis the prevailing intentions of embarking on the project. Project alternatives, to this end, refer to a comparison of the possible actions and modes to be considered regarding the context of the proposed project located in some communities in Enugu State. Weighing the strengths of these alternatives to select the most appropriate in terms of addressing the key issues is a vital step in designing of the ESMP. The choice will be centered on the fundamentals of achieving the threshold of the set objectives concerning all the considered environmental and social variables that are vital to the project (i.e. Applicable or Relevant and Appropriate Requirements (ARAR)). Upon the assessment of the possibilities, two project alternatives opportunities and prospects surface – "***No Action***" and "***Go Ahead***" alternatives.

The "***No Action***" alternative presupposes that there will be no provision of the proposed facilities in the selected agrarian communities. This would imply also that the APPEALS project investment proposed area/location would be left in their present states, thus, the added value of having the commodity aggregation centres and cottage processing will not be executed. This simply further means that the challenges encountered by the farmers, in terms of the facility demerits, will persist and the losses that would have been either reduced or completely averted will persist. It also means that proper storage benefits, strengthening of the crop production clusters, empowerment of farmers to the adoption of modern aggregation facilities, the swift processing facilities that will add value to the priority crops (rice, tomato and wheat) that the proposed projects promised to deliver will remain a dream and the undesirable agricultural losses will remain unchanged. Furthermore, poverty level amongst the local farmers will remain unalleviated and the objectives of the APP of the Federal Government for the country will suffer a huge impediment. Given that there is no clear-cut benefit that can be addressed with the *no-action or no project* alternative, it is certainly not recommended for the projects.

The "***Go Ahead***" project alternative is the second option and it simply means that the proposed project should be implemented. Despite its inherent cost outlay, it is the most desirable alternative when compared to the "No Action" alternative. This alternative is guaranteed to deliver its full potentials based on the pre-project assessments and the anticipated benefits to all stakeholders. Indeed, the construction of the commodity aggregation centres and cottage processing merits such as livelihood improvements of the rural farming communities, increased household incomes, opportunities for secured markets, improved productivity, reduction of post-harvest losses, adoption of processing technologies, development of technical skills to maintain the facilities and increased employment of the locals involved in series of activities will be fully delivered to all stakeholders mainly the farmers. These will have cumulative impacts on the poverty levels in Enugu State and the country in general. Other merits of the project will include agricultural produce price stability, stable local economy, and sustainable environmental development through waste minimization as derivatives from the project.

The two scenarios considered are succinctly summarized in Table 3.2. The inference from this consideration is that even though the go-ahead option is more extensive, it is the preferred and most environmentally-sound, financially-feasible and benign alternative for achieving the project objectives. This alternative will ensure economic growth and sustainable development both at all levels of agricultural development in Enugu State and at the country level in general. The features and traits of the "No Action" do not exceed the project objectives as strongly observed in the "Go Ahead" alternative.

Table 5.2: Analysis of the Alternative

S/N	Assessment Criteria	No Project Alternative	Go Ahead Project Alternative
1	Overall Protection of the Environment and Social well being	The field visits uncovered the level of poverty in the communities, the common unsustainable environmental practices such that a "no action" alternative will not benefit members of the project areas or their environment. Also, the economy of Enugu State and by extension Nigeria will not derive any measurable positive benefit that will lead to a reduction in the poor environmental management and expansion of national economy. It will also contribute zero advantage to the diversification drive of the Federal Government of Nigeria.	Implementation of the projects will strengthen the status of agriculture within the concerned communities, Enugu State in particular. It will galvanize farmers to concentrate more on the existing clusters which drive more profit, reduce losses, add value to the crops cultivated, and integrate technology to agricultural production value chain. Thus, skill addition advantage cannot be ruled out for the locals. In all it will boost the local standard of living and make agriculture to be appealing to youths.

2	Long-term Effectiveness and Permanence	A key aspect of this criteria is sustainability which this alternative does not support. The anticipated revival of the dwindling fortunes of environmental safeguards that guarantee permanence cannot be guaranteed. Thus environmental degradation and losses matrix will be widened and will make the environment poorly and badly managed.	The go-ahead option will improve the local and national economy with sustainable development agenda in mind. This will be through a careful planning that will be based on informed decision making by all parties including the locals of the project environment. The sustainability of the projects is such that the profit profile of farmers will increase, local economy will boom and integrated agricultural development overtime are encouraging developments that flow with permanence.
3	Compliance with Applicable or Relevant Appropriate Requirements	Does not require compliance with applicable or relevant appropriate requirements even at local levels	All undertakings will go through an established system of screening to ensure the necessary standard and permit requirements even at the local levels are met. This simply follows the expected project management profile for the APPEALS project and the commodity aggregation centre and cottage processing facilities. This conformance makes the project much more suitable.
4	Short-term Effectiveness (project quick-wins)	The “no action” alternative will not add any input under these criteria. No quick-wins will be delivered.	The “go ahead” alternative will be completed in a long-term period based on the projections. However, the quick-wins benefits when completed outweighs a “no action” alternative because of the progressive and systematic manner of development it brings.

CHAPTER SIX

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

6.0 Introduction

This chapter presents the heart of this document, which is the fundamentals of the social and Environmental Management Plan (ESMP). This is presented in consultation with the identified project-driven adverse impacts that were listed in the previous chapter. The chapter begins with an account of the proposed mitigation measures presented to address the adverse impacts. Next, the institutional arrangements, responsibilities and accountabilities expected to take charge of addressing the identified mitigation measures are discussed. The framework of this chapter ends with the cost outlay of the ESMP. Issues of labor influx, child labor and gender based violence, and risk management mechanisms were also comprehensively elaborated.

6.1 Description of the Proposed Mitigation Measures

6.1.1 Pre-Construction Phase Measures

The pre-construction phase defines the prior activities that pre-dates civil works. Mitigation measures at this phase involved consultations for clarity on the proposed projects and involvement of land documentations (if any) as well as the pursuance of all final details of paper works that concern land allocations. Thus, details of acquisition and the general perceptions of the proposed projects with respect to each location will become *sine qua non* for the project proponents as well as for the beneficiaries. Each of these is, thus, discussed as follows:

i. Land acquisition

Land allotment for the proposed projects are essential at this phase of the projects. In order to avoid issues that Federal APPEALS strongly avoid such as resettlement action plans (RAP) which usually involves payment of compensation to persons that may be relocated, a review of the current land proposals is weighed and assessed. This assessment usually is designed to enforce the instrumentality of avoidance of RAP. As soon as this is ensured, all other government-oriented land allocation issues are forthwith settled with proper documentations, surveys and other vital requirements including the transfer of ownership deeds (if any). Table 6.1 provides more details on this activity and the appropriate mitigation measures that must be arranged prior to project commencement.

ii. Community perception of the project

Every proposed project of government is normally accompanied with three levels of philosophical anticipations – optimism, pessimism and quasi-skepticism. Where optimism subsists, people often aid the fulfilment of such intension. Pessimism is usually fraught with degrees of doubt colored with cynicism and such usually lack the support of the project beneficiaries. Quasi-skepticism is more of the middle line between positive expectations and negative such that people often tends to the negative aspect. However, a series of pre-project meetings and the workings of the Enugu-APPEALS SPC office with the key stakeholders could help to drive optimism towards these projects. And where there are doubts, these could be addressed using the measures presented in Table 6.1 below.

6.1.2 Construction Phase Mitigation Measures

Series of activities are expected at this phase of the project with respect to each of the projects. Owing to the nature of the projects, some locations will have singular facility constructed while some could have a combination of the aggregation centers and cottage processing. Therefore, the piecemeal activities are presented as follows based on the extent of activities anticipated.

- ***Aggregation Centres***: Activities to be embarked upon will include excavation, concretisation, and filling. Others include: foundation development, cement mixture for concretes, iron bending, roofing, painting, nailing and others will be carried out on site.
- ***Cottage processing***: Activities such as excavation, digging, concretisation, filling, land clearance and machinery installation. Such processing centre will involve the construction and building of spots where tools are kept for machinery maintenance. Thus, installation of metallurgical processing facilities will also be embarked upon irrespective of size.

6.1.3 Operation Phase Mitigation Measures

The expected activities during the operation phase include:

- Maintenance and repairs;
- Scheduled and unscheduled building tests for the constructed facilities maintenance and replacement of degraded/wearing/faulty/damaged sections and components;
- Maintenance of cracks and roofing (where necessary);
- Surface and surrounding cleaning (where and when necessary);
- Vegetation, cleaning and control through weeding; and
- General cleaning of the environment.

6.1.4 Monitoring of Mitigation Measures during Project Implementation

- ***Pre-Construction Phase***

The pre-construction phase of the project is the project-initiation stage with series of ground works and documentation that set the projects' construction phase in motion. This phase guarantees the efficient running of the project with activities that prepare the site ahead of full civil works. Activities such as setting up of on-site plants, movement and mobilization of workers to site to prepare ahead of civil works, documentation required for clearance, and setting the atmosphere for the project commencement. Table 6.1 provides the detail of monitoring activities for this phase of the project. Issues of COVID-19 were integrated given that the pandemic is still ravaging the health, environment and safety concerns of project management worldwide hence; adjustments were given in Table 6.1 below.

- **Construction Phase**

The construction phase of the project is full of a series of activities particularly set in motion to ensure that the proposed projects become a reality. Activities such as construction, cement and concretization will become intensified with the required number of works on site. Also, there will be some offsite construction works that will require transportation for installation at the project sites. These high intense activities within this project phase will set the tone for the nature of impacts and the associated mitigation measures to be put in place. As earlier mentioned, there are a series of environmental and social impacts that are associated with the project and the possible mitigation measures have been outlined. The missing labyrinth is the monitoring which is required to track the progress of the mitigation measures. The details of these with respect to the project implementation have been stated in Table 6.2 for the construction phase of the project. The connected impacts are also presented in the table. These were set in full consideration of the COVID-19 pandemic, which has led to the introduction of new measures towards health, environment and safety concerns particularly from the community level.

- **Operation and Maintenance Phase**

This is the post-construction phase; it is essentially designed to ensure that the projects are functioning as designed. Monitoring measures are essential at the operation and maintenance because these are key pivots that will keep the project intact. Specific environmental and social monitoring measures are stated in Table 6.3. The respective monitoring measures are attached to the explicit environmental and social issues identified with their associated mitigation measures in consideration of the COVID-19 pandemic which has had serious adjustments to project implementation and monitoring.

Table 6.1: Environmental and Social Mitigation and Monitoring Plan during the Pre-Construction Phase (with respect to COVID-19)

S/N	Activity	Potential Impacts	Mitigation/ Enhancement Measures	Mitigation Responsibility (Implementation)	Cost of Mitigation		Indicators/ Parameters	Measurement Method	Sampling Location	Frequency of Monitoring	Monitoring Responsibility (Supervision)	Cost of Monitoring	
					USD $	NGN						USD$	NGN
Environmental Impacts													
A1	• Mobilisation • Site clearing • Material sourcing • Staging area • Workers camp	Noise and vibration from the use of heavy duty trucks vehicles and equipment	• Keep equipment and machineries amply to reduce noise levels • Fix machineries and equipment with exhaust mufflers/silencers to minimize noise generation • Keep internal combustion engines low	Contractor	810	313,000	• oise Levels (Not to exceed 90dB(A) • ecords of Equipment Maintenance	• In-Situ Measurement • Complaint Register	Construction Site and surrounding area	Daily	Environmental Safeguards Officer (ESO), Enugu APPEALS, Enugu APPEALS-SCO, Enugu State Ministry of Environment	710	274,000
A2		Ambient air pollution from release of dusts and gaseous emissions	• Suppress dust emissions by appropriate methods such as spraying water on soil • Ensure vehicles are in good working condition. • En	Contractor	760	298,500	• uspended Particulates (SPM), SO_2, NOx, CO, THC • ehicle Exh	• In-Situ Measurement	Construction Site and surrounding area	Daily	ESO-Enugu APPEALS SCO, Enugu State Ministry of Environment	715	276,000

			sure exhaust fumes from vehicles conform to applicable National standards and specifications				aust Measurements • ecords of maintenance for all machineries and equipment						
A3		Soil contamination from accidental leakage/spillage of fuel, oil and lubricants	• Ensure fuel storage tanks are leak-proof, • checked daily & installed in a bonded area • Establish procedures for storage & handling of hazardous materials. • Implement emergency response plan as part of OHS Plan to deal with spillage	Contractor	1,250	487,500	• Soil quality parameters (especially hydrocarbon contaminants) • Compliance with fuel storage proced	• In situ / and Laboratory analysis • Visual observation	Project site	Monthly	ESO-Enugu APPEALS SCO, Enugu State Ministry of Environment	1,100	429,000

							ures						
A4		Loss of soil quality from construction activities	• Avoid removal of vegetation and trees to the extent possible • Protect all vegetation not required to be removed against damage	Contractor	700	273,000	• of Vegetal Loss • evegetated areas	• isual estimate	Construction Site and surrounding area	During site clearing and construction	ESO-Enugu APPEALS SCO, Enugu State Ministry of Environment	550	214,500
A5		Impact on water quality • Possible in-washing of lubricants into water bodies. • Habitat loss for aquatic life leading to potential loss of specie • Impact on dam water quality • Impact on irrigation agriculture downstr	• Washing of Project plant and vehicles in watercourses will not be undertaken • Avoid direct impacts (i.e. habitat disturbance in the channel) or increases in suspended sediments in the water bodies	Contractor	1,000	390,000	• ecords of fish catch • isual monitoring • robe monitoring	• omplaint Register	Construction Site and surrounding area	During site clearing and construction	ESO-Enugu APPEALS SCO, Enugu State Ministry of Environment	900	351,000

		eam	especially those proximate to dams and rivers especially in the spawning season • Daily visual monitoring of turbidity will be undertaken at location likely to be affected • Only essential construction vehicles (as approved by the Company) will be allowed close any water body to avoid fuel/lubricant leakage into water body • The contractor will prepare a plan to respond to an outbreak of pollution, including clean up and remedia										

			tion in concordance with downstream users										
A6		Generation of vegetal wastes and other cleared materials	• Comply with the Waste Management Plan • Promote waste avoidance; reduction; reuse and recycling as applicable • Ensure proper handling, and disposal of wastes (especially contaminated soil, concrete, oils, grease, lubricants, metals, etc.)	Contractor	750	292,500	• ontractors Compliance to WMP • n-site Waste management techniques	• isual observation • aste Tracking Report	Construction Site and surrounding area	Weekly	ESO-Enugu APPEALS SCO, Enugu State Ministry of Environment	800	312,000
					5,250	**2,047,500**						**4,750**	**1,852,500**

Biological Impacts													
A7		Impact on flora and fauna	• Planting of trees and re-vegetation of affected area.	Contractor	900	351,000	• rea cleared for construction purposes • xtent of area cleared for installation • umber of trees planted and area extent of lawns developed	• isual observation	Construction Site and surrounding area	Weekly	Enugu APPEALS SCO, Federal APPEALS, ESME and other relevant Ministries, Department, and Agencies (MDAs)	750	292,500
A8		Impact on wildlife	• Avoid protected area in project	Contractor	750	292,500	• umber and	• isual observa	Construction Site and	Weekly	Enugu APPEALS SCO, Federal APPEAL	710	276,900

			implementation				extent of protected/ conserved area developed • umber of trees planted	tion	surrounding area		S, KSME and other relevant MDAs		
	Total				**1,650**	**643,500**						**1,460**	**569,400**
Socio-Economic Impacts													
A9	• Sensitisation • Mobilisation • Site clearing • Material sourcing • Workers camp	Grievances and conflict arising potentially from members of the community asked to vacate areas allocated for the project	• ontinuous community engagement/consultation • stablishment of grievance redress mechanism (GRM) to receive and address concern	• ocial Safeguard Officers (SSO) – Enugu APPEALS SCO, GRCs	950	370,500	• egular consultations with stakeholders and members of the communities • mpl	• vidence of consultation, e.g., minute of meetings pictures • umber of complaints received and	Impacted communities	Throughout project implementations	Federal APPEALS, Enugu APPEALS SCO	1,000	390,000

			s				ementation of GRM	resolved.					
A10		Security issues that may lead to stealing of contractor equipment mobilised to site	• Engage competent security personnel • Provide adequate training of security personnel. • Disclose site security arrangements to the Police and host communities	Contractor	1,200	468,000	• egular meetings with community heads	• og book	Community/project site	Monthly	Supervision Consultant Enugu APPEALS SCO	400	156,000
A11		• hreat to community culture due to labour influx • mpact on site of cultural heritage • mpact on intangible cultural heritage (all the festivals)	• Involve local community and opinion leaders in the project planning process • Develop an induction programme including a code of conduct for all workers. • Provide cultural sensitisation training to improve awarenes	Contractor Enugu APPEALS SCO	550	214,500	• mplementation of the requirements of the code of conducts and the cultural sensitization progra	• og book • sses sment by the Enugu APPEALS SCO to determine avoidance on resettlement	Community/project site	Monthly All issues regarding cultural heritage should be settled before the start of civil works	Enugu APPEALS SCO; Supervision Consultant	600	234,000

			s of and sensitivity of workers to local cultures, traditions and lifestyles. • Minimise the disruption as a result of the relocation and removal of sacred sites • Where possible, design or re-design Project components to avoid or minimise impacts to known physical cultural heritage resources based on input from cultural heritage specialists. • Avoidance of shrines determined to be very important to the local community. • If shrines considered important to the local communi				ms • egular meetings with community heads						

			ty cannot be avoided, consultation with the local community to inquire about the possibility of relocating the resource. • Sensitise all workers on possible restriction during the series of festivals • Educational, awareness-raising and information programmes, aimed at the general public, in particular construction workers from other communities • Identify and define the various elements of this intangible cultural heritage including festivals with the participa									

			tion of communities and relevant non-governmental organisations. • Adopt a general policy of respect aimed at promoting the function of these intangible cultural heritages and at integrating the safeguarding of such heritage into project planning programmes.										
A12		Exposure of workers to occupational hazards	• Implement site specific OHS Plan: • Ensure that staging areas for contractor equipment are adequately delineated and cordoned off with reflective tapes and barriers • Any uncovered work pits should have appropria	Contractor	950	370,500	• ontractors Compliance to Occupation safety and Health (OSH)/ Health Safety and Enviro	• outine Inspection • SE Reports	Construction Site/ Campsite / Staging areas / borrow pit areas	Weekly	ESO-Enugu APPEALS, Enugu APPEALS SCO, ESME Supervision Consultant	750	292,500

			te signage and protection around them • Workers should get a daily induction /toolbox before going on the site and a refresher of what happened on site a day before • Adequate safety signage on construction sites should be installed to alert community/drivers /pedestrians. • Lighting and/or reflective tapes and signage integrated in all worksites for safety at night • Appropriate security measures in place to prevent harassment or kidnapping (see OHS plan).				nment (HSE) Plan • omplaince to use of PPEs • HSE Statistics (FAC, LTI, etc.) • o of workers trained						
A13		Conflict arising from the poor employment/engagement of local	Employment of local labour should be maximized by ensuring the	Contractor	950	370,500	• o. of local labour	• og book	Construction Site	Weekly during Pre-Constructi	Enugu APPEALS SCO	750	292,500

		labour for site clearing	submission of statement of intent to employ local labour as a condition in the procurement document for the contractor.				used			on			
					4,600	**1,794,000**						**3,500**	**1,365,000**
Public Health Impacts/COVID-19													
A14		• Risk of diseases arising from indiscriminate waste disposal • Risk of contracting COVID-19	• Develop a site specific HSE plan • Comply with the waste management plan • Comply with APPEALS COVID-19 guidelines and NCDC Protocol	Contractor	1,250	487,500	• orkers Using PPE • HSE Statistics (FAC, LTI, etc.)	• outine Inspection • SE Reports	Project site	Daily during Pre-Construction	ESO-Enugu APPEALS, Enugu APPEALS SCO and ESME	1,000	390,000
	Total				**1,250**	**487,500**						**1,000**	**390,000**
	Grand Total				**12,750**	**4,972,500**						**10,710**	**4,176,900**

Table 6.2: Environmental and Social Mitigation and Monitoring Plan during the Construction Phase (with respect to COVID-19)

S/N	Activity	Potential Impacts	Mitigation/Enhancement Measures	**Responsibility** (Implementation)	Cost of Mitigation		Indicators/ Parameters	**Method of** Measurement	**Sampling** Location	Frequency of Monitoring	**Responsibility** (Supervision)	Cost of Monitoring (USD$/NGN)	
					(USD$)	**NGN**						**(USD$)**	**NGN**
Environmental Impacts													
B1	• Earthworks including concretization, digging, filling, cement works, etc.	Noise and vibration from the use of motorized vehicles and equipment	See A1	See A1	970	378,300	See A1	See A1	See A1	See A1	See A1	650	253,500
B2		Ambient air pollution from release of dusts and gaseous emissions during construction	See A2	See A2	1,050	409,500	• Suspended Particulates Matter (SPM), SO_2, NOx, CO, THC • Vehicle Exhaust Measurements • Records of maintenance for all machineries and equipment	See A2	See A2	See A2	See A2	1,000	390,000
B3		Increased Siltation and runoff/flooding	• Filling and surface stabilisation • Enhance proper	Contractor	700	273,000	Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity)	In-Situ Measurements	Discharge point, midstream	During construction	ESO - Enugu APPEALS SCO	900	351,000

			handling and disposal of wastes (especially contaminated soil or water, concrete, demolition materials, oils, grease, lubricants, metals, etc.) • Construct temporary drainage channels with sedimentation traps and/or screens						and downstream		, Engineer, ESME		
B4		Topographic alterations and slope instability arising from levelling	• Construction works should be done according to local relief and hydrology; • Old drainage systems should be maintained and new ones prioritized; • Ensure that building designs are in concord with local topography.	Contractor	500	195,000	• Height of bank stabilisation to the local relief • Terraced areas (extent)	Routine Inspection	Construction Site	uring construction	ESO - Enugu APPEALS SCO Engineer – Enugu APPEALS SCO, Enugu State Ministry of Works	600	234,000
B5		Loss of soil quality from grass/land clearance	See A4	See A4	900	351,000	See A4	See A4	See A4	See A4	See A4	600	234,000

B6		Generation of spoils and other construction wastes	See A6	See A6	850	331,500	See A6	See A6	See A6	See A6	See A6	470	183,300
	Total				**4,970**	**1,938,300**						**4,220**	**1,645,800**
Biological Impacts													
B7		Impact on flora and fauna	See A7	See A7	1,200	468,000	See A7	See A7	See A7	See A7	See A7	750	292,500
B8		Impact on Wildlife	See A8	See A8	790	308,100	See A8	See A8	See A8	See A8	See A8	550	214,500
					1,990	**776,100**						**1,300**	**507,000**
Socio-Economic Impacts													
B9	• Earthworks including excavation and grading • Side Drains • Culvert works	• Risk of diseases arising from indiscriminate waste disposal	See A15	See A15	900	351,000	See A15	See A15	See A15	See A15	See A15	1,100	429,000
B10		• GBV/ SEA risks • Intimate Partner Violence (IPV) • Public harassment • Harmful widowhood practices	• Commitment / policy to cooperate with law enforcement agencies investigating perpetrators of gender-based violence; • Ensure a copy of the code of conduct is presented to all workers and signed by each worker. • Ensure workers are	Contractor, ESO-Enugu APPEALS SCO, SSO, GRC, Procurement Enugu APPEALS SCO	Part of construction cost		• No of workers sensitized. • Code of conduct developed for workers • Code of conduct signed by Contractor and workers • Level of awareness of workers to local cultures • Awaren	Routine Inspection	Priority Site	During Construction	Supervision Consultant Enugu APPEALS SCO ESO-Enugu AP	1,000	390,000

		and women and child trafficking	trained on the content of the code of conduct in English and local language • Provide cultural sensitisation training to improve awareness of and sensitivity of workers to local cultures, traditions and lifestyles. • Prohibit child and forced labour. • Establish and implement the GBV-GRM. • Engage competent security personnel • Developing a clear APPEALS specific internal "Reporting and Response Protocol" to guide relevant stakeholders in case of GBV/SEA incidents, • Strengthening operational processes of APPEALS states project area on GBV/SEA, • Identifying development partners and cultivating			ess of grievance • Procedures. • No of local workers • Presence of security personnel				PEALS SCO, Police		

			pragmatic partnership on GBV/SEA prevention measures and referral services, • Providing financial support implementation of the GBV/SEA actions described herein, including training and awareness building for various stakeholders, • Establishment of inter-ministerial committee to advance GBV/SEA actions described above.										
B11		Conflict arising from the poor employment/engagement of local labour for construction activities	See A15	See A15	1,250	487500	See A15	See A15	See A15	See A15	Supervision Consultant See A15	970	378,300
B12		Traffic congestion and increased risk of road traffic accidents and injury	Implement site specific Transport Management Plan (TMP) and OHS Plan	Contractor in conjunction with Federal Road Safety Commission (FRSC)	990	351000	• Contractors Compliance • Workers Using Personal Protective Equipment-Health	• routine Inspection	Priority Site	During Construction	ESO - Enugu APPEALS FRSC	1,060	413,400

							Safety and Environment (PPE-HSE) Statistics / Incident/ accident report						
B13		Damage to shrines and cultural sites	See B12	See B12	400	156,000	• See B12	• ee B12	Project site and its surrounding	During Construction	Supervision Consultant, ESO - Enugu APPEALS SCO, , SSO, Enugu State Ministry of Culture and Tourism	520	202,800
B14		Damage to and disruption of services of existing public utility cables and pipes	• Employ utility survey maps to identify existing underground facilities before excavation works to prevent / minimize damages and disruption of services • Shut down service if necessary, should be as temporal	Contractor	1,500	585,000	• Notify Utility Service Providers	• otification Register • isual Observation	Construction area	During excavation	ESO - Enugu APPEALS Engineer, ESO - Enugu APPEALS SPC, ESO - Enugu APP	500	195,000

			as possible • Any disruption will be discussed with utility operators and the community beforehand.								EALS		
B15		Interference from local community causing disruptions to work	• Engage members of communities in stakeholder consultation throughout the Lifecyle of the project • Involve local community and opinion leaders in planning process • To minimize the number of foreign workers being brought to the site, the contractor will be required to hire skilled/unskilled labour from local people if they wish to be hired.	SSO and ESO-ESO-Enugu APPEALS Contractor	1,000	390,000	• Regular meetings with community heads	• ogbook	Community/ project site	Monthly	ESO-Enugu APPEALS SCO	650	253,500
B16		Impacts on water supply /water quality	• A12	A12	1,150	448,500	• A12	• 12	A12	A12	A12	1,200	468,000

B17		Risk of flooding	• Ensure the structure fits beyond projected flood levels to ensure flood-proofing and safety • Ensure proper channeling into designed drainage channels • Proper handling and disposal of wastes (especially contaminated soil or water, concrete, demolition materials, oils, grease, lubricants, metals, etc.) •	Contractor	1,300	507,000	• Record keeping	• ogbook	Construction Site	During Construction	Supervision Consultant, ESO-SSO-Enugu APPEALS, SSO, ESME	800	312,000
B18		Impact on accessibility to public establishment	• Provide alternative route/access to public and private establishments • The Contractor should liaise with the Enugu State Ministry of transport and where possible the federal government agencies such as the Federal Road Safety Commission (FRSC) throughout the		1,700	663,000	• Record keeping	• ogbook	Construction Site	During Construction	Supervision Consultant, ESO-SSO-Enugu APPEALS, SSO, ESME. Enugu State Ministry of Health	400	156,000

			construction phase to ensure traffic during the construction period. The design of traffic management system should involve all the modes of road transport particularly motorcycles.										
B19		Impact on water, and water-based activities	• Suppress dust emissions by appropriate methods such as spraying water on soil • Ensure vehicles are in good working condition • Fit machineries and equipment with exhaust mufflers/silencers to minimize noise generation • Avoid unnecessary idling of internal combustion engines		1,700	663,000	• Record keeping	• ogbook	Construction Site	During Construction	Supervision Consultant, ESO-SSO-Enugu APPEALS, SSO, ESME	1,350	526,500
	Total				**11,890**	**4,637,100**						**9,550**	**3,724,500**
Public Health Impacts													
B20		Risks of diseases	• Develop a	Contractor	1,300	507,000	• Contractors	• ou	Construct	During Constr	Site Eng	500	195,000

		such as HIV/AIDS, STDs	site specific HSE plan • HIV/AIDS and STD awareness programme should be prioritized; • Other activities should include treating any sexually transmitted diseases, distributing condoms, and providing counselling, screening, and support services for employees; • Medical examinations on general health issues should be performed on new employees and repeated regularly throughout the term of employment; • Workers should be prohibited from patronising prostitutes and the use of alcohol and drugs.				Compliance • Workers Using PPE • HSE Statistics (First Aid Case (FAC), Loss Time Injury (LTI), etc)	tine Inspection • SER eports • ecord of awareness and the me carried out	ion Site	uction	ineer/ ESO - Enugu APPEALS; Enugu State Ministry of Health		
B2		Commu	Implement a	Contracto	950	370,5	• Co	•	Cons	During	Sup	450	175,5

1		nity health & safety risks	site specific HSE plan	r		00	ntractors Compliance • Workers Using PPE • HSE Statistics (FAC, LTI, etc)	outine Inspection • SE Reports	truction Site	Construction	ervision Consultant ESO - Enugu APPEALS; KASEPPA; Enugu State Ministry of Health		00
B22		Safety risks associated with falls in poorly managed borrow pits	• Develop and Implement a borrow pit management and reclamation plan. • Adequate PPEs must be provided and used by workers • All borrow pits must be reclaimed • Any uncovered work pits should have appropriate signage	Contractor	870	339,300	• Contractors Compliance to borrow pit managment plan • Workers Using PPE • Report of unreclaim borrow pits from completion audit report	• outine Inspection • SE Reports	Borrow pit Site	During Construction	ESO - SSO - Enugu APPEALS; Enugu State Ministry of Health	470	183,300

			and protection around them										
B23		The potential risk of drowning	• Adequate PPEs (life jackets, buoyancy aid and surf helmets) must be provided and used by workers • All river should have appropriate signage and protection around them • Design and erect fences or barrier gate around the walking paths • Install warning signs and install lighting system around the project sites. • Develop a site specific HSE drowning plan	Contractor	950	370,500	• Workers Using PPE	• routine Inspection • SE Reports	Site of the construction activity	During Construction	Supervision Consultant ESO-SSO-Enugu APPEALS; Enugu State Ministry of Health	800	312,000
B24		Uncontrolled sale of food and other items to workers on the site	• The HSE officer will ensure that only approved vendors are allowed to sell food. • Access to the site should	Contractor	900	351,000	• HSE Statistics (FAC, LTI, etc)	• routine Ins	Construction Site	During Construction	Enugu APPEALS; Enugu State Ministr	350	136,500

			be restricted to avoid sale of contraband on site • Implement a site specific HSE plan (section 12-Welfare)					• pection • SE Reports			y of Health		
B25		Water-borne diseases	• Good sanitation including hygienic water supply and proper waste disposal at its operation and residential accommodations during the phase of the project.	Contractor	800	312,000	• HSE Statistics (FAC, LTI, etc)	• outine Inspection • SE Reports	Construction Site	During Construction	ESO - Enugu APPEALS; Enugu State Ministry of Health	650	253,500
		Increased mosquito vector breeding sites	• Government programmes to improve existing medical and health services in the local communities should be supported	Contractor	800	312,000	• HSE Statistics (FAC, LTI, etc)	• outine Inspection • SE Repo	Construction Site	During Construction	ESO - Enugu APPEALS; Enugu State Ministr	320	124,800

			as much as possible. This should include Mosquito control programmes such as the distribution of insecticide treated nets to affected community members.					rts			y of Health		
B26		Risk of COVID-19	• Social Distancing • Compulsory use of Facemask • Continuous/ Regular hand wash	Contractor	400	156,000	• Social Distancing observed. • Number of facemasks that are warn • Facemask available and in use • Soap and water available for hand wash	• one (1) meter apart • umber of facemasks warn. • mount of water and soap used to wash hands		• t all times during construction. • t all time. • t least 30 minutes' interval	ESO Enugu APPEALS SCO; ESME; Ministry of Health	100	39,000

	Total				**6,970**	**2,718,300**						**3,640**	**1,419,600**
	Grand Total				**25,820**	**10,069,800**						**18,710**	**7,296,900**

Table 6.3: Environmental and Social Mitigation and Monitoring Plan during the Post–Construction/Operation Phase (with respect to COVID-19)

S/N	**Activity**	**Potential Impacts**	**Mitigation/Enhancement Measures**	**Responsibility (Implementation)**	**Cost of Mitigation**		**Indicators / Parameters**	**Method of Measurement**	**Sampling Location**	**Frequency of Monitoring**	**Responsibility (Supervision)**	**Cost of Monitoring**	
					(USD$)	**NGN**						**(USD$)**	**NGN**
Environmental Impacts													
C1	• Maintenance and repairs • Planned and unplanned integrity checks and maintenance and replacement of wearing/faulty/damaged components • Repairs of cracks on buildings • Servicing of machines and metallurgical maintenance	Increased air pollution level / dust emissions from milling operations	See A2	See A2	1,050	409,500	See A2	See A2	See A2	See A2	See A2	450	230,100
C2		Soil contamination from accidental leakage/ spillage of fuel, oil and lubricants	See A3	See A3	950	370,500	See A3	See A3	See A3	See A3	See A3	400	195,000

C3		Contamination of surface water as a result of waste dumping in and around the river/wetlands during maintenance	• Implement the Waste Management Plan (WMP) • Promote waste avoidance; reduction; reuse and recycling as applicable	Contractor	800	312,000	Surface Water Quality (pH, TDS, TSS, BOD, COD, Turbidity, THC, Heavy Metals)	• n-Situ / Laboratory Measurements	Discharge point, midstream & downstream	Monthly	Enugu APPEALS SCO;	650	292,500
C4	Agro-processing activities for cottage processing facilities	Solid wastes generation lead to foul odour, mostly from slurry waste and leachates formed by rain Dust emissions from milling/ machine operations	• Site facilities away from populated area, water abstraction points or drinking water sources; • Avoid any pollution hotspot zone; • Design a treatment plant for wastes; • A	Contractor	1,200	468,000	See A2 and A3	• ee A2 and A3	See A2 and A3	Weekly	Enugu APPEALS SCO;	1,000	390,000

			void release into surface water systems and install Proper waste water management; • Ensure careful of storage of solid waste; • Store solid waste for a minimum period and develop suitable enterprise linkages for rice and wheat straw and husk waste; • Use good screening technology to remove dust particles and broken										

			fragments when processing; • Locate milling and processing machines away from populous areas; • Ensure workers use correct PPE to protect their skin dust that can cause dermatological problems and from inhalation.										
	Total				**4,000**	**1,560,000**						**2,500**	**725,000**
Socio-Economic Impacts													
C5	• Maintenance and repairs • Planned and unplanned integrity checks and maintenance and replacement of wearing/faulty/damaged components • Repairs of cracks on	Exacerbation of the risk of transmission of HIV/AIDS and other STIs due to potential labour influx	• Conduct sensitization and awareness campaigns • Supply health check equipment	Contractor HSE officer	650	253,500	• umber of health campaigns and toolbox me	Routine inspection	Project area	Daily	Supervision Consultant, Ministry of Health, Enugu APPEALS SCO;	550	214,500

	buildings • Servicing of machines and metallurgical maintenance		• E nsure compliance to workers' code of conduct as stated				etings • umber of health checks						
C6		Risks of occupational and social accidents and injuries.	• mplement the site specific HSE plan • uild concrete or steel barriers to protect pedestrians	Contractor	630	245,700	HSE Statistics (FAC, LTI, etc.)	Routine Inspection	Road and drainage	Monthly	Supervision Consultant Ministry of Work, Enugu APPEALS SCO	650	253,500
C7		Traffic congestion and increased risk of road traffic accidents and injuries due to increase in traffic	• Ensure free flow of traffic and traffic officials are strategically positioned at specific junctions to provide safety	Contractor	500	195,000	See B13	See B13	See B13	See B13	See B13	480	187,200

			guidelines and ensure free flow of traffic within the project area.										
C8		Cultivation within the location of the facility	• nsure that crop cultivation is prevent within the 2-3 metres buffer to permit ease of access to users	Contractor	750	292,500	Visual sighting during the implementation	1. Number of truck load of sand evacuated from the channel.	Project area	Weekly	Enugu APPEALS; ESME	350	136,500
C9		• Contamination of surface water as a result of waste dumping in and around some streams and rivers • Waste dumping impact on the life span of the	• mplement the Waste Management Plan (WMP) • romote waste avoidance, reduction; reuse and recycling as applica	Contractor	770	300,300	Contractors Compliance to WMP Waste Handling and Disposal	Visual Observation Waste Tracking Report	Project area	Weekly	Enugu APPEALS SCO	690	269,100

		constructed area by blocking access to farm.	ble • nsure proper handling, and disposal of the various types of solid municipal and household wastes • ence off river/stream banks around bridge										
C10	Sustainability of cottage processing facilities	• Management and maintenance of machinery • Lubricant wastes, spills of different substances • Usage of facilities that could disrupt surrounding value chain sensitive farming	• roper maintenance structure to assess the effectiveness of the processing facilities; • fficient use of resources be adopted to curtail any economic	Contractor HSE Officer	800	312,000	Contractors Compliance to ERP and visual analysis of the situation	Routine inspection, Observation of events	Project sites	Monthly	Enugu APPEALS SCO	1,300	507,000

		activities	losses; • nsure regular maintenance of the machineries for higher efficiency; • vailability of adequate machinery for tomato, rice and wheat processing; • roper marketing strategies will be put in place for farmers to be able to sell produce and reduce loss of revenue. • he Enugu APPEALS and value										

			chain clusters will prepare an emergency response plan (ERP) to reduce damages related to fire incidence;										
	Total				**4,100**	**1,599,000**						**4,020**	**1,567,800**
Public Health Impacts													
C11		Community Health and Safety	• E nsure water pollution free environment. • U se of PPEs • ealth and safety talk	Contractor	1,150	448,500	• No. of complaints about pollution due to operations • Number of workers with PPEs • Number of FR	In situ	Project site and its surrounding	Quarterly, throughout the operation phase of the project	Enugu State Relevant Ministries: Environment, Transport, Works and Infrastructure	800	312,000

							SC and police present in the area. • Number of safety talk and awareness conducted.						
C12		Risk of COVID-19	• ocial Distancing • ompulsory use of Facemask • ontinuous/Regular handwash	Contractor	400	156,000	• ocial Distancing observed. • umber of facemasks that are warn • ace mask available and d	• ne (1) meter apart • umber of facemasks warn. • mount of water and soap used to wash hands		• tall-time during construction. • tall time. • t least 30 minutes' int	ESO-Enugu APPEALS SCO; ESME; Ministry of Health	400	

							in use • Soap and water available for hand-wash			er val			
	Total				**1,150**	**604,500**						**1,200**	**468,000**
	Grand Total				**9,250**	**3,607,500**						**7,720**	**3,010,800**

6.2 Occupational Health and Safety/Community Health and Safety Management Plan

6.2.1 Occupational Health and Safety

During the construction and operation phase of any project that fall within the World Bank fold, health and safety concerns are very vital. For this set of projects, the key reference document is the World Bank Group's Environmental, Health, and Safety (EHS) Guidelines (April 2007) and the essential industry safety guidelines that are extended and applicable to project communities' safety. This document is comprehensive, covering all aspects of safety, health and environment as regards occupation. It is available online at www.ifc.org/ehsguidelines. It will also comply with the National and Enugu State's safety regulations and requirements. A comprehensive workers' intensive and site specific OHS plan is expected to be provided as part of the Contractor's ESMP (CESMP). As expected of the ESMP, health and safety measures incorporate all aspects of the project construction and operation including ancillary activities. The plan will address issues such as:

- The proper provision and use of personnel protective equipment (PPE) such as safety boots, respirators, eye protection, hearing protection, gloves, and hardhats;

- Analysis of risks associated with job activities in order to develop standard requirements for PPE on a job-specific and station-specific basis;
- Provision of training on the proper use of PPE and penalties for the improper use of PPE;
- Training on the proper and safe use of all equipment in workshops, garages, the plantation, nurseries, and mills;
- Physical barriers so that unauthorized personnel are not admitted to areas where dangerous equipment is in use;
- Training related to job-specific risks and activities, including:
- Electrical installations (e.g. electric shock on direct contact with conductors and indirect contact with masses powered up, burns, fire and explosion);
- Mechanical equipment (e.g. tool blasting or matter risk, crushing of fingers, wounds, equipment shock);
- Lifting devices (e.g. crushing risk, injury caused by appurtenances, falling, collision); machinery and vehicles (e.g. risk of accident on contact with other materials, collision with or knocking down of persons, obstacle shock, fall by the operator, collision with a vehicle or machine);
- Hand tools, electric or other welding equipment (e.g. risk of injury, electrocution, poisoning, dazzle);
- Workshops and garages (e.g. risk of mechanical injury, shock and collision with machines);
- Sterilizers and boilers (e.g. risk of burns due to heat and steam from furnace, explosion risk); and
- Power plant, processing lines and workshops (e.g. noise-related risks, electrocution risk) provision of properly trained and equipped first aid personnel including a well-stocked pharmacy, a treatment room with beds, and an ambulance for any worksite injuries.

6.2.2 Community Health and Safety Management Plan

Issues and potential impacts regarding community health are addressed by the Community Health and Safety Plan. This is because human populations within the residential areas of the project communities as well as those traversing the communities to other parts of Enugu State are related to the health and safety issues requiring mitigation. Thus, the respective mitigation measures will include:

- Construction activities can draw significant numbers of unmarried (single) men and others attracted by the opportunity to provide goods and services to construction workers and project beneficiaries with disposable income. Some of these activities such as alcohol, drugs, and sex

trade can lead to increased crime and diseases, including HIV/AIDS. Thus, the project contractor is expected to recruit most of the construction workers from the immediate area to minimize the number of single men migrating for work;

- The Project Contractor will ensure that adequate training and enforcement of code of conduct to curtail workers' participation in sensitive activities such as sex trade, drugs and alcoholism;
- The Project Contractor will to conduct sensitization programmes across the frontiers of the project community with the villages therein regarding the potential impacts of the project and the workers' code of conduct;
- The Project Contractor will conduct community training and awareness programmes to ensure that the local population understand the risks of participating in risky economic activities for short-term economic gain; and
- The Project Contractor will work closely with the Enugu State Ministry of Health to promote sensitization campaigns to help the local population avoid risky activities; and to monitor the incidence of diseases and other health measures that have indicated the need for further intervention to protect community health and safety as connected to the proposed project in the projects community.

6.3 Worker's Training and Orientation Plans on COVID-19

The details of the workers training plans for the consideration of the COVID-19 pandemic is expected to take a spectrum consideration including COVID-19 awareness training, precautionary steps, curtailing exposure to the virus, managing access and spread, daily routine activities, and personal care. A comprehensive details of the steps, actions and possible case management of the pandemic are supplied in the following web portals:

- World Health Organisation - WHO
  https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public
- United States Centre for Disease Control
  https://www.cdc.gov/coronavirus/2019-nCoV/index.html
- Nigeria Centre for Disease Control (NCDC)
  https://covid19.ncdc.gov.ng/report/

6.3.1 Workers Training and Precautions

- Train all staff and workers on the signs and symptoms of COVID-19; how it is spread, how to protect themselves and the need to be tested if they have symptoms. Allow questions and answers to dispel any myths;
- Use the existing grievance procedures to encourage workers reporting of co-workers if they show outward symptoms including those who may not want to voluntarily submit themselves for testing. Symptom may include but not limited

to ongoing and severe coughing with fever;

- Supply face masks and other relevant PPE to all project workers at the entrance to the project site. Any persons with signs of respiratory illness that is not accompanied by fever should be mandated to wear a face mask;
- Provide hand-wash facilities, hand soap, alcohol-based hand sanitizers and mandate their use at the entry and exit of the project site and during breaks, through the use of simple signs with images in local languages;
- Train all workers in respiratory hygiene, cough etiquette and hand hygiene using demonstrations and participatory methods;
- Train cleaning staff in effective cleaning procedures and disposal of rubbish.

6.3.2 Minimize Chance of Exposure

- Any worker showing symptoms of respiratory illness (fever + cold or cough) and has potentially been exposed to COVID-19 should be immediately isolated from the site and tested for the virus at the nearest local hospital;
- Close co-workers and those sharing accommodations with such a worker should also be isolated from the site; isolated and tested to ascertain their COVID-19 status;
- The Project Management must liaise with the Enugu State COVID-19 Task Force on testing facilities and modalities on testing and proper case and contagion management;
- Persons under investigation for COVID-19 should not be allowed to return to work at the project site until they are cleared by test results;
- If a worker is found to have COVID-19, wages should not be stopped during the worker's convalescence (whether at home or in a hospital);
- Any worker who lives with a family member who has been confirmed or suspected to have contracted COVID-19 should be quarantined from the project site for 14 days.

6.3.3 Managing Access and Spread

- Should a case of COVID-19 be confirmed in a worker on the project site, visitors should be restricted from the site and worker's groups should be isolated from each other as much as possible;

6.3.4 Daily Routine Management for Workers

- Consider ways to minimize/control movement in and out of construction areas/site;
- If workers are accommodated on site mandate them to minimize contact with people outside the construction area/site or prohibit them from leaving the area/site for the duration of their work;
- Implement procedures to confirm workers are fit for work before they start work, paying special to workers with underlying health issues or who may be otherwise at risk;

- Check and record the temperatures of workers and other people entering the construction area/site or mandate them to self-report prior to or on entering;
- Provide daily briefings to workers prior to commencing work, focusing on COVID-19 specific considerations including cough etiquette, hand hygiene and distancing measures;
- Mandate workers to self-monitor one another for possible symptoms (fever, cough) and to report to their supervisors if they have symptoms or are feeling unwell;
- Prevent all workers from an affected area or who has been in contact with an infected person from entering the construction area/site for 14 days;
- Prevent a sick worker from entering the construction area/site, referring them to local health facilities if necessary or mandate them to isolate at home for 14 days.

6.3.5 Personal Care

1. *Hand hygiene and hand-washing practices*:

- If hands are not visibly dirty, the preferred method of hygiene is to perform hand hygiene with an alcohol-based hand rub (hand sanitizer) for 20–30 seconds using the appropriate technique. When hands are visibly dirty, they should be washed with soap and water for 40–60 seconds using the appropriate technique;
- Functional hand hygiene facilities should be made available to all workers at vantage points around the construction areas. A corresponding mobile hand-washing facilities with secured wastewater collector can also be made available. In addition, functional hand hygiene facilities should be available for all visitors, site assessors and others.

2. *Social distancing*:

- Workers should stay at least 6 feet (about 2 arms' length) from one another, visitors and others on and off work site;
- Social distancing should be practiced in combination with other daily preventive actions to reduce the spread of COVID-19. This should include wearing masks, avoiding touching the face with unwashed hands, and frequently washing the hands with soap and water for at least 20 seconds.

6.4 Institutional Arrangements, Responsibilities and Accountabilities

In implementing the details of the ESMP, specific roles and responsibilities of the project executors and respective institutional engagements are vital to the efficient execution of

the stated environmental and social safeguard measures. These roles and responsibilities are outlined below with their monitoring and reporting cadres to provide adequate checks and balances and to ensure that cases of duty overlaps (if any) are addressed forthwith.

6.4.1 Pre-Construction Phase

6.4.1.1 Key Agencies

The main governmental and non-governmental agencies charged with major roles in the implementation of the ESMP during the pre-construction phase are:

- The Consultants;
- The Federal APPEALS-FCO;
- The Enugu APPEALS-SCO;
- Enugu State Ministries, Departments and Agencies (Health, Environment, Information, Finance, and Agriculture);
- Community Based Organisations; and
- The executive members of the priority crop clusters

6.4.1.2 Duties and Role of the Involved Agencies

The significant duty for ESMP monitoring remains with the Project Supervising Engineer and the Ministries of Health and Environment while the implementation of and reporting on the ESMP progress rest with the Project Contractor. At the initial stage, ground works and preparatory meetings and consultations were being conducted with the executive members of the concerned crop clusters of each of the beneficiary communities, and Community Based Organizations (CBOs) as well as concerned members of the public affected by the project in Enugu State. The contractor must liaise with the Enugu State APPEALS- SCO on issues raised in order to reach a common ground prior to the commencement of projects. This will boost the projects' capacity to meet the World Bank Safeguard Polices. Efforts must be put in place to ensure that the observed concerns are communicated to the respective Enugu State Ministries, Departments and Agencies for prompt action as regards their respective portfolios.

6.4.1.3 Project Reporting Channels and Follow-Up

The secretary of each of the beneficiary communities shall forward the details of the meetings held to the Enugu APPEALS–SCO. This will be to enhance reporting, feedback and follow-up processes for the issues raised and to drive swift implementation. All issues raised shall be forwarded together with the contributions of the Enugu State APPEALS SCO, which is expected to have reviewed the comments within the scope of the project and their suitability to the World Bank standards. Also, the Contractor must ensure that the observations, comments and notes are implemented painstakingly as approved and the feedback conveyed to the Enugu State APPEALS- SCO. This process

should continue through a chain of reporting-feedback, follow-up-and-response mechanisms; until the pre-construction phase is completed.

6.4.2 Construction Phase

6.4.2.1 Major Actors / Key Agencies during Construction Phase

Given that the construction phase of the project is filled with intensive civil activities, various players in the different categories will be involved. For the proper implementation of the provisions of the ESMP, the key players include:

- The Engineering supervising firm;
- The Contractor;
- Enugu State APPEALS- SCO;
- The Federal APPEALS-FCO;
- Enugu State Ministries, Departments and Agencies (Works, Health, Environment, and Agriculture);
- Federal Ministry of Environment (FMEnv), NESREA; and
- World Bank (will provide guidance during support and supervision tasks).

In addition to these key agencies, the Enugu State Government through the vital MDAs will perform general oversight functions in certifying that all the provisions of the ESMP are carefully executed.

6.4.2.2 Role of the Concerned Agencies

It has been established that the key responsibility for monitoring and reporting of the ESMP implementation remains exclusively with the site Engineer and the Contractors. The Environmental and Social Specialist (ESS) and the Contractor will be responsible for periodic and systematic supervision and reporting on the ESMP execution. The Engineer and ESS will engage a team of socio-environmental experts in different fields (water, soil, social consultant, land and natural resources, etc.) to ensure that sufficient capacity information delivery on ESMP implementation is fully ensured.

The implementation of the ESMP will be managed by the Enugu APPEALS-SCO through the Environment Officer (EO) who is primarily in control of the daily inspection and monitoring of the ESMP. The Enugu State Ministries of Works, Health, Environment, and Agriculture have the responsibility to monitor the ESMP implementation using the fundamentals of their respective internal mechanisms, regulations and policies as established by the appropriate legal machineries guiding their procedures. It is expected also that these MDAs will embark on site visits vis-à-vis these of the representatives of the Federal APPEALS-FCO. The reports of these activities should be forwarded to the World Bank with full details and findings concerning the project.

The FMEnv and NESREA should also send their corresponding EOs and officials observing the ESMP project under the Federal APPEALS approved projects to detect the

level of compliance with the execution of the provisions of the ESMP. At the local level, the Enugu State Ministry of Environment will also visit the project site regularly to observe and monitor the level of conformity to the provisions of the ESMP.

6.4.2.3 Reporting and Follow-Up

A follow-up process is a nonstop chain of reporting on the project activities with regard to the ESMP implementation. The Environmental and Social Specialists (ESS) of the Engineer/ Monitoring firm must arrange, document and register incidents on weekly and monthly basis. The reports must be submitted to the Enugu APPEALS State Project Coordinator (SPC) for comments, observations, and recommendations (where necessary). Subsequently, the Enugu APPEALS-SCO will send feedback to the Engineer through the consultant(s)/ SCO EO or directly if urgent. ESS's duties should include checking and reporting on the implementation of follow-up action showing the inevitability of the office to the ESMP implementation and monitoring for the project Engineer. The Contractor and Site Engineer will submit monthly reports on the implementation of the ESMP to the Enugu APPEALS-SCO. The ESS officers who will advise the project management unit will inspect and affirm its authenticity. Any incongruity on environmental issues will require the project coordinator to convene a Project Environmental Management (PEM) meeting to settle those inconsistencies.

6.4.3 Operational and Maintenance Phase

The Enugu APPEALS and the Federal APPEALS as the managing entities of the proposed projects have the responsibility to consider the stated monitoring measures. They must inform other government agencies, especially the State Ministries of Health and Environment for proper action, where necessary, at the operation and maintenance phase.

6.4.3.1 Key Agencies

At this phase of the project, the main governmental institutions which Enugu APPEALS will co-operate with are the following:

- The Enugu State Ministry of Ministry of Environment;
- The Enugu State Ministry of Health;
- The Enugu State Ministry of Transport;
- The Enugu State Ministry of Works; and
- The Nigerian Police.

In addition to these ministries and government agencies, the respective local government administrative councils will have a role in the general oversight functions of the ESMP implementation.

6.4.3.2 Major Actors / Key Agencies During Operational and Maintenance Phase

The duties of the institutions that have roles to perform in the process of the operation of the proposed projects across the different locations include:

- The Monitoring and Supervision Unit of the Enugu State Ministry of Health and Environment will conduct continuous visits to the site to check and confirm that the facilities are well maintained. Monitoring activities will be conducted within the legal and administrative capacities of the concerned Ministries via their corresponding departments and agencies;
- The Ministry of Transport will check the nature of vehicular traffic and road transportation pattern in the area focussing on safety and vehicular controls;
- The Ministry of Works will conduct normal checks on the nature of infrastructure provided within the duration of the project;
- The Nigerian Police will ensure that crime and criminal activities are reduced to the barest minimum to avoid any possible linking of crime to the project activities.

6.4.3.3 Institutional and Implementation Actions for the ESMP at the Local Level

At the local level, the APPEALS ESMF vests the overall implementation of ESMP on the Site Monitoring Committee. The executive members of the priority crop clusters who are beneficiaries of the projects have already been constituted by the Enugu APPEALS. Therefore, the committee will form a vital source of information for community liaison and local engagements during the field activities for the preparation of the ESMP. The committee comprises several sub-committees including women, youth, elders and environmental sub-committees.

Considering the significance of the Site Monitoring Committee members, it is essential to design and execute a suitable capacity building for them on environmental and social issues on the execution of the ESMP. Thus, capacity strengthening and sensitization of the Site Monitoring Committee and the Environmental sub-committee members are proposed owing to their importance in the ESMP implementation. The content of the training should include but not limited to:

i) The role of community during the pre-construction, construction and post-construction phases of the project;
ii) Sustainable practices to ensure construction and facility installation; and
iii) Local level of ESMP Implementation.

6.5 Grievance Redress Mechanism (GRM)

The Grievance Redress Mechanism (GRM) is part of the broader process of stakeholders' engagement, accountability, quality and compliance assurance in the

project designed for solving disputes at the earliest possible time. This will be in the interest of all parties concerned. This shall further be made tighter in all future ESMPs once the specific sites of the various project/subproject investments are known; since there are different LGAs and communities affected.

The objectives of the grievance redress mechanism are to:

- provide an effective avenue for aggrieved persons to express their concerns and resolve disputes that are caused by the project;
- promote a mutually constructive relationship among farmers, community members, project affected persons, government and investors;
- prevent and address community concerns;
- assist larger processes that create positive social change; and
- identify early and resolve issues that would lead to judicial proceedings.

6.5.1 Enugu APPEALS GRM Process

In line with the World Bank requirements for a sustainable project activity, the Enugu APPEALS had developed its GRM procedure in 2019. Considering that the three-value chain being supported by the Enugu APPEALS have similar operational attributes, a one size fits all approach was adopted for the design of its GRM, especially for the uptake of grievances at the project beneficiaries' (Cluster) level.

The core institutional blocks for the Enugu APPEALS GRM include the following:

- Farmers Cluster/CDA/Cooperative/CAMs;
- Traditional leaders/Community heads;
- Women leaders in the various beneficiary communities;
- Youth leaders in the various beneficiary communities;
- Local council representative;
- Field Officers/Enumerators;
- Value Chain Facilitators;
- Environmental/Safeguard Specialist (GRM Coordinator);
- Environmental officer;
- Agro-processing specialist;
- Communication officer;
- Rural infrastructure engineer;
- M&E officer;
- Rural Infrastructure Engineer;

- Training officer;
- State Project Coordinator;
- Enugu State Citizens' Mediation Centres;
- Department of Women Affairs in the state Ministry of Women Affairs;
- Women's right focused NGOs; and
- Nigeria Police.

6.5.1.1 Stages of Complaint and Appeal Levels

An effective GRM must provide the opportunity for a complainant to seek a higher level of redress if they are not satisfied at the lower level. In essence, six stages of complaint with five appeal levels have been developed for the Enugu APPEALS GRM.
These include:

1. Cluster-based GRC;
2. Local Government Area-based GRC;
3. Enugu State Coordinating office/SCO GRC (State Level);
4. National Coordinating Office GRC;
5. Citizen Mediation Centre;
6. Law Court.

The introduction of the Enugu State Citizen Mediation Centre into the hierarchy of Enugu APPEALS GRM is to ensure that the aggrieved person through independent mediation has his/her compliant resolved. However, if the complainant is still not satisfied at this level, he/she can then opt for formal legal procedure at the law court. The structure of the GRM is and the respective but brief description and member composition of each of these GRM stages is provided in subsequent sections.

- *Cluster-based GRC*
  The cluster-based GRC is the first and lowest grievance redress mechanism in the Enugu APPEALS GRM. The GRC at this level is expected to resolve simple project-activity related issues between; members of a cluster; members of the cluster and other members of the community; members of a cluster and the contractor. The Cluster-based GRC shall consist of 7 members per cluster, with at least 2 positions assigned to women. Members of the Cluster-based GRC shall include:

  a. Executives of the Cluster/CDA/Cooperative/CAMS (including women and youth)
     i. The Chairman,
     ii. The Secretary (Representative of Enugu -APPEALS) and
     iii. Village Head
  b. Any other two members.

Each cluster must ensure that they discuss and display complaints procedures and available uptake channels in ways that are easily accessible to their members and

members of the community. The uptake channels at this level should include among others; verbal complaints to members of the GRC, written complaints in complaint boxes in the community, through phone calls to the chairman and/or secretary telephone lines. All complaints are expected to be resolved and the complainant officially notified within 15 Days of receipt of the complaint by the Cluster-based GRC PRO. Where additional time is required, the complainant is updated of actions being taken within every 7 Days until the complaint is resolved. In all, the complaint at this level is expected to be resolved within 30 days. However, after a complaint is certified unresolvable at the cluster level or the issue requires arbitration, the Cluster-based GRC secretary will refer it to stage two, which is the Local Government Area-Based GRC.

- *Referral to Local Government Area-based GRC*
  The Local Government Area-based GRC are expected to resolve project activity-related issues such as trespass into private property by project activity, exclusion claims, labour or workforce related issues and any other serious grievances that could not be resolved at the cluster level. The members of the community-based GRC shall be made up of nominated executive members representing the value chain clusters within a local council. The nomination of members of the GRC shall involve a participatory process to take place in well publicised town hall meetings and driven jointly by the farm clusters/Community leaders/Cooperative/CAMS and representatives of the Enugu APPEALS SCO. Local interest groups such as the relevant NGOs/CSOs, respected citizens in the communities and reputable community associations will also participate in the selection of the GRC members.

  The GRC at this level shall include:

  - LGA Chairman (Chairman);
  - Enugu -APPEALS (Secretary); Other members are
  - District Head, LGA HOD Agric, LGA Land Officer, Civil Defense (CD), Ebube Agwu, Representative of Women Development Organizations, AFAN (Chapter Chairman), and NYC (Chapter Chairman)

  Complaints referred by the Cluster-based GRC shall be received and recorded by the Secretary of the Local Government Area-based GRC. Feedback from the community-based GRC to a complainant shall not exceed 7 workdays. A complainant who is not satisfied with the feedback on outcome of the mediation by the Local Government Area-based GRC shall have their grievance referred to the Enugu State Coordinating Office GRC.

- *Referral to Enugu State Coordinating Office GRC (State Level0*

The Enugu Coordinating Office GRC is expected to resolve project-activity related issues such as: resettlement and compensation for damages; Gender Based Violence (GBV) or

sexual exploitation; contractor impunity or highhandedness etc. This committee shall be the apex authority of the Enugu APPEALS GRM which will make recommendations for actions to be taken to the State Project Coordinator (SPC) in the case of issues of extreme importance, or make referral to the National Coordinating Office in the case of grievances that are either unresolvable at the committee level or found to be extraneous to the execution of the project. The Enugu APPEALS Coordinating Office Grievance Redress Committee shall be established and chaired by Ministry of Justice (DIR Legal draft). The Safeguards Environmental Officer of the Enugu APPEALS shall serve as the committee secretary.

Other members include: Ministry of Agriculture (DIR Special Services), Ministry for Local Government (DIR Agric Service), Ministry of Environment (DAGS), Civil Defense, Ebube agwu(Legal), Traditional Leader (Igwe), AFAN (State Chapter Secretary),and ALGON (Chairman)

The Enugu APPEALS Coordinating Office GRC is expected to finalise mediation on grievances within 10 working days. The complainant/survivals confidentiality should also be kept in mind when reporting any incidences to the police or referral to the CMC.

- *Referral to National Coordinating Office*
  The National Coordinating Office GRC will be the highest forum of the project for redressing the grievances received from beneficiaries, stakeholders and other concerned. The committee, while handling a complaint may requisition any staff for its assistance and/or may constitute a special committee, where necessary.

- *Referral to Citizen Mediation Centre (CMC)*
  Cases referred to the CMC are usually unresolved prolonged cases that are deemed fit for referral by the Enugu Coordinating Office GRC. The complainant is adequately briefed at this point about the need for a higher level of independent and transparent mediation. As indicated earlier, there are 19 CMC offices in the different parts of Enugu State. In the case where the cluster of a beneficiary does not have a CMC, the Coordinating office is expected to refer the case to the closest CMC Office or request the Registrar of the Institute of Chartered Mediators and Conciliators (ICMC) of Nigeria to second a reputable mediator to provide professional service on the case. The Coordinating Office is expected to exhaust all available avenues for settlement based on the principles of Alternative Dispute Resolution before allowing a complainant decide that they are not convinced about the resolution reached and would wish to take the matter up to a law court.

- *Referral to Law Court*

The law court is the final stage where grievances are expected to be resolved in this GRM.

6.5.1.2 Grievance Uptake Points

The grievance uptake points in this GRM are based on the Stages of Complaint and Appeal Levels and they include the following:

- Cluster-based GRC:
  - Farmers Cluster/CDA/Cooperative office;
  - Complaint/Suggestion box in Cluster office or other designated places (Palace of the traditional ruler, Market square etc);
  - Telephone calls to the GRC Chairman or the Secretary;
  - Text messages and WhatsApp to the GRC Chairman or the Secretary;
  - Complaint through the traditional ruler, religious heads and other reputable personalities in the community.
- Local Government Area-based GRC:
  - Verbal complaint to the members of the Community GRC;
  - Written complaint physically submitted to the secretary of the GRC;
  - Complaint/Suggestion box in the office or other designated places (Palace of the traditional ruler, Market square etc);
  - Verbal complaint to the GRC Chairman or the Secretary over the telephone;
  - Written complaint sent through Text messages and WhatsApp to the Chairman or the Secretary;
  - Complaint reported through the traditional ruler, religious heads and other reputable personalities in the community;
  - Complaint reported through the local council.
- Enugu State Coordinating Office GRC:
  - Enugu APPEALS Website;
  - Enugu APPEALS Facebook page;
  - Complaint/Suggestion box in the office or other designated places;
  - Enugu Ministry of Agriculture;
  - Enugu Ministry of Environment.
- National Coordinating Office GRC/Office
  - Referral from Enugu State Coordinating Office
- Citizens' Mediation Centre:
  - Referral from the National Coordinating office;
  - Petition from aggrieve individuals;
  - Walk in by aggrieved persons to make their complaints;
  - Transferred to the CMC from court for amicable mediation; and lastly
  - Telephone Calls to the CMC and the case would be entertained.
- Law Court:

- Referral from the CMC.

6.5.1.3 Grievance Redress Procedures

The procedure for grievance redress is as follows:

- *Receipt and Registration of Feedback or Grievance*

The first step for any project beneficiary or complainant to benefit from the Enugu APPEALS GRM is the presentation of a grievance at a grievance uptake point at the cluster-level. The Cluster-based GRC Secretary will receive grievances from the complainant through verbal presentation, the Complaint/suggestion box placed at traditional ruler's palace, market square, CDA/Cluster/Cooperative/CAMS office in the community, telephone calls, Email, physically/verbally etc. and the grievance will be acknowledged. The complaint will then be registered and a logbook of grievances will be maintained. Sample of a grievance registration form can be found in the Annex section of this document.

Cases related to GBV and personal details of the complainant will however not be documented in the public grievance log book. In case a GBV complainant decides to provide any information, the complainant/survivals confidentiality should be kept intact when attending to such or when reporting any incidence to the police.

The receiver (preferably the cluster-based GRC Secretary) will clarify the primary information, register and acknowledge the receipt of it to the grievant immediately or within the maximum of 2 days. The acknowledgement is to give the complainant an assurance that the complaint has been received and is receiving necessary attention or has been resolved. The registration will capture the following data: Reference Number, Date of the feedback or grievance, Name of the complainant, Gender of complainant, Address, Contact Phone Number (& Email, if applicable), Category of the grievance and Signature. A complaint or feedback can also be submitted anonymously or via a third party.

Complaints and feedbacks made in writing and those made verbally by persons who cannot read or write shall be transcribed by the receiver as appropriate and read back to the complainant to ensure agreement. All complaint submitted, irrespective of its sources, shall be acknowledged with a corresponding acknowledgement sent to the complainant. Sample of a grievance acknowledgement receipt can be found in the Annex section.

- *Verification/Screening of Grievances*

The receiver of grievance will consult and make enquiries within the areas of grievance. The investigation will determine, among other things, whether the matter has any relationship with the Project or whether it can be handled at the level where it is presented. In the case of GBV/SEA complaint, this will not be investigated but

rather referred to the appropriate authority and GBV service provider around the project area. If the complaint is rejected, the complainant is informed of the decision and the reasons for the rejection within 2 days of registration of the complaint or feedback. Any complaint that is rejected shall have the benefit of a first hearing at the Local Government Area GRC level and then referred to the appropriate level/authority for redress.

Reasons why a complaint or feedback may be deemed not eligible and rejected may include:

i. The complaint does not pertain to the project;
ii. The issues raised in the complaint does not fall within the scope of issues the grievance mechanism is authorized to address; and
iii. The complainant has no standing to file e.g. not a member of the project community and not affected by the project activities.

Facts must be established against the interest and goal of the grievant to build trust. Fact finding is essential to redress, but not applicable to GBV/SEA cases under this GRM. It should be noted that grievances spring from differences in expectations, interests, knowledge or lack of it, needs and fears.

Complaints in the Enugu APPEALS GRM should be classified under the following categories:

Category 1: Physical and/or economic displacements caused by land acquisition or any other project activities
Category 2: Security, Crime and Enforcement Issues (including GBV)
Category 3: Labour issues
Category 4: Environmental Pollution issues
Category 5: Cultural issues
Category 6: Exclusion claims

- **Gender Based Violence (GBV) and Sexual Exploitation and Abuse (SEA)**

All complaints relating to GBV shall be treated in a private and confidential manner, limiting information to what the survival or complainant is freely willing to provide. A separate register shall be opened for this category of cases and shall ONLY be accessed by the community-based GRC Secretary, the GRM coordinator at the Enugu Coordinating Office (and any female GRC member empowered to handle GBV cases where the Chairman and Secretary are all male). The complainant (if a survival) shall be attended to with empathy, assurance of safety and confidentiality. In the event that the complainant is not willing to divulge any information, this view should be respected by the GRM officer, and the complainant referred to the appropriate nearest medical centre, approved available GBV service provider or

police, depending on the complainant's choice. Such a complaint should be reported to the World Bank Task Team as well by the Enugu Coordinating Office GRC.

Other considerations for the handling of GBV/SEA grievances include:

- No GBV data on anyone who may be a survival should be collected without making referral services available to support them;
- All GBV complaint should be referred to the right service provider and other relevant institutions, information to be requested should be limited to:
  - The nature of the complaint (what the complainant says in her/his own words without direct questioning);
  - If, to the best of their knowledge, the perpetrator was associated with the project; and
  - If possible, the age and sex of the survivor.

- *Implementation and Case Closing*

This is the period where the complaint or feedback passes through the full cycle and a feedback is agreed. The resolution of the committee at the various levels is documented. (Sample format for the recording of grievance proceeding can be found in Anne VI). Where there is a need for external referral of the matter, the complainant will be appropriately guided on the next steps. The result of the process can, however, vary. The request of the complainant may be turned down, compensation may be recommended, or management may simply apologise to the grievant. The SPC, Enugu Coordinating Office must provide oversight for timely and adequate resolution of disputes.

- *Feedback*

At the time of the acknowledgement of the feedback or grievance, the complainant will be provided with the following information:

i. Grievance Reference Number to facilitate monitoring and reminders by complainants;
ii. Expected time of redress (Prescribed maximum time limit for redress is three months);
iii. If not addressed within the expected time, action to be taken by complainant.

If the grievance is not redressed within the expected time, the complainant shall be provided with the following information:

i. Information on reasons for delay;
ii. Updated expected time of redress;

iii. If not addressed within the expected time, action to be taken by complainant.At the time of final redress, the complainant will be provided with information on the

i. Final action taken for redress and
ii. Avenues for pursuing the matter further

All responses to the complainant in a grievance redress process must be communicated in writing to the complainant. The officer responsible for the uptake of the grievances will follow up on the responding authorities for cases referred to be able to establish when each grievance has been resolved.

6.5.1.4 Roles and Responsibilities of Grievance Redress Implementers

The Enugu APPEALS GRM shall be driven and coordinated by the Environmental/Safeguard Specialist. The specialist is going to be supported by the M&E specialists among other supporters. However, it is essential to create a home or focal point for the GRM and integrate such into the Project's Management Framework. The M&E officer shall be responsible for compilation and reporting of all beneficiary complaint and feedbacks tracked in the process of grievance reporting and redress by the GRCs while the Communication Officer shall provide the necessary publicity and media coverage of all procedures. Additional support shall be provided to this team through external social experts and firms where and when required. These responsibilities are explained in details below:

Environmental/Safeguard Specialist

- Coordination of the entire GRM;
- Documentation of the GRC proceedings, decisions, and recommendations;
- Registration of grievances using a prescribed form;
- Facilitation and provision of information and services to resource persons as required by the Grievance Redress Committee (GRC) to deal with the reported grievances;
- Maintenance of grievance-related documents, reports, and attendance and payment registers of GRC members;
- Coordination of the grievance uptake channels, ensuring that they are adequately resourced;
- Liaise with the Communications Specialist of the Coordinating office for publicising the Enugu GRM channels, structure and other essential project communication strategies;
- Liaise with community-based GRC to track and record complaint and resolution reached;
- Liaise with the Citizens' Mediation Centres in the project states, for possible referral of unresolved grievances and tracking of reported complaints;
- Facilitating arrangements for field inspections;

- Handling all payments and expenses related to GRM operations;
- Providing feedback to affected persons and agencies involved in grievances;
- Reporting progress to the Coordinating office and World Bank in required formats;
- Planning and executing GRM trainings;
- Planning and executing GR evaluation and refining the GRM process for continuous improvements.

Cluster-Based GRC

- Operate and manage uptake points for complaints and resolving complaints;
- Promptly refer grievances certified as UNRESOLVABLE to Local Government Area-based GRC;
- Monitor and provide feedback on environmental and social impacts and effectiveness of mitigation measures at the cluster level;
- Provide monthly/quarterly report on grievances to the Coordinating office through the Environmental/Safeguard Specialist;
- Partake in development and implementation of grievance prevention sub-plans.

Local Government Area-based GRC

- Settle disputes at LGA level;
- Operate dedicated telephone hotline(s) for complaints;
- Partake in training programs;
- Partake in participatory planning with contractors for conflict prevention e.g. onsite food vendors plan, local labour engagement plan etc.;
- Project information dissemination;
- Coordination of town hall meetings and other stakeholder engagements.

Local Government Area-based GRC Secretary

- Manage day to day operations of GRC in project beneficiary community;
- Arrange and partake in Grievance Resolution Sessions;
- Register new complaints using agreed formats;
- Manage complaint boxes and other grievance uptake channels;
- Provide monthly/quarterly report on complaint to the Coordinating office through the Environmental/Safeguard Specialist;
- Facilitate pasting of posters, distribution of brochures and other information dissemination materials in communities;
- Operate dedicated telephone hotline(s) for complaints.

State Coordinating Office GRC

- Resolve and address complaints referred from the LGA GRC;
- Consider and determine corrective measures in the light of comments and suggestions received by GRC and/or recommended by LGA GRCs;
- Analyze data on grievances and using this to make informed decisions;
- Referring to the NCO GRC unresolved grievances at the state level.

National Coordinating Office GRC

- Resolve and address complaints referred from the State Coordinating GRC;
- Constitute special committees, if required under un-usual circumstances for Redress of grievance of exigent nature and/or for resolutions of complaints requiring broader inquisitorial procedures;
- Referring unresolved grievances to the CMC.

Citizens' Mediation Centres

- Settle disputes that could not be resolved within the APPEALS administrative structure.

6.6 Labour Influx, Child Labour and Gender Based Violence (GBV)

6.6.1 Labour Influx

The project may face the problem of an influx of non-local resident's labour and working conditions issues as skilled labourers might not be available in some of the project sites. The project will take concrete measures to mitigate all potential labour influx-related risks such as workers' sexual relations with minors and any resulting pregnancies, presence of sex workers in the community, the spread of HIV/AID, sexual harassment of female employees, child labour and abuse, increased dropout rates from school, inadequate resettlement practices, and fear of retaliation, failure to ensure community participation, poor labour practice, and lack of road safety. These risks require careful consideration to improve social and environmental sustainability, resilience and social cohesion. To this end, the project will include mitigation measures such as: (a) assessing living conditions of workers' camps and ensuring appropriate living conditions; (b) establishing and enforcing a mandatory Code of Conduct for the company, managers and workers, and an Action Plan for implementation; (c) ensuring appropriate location for these camps; (d) taking countermeasures - indicated in the Social Management Plan - to reduce the impact of the labour influx on the public services; and, (e) devising and implementing a strategy for maximizing employment opportunities for local population, including women.

The following guidelines lay out the principles that are key to proper assessment and management of the risks of adverse impacts on project area communities that may result from temporary Enugu APPEALS induced labour influx.

- The Enugu State Coordinating Office will ensure that the contractors, farmers and consultants hire, to the maximum extent, skilled and unskilled workers from affected communities in the project area. The Enugu State APPEALS Coordinating Office will adopt or implement all possible measures to minimize, if not avoid, labour influx into the project area.
- The Enugu State APPEALS Coordinating Office will assess and manage labour influx risk based on appropriate instruments such as those based on risks identified in the ESMP and the Bank's sector-specific experience in the country.
- Risk factors to the Enugu State APPEALS Coordinating Office that should be considered, include,
    - weak institutional capacity of the implementing agency;
    - predominant presence of contractors without strong worker management and health and safety policies;
    - anticipated high volumes of labour influx;
    - pre-existing social conflicts or tensions;
    - weak local law enforcement;
    - prevalence of gender-based violence and social norms towards it in the community (acceptance of gender-based violence);
    - prevalence of transactional sex;
    - local prevalence of child and forced labour;
    - existing conflict situation between communities;
    - absorption capacity of workers to the community (See http://pubdocs.worldbank.org/en/497851495202591233/Managing-Risk-of-Adverse-impact-from-project-labour-influx.pdf)
- The Enugu State APPEALS Coordinating Office will be required to incorporate social and environmental mitigation measures into the beneficiary activities and civil works contract and responsibilities for managing these adverse impacts. This will be a binding contractual obligation on the Enugu State APPEALS Coordinating Office, with appropriate mechanisms for addressing non-compliance

6.6.2 Child Labour

The project may also face the problem of child labour and abuse especially from farmers. This may increase school children dropout rate. Child labour specifically

relates to underage workers who should be in schools acquiring knowledge and skills as well as forced labour. The project will establish and enforce a mandatory Code of Conduct for the company, managers and workers, and an Action Plan which will prevent child and forced labour at all the phases of the project. The safeguards officer shall be responsible for monitoring the farm performance and adherence to the child labour obligations. The Enugu State APPEALS Coordinating Office through the Safeguards Officer shall ensure total compliance to the Enugu APPEALS child labour policy of none involvement of underage workers by individual and organizations (contractors and consultants) in the implementation of the proposed intervention.

6.6.3 Gender Based Violence (GBV)

6.6.3.1 GBV Risk Management Mechanisms

A GBV workshop to be conducted to sensitize the SCO staff on the key principle and specific requirements to address GBV/SEA have been included in the bidding documents ('pre-qualification' and 'employers' requirements') for infrastructures. It should be included into the individual beneficiary agreement. As such specific measures to reduce and mitigate the risk of GBV/SEA in the project will be well taken. Such measures will include:

i) GBV/SEA assessment of project;
ii) mandatory contractors' code of conduct on sexual harassment for infrastructure development;
iii) appointment of NGO to monitor GBV/SEA in Enugu APPEALS;
iv) community and workers' sensitization on GBV/SEA;
v) provision of referral units for survivors of GBV/SEA;
vi) provisions in contracts for dedicated payments to contractors for GBV/SEA prevention activities against evidence of completion;
vii) requirement to ensure a minimum target of female employment with incremental rewards of the obtainment of this target.

The following **actions** are recommended for immediate implementation:

- Hiring of a dedicated GBV/SEA specialist or retraining Safeguards Officer for the project;
- Including in the focal NGO's ToR services for managing social risks associated with GBV/SEA in the project;
- Building and improving NCO/SCOs, local communities and other relevant stakeholders' capacities to address risks of GBV/SEA by developing and providing guidance, training, awareness, and dissemination of relevant GBV/SEA materials to communities;

- Developing a clear Enugu APPEALS specific internal "Reporting and Response Protocol" to guide relevant stakeholders in case of GBV/SEA incidents;
- Strengthening of operational processes of Enugu APPEALS states project area on GBV/SEA;
- Identify development partners and cultivating pragmatic partnership on GBV/SEA prevention measures and referral services;
- Developing Codes of Conduct for civil works contractors with prohibitions against GBV/SEA;
- Strengthening consultations and operationalizing GBV/SEA specific grievance redress mechanisms;
- Providing financial support implementation of the GBV/SEA actions described herein, including training and awareness building for various stakeholders;
- Establishing an inter-ministerial committee to advance GBV/SEA actions described above.

Overall, GBV risks in the project target areas might include Intimate Partner Violence (IPV), public harassment including potentially verbal insults, physical abuse, rape, harmful widowhood practices and women and child trafficking. Targeted support to women under the program could potentially exacerbate these risks. Development and implementation of specific GBV risk prevention and mitigation strategies, suitable to local contexts, will be critical. Guidelines for situation analysis of GBV and safe reporting guidelines in line with international best practices will be implemented. Furthermore, all risks related to labour influx will have to be mitigated by participation of project beneficiaries/communities, and involvement of project contractors and contractors' workers and consultant employees, in identifying mitigation and implementing measures, including developing mitigation instruments such as the "Labour Influx Management Plan" and the "Workers Camp Site Management Plan".

6.7 Stakeholder/Citizen Engagement

Stakeholders' engagement is essential in achieving the major objectives of any project implementation and sustainable development. Participatory approaches in project planning and implementation enhance project policy, ownership and sustainability and also empower targeted beneficiaries.

The objectives for stakeholders' engagement and sensitization include but not limited to the following;

i. To create general public awareness and understanding of the project, and ensure its acceptance;

ii. To develop and maintain avenues of communication between the project proponent, stakeholders and beneficiary farmers in order to ensure that their views and concerns are incorporated into the project design and implementation

with the objectives of reducing, mitigating or offsetting negative impacts and enhancing benefits from the project;

iii. To inform and discuss about the nature and scale of possible adverse impacts of the rehabilitation work and to identify and prioritize the mitigation measures for the impacts in a more transparent and direct manner;

iv. To document the concerns raised by stakeholders and PAPs so that their views and proposals are mainstreamed to formulate mitigation and benefit enhancement measures;

v. To sensitize other MDAs, local authorities, Non-governmental Organizations (NGOs) and Community Based Organizations (CBOs) about the project and solicit their views and discuss their share of responsibility for the smooth functioning of the overall project operations;

vi. Reducing conflict between stakeholders, project proponents PAPs; and

vii. To develop stakeholder's capacity in the areas sustainable project management.

Additional entry points for stakeholders' engagement in monitoring include collaboration with local CBOs/NGOs, communities, local academia, or think-tanks in gathering results data and conducting joint evaluations of project results after project completion (including in the preparation of project Implementation Completion Reports). Capacity building will be an integral part of the stakeholder's engagements.

Envisaged Benefits

The envisaged benefits of the Stakeholders engagement and sensitization exercises include;

- Provision of opportunities to foresee and/or resolve potential obstacles, constraints and conflicts;
- Means to identify and address potential negative social and environmental impacts as envisaged by stakeholders;
- Opportunities to generate social learning and innovations based on local field experiences;
- Means of ensuring that project benefits are distributed equitably, and
- Strengthened working relations between stakeholders; Federal and State Governments, etc., and the World Bank.

6.7.1 Fundamentals of Stakeholder Engagement Approach

6.7.1.1 Consultations

Meaningful consultations can contribute to improved design, implementation, and sustainability of developmental interventions. The objectives of consultations include receiving inputs for improved decision-making about the design and implementation

arrangements of a developmental program or project and to contribute to improved results and sustainability. In this context, consultations can potentially give voice to the needs of different population groups, including the vulnerable and marginalized groups; improve risk management by identifying opportunities and risks from and to a project; and increase transparency, public understanding, and stakeholder involvement in development decision-making.

Consultations with key stakeholders, including the project-affected people and the civil society, are mandatory in developmental projects so as to satisfy *"best practices"*. Consultation methods include public hearings or meetings, focus group discussions, household surveys and interviews, electronic consultations, and advisory/expert groups. In addition, consultations can include informal structures at the local level, such as village councils and women's groups. Good practice approaches to consultation, including closing the feedback loop, need to be applied more systematically.

6.7.1.2 Collaboration

Collaboration with stakeholders in the decision-making processes and events can make decisions more responsive to stakeholders' needs and improve the sustainability of program and project outcomes through increased ownership by stakeholders. Mechanisms for collaboration include stakeholder/user membership in decision-making bodies, integrity pacts, participatory planning and budgeting, and stakeholders' juries.

6.7.1.3 Collecting, Recording, and Reporting on Inputs from Stakeholders

Stakeholders' feedback can be collected periodically on the various dimensions of public services provided. The service may include effectiveness, inclusiveness, quality, delivery time, transaction costs, and targeting, as well as on resource utilization or engagement processes. The tools to use may include satisfaction surveys, focus group discussions, hotlines, community scorecards, stakeholder report cards, or SMS/online feedback

However, the Enugu State APPEALS has been implementing its Citizen/Stakeholders Engagement Plan since the inception of the Project. Major milestones covered so far in this respect include the:

- identification of Project stakeholders;
- summary of past consultation efforts from baseline study and GIS mapping;
- establishment of site committee

Other planned consultation efforts to prepare for construction activities include;

- stakeholder engagement during consultancy services;
- resources for stakeholder engagement;
- monitoring and reporting on stakeholder engagement; and
- formation of the Community Farmer Environmental Committee (CFEC).

6.8 Training Programmes

The Enugu State APPEALS is expected to develop, implement, and track training programmes at the SCO and community levels. Table 6.4 explains the institutional capacity strengthening plan including the needs, topics of training (subjects), the specific resource personnel and period of the capacity development at the specific levels.

Table 6.4**: Institutional Capacity Strengthening Plan**

S/N	Capacity Needs	Participants	Subject	Resource Person	Duration	Cost (US $)
1	Personnel requires knowledge of WB's, Federal/State environmental policies and standards, and application of these policies and standards in implementing the World Bank support for the project.	**SCO Training** SCO, Environmental Safeguards Specialist, Project Engineer, Social Safeguards Specialist, Livelihood Officer and other associated support staff from the Enugu APPEALS SCO. The expected number of participants is Ten (10) persons	In-depth consideration of the mitigation measures proffered by the ESMP.	Environmental Science Specialist	2 days' seminar	3,920
2	Training on GBV/SEA, Labour Influx Issues and other Social Safeguards and Livelihood Issues as it affect project.	**Community Training** The executive members of the clusters and PAPs. The estimated number of participants is Twenty-Five (25) persons.	GBV/SEA, Labour Influx and Social Livelihoods	GBV/SEA specialist, Social Livelihood Specialist. Environmental specialist	1-day workshop	3,550
3	APPEALS institutional arrangements concerning the aggregation and	**Community Training** The executive committee of the	General environmental awareness; seminars that will include ecological	Environmental science specialist	1-day workshop	3,400

	cottage processing facilities project sites	project beneficiaries and PAPs, Contractors and their staff. The estimated number of participants is Fifty (50) persons.	and social science principles, as it affects the project sites. Understanding Environmental Checklist for monitoring contractor's compliance to the mitigation measures proffered in the ESMP.			
Total						**10,800**

6.7 Implementation Schedule

The period that specifies that, tentative and tractable progress of the project with milestones to be achieved, defines the implementation schedule. Various tasks attached to each of the mitigation measures stated in the ESMP are therefore well-defined. For each of these mitigation measures, the respective monitoring tasks are expected to be suitably appended with specific time. Table 6.5 provide a portrait of the designed implementation schedule which is related to the respective phases of the project as well as the period of time expected for the completion of tasks. The project is expected to be completed within a period of 6 months (roughly 24 weeks) which is sufficient to cover all aspects of the implementation of all measures as well as for the review of any of the measures to adapt to any emerging issues.

Table 6.5: ESMP Implementation Schedule for the Project

	Mitigation measures for:	Mitigation Timeline (Weekly)																						
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th
1.	**Pre-construction phase** i. Land Acquisition																								
	ii. Community sensitivity of the project																								
2.	**Construction phase** 1. Environmental impacts																								
	2. Biological impacts																								
	3. Socioeconomic impacts including Labour Influx, Child Labour etc																								
	4. Public health including GBV/SEA																								
3.	**Operation and maintenance phase** Air quality, noise and vibration, water quality, traffic & transportation, and health and safety																								

6.8 ESMP Costing and Cost Analysis

The total sum of the stated mitigation measures in Tables 6.1, 6.2 and 6.3 covering pre-construction, construction and operation phases of the project is presented in Table 6.6. The cost of mitigation and capacity building are also included to arrive at the total cost estimate for ESMP implementation and monitoring. The total sum for implementing the Aggregation Centres and Cottage Processing Facilities ESMP is N 23,878,140 (Twenty-Three Million, Eight Hundred and Seventy-Eight Thousand, One Hundred and Forty Naira) only at the exchange rate of N411 to the United States Dollar, it corresponds to USD 61,226.00 (Sixty-one Thousand, two Hundred and Twenty-Six dollars).

Table 6.6: Cost Estimate of ESMP Implementation and Monitoring

S/N	ESMP Activities (Monitoring)	Cost Estimate ($)
1	***Pre-Construction Phase***	**10,710**
2	***Construction Phase***	
	Environmental Impacts	4,220
	Biological Impacts	1,300
	Socioeconomic Impacts	9,550
	Public Health Impacts	3,640
	Sub-Total	**18,710**
3	***Post-Construction/Operation Phase***	**7,720**
	Total for Construction Impact Mitigation Monitoring	**44,860**
4	***Institutional Capacity Reinforcement Programme***	
	Enugu State APPEALS including the purchase of satellite imageries	3,900
	Community	6,900
	Total for Institutional Capacity	**10,800**
Total for Mitigation Monitoring		**55,660**
	10% Contingency	**5,566**
Grand Total		**61,226**

Foreign Exchange Rate Used: 411 Naira to 1 United States (U.S.) Dollar

6.9 ESMP Disclosures

After a review and clearance by the World Bank, the ESMP will be disclosed at the FMEnv, Enugu APPEALS-SCO and the LGA offices of the beneficiary communities and at the World Bank online web portal (www.worldbank.org). The purpose will be to inform stakeholders about the project activities, impacts, anticipated and proposed environmental management actions as well as to obtain the certificate of conformity from the FMEnv.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 Summary

The aggregation centres and cottage processing facilities are programmes designed for scaling up smallholder farmers to medium class business enterprises in Enugu State. Aggregation centres were proposed for Ezeagu, Orba, Eha Etiti, and Ezineri Oduma while cottage processing will be installed at Ikpa, Amechi, Adani, Eha Amufu, Nara, and Ezineri Oduma. On the basis of coverage, within 8 local government areas, the project cut across Enugu State.

Enugu State is located in the south-eastern part of Nigeria and stretches from latitudes 5^0 55' to 7^0 6' North of the Equator and Longitudes 6^0 54' and 7^0 52' East of the Greenwich Meridian (Fig. 3.1). The total land area of Enugu State is roughly 7,534 km^2, with a population of 3,267,837 (2006 Census) and a corresponding population growth rate of 1.3 percent. The population of Enugu State based on 2006 Census projection is 4,411,119 as at 2017 and will exceed 8 million mark by 2030. The climate of Enugu State is under the influence of tropical semi-arid dynamics of tropical continental and tropical maritime air masses, both of which dictate seasonality upon climatic elements. Rainfall is remarkably seasonal with September usually with the highest amount of roughly 400.4 mm. It rains in every month in Enugu but with varying amount. Also, average temperature of Enugu State ranges from 30.84^0 C during the dry harmattan season (December to early February) to 39.49^0 C at the peak of the dry season. During the wet season, average temperature drops slightly to 30^0 C. Relative humidity also indicates some seasonal distinctiveness as it rises from March and peaked at July with a mean of 81.6%. On the average, wind velocity exceeds 23 km/h while lesser winds declines month-on-month. Most days of the month, wind usually exceeds 19 km/h but rarely exceeds 23 km/h. The soil structure and chemical composition supports agriculture extensively and are not found to exceed the standards set by the FMEnv and other regulatory bodies. None of the plant species recorded is in the vulnerable category of the International Union for Conservation of Nature (IUCN).

The main occupation of the respondents is farming (72.7%) and trading and shop keeping (19.1%). Crops cultivated include maize, wheat, tomatoes, onions and rice. Trading varies in the communities from small shops in front of houses to medium scale buying and selling in local markets. Civil servants constitute 4.5% while daily labourers represent 3.6% of the sampled population. Monthly income as indicated by respondents in the sampled communities include: less

than N10,000 (20.9%), N10,000 - N20,000 (30.9%), N21,000 – N30,000 (13.6%), N31,000 – N40,000 (10.0%), N41,000 – N50,000 (9.1%), N81,000 – N90,000 (1.8%), above N100,000 (8.2%) while those who earn between on N61,000-N70,000 and N71,000 – N80,000 represent 2.7% each. . About 19.1% indicated that they receive remittances from family members who live elsewhere while others (80.9%) indicated the contrary. As indicated by respondents, remittances received ranges from less than N10,000 (6.4%), to N10,000 - N20,000 (36.4%), N21,000 – N30,000 (3.6%), N41,000 – N50,000 (1.8%) and above N50,000 (0.9%) while others (80.9%) did not disclose how much they receive. 92.7% of the respondents living within the proposed projects communities claimed they own the house they live in, 3.6% live in rented apartments while 2.7% of the respondents indicated that they occupy rent free houses while 0.90% are family owned. The land tenure followed same pattern as that of the housing tenure with about 93.6% owned by the respondents, 0.9% is family owned while others rented and occupied rent free (2.7% respectively). The most common ailment in the project area is malaria. There are no major cultural issues in the communities which may affect the implementation of the project as the areas are rapidly urbanizing. However, there are shrines very close to the gully head. The expectation of respondents is mainly the execution of the proposed project.

7.2 Conclusion

Every project that has the potential to affect the prevailing social and environmental aspects of the beneficiary community must be examined as deemed appropriate. Such scrutiny must engage a proper diagnosis of the pre-project (baseline) conditions and the potential adverse and positive impacts must be drawn. When these are juxtaposed efforts and strategies must be installed such that the positive impacts are strengthened and the adverse impacts addressed such that they will not pose deleterious imprint on the community. This is the overall aim of any ESMP. In this case, the proposed aggregation centres and cottage processing facilities have been examined and the risks management strategies prepared. Hence, the main strategy is to ensure that all impact studies have been conducted to ensure that the social and environmental components of the 9 locations in Enugu State remain undeterred and undisturbed throughout the lifespan of these projects. This is because all the legal and administrative requirements have been prepared in total compliance with the standards expected.

An Environmental and Social Management Plan (ESMP) documents a project's risk management strategy. It serves as an "Umbrella Document" that integrates the findings of all impact studies carried out during the design phase, the plans and other provisions for complying with the requirements of the Standards that were triggered as well as country- and site-specific information relevant for the

project's risk management strategy. The ESMP will thus become an integral part of the project proposal.

Consequently, the biophysical and social baseline information of the proposed intervention sites including; air quality, water, soil, vegetation, geology, socio-demographic of the community among others were assessed. The study identified the environmental parameters that may be positively and or negatively impacted upon at the different phases of the project development and developed the appropriate mitigation measures for the identified impacts. The cost implication of monitoring the implementation of the mitigation measures in the ESMP was estimated and presented. Capacity building strategies that will ensure that the projects, throughout the selected communities in Enugu State, are in line with the World Bank Environmental and Social Standards goals of ending extreme poverty and promoting shared prosperity were also developed.

7.3 Recommendation

The following recommendations are presented for the consideration of the Enugu State APPEALS SCO. The recommendations are geared towards ensuring the improvement of decisions and filling of gaps identified by the ESMP study.

- Capacity building on the ESMP implementation for members of the beneficiaries of aggregation centres and cottage processing facilities and other stakeholders to ensure effective and efficient contribution;
- Complete compliance to the mitigation measures in the ESMP at all the stages of project implementation by all actors in project delivery;
- Continuous stakeholder's engagement and awareness creation on Sustainable Agricultural System (SAS) practices and optimal usage of the proposed facilities.

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ANNEXES

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
QUESTIONNAIRE
ENUGU STATE APPEALS INTERVENTION PROJECT

Dear Respondent,

Thank you for taking the time to complete this survey. The exercise is meant to gain valuable insight on proposed intervention by **ENUGU STATE APPEALS** Coordination Office. The survey provides you an avenue to contribute to the environmental and social components of the project implementation.

Kindly read each question carefully. Answers provided by you are absolutely confidential and will be included only in summaries where individual answers cannot be identified. Unless otherwise instructed, please tick appropriate answer category that best describes your opinion. It will take approximately 20 minutes to complete this questionnaire.

SECTION A: Respondents Household data

1. Respondent's Gender: (a) Male (b) Female
2. Age: (a) Below 18 yrs (b) 18-45 yrs (c) 46-65 yrs (d) Above 66 yrs
3. Marital Status: (a) Single (b) Married (d) Divorced/Separated (e) Widowed
4. Occupation: (a) Famer (b) Daily Labourer (c) Trading & Shop Keeping (d) Artisans (e) Employed (salary) (f) Retired (g) Civil Servant (h) Unemployed (i) Others specify……
5. Residential Status: (a) Permanent Resident (b) Back Home (Returnee) (c) Non-Resident, Visiting
6. Ethnic Group: (a) Igbo (b) Igala (c) Idoma (d) Yoruba (e) Hausa (f) others(specify)

……

7. Religion: (a) Christianity (b) Islam (c) Traditional (d) Others (Specify)……
8. Relationship to Household Head (HH): (a) Self (b) Spouse (c) Child (d) Parent (e) Other, specify…..
9. Size of the HH ……
10. How long have you been living in this area? (a) 0-2 yrs (b) 3-5 yrs (c) 6-9 yrs (d) 10 yrs and Above
11. Education: (a) No formal education (b) Primary School (c) Secondary School (d) NCE/OND/HND (e) University Graduate (f) University Post Graduate

SECTION B: Respondents Health Conditions

1. How do you manage your health conditions when sick? (a) Attend hospital/clinic (b) Buys drugs from nearby chemist (c) Traditional medicine (d) None (e) Others Specify……..
2. If you do attend hospital/clinic, when last did you visit one? (a) last six months (b) last one year (c) last five years (d) more than five years ago (e) Never visited one.
3. Please tick one or more of the under-mentioned ailment/sickness, you suffer from most accordingly?

Ailment	**Tick (√)**	**Ailment**	**Tick (√)**
Whooping Cough		Rheumatism	
Tuberculosis		Rashes	
Asthma		Eczema	
Dysentery		Ringworm	

Diarrhoea		Eye pains	
Cholera		Cataract	
Pile		Glaucoma	
Hypertension		Typhoid fever	
Congestive health problem		Malaria	
Pneumonia		Sickle cell anaemia	
Sexually transmitted diseases		Epilepsy	

7. Do you think your health condition will be affected by the proposed intervention? (a) Yes (b) No
8. If yes, how? (a) Contamination of ground water (b) Contamination of surface water (c) Provide breading site for disease vectors (d) Noise/air pollution (e) Others, specify:……
9. Please suggest how this can be averted during construction and implementation……..

SECTION C. Standard of Living / Socio-Economic Activities

1.0 Assets

1.1 What sort of housing does your household live in?					
a. Construction material - Walls		Plastered mud	c. Number of rooms		1-2
		Cement blocks			3-4
		Other (specify)			Other
b. Construction material - roofing		Corrugated	d. Other structures on plot		Animal Pen
		Aluminium			Granary
		Asbestos			Shops
		Tile			Kiosks
		Other (specify)			Other
e. Construction material - floor		Earthen			
		Concretes			
		Tiles			
		Other (specify)			
f. Toilet Facility		Pit latrine			
		Water closet			
		Toilet facility outside dwelling			
		Pit latrine			
		Other (specify)			
		None			
g. Tenure of housing		Owned			
		Rented			
		Occupied rent free			
		Other			
h. Tenure of land		Owned			
		Rented			
		Occupied rent free			
		Lease hold			
		Others specify			

1.2 Indicate household refuse disposal for solid waste? (Multiple options) (a) Depositing refuse at backyard of the house (b) Dumping in water body (c) Dumping in community refuse/garbage pit/dumpsite
(d) Burning after gathering together (e) Waste collector (f) Other specify……

2.0 Household Services

2.1 Rank in order of availability and usability the source(s) of lighting for the household? (please use 1, 2,...in hierarchical order with 1 indicating the most available and used source)

(a) EEDC	(b) Generator	(c) Lantern	(d) Candle	(e) Palm Oil Lamp	(f) Torchlight Battery	(g) Wood	(h) Kerosene	(i) Gas

2.2 Using the method in 2.1, indicate major source of energy for cooking?

(a) Fire Wood	(b) Coal	(c) Kerosene	(d) Electricity	(e) Animal dropping	(f) Gas	Others

3.0 **Sources of Water**

Sources	for drinking	for cooking	for bathing and
a. Well			
b. Borehole/Water pump			
c. Community tap			
d. Piped water outside dwelling			
e. River			
f. Rain harvesting			
g. Water vendor			
h. Tanked water			
i. Other (specify)			

4.0 **Income**

Kindly state your main income per month	₦

4.1 **Remittances**

1. Does anyone in the family who lives elsewhere send money to you?	1	Yes	2	No
2. If yes, how much (per month)	₦			

5. In your opinion, how has the standard of living of your household changed over the previous three years? (a) Same (b) Better (c) Worse
6. Is the option in 5 propelled by the state of the environment? (a) Yes (b) No
7. If 6 is YES, do you think the proposed intervention will improve the situation? (a) Yes (b) No
8. If 7 is YES specify how the project will improve the situation ……

SECTION D: Gender-Based Violence/Sexual Exploitation and Abuse

1. Are there any provisions which restrict women's access to health and other social services? In particular, which:

(Please specify in the space provided for this purpose "yes" or "no")

( ) require the consent of a male relative/husband for a married woman's medical examination or treatment or access to contraceptives or abortion,

( ) require parental consent in case of adolescents' access to contraceptives or abortion;

( ) allow medical practitioners to refuse provision of a legal medical service on grounds of conscientious objection

( ) prohibit certain medical services, or require that they be authorized by a physician, even where no medical procedure is required; in particular:

( ) IUDs (intrauterine devices) or hormonal contraceptives

( ) Emergency contraceptives, including the morning-after pill,

( ) Sterilization on request;

( ) Early abortion (in first trimester of pregnancy) at the pregnant woman's request

( ) Medically assisted reproduction (e.g., in vitro fertilization)

2. Are the following acts criminalized?

(Please specify in the space provided for this purpose "yes" or "no")

( ) transmission of HIV or other venereal diseases by women only

( ) female genital mutilation

( ) child marriage

( ) home births with an obstetrician or midwife

( ) abortion

3. Are the following acts criminalized?

(Please specify in the space provided for this purpose "yes" or "no")

( ) adultery

( ) prostitution

(If yes, who is criminally responsible – please circle the appropriate answer: the sex worker, the procurer and/or the customer)

( ) sexual orientation and gender identity (homosexuality, lesbianism, transgender, etc.)

( ) violations of modesty or indecent assault (e.g. not following dress code)

4. If yes, does it cover: *(Please specify in the space provided for this purpose "yes" or "no")*

( ) prevention of sexually transmitted diseases

( ) prevention of unwanted pregnancies

( ) promotion of a healthy lifestyle, including prevention of dietary disorders of teenage girls, including anorexia and bulimia

( ) psychological/psychiatric training on self-control of aggression, including sexual aggression

5. Are there any measures and programs undertaken in order to increase women's safety e.g. in public urban spaces, in public transportation, etc.? YES ( ) NO( )

6. Are there centers established within your community for the management of gender-based violence related issues?

7. Are there specific training programs for medical and legal professionals on the issue of gender-based discrimination in the area of health and safety? YES ( ) NO( )

8. Are there specific rehabilitation programs for victims of GBV in your community? YES ( ) NO( )

9. Do they cover: *(Please specify in the space provided for this purpose "yes" or "no")*

( ) the issues connected with specific women's needs in area of health

( ) specific women's vulnerability to be victims of gender-based violence or specific crimes

( ) the nature of gender-based violence,

( ) its occurrences and symptoms

( ) methods of detection

( ) medical protocols

( ) influence of gender-based violence, in particular of sexual violence on the future behaviours of victims (post-traumatic stress symptoms etc.)

10. Are there channels for the reporting of Gender Based Violence incidents reported in your community?

Yes ( ) NO( )

11. If yes, please specify……..

12. How are Gender Based Violence treated in your community? Please specify……..

13. Is there a referral system for GBV incidents?

YES ( ) NO ( )

14. If Yes, please specify ……

15. Are there homes/Shelters for the victims of Gender Based Violence in your community?

YES ( ) NO( )

16. If yes, please specify ……

17. How do you ensure gender equity in the community? (a) Women are elected in public office (b) Females are given equal opportunity and access to education and employment (c) Quotas on genders are ensures in leadership of community-based organizations (d) Others specify……..

SECTION E: Resources/ Cultural Property

1. Please indicate the environmental problems which your settlement/community experiences? (a) Soil infertility (b) Poor drainage system (c) Bad road (d) Bad lands (e) environmental degradation (f) Degraded land (i) Destruction of infrastructures (j) Others (specify) ……..
2. Please indicate the environmental problems which your settlement/community would likely experience and whose cause can be linked to the proposed intervention project during construction? (a) Soil infertility
   (b) Poor drainage system (c) Bad road (d) Low visibility (e) Erosion Problems (f) Flooding
   (g) Environmental degradation (g) Destruction of infrastructures (h) encroachment of land properties
   (i) Pollution (air, surface water, ground water, noise) (j) Others (specify) ……..
3. Please indicate the environmental problems which your settlement/community would likely experience and whose cause can be linked to the proposed intervention project during operation? (a) Soil infertility
   (b) Poor drainage system (c) Bad road (d) Low visibility (e) Erosion Problems (f) Flooding
   (g) Environmental degradation (h) Destruction of infrastructures (i) encroachment of land properties
   (j) Pollution (air, surface water, ground water, noise) (k) Others (specify) ……..
4. Do you think the proposed intervention project will affect any valued resource/cultural/archaeological property in your area? (a) YES (b) NO
5. If yes mention the name(s) of the valued resource/cultural/archaeological property ……
6. How will valued resource/cultural/archaeological property be affected? (a) Displacement of such valued cultural properties (b) Vandalisation of sacred items/locations (c) Possible theft of sacred/archaeological items (d) Others, specify: ……

SECTION F: Intervention Project Activities Impact Evaluation

1. Are you aware of the proposed intervention by APPEALS? (a) Yes (b) No
2. If yes, from which source (a) Community meetings (b) Media (TV, Radio, Newspaper, Internet) (c) Others specify……..
3. What exactly are your expectations from the proposed intervention? ……..

   Please specify……..

   ……

   ……
4. Do you think the project can cause agitation in your community? (a) Yes (b) No
5. If 4 is yes, how will the proposed intervention result in restiveness? (a) Disrespect of norms and culture by contractors (b) loss of farmland / Property (c) Possible theft of sacred/archaeological items (d) local people not employed during construction (e) Others, specify: ……
6. How will the proposed intervention project impact on your livelihood and environment?

Positive impacts	Negative impacts
(a)	
(b)	
(c)	
(d)	
(e)	
(f)	

7. Can you name some of the animals and other habitat that may be affected by the proposed intervention project? ……

8. What do you expect from the activities of APPEALS intervention? (a) employment of Locals during the intervention (b) compensation for those whose properties will be affected (c) capacity building for maintenance during implementation (d) community input into project (e) Others please specify……

9. Are there any other issue(s) of concerned as regards the intervention project in your area, please state clearly?

……

Thank You

ANNEX II

PICTURES OF FIELDWORK ACTIVITIES

Socioeconomics and Community meetings

Meeting Section at Adani Community

Group picture after meeting at Adani

Rice Sun/Open drying at Adani

Team lead and stakeholders by Adani Project site

Engagement with Amechi community

Group picture with people of Amechi community

Group picture at Eha Amufu site visit

Group picture at meeting at Eha Amufu

Rice sales section at Eke market, Eha Amufu

Bags of rice paddy displayed at Eke market, Eha Amufu

Discussion with youths at Eha Etiti

Group picture after meeting at Eha Etiti

Meeting section at Ikpa community

Picture with Ikpa Igwe and women representative

Group picture after meeting at Ikpa

Existing poultry slaughter at Ikpa market

Engagement with Oduma rice farmers

Rice open drying on road side at Oduma community

Group picture after meeting at Oduma

A market by Oduma project site

Women leader vote of thanks at Orba Meeting

Group picture after Orba meeting

Meeting session at Orba community

Transportation of Cashew nuts at Orba

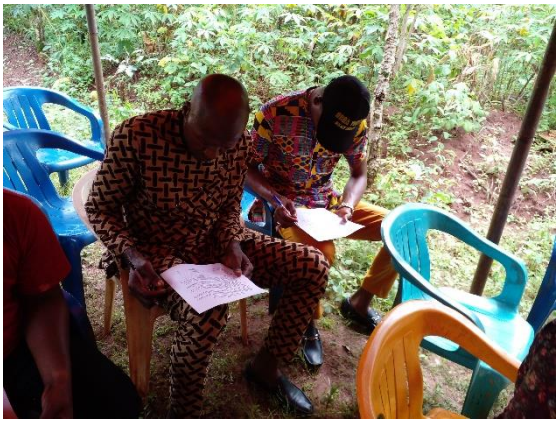
Group picture with Igwe of Nara kingdom

Member of Enugu State Graduate farmers at Nara

Questionnaire administration at Nara

Questionnaire administration at Adani

Questionnaire administration at Eha Etiti



Leader of Orba youth assembly filling questionnaire

ANNEX III

ATTENDANCE

IKPA COMMUNITY NSUKA

ENUGU APPEALS ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN(ESMP)

ATTENDANCE REGISTER

S/N	NAME	ORGANISATION/ DESIGNATION	PHONE NO. SIGN	DATE
1	ATTANIKE, P. C.	08060219007		
2	OTI, L. I.	07064828212		10.9.2021
3	ONAH, A. O.	08052666704		10/9/2021
5	ATTAH, E. U.	07067885512		10/09/2021
6	OZIOKO ONYEBUCHI	08081412795		10/09/2021
7	SIMON NSUKA	08136800359		10/09/2021
8	OkeChukwu Ezeuga	08163545[illegible]		10/09/2021
9	Onyeka Valentine	08033748[illegible]		10/9/21
10	Augustine Asadu	080[illegible]		〃
11	UCHE OMEJE			10/09/2021
12	Comrade AGBO, S. O.	08057213908		10/9/2021
13	ONAH, Jones			
14	NZE FIDELIS AGBO	08038341048		10/9/2021
15	Mrs Attanike Edith L.	08063[illegible]		10/9/2021
16	Mrs ASOgwa Onyedika	0703[illegible]		10/9/2021
17	Abiodun Ajiyole / ESMP Team	08036[illegible]		10/9/2021
18	DR. DIDISI SONNY PRINCIPAL CONSULTANT	08032166391		10-9-21
19	KENECHUKWU ENE	08036446935		10-09-21
20	Ugwu Linus Etutor	07038080478		10/9/2021

EHA - ETITI

ENUGU APPEALS ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN(ESMP)

ATTENDANCE REGISTER

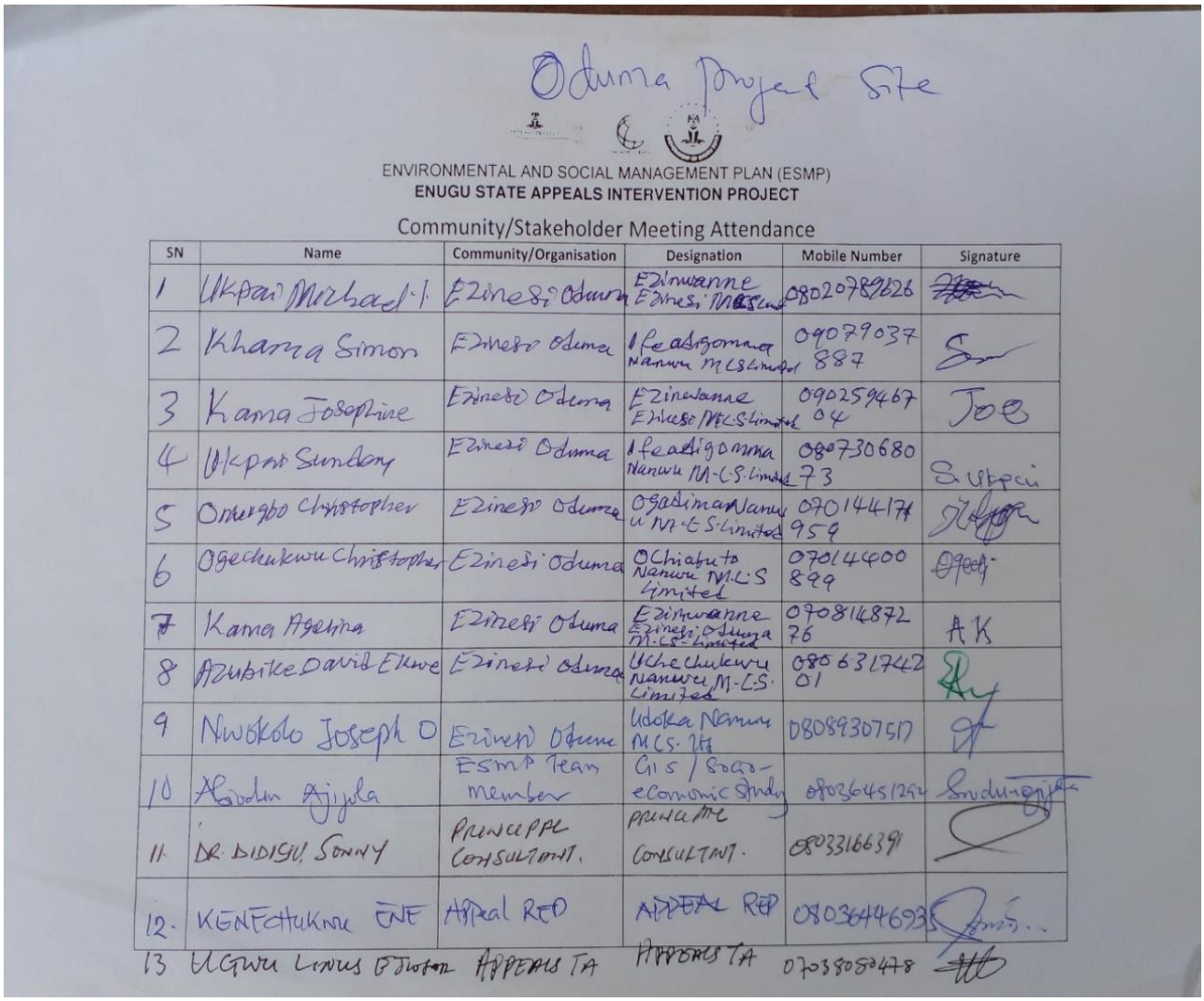
S/N	NAME	ORGANISATION/ DESIGNATION	SIGN	DATE
1.	Chief Rommy Odo	08033102821 Eha-Etiti		10/09/021
2.	Ichie Evaristus Ugwu	08034225995 Eha Etiti	[signature]	10/09/021
3.	Ichie Aloysius Asogwa	[illegible] Eha Etiti	[signature]	✓
4.	Mrs Josephine Ugwu	08061391125 Eha Etiti	[signature]	✓
5	Mr. Ezugwu Felix	08038106660 Eha Etiti	[signature]	10/10/2021
6.	Mrs Agbo Edith I	08107187543 Eha Etiti		10/09/021
7.	Mrs Veronica Mbah.	Eha Etiti		✓
8.	Mrs Agnes Odo	Eha Etiti		✓
9.	Ichie Linus Asogwa			
10.	✓ Melitus Odo			
11.	Mr. Daniel Enwo	07012363353 Eha Etiti	[signature]	
12.	✓ Chinonso Eze	07030160825 Eha Etiti	[signature]	
13.	✓ ~~Emeka Enwo~~	~~[illegible]~~		
14	✓ Chinedu Asogwa	07031906225 Eha Etiti	[signature]	
15	✓ Chizoba Ugwu	08169406435 Eha-etiti	[signature]	
16	Abudun Ajiyoke / ESMP Team	08036451252	[signature]	10/09/2021
17.	DR. DIDIGU SONNY PRINCIPAL CONSULTANT	08033166391	[signature]	10-9-2021
18.	KENECHUKWU MELVIN ENE	08036446935	[signature]	10-09-2021
19	UGWU LINUS E. JIOFOR	07038080478	[signature]	10/09/2021

UMUGWUINYI, AMAEKWURU – AMALLA, ORBA.

ENUGU APPEALS ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN(ESMP)

ATTENDANCE REGISTER

S/N	NAME	ORGANISATION/ DESIGNATION	SIGN	DATE
1.	ICHIE ODO CHARLES	AMALLA ORBA 07034546881		
2	HON EZE BONIFACE	ORBA 08103269690		10/09/21
3	HON EZEH CHARLES Ejiofor	AMALLA ORBA 08064838187		10/9/21
4	HON ODO Godwin	08061654576		10/9/21
5	UGWUABONYI PETER CHIEMEZIE	08133058694		10/09/2021
6	Onah Anthony	ORBA 08035531694		10/09/2021
7	MADU Joel Uchechukwu	07030607746		10/09/2021
8	IFEANYI UGWU	ORBA 08060632486		10/09/2021
9	Linus Ofo Nweke	07038293916		10/09/21
10	Onah Ernest	08135731529		10-9-021
11	Chinweike Ngozika	08038685683		10.9.021
12	Onowu Odo Nichodemus U.	08034940162		10/9/21
13	Ugwu Charles C.	08063125490		10/9/21
14	MADU CHIDI	08161141318		10/9/21
15	Abodun Ajiyola	ESMP Team member 08036441212		10/9/2021
16	DR. DIDIGU SONNY	PRINCIPAL CONSULTANT 08033166391		10-9-21
17.	KENECHUKWU ENE	08036440635		10-9-21
18	Ukenu Linus Ejiofor	07038080478		10/09/2021



Oduma Project Site

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
ENUGU STATE APPEALS INTERVENTION PROJECT

Community/Stakeholder Meeting Attendance

SN	Name	Community/Organisation	Designation	Mobile Number	Signature
1	Ukpai Michael I.	Ezinesi Oduma	Ezinwanne Ezinesi M.C.S Limited	08020789626	
2	Khanna Simon	Ezinesi Oduma	Ifeadigonma Nanwu M.C.S Limited	09079037887	
3	Kama Josephine	Ezinesi Oduma	Ezinwanne Ezinesi M.C.S Limited	09025946704	Joe
4	Ukpai Sunday	Ezinesi Oduma	Ifeadigonma Nanwu M.C.S Limited	08073068073	S. Ukpai
5	Onuigbo Christopher	Ezinesi Oduma	Ogadinma Nanwu M.C.S Limited	07014417959	
6	Ogechukwu Christopher	Ezinesi Oduma	Ochiabuto Nanwu M.C.S limited	07014400899	Ogech
7	Kama Agatha	Ezinesi Oduma	Ezinwanne Ezinesi Oduma M.C.S Limited	07081487276	AK
8	Azubike David Ekwe	Ezinesi Oduma	Uche Chukwu Nanwu M.C.S Limited	08063174201	
9	Nwokolo Joseph O	Ezinesi Oduma	Udoka Nanwu M.C.S. Ltd	08089307517	
10	Abiodun Ajijola	ESMP Team member	GIS / Socio-economic Study	08036451252	
11	DR. DIDIGU SONNY	PRINCIPAL CONSULTANT.	PRINCIPAL CONSULTANT.	08033166391	
12	KENECHUKWU ENE	Appeal REP	APPEAL REP	08036446935	
13	UGWU LINUS OJIOFOR	APPEALS TA	APPEALS TA	07038080478	

Adani Community

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

ENUGU STATE APPEALS INTERVENTION PROJECT

Community/Stakeholder Meeting Attendance

SN	Name	Community/Organisation	Designation	Mobile Number	Signature
1	IDU BERNARD	ADANI	LEAD FARMER	07060870097	[signature]
2	Ayogu IGNATIUS	ADANI	FARMER	0803038660	[signature]
3	Ezeh christopher	Adani	chairman chebube Fc	080620063 681	[signature]
4	Nwali Richard	ADANI	LEAD FARMER	07062032282	[signature]
5	[illegible] Amaechi	ADANI	LEAD farmer	0813080 8276	[signature]
6	ANIAKU KIZITO	ADANI	FARMER	090372648	[signature]
7	EZea ELias	ADani	Farmer	08106933654	[signature]
8	OKAFOR FELICIA	ADANI	FARMER	09060611577	[signature]
9	ANOSIKE CYNTHIA	ADANI	FARMER	08141641502	[signature]
10	Ude Priscilla	Adani	farmer	09034918769	[signature]
11	Abiodun Aishola	ESMP Team	GIS/Socio-economic study	08036451292	[signature]

Eho - Amufu Community 15/09/2021

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

ENUGU STATE APPEALS INTERVENTION PROJECT

Community/Stakeholder Meeting Attendance

SN	Name	Community/Organisation	Designation	Mobile Number	Signature
1	Hon francis Ede	community Leader	SSA to the Gov	07030183783	[signature]
2	Hon Ogenyi Innocent	" "		07037948618	[signature]
3.	OLINYA PAUL	✓ ✓		09023146625	[signature]
4	Hon Ogbu Nneka	✓ ✓	Councillor	09063776198	[signature]
5	PASTOR MIKE MAKINYI	" "	CLERGY	07034512976	[signature]
6	Hon Ugwu Thaddeus	" "	councillor	08037423660	[signature]
7	Mr James E. Olinya	✓ ✓	Food Processing Technologist	08050352661	[signature]
8	Prince Charles Ezeoha	✓ ✓	Food Processor	07033221160	[signature]
9	Hon Ani Israel	✓ ✓	Councillor	08035411480	[signature]
10	Nnabuchi Amarachi F.			08165499516	[signature]
11	Odoh Paulinus A.	✓ ✓	AFAN. Ch	07036881185	[signature]
12	Ejeke Chibuzor	Chief	Leader of Community	08030712457	[signature]

Eha – Amufu Community

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
ENUGU STATE APPEALS INTERVENTION PROJECT

15/09/2021

Community/Stakeholder Meeting Attendance

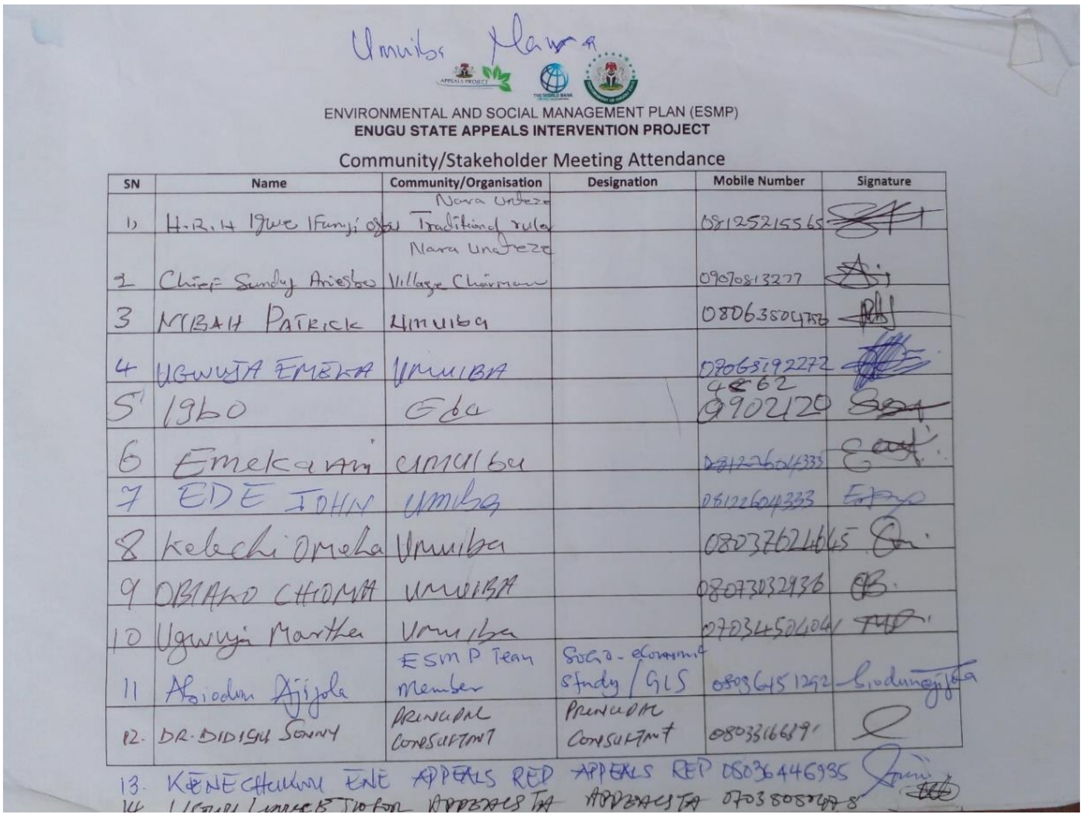
SN	Name	Community/Organisation	Designation	Mobile Number	Signature
13	EDE JOSEPH EJIKE	MGBUJI/leader	food producer	08037600240	[signature]
14	OLINYA, PAUL OKECHUKWU	AMEDE/LEADER	FOOD PRODUCER	08068576658	[signature]
15	EDE DANIEL TOCHUKWU	IHENYI/LEADER	FOOD PRODUCER	~~09038627039~~ 09038627039	[signature]
16	Ede David N.	Agu-Amede	Rice, Maize, Cassava.	08167779321	[signature]
17	Mr Irvine Nwonye	Agamede	Rice packaging & farmer	07016731327	[signature]
18	Ugwu Chukwuemeka	Camp Eha-Amufu	Treasurer	08106302399	[signature]
19	UGWU Linus Ejiofor	Eha-Amufu	APPEALS TA	07038080478	[signature]
20.	KENECHUKWU ENE	Eha-Alumona	APPEALS	08036446935	[signature]

Amachi Project Community

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
ENUGU STATE APPEALS INTERVENTION PROJECT

Community/Stakeholder Meeting Attendance

SN	Name	Community/Organisation	Designation	Mobile Number	Signature
1	NNAM EMMANUEL O.	AMACHI		08034084289	[signature]
2	ODOH CHIJIOKE	AMACHI		08067074882	[signature]
3	EGBO STELLA	AMACHI		07065816921	[signature]
4	UGWU CHUKWUBE	AMACHI		08035927653	[signature]
5	EGBOANMA CHARLES	AMACHI		07037451851	[signature]
6	ANI AMACHI-G.	AMACHI		08037451437	[signature]
7	CHUKWUBIKE ORIJI	AMACHI		08034805610	
8	MRS NNAMCHI STELLA	AMACHI		08038868985	
9	MARYROSE NWEGA	AMACHI		08067951778	
10	UGWU KENNETH	AMACHI		07036815615	
11	ENEH ONYIYECHI	AMACHI		07032686960	
12	OBY NNAM	AMACHI		08063311448	
13	Abiodun Ajiyola	ESMP Team	Socio-economist/GIS	08036451292	[signature]
14	DR. DIDIGU SONNY	PRINCIPAL CONSULTANT	—	08033166341	[signature]



Umuiba Nara

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)
ENUGU STATE APPEALS INTERVENTION PROJECT

Community/Stakeholder Meeting Attendance

SN	Name	Community/Organisation	Designation	Mobile Number	Signature
1)	H.R.H Igwe Ifunji Ofu	Nara Unateze Traditional ruler		08125215565	[signature]
2	Chief Sunday Ariesbo	Nara Unateze Village Chairman		09070813277	[signature]
3	MBAH PATRICK	Umuiba		08063504756	[signature]
4	UGWUJA EMEKA	UMUIBA		07065192272	[signature]
5	Igbo	Eda		09021204862	[signature]
6	Emekanni	umuiba		08122604333	[signature]
7	EDE JOHN	Umiba		08122604333	[signature]
8	Kelechi Omeka	Umuiba		08037624645	[signature]
9	OBIAKO CHIOMA	UMUIBA		08073032936	[signature]
10	Ugwuja Martha	Umuiba		07034504041	[signature]
11	Abiodun Ajijola	ESMP Team Member	Socio-economic study / GIS	08036451292	[signature]
12.	DR. DIDIGU SONNY	PRINCIPAL CONSULTANT	PRINCIPAL CONSULTANT	08033166891	[signature]
13.	KENECHUKWU ENE	APPEALS REP	APPEALS REP	08036446935	[signature]
14	[illegible]	APPEALS TA	APPEALS TA	0703808[illegible]8	[signature]

ANNEX IV
General Environmental Management Conditions for Construction Contracts/Civil Works

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental and Social Management Plan (ESMP) for the works he is responsible for. The Contractor shall inform himself about such an ESMP, and prepare his work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP after written instruction by the Supervising Engineer (SE) to fulfil his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.

2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an ESMP. In general, these measures shall include but not be limited to:

a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, asphalt mixing sites, dispersing coal ashes, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity of dust producing activities.

b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g., excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.

c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.

d) Prevent bitumen, oils, lubricants and waste water used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.

e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archaeological or historical importance during the execution of works, immediately report such findings to the SE so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.

g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation,

i) Ensure that garbage, sanitation and drinking water facilities are provided in construction worker scamps.

j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long-distance transportation.

k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.

3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.

4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.

5. Besides the regular inspection of the sites by the Supervising Engineer for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the SE, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

6. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be

collected and disposed-off at designated disposal sites in line with applicable government waste management regulations.

7. All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.

8. Used oil from maintenance shall be collected and disposed-off appropriately at designated sites or be reused or sold for re-use locally.

9. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

10. Construction waste shall not be left in stockpiles along the road, but removed and reused or disposed of on a daily basis.

11. If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the SE, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality.

12. The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

13. The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

14. New extraction sites:

a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.

b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels.

c) Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.

d) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.

e) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.

f) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.

g) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

15. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

16. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

17. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable ESMP, in areas approved by local authorities and/or the SE.

18. Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the SE and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

19. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.

20. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.

21. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.

22. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.

23. Locate stockpiles where they will not be disturbed by future construction activities.

24. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.

25. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.

26. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.

27. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.

28. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.

29. Minimize erosion by wind and water both during and after the process of reinstatement.

30. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.

31. Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people. Water Resources Management

32. The Contractor shall at all costs avoid conflicting with water demands of local communities.

33. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

34. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

35. Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.

36. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

37. Wash water from washing out of equipment shall not be discharged into water courses or road drains.

38. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

39. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.

40. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

41. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

42. Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands without the permission of the SE.

43. Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.

44. Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

45. Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the SE. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

46. As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the SE and the local authorities concerned.

47. AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

48. Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

49. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

50. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

51. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

52. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair,

the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

53. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the SE. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

54. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works.

The Contractor's EHS-MP will serve two main purposes:

• For the Contractor, for internal purposes, to ensure that all measures are in place for adequate HSE management, and as an operational manual for his staff.

• For the Client, supported where necessary by a SE, to ensure that the Contractor is fully prepared for the adequate management of the HSE aspects of the project, and as a basis for monitoring of the Contractor's HSE performance.

55. The Contractor's EHS-MP shall provide at least:

• A description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;

• A description of specific mitigation measures that will be implemented in order to minimize adverse impacts;

• A description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and • The internal organizational, management and reporting mechanisms put in place for such.

56. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

57. The Contractor shall prepare bi-weekly progress reports to the SE on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor HSE report is given below. It is expected that the Contractor's reports will include information on:

• HSE management actions/measures taken, including approvals sought from local or national authorities;

• Problems encountered in relation to HSE aspects (incidents, including delays, cost consequences, etc. as a result thereof);

• Lack of compliance with contract requirements on the part of the Contractor;

• Changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects; and

• Observations, concerns raised and/or decisions taken with regard to HSE management during site meetings.

58. It is advisable that reporting of significant HSE incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendices to the bi-weekly reports. Example formats for an incident notification and detailed report are given below. Details of HSE performance will be reported to the Client through the SE's reports to the Client

59. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHSMP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP.

General topics should be:

• Occupational Health and Safety Basics
• Occupational Health and Safety in water supply pipeline installation
• Safety Practices in Borehole installation and Aquifer Abstraction
• Electrical Safety Basics
• Hazard Identification and Control
• Hazard Communication Program
• Accident Investigation
• Asbestos Management
• Safe work Procedures
• Fall Protection
• Noise Management Program
• Workers Respiratory Program
• Work place Violence Management
• Fire Safety
• Emergency Management; and
• Social and cultural awareness

60. It is expected that compliance with these conditions is already part of standard good workmanship and state of the art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable HSE impact.

Example Format: HSE Report

Contract:
Period of reporting:
HSE management actions/measures:
Summarize HSE management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), HSE training, specific design and work measures taken, etc.

HSE incidents:

Report on any problems encountered in relation to HSE aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

HSE compliance:

Report on compliance with Contract HSE conditions, including any cases of non-compliance.

Changes:

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to HSE aspects.

Concerns and observations:

Report on any observations, concerns raised and/or decisions taken with regard to HSE management during site meetings and visits.

Signature (Name, Title Date):

Contractor's Representative

Example Format: HSE Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:
Date of Incident: Time:
Location of incident:
Name of Person(s) involved: Employing Company:
Type of Incident:

Description of Incident:

Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):

Contractor's Representative

ANNEX V

OCCUPATIONAL HEALTH AND SAFETY (OHS) PLAN

1.0 INTRODUCTION

Every project poses its HSE risks. This plan was necessitated to meet up with OHS standards and to achieve the objectives set for the proposed project. The project team shall undertake to ensure high performance standards and conformity with contract requirements by managing the works in a systematic and thorough manner.

2.0 PROJECT DESCRIPTION

2.1 Purpose

The purpose of this document is to describe the Project Occupational Health and Safety (OHS) plan for the proposed road rehabilitation and construction and the specific management controls, risk control systems and workplace precautions required to ensure compliance with Occupational Health and Safety Laws and Standards.

2.2 HSE Objectives

The Objectives for this plan are to:

- Adopt a positive Health & Safety Culture.
- Adopt the principles of prevention to avoid risk.
- Complete the project without incident (Zero fatalities, Zero Lost Time Injury (LTI) or occupational illness).

2.3 Scope of Work

The Project Occupational Health and Safety (OHS) plan covers the scope of works defined in the contract. This includes Preconstruction, Construction, Operation & Maintenance and Decommissioning phases.

2.4 Policy Statement

In addition to the existing HSE policy, other policies shall be developed which includes:

- Substance Abuse Policy – Prohibiting the consumption or possession of narcotics, drugs, alcohol and other banned substances
- Emergency Response Policy – Stating commitment to ensure adequate resources and arrangement are in place in the case an emergency.

- Community Affairs Policy – Stating commitment to foster healthy relationships with communities through observance of the highest standard of conduct.
- Road Safety Policy–Stating commitment to complying with Road Traffic regulations and continuously improving its road safety performance by implementing a Road Safety Management Plan (RSMP)

3.0 KEY RESPONSIBILITIES

Involvement of all in implementing, maintaining and continually improving OHS processes is the key to successful completion and achievement of quality objectives set by the management. All project personnel shall therefore be required to be familiar with the content of this OHS plan and shall participate in implementing, maintaining and improving the management system. It is the responsibility of the project manager and all key personnel to ensure that the requirements for quality are fulfilled for works under their responsibility. All new staff and staff who are given new responsibilities are to be inducted into the requirements set out in this plan in general and into their function and responsibilities in particular.

3.1 Project Manager Responsibilities

- Set good example in HSE issues.
- Ensure the availability of resources essential to establish, implement, maintain and improve the OHS Management System.
- Define, document and communicate roles, allocate responsibilities and accountabilities, delegating authorities, to facilitate effective OHS management.
- Ensure that all of the activities undertaken in the Project conform to Nigerian legislation, client requirements or international standards when applicable.
- Review objectives achievements throughout the year.

3.2 Project Supervisors Responsibilities

- Enforcing all phases of the established HSE plan.
- Set good example in HSE issues.
- Preparing Job Hazard Analysis when required.
- Ensuring the safety of all workers associated with the site.
- Conducting HSE inspections.

- Ensuring workers are competent for their allocated tasks.
- Attending and participating in HSE meetings.
- Participating in accident investigations.

3.3 HSE Manager/Supervisor Responsibilities

- Prepare relevant OHS documentation and procedures.
- Monitor the efficient implementation of OHS requirements.
- Participate and organize the OHS risk assessments.
- Advise management of compliance and of conditions requiring attention.
- Conduct regular HSE inspections.
- Make thorough analysis of statistical data and inspections; delineates problem areas; and makes recommendation for solutions.
- Take part in the review of all OHS incidents and assist in investigating incident.
- Monitor the efficient implementation of the Project's OHS requirements.
- Organize the Project's OHS risk assessment exercises.
- Check on the use of all types of personal protective equipment specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements where indicated.

3.4 HSE Advisor Responsibilities

- Check on the use of all types of personal protective equipment specifies the use of appropriate PPE for the various work activities. Evaluates their effectiveness and suggests improvements.
- Conduct independent inspections to observe conformance with established OHS Plan and determines the effectiveness of individual elements of the plan (pre-task briefing, weekly toolbox talk, etc.)
- Establish contact with Subcontractors with the objective of maintaining good relations and coordination of accident prevention activities and compliance with the established OHS plan.
- Correct unsafe acts and unsafe conditions.

- Deliver HSE induction/orientation course to all employees, including subcontractors.
- Deliver HSE awareness course and toolbox talk.
- Advise employees on OHS matters.

3.5 All employees Responsibilities

- Take all reasonable and practical steps to care for their own health and safety and avoid affecting the health and safety of co-workers and the general public.
- Follow all instructions and use the equipment properly
- Not interfere with any safety arrangements.
- Report any circumstances which may not comply with the project's OHS management system.

4.0 Competency

All personnel required to operate or work with any equipment or machine must be competent, be tested for each equipment that he/she shall be operating. All personnel who as part of their profession require licensing or certification must obtain the necessary certification before he/she shall be allowed to work on the site.

5.0 Fitness

All personnel working on site shall be required to be certified medically fit to do so by an approved medical facility or Medical Doctor (pre-employment medical examination).

6.0 HSE Training

6.1 Induction/Orientation

Every new or rehired employee and Subcontractors employees must undergo mandatory OHS orientation / induction. The purpose of the Induction is to educate workers and make them aware of the major potential hazards he or she shall come into contact with while working on the site; also, it is one more opportunity to stress the importance of HSE being the first priority in the operations. The content of the HSE orientation / induction shall cover the following subjects:

- Site safety rules.
- Personnel protective equipment requirements (PPE).
- Environmental sensitivity and protection.
- Preparation and planning of the job (Daily Pre-task talk).
- Emergency plan and muster points.

6.2 Project Specific HSE Training

In addition to the HSE orientation /induction, there shall be specific site HSE trainings which shall cover the following topics:

- Manual handling.
- Electrical Safety
- Emergency Prevention, Preparedness and Response
- Work at height training
- First Aid training (for site First Aiders)
- Lifting and Rigging
- Safe Driving techniques (for drivers)

7.0 Hazard identification & HSE risk assessment

7.1 Project HSE Risk Assessment

The project HSE risk assessment shall be developed and recorded. The Project's HSE risk assessment shall be conducted by a team consisting of HSE Manager/ Supervisor and technical managers/supervisors. It must be approved by the Project manager.

7.2 Fire Risk Assessment

A fire risk assessment shall be developed and recorded. A fire safety plan shall be in place in the site.

7.3 Job Hazard Analysis

Job hazard analysis is required when the hazards and risks associated with a specific task is to be identified so as to implement control measures. The HSE department together with the technical managers/supervisors shall develop a job hazard analysis when applicable.

8.0 EMERGENCY PREPAREDNESS AND RESPONSE

Emergency procedures and evacuation plan shall be developed by the HSE Department and displayed on the notice board. These procedures shall be communicated to all staff. Also, each section/department shall have at least a trained first aider at all times.

9.0 HSE IMPLEMENTATION AND PERFORMANCE MONITORING

9.1 HSE Meetings

HSE management meetings shall be held once a month. The meeting is to help identify safety problems, develop solutions, review incident reports, provide training and evaluate the effectiveness of our safety program. Some of the meetings shall be:

- Project/Site Management HSE Meeting for management and supervision (Monthly);
- Tool box talk meetings for all workforce (Weekly);
- Pre-task briefing for all workforces (Daily);
- Special situation meeting (As required).

9.2 HSE Reporting

All incidents and illnesses must be reported to the Site Supervisor after which investigation shall commence and recorded so that appropriate corrective actions shall be implemented to prevent any re-occurrence and report findings shall be forwarded to management for review. Reporting requirements shall include notification of incident, investigation report, and monthly report. Notification of Incident form shall be developed which shall be filled and submitted to HSE department for investigation.

9.3 HSE Inspection and Audits

For continual improvement of HSE management system, HSE inspection and audit shall be conducted. An inspection checklist shall be developed. This is to ensure that the HSE management system is being adhered to. The inspection shall be conducted by the HSE department together with site management.

9.4 Corrective and Preventive Actions and Non-Conformities

During the cause of inspections, concerns raised shall be addressed and closed out. It is expected that within a period of two weeks, a close out inspection shall take place to verify that the corrective actions have been closed.

10.0 Project HSE Rules

The project HSE rules shall be developed and supervision shall develop specific rules and procedures when necessary. The following site rules shall be implemented at all times. The Site Manager shall draw these rules to the attention of their own workmen or staff. All sub-contractors must ensure that these rules are drawn to the attention of their workmen and staff. The Principal Contractor may implement additional site rules during the contract programme. Any such additional rules shall be notified to all

personnel engaged on the project prior to their implementation. The HSE rules shall include but not limited to:

1. Personal Protective Equipment must be worn at all times;
2. All instructions issued by the Site Manager regarding the storage, handling or cleaning of materials, plant and equipment must be followed;
3. All vehicles must be parked in the designated areas;
4. Any workman suffering from a medical condition that might affect his work and/or that could require specific Medical treatment must inform the supervisor before commencing work;
5. All site tools shall either be battery operated or at 110 volts operated;
6. No one shall be permitted on site if it is believed that they are under the influence of alcohol or drugs;
7. Vehicles must not reverse without a banksman in attendance;
8. All visitors to site must undergo a site-specific induction and operative Identity badges must be worn at all times;
9. All excavations must be secured;
10. Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction;
11. All food and drink vendors on site shall be registered;
12. The variant of food and drink to be sold in the sites must be approved by the HSE officer;
13. No hot works operations are permitted without a hot work permit in place;
14. There shall be no radios or other music playing devices on site;
15. Good housekeeping practices to be adopted;
16. Compliance with all Ethical Power Permit to Work systems;
17. The site keyed access procedure must be strictly adhered to;
18. All Contractors must comply with Site Health & Safety Guidelines / Site Safety Method Statement;
19. No untrained worker shall be permitted to operate heavy machineries.

11.0 SAFE WORK PRACTICES

Implementing safe work practices is one of the keys to achieving our HSE objectives and some of these safe work practices include:

11.1 Personal Protective Equipment (PPE)

The basic PPE required for the project shall be Safety Glasses, Safety Boots, Hand Gloves, Hard Hat and Coverall. Any other PPE shall be used as applicable. Management is responsible for the provision of PPE and usage shall be enforced at all time. PPE shall be provided in circumstances where exposure to hazards cannot be avoided by other means or to supplement existing control measures identified by a risk assessment. An assessment shall be made to ensure that the PPE is suitable for purpose and is appropriate to the risk involved. Information, instruction & training shall be given to all employees on safe use, maintenance and storage of PPE. Employees shall, in accordance with instructions given, make full use of all PPE provided and maintain it in a serviceable condition and report its loss or defect immediately to the maintenance department where it shall be replaced. PPE shall be replaced when it is no longer serviceable and returned on a new for old basis. Employees shall sign to state that they have received PPE when issued.

12.0 WELFARE FACILITIES

The provision of welfare facilities on the site shall be communicated to all operatives at site induction. A cleaning regime shall be implemented and maintained for the duration of the construction phase to ensure the site welfare facilities remain in a clean and tidy condition.

- If mains drinking water becomes unavailable during the construction phase bottled water shall be brought to site for all operatives for the necessary period.
- All food and drink vendors on site shall be registered.
- The HSE officer will ensure that only approved vendors are allowed to sell food.
- The variant of food and drink to be sold on the sites must be approved by the HSE officer
- Access to the site should be restricted to avoid sale of contraband on site
- Smoking and eating shall only be permitted in the designated area. This area shall be identified during induction.

13.0 SIGNAGE

Adequate provision for warning and directional signs shall be made.

14.0 PROJECT HSE PROCEDURES

OHS procedures shall be developed. Project activities shall generally be controlled in accordance with OHS Procedures. These procedures shall include:

- Lifting and Rigging Procedure
- HSE Reporting Procedure
- Working at Height Procedure.
- Emergency Procedure.