Environmental and Social Management Plan (ESMP)

On Fruit Juice Production and Packaging

For Promise Kept Farmers Multi-Purpose Cooperative Society

May, 2013
Final Report

Environmental and Social Management Plan (ESMP) for Fruit Juice Production and Packaging

Submitted by Dr A.O Anyadiegwu
2 Masaka Close, Off Olusegun Obasanjo Way, Wuse, Zone 7, Abuja
# Table of Contents

**ABBREVIATIONS** ................................................................................................................. 1  

**EXECUTIVE SUMMARY** ........................................................................................................ 2  

**CHAPTER 1  INTRODUCTION** ................................................................................................. 6  

1.1 Background ....................................................................................................................... 6  

1.2 Project Development Objectives ..................................................................................... 7  

1.3 Enugu State CADP Activities ........................................................................................... 8  

1.4 Purpose of the ESMP ......................................................................................................... 8  

1.5 Objectives of the Environmental and Social Management Plan ..................................... 9  

1.6 Technical Approach for the ESMP .................................................................................... 10  

1.7 Project Strategy ................................................................................................................ 10  

1.7.1 Literature Review ........................................................................................................ 10  

1.7.2 Field Visits .................................................................................................................. 10  

**CHAPTER 2  DESCRIPTION OF THE STUDY AREA** ................................................................. 11  

2.1 Biophysical Setting of Enugu State .................................................................................. 12  

2.1.1 Climate and Meteorology .......................................................................................... 12  

2.1.2 Geology, Relief and Drainage ..................................................................................... 12  

2.1.3 Vegetation .................................................................................................................. 12  

2.2 Socio-Economic Setting of Enugu State ......................................................................... 13  

2.3 Overview of Promise Kept FMCS ................................................................................... 13  

2.3.1 General Biophysical Conditions ................................................................................ 13  

2.3.2 Socio Economic Setting .............................................................................................. 14  

**CHAPTER 3  PROJECT DESCRIPTION** .................................................................................... 15  

3.1 Background ....................................................................................................................... 15  

**CHAPTER 4  INSTITUTIONAL AND LEGAL FRAMEWORK** ..................................................... 16  

4.1 Nigerian Legislation and Regulations ............................................................................... 16  

4.2 Sector Institution .............................................................................................................. 19  

4.3 Relevant State Legislation ............................................................................................... 20  

4.4 International Laws and Regulations ............................................................................... 21
4.5 Other International Laws and Regulations .......................................................... 22
4.6 Nigeria EIA Guidelines and World Bank EA Guidelines .................................... 23

CHAPTER 5 SUMMARY OF IMPACTS ................................................................. 25
5.1 Introduction ........................................................................................................ 25
5.2 Beneficial Impacts ............................................................................................ 26
5.3 Adverse Environmental and Social Impacts ....................................................... 27
5.4 Identified Potential Impacts ............................................................................. 27
  5.4.1 Pre-Construction phase ........................................................................... 27
  5.4.2 Construction Phase .................................................................................. 29
  5.4.3 Operation and Maintenance Phase ........................................................... 31

CHAPTER 6 ENVIRONMENTAL MITIGATION AND ENHANCEMENT
MEASURES ........................................................................................................ 34
6.1 Environmental and Social Management Plan ............................................... 34
6.2 Monitoring Plan .............................................................................................. 45
6.3 Waste Management Plan ................................................................................ 52
  6.3.1 Recommended Measures for Waste Management .................................. 52

CHAPTER 7 PUBLIC CONSULTATION .................................................................. 55
## ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tr>
<td>CADA</td>
<td>Commercial Agriculture Development Associations</td>
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<td>CADP</td>
<td>Commercial Agriculture Development Project</td>
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<td>CIG</td>
<td>Commodity Interest Groups</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>ENADEP</td>
<td>Enugu State Agricultural Development Program</td>
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<td>ENSCADO</td>
<td>Enugu State Commercial Agriculture Development Office</td>
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<td>ENSCADP</td>
<td>Enugu State Commercial Agriculture Development Project</td>
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<td>ENSMEnv</td>
<td>Enugu State Ministry of Environment</td>
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<td>ESMF</td>
<td>Environmental and Social Management Framework</td>
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<td>ESMP</td>
<td>Environmental Social Management Plan</td>
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<td>ESWAMA</td>
<td>Enugu State Waste Management Authority</td>
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<td>FEPA</td>
<td>Federal Environmental Protection Agency</td>
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<td>FMARD</td>
<td>Federal Ministry of Agriculture and Rural Development</td>
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<td>FMCS</td>
<td>Farmers Multipurpose Co-operative Society</td>
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<td>FMWR</td>
<td>Federal Ministry of Water Resources</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>IDA</td>
<td>International Development Association</td>
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<td>km</td>
<td>kilometre</td>
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<tr>
<td>LGA</td>
<td>Local Government Area</td>
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<td>MDA</td>
<td>Ministries Departments and Agencies</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>NCO</td>
<td>National Coordinating Office</td>
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<tr>
<td>NFRA</td>
<td>National Food Reserve Agency</td>
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<td>OP/BP</td>
<td>Operational Policies/ Bank Procedures</td>
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<td>PPE</td>
<td>Personal Protective Equipment</td>
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<td>PPP</td>
<td>Public-Private Partnership</td>
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<td>RPF</td>
<td>Resettlement Policy Framework</td>
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<td>SCADO</td>
<td>State Commercial Agriculture Development Office</td>
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<td>STI</td>
<td>Sexually Transmitted Infections</td>
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<td>TBD</td>
<td>To Be Discussed</td>
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<td>WB</td>
<td>World Bank</td>
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EXECUTIVE SUMMARY

The Federal Government of Nigeria has received a credit from the International Development Association (IDA) under the World Bank for the implementation of the Commercial Agriculture Development Project (CADP). The Commercial Agriculture Development Project (CADP) is aimed at promoting private sector-driven agricultural value chains development, and accelerated agricultural growth in Nigeria. The value chains include rice, oil palm, cocoa, fruit trees, poultry production, aquaculture and dairy, with maize and rice as staples. The project intends to bring together global experience and prospective partners in commercial agriculture.

In a bid to fulfil its operation procedures/bank procedures, the World Bank has required the preparation of an Environmental and Social Management Plan (ESMP) to institute mitigation measures for potential negative impacts of the project and enhance the positives impacts on the environment and Enugu state at large, implementation responsibilities, proffer mitigation measures and monitoring framework for the execution of the sub-projects. The project for which this report is being prepared is the Fruit Juice Processing and Packaging for the Promise Kept Services (FMCS) Ltd, located in Thinkers Corner Enugu East L.G.A, Enugu State. The CIG majors on fresh juice production and intends to increase production by 50% through the proposed intervention. The measures in this ESMP are based on the Environmental and Social Management Framework (ESMF) prepared for CADP. The ESMF served as a guidance material for the development of this ESMP.

This ESMP has equally been prepared in accordance with the Nigeria EIA Act No. 86 of 1992 and in line with international standards, as reflected in the Safeguard policies of the Word Bank Group. The project has been classified as a World Bank’s Environmental Assessment (EA) category B, since it is assumed that the likely overall impacts of the project will be site-specific; few if any of them will be irreversible; and mitigation measures for them can be readily achieved. It contains a description of mitigation measures for adverse impacts, measures for enhancing the beneficial effects, cost for the implementation of the ESMP, specific actions required, roles and responsibilities for these actions, implementation plans, measures for waste management and disposal, noise abatement, maintenance, occupational health and safety, as well as monitoring plans and procedure for grievance mechanism for project affected persons.

Objectives of the ESMP

The implementation of this ESMP will ensure that all adequate steps are taken to address the potential positive and negative impacts of the Fruit Juice Processing and Packaging project. It also defined a proposed institutional structure to govern the implementation of the project.
Policy and Legislation

Several national and international regulations and policies that are applicable to this ESMP have been consulted. The Environmental Impact Assessment (EIA) Act No. 86 of 1992, requires that EIA studies are carried out for any large-scale development project. Screening of the projects are required to ensure if there is need for a full EIA, a partial EIA or no need for an EIA to be carried out. The EIA Act is related to the World Bank EA requirements for any development projects and her categorization (A, B, & C) of EA types.

Further, the World Bank provides a number of Operational and Safeguards policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. The Nigerian EIA Act and the World Bank safeguard policies are similar. OP/BP 4.01 and Nigerian EIA Act are also similar. World Bank EA Screening Category A is similar to Nigerian EIA Act category I, World Bank EA Category B is equivalent to Nigeria EIA Act Category II, World Bank EA Category C is equivalent to the Nigeria EIA Act Category III. However in the event of divergence between World Bank safeguard policies and the existing Environmental laws in Nigeria during the implementation of the Fruit Juice Processing and Packaging for the Promise Kept Services (FMCS) Ltd, the World Bank safeguard policies will take precedence.

The Proposed Project

This CADP sub-project focuses on provision of modern technology for fruit trees, with an utmost objective to support fruit juice processing and packaging in Promise Kept FMCS, Thinkers Corner. The CADP intervention proposes the adoption of fruit juice extracting machine and packaging equipment (including corking machine). It is expected that the implementation of the CADP intervention, will boost the production system of the CIG.

Potential Impacts associated with the Sub-Project

The beneficial and adverse environmental and social impacts associated with the sub-project were assessed.

Beneficial Environmental and Social Impacts

- Increase in current production of locally made processed juice in the market
- Income generation for CIG members
- Reduce Post Harvest losses
- Training of the CIG members and locals on modern fruit juice processing and packaging equipment use and maintenance
• Marketing linkages due to increased productivity

**Adverse Environmental and Social Impacts**

• Noise pollution during construction and operation phase due to installation works and operation of fruit juice processing and packaging machines.
• Safety issues for processing factory workers due to location and tight spacing
• Increase in solid and liquid wastes generated
• Conflict within the CIG and with Service Providers
• Possibility of spread of Sexually Transmitted Infections (STIs) amongst permanent and temporary workers.

These impacts typical of a category B project and can easily be managed a well implemented set of mitigation measures.

**Mitigation Measures**

A monitoring plan has been established, highlighting elements that must be in place prior to construction to allow a baseline to be established against which changes during construction, and on into operation, can be assessed. A matrix table format of the ESMP is described in detail in this chapter 6 of this report. All impacts are discussed according to the respective phases during the project implementation. The impacts have been described, as they would impact on different environmental and social sensitivities with emphasis on occupational health and safety at all phases. The chapter also includes mitigation measures and mitigation costs, and institutional responsibilities in the implementation of the ESMP. The estimated cost for the implementation of the proposed mitigation measures and monitoring of the ESMP is $13,982.5

**Public Consultation**

The public consultation formed a very important forum for the stakeholders to raise their concerns about the project. Stakeholders consulted range from the members of the CIG to other fruit juice processors and staff of the Enugu CADP.

**Translations into Major Language in the Project Area**

In order to ensure that communities in the project area especially “potential project affected persons” (PAPs) understand the involved issues, the executive summary of the report is may be translated into the major language in the Project area (Igbo).
Disclosure

The ESMP will be disclosed publicly through the Federal/State Ministries of Environment at designated locations at Federal and Enugu State, and, at the World Bank “Info-Shop”.

ESMP Implementation Arrangement

The implementation of the Environmental and Social Management Plan for this intervention will be done by the contribution of the various stakeholders involved in the project cycle. This ranges from the World Bank which has supervisory and coordinating role, through the State SCADO which directly ensures the enforcement of the dictates of the ESMP to the Promise Kept FMCS members that will ensure the day to day implementation of the mitigation measures outlined in the ESMP with the technical support of the safeguards Unit of the SCADO.
CHAPTER 1

INTRODUCTION

1.1 Background

Agriculture plays a critical role in the Nigerian economy being the largest employer of labour (over 60% of the labour force). Recent figures indicate that the agricultural sector contributes to about 42 per cent of the nation’s Gross Domestic Product (GDP). The Federal Government of Nigeria has identified investments in agriculture as a major priority for the nation’s development. In line with the Vision 20:20:20 of the Federal Government and with support from the World Bank, the Nigeria government is desirous in supporting growth in the non-oil sector of the economy. The Federal Government of Nigeria has received a credit from the International Development Association (IDA) under the World Bank for the implementation of the Commercial Agriculture Development Project (CADP). The Government has adopted the model of the CADP for the implementation of a National Commercial Agriculture Development Programme, which will be implemented in all the 36 states of the federation, and the Federal Capital Territory (starting with 5 states: Cross River, Enugu, Lagos, Kaduna, and Kano). The project is expected to be implemented over a period of 5 years (April 16th, 2009-December 31st, 2014) and is facilitated to the tune of US$185 million.

The Commercial Agriculture Development Project (CADP) is promoting private sector-driven agricultural value chains development, and accelerated agricultural growth in Nigeria. The value chains include rice, oil palm, cocoa, fruit trees, poultry production, aquaculture and dairy, with maize and rice as staples. The project is bringing together global experience and prospective partners in commercial agriculture. It is envisaged that CADP will have an overall positive impact (direct and indirect) on 10,000 beneficiaries (CIGs) from each of the 5 (five) implementing project States.

The project is divided into 3 (three) components viz:

Component 1: Agricultural Production and Commercialization

This component provides resources to facilitate the adoption of appropriate and existing agriculture technologies. It also supports staple crop production systems to complement the country’s food security initiatives and develop domestic and export markets. The activities supported under this component focuses primarily on the selected value chains. The component has four sub-components.

• Technology Demonstration and Adoption
• Support to Staple Crop Production System
• Market Facilitation
• Capacity Building

Component 2: Provision, rehabilitation and maintenance of rural infrastructure.

This component provides resources for provision of energy and construction of new roads, rehabilitation of existing ones and maintenance of roads to communities and selected agricultural activities.

The component has the following two sub-components:

• Network of Farm Access Roads
• Rural Energy


The component is financing Project Management, Monitoring and Evaluation and selected studies as follows:

• Project Management
• Monitoring and Evaluation
• Strengthening of relevant institutions at Federal and State levels
• Studies.

1.2 Project Development Objectives

The CADP is strengthening agricultural production systems and facilitating access to market for targeted value chains among small and medium scale commercial farmers.

The key performance indicators for the project are:

1. Percentage increase in total production of targeted value chains amongst participating small and medium scale commercial farmers (disaggregated by rice, oil palm, cocoa, fruits, poultry production, aquaculture, dairy and maize).

2. Percentage increase in total sales of agricultural products under the targeted value chains amongst participating small and medium scale commercial farmers (disaggregated by rice, oil palm, cocoa, fruits, poultry production, aquaculture,
dairy and maize).

3. To facilitate access to markets for targeted value chains.

1.3 Enugu State CADP Activities

Enugu state is endowed with very vast landmass and agriculture is highly predominant in the state. Enugu State Commercial Agriculture Development Project (ENSCADP) is desirous in ensuring that CIGs benefit from this initiative. The 3 (three) value chains being supported by the project in the state includes:

- Poultry
- Maize
- Fruit Trees

The Project activities are aimed to facilitate the adoption of appropriate and existing agriculture technologies, and support investments in roads and energy to complement the investments in the value chains.

ENSCADP has prepared a number of site-specific safeguards instruments in line with the provisions of the Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) of CADP. Upon review of formally prepared instruments and comments raised by the World Bank, the ENSCADP has procured an independent consultant to review and upgrade the previously developed Site-specific Environmental and Social safeguard instruments (Environmental and Social Management Plans [ESMPs]) targeted at 4 sub-projects.

This report focuses on the development of an Environmental and Social Management Plan (ESMP) for Fruit Juice Processing and Packaging for the Promise Kept Services (FMCS) Ltd, located in Thinkers Corner Enugu North L.G.A, Enugu State.

1.4 Purpose of the ESMP

The ESMP is an instrument that details the measures to be taken during the implementation and operation of a project to eliminate or offset adverse environmental and social impacts or to reduce them to acceptable levels; and the actions needed to implement these measures. The ESMP is an integral part of Category “A” Environmental Assessments (EAs) (irrespective of other instruments used). EAs for Category “B” projects may also result in an ESMP. However, the sub-project is a Category B project as the impacts are envisaged to be minor and reversible with more likely beneficial impacts in the short and long-term.
The Environmental and Social Management Plan (ESMP) provides a framework of procedures through which CADP will develop and implement environmental, social, health, and safety management systems, programs, processes and procedures that will establish a foundation for sound mitigation of adverse impacts, enhancement of positive impacts, institutional responsibilities, indicative costs for mitigation and eventual monitoring of the ESMP.

The ESMP outlines ENSCADP’s corporate commitment to managing the project in a responsible, safe and sustainable manner whereby the protection of the environment, safety of people and social concerns take priority above all other business concerns.

The ESMP will also ensure compliance with applicable environmental standards all through the life span of the projects. If the recommendations and guidelines in this ESMP document are followed, it is envisaged that the anticipated potential negative environmental and social impacts associated with the sub-project will be markedly minimized, and the positive impacts enhanced.

The Bank will disclose the ESMP document publicly, in Nigeria and at the World Bank Info-shop before project appraisal.

1.5 Objectives of the Environmental and Social Management Plan

The objective of the ESMP is to develop procedures and plans to ensure that the mitigation measures will be implemented throughout the phases for the sub-project i.e. Fruit Juice Processing and Packaging for the Promise Kept (FMCS) Ltd, located in Thinkers Corner Enugu East L.G.A, Enugu State. It has also been prepared to ensure the effective long-term protection of the processing site, her employees and other biotic and abiotic components of the environment.

Specific objectives of this ESMP include the following:

- a) To examine the project in terms of its major activities and identify the aspects associated with the project construction which generate environmental impacts,
- b) Identify the environmental issues associated with the major activities,
- c) Develop mitigation measures for the aspects identified as having environmental impacts,
- d) Incorporate environmental mitigation measures into activities and develop corrective actions and ensure monitoring,
- e) Define the specific actions required, roles and responsibilities for these actions, and associated costs and,
- f) Define a proposed institutional structure to govern the implementation of the ESMP.
1.6 Technical Approach for the ESMP

This ESMP has been prepared in accordance with standard procedures for environmental assessment including the applicable World Bank (WB) safeguard policies and Nigerian environmental assessment guidelines.

The triggered WB safeguards policies for this sub-project is;

- Environmental Assessment (OP/BP 4.01)

1.7 Project Strategy

The preparation of the ESMP was for a period of 4 weeks - within which the consultant accomplished all the tasks as stated in the Terms of Reference (TOR).

A brief description of activities carried out in preparing the ESMP document is indicated below.

1.7.1 Literature Review

The methodology adopted for the ESMP studies involved an intensive application of desk reviews & collection of all relevant information in order to achieve successful outputs. Information was garnered from the ENSCADP.

1.7.2 Field Visits

This activity involved:

a) Visit to the Promise Kept FMCS Ltd, Thinkers Corner, Enugu State
b) Impacts Identification and Assessments
c) Potential Impacts Assessment and Definitions
d) Oral interviews with employees of Promise Kept FMCS and members of ENSCADP
CHAPTER 2   DESCRIPTION OF THE STUDY AREA

Enugu State is an inland state in the South Eastern region of Nigeria, located between latitude 04 30’N and 07 30’N and longitude 06 45’E and 08 45’E. The State is regarded as the oldest urban area in the South East Geopolitical Zone.

The State shares boundaries with Anambra State on the West, Abia and Imo states on the South, Ebonyi state on the East, Benue state to the Northeast, and Kogi on the Northwest. The state is made up of seventeen (17) Local Government Area’s (LGAs) and they include; Aninri, Awgu, Enugu East, Enugu North, Enugu South, Ezeagu, Igbo Etiti, Igbo Eze North, Igbo Eze South, Isi Uzo, Nkanu East, Nkanu West, Nsukka, Oji River, Udenu, Udi, Uzo Uwani. Enugu and Nsukka are its major towns.

Figure 1: Map showing the Regions, 17 (seventeen) LGAs in Enugu State and the Project Area indicated
2.1 Biophysical Setting of Enugu State

2.1.1 Climate and Meteorology

Enugu has a tropical savannah climate, and experiences two seasons; the Rainy and Dry Seasons. The rainy season usually falls between April/May and October and is accompanied by heavy humidity and strong rainfalls. The average annual rainfall in Enugu ranges between 152 to 203 cm, with the heaviest rainfall occurring between June and July. Enugu's climate is humid and this humidity is at its highest between March and November.

The dry season typically occurs between November and March/April and is usually hotter than the rainy period. The lowest rainfall of about 16 mm is normal in February. This period is also characterized by the dry and dusty harmattan winds in January and February.

The mean daily temperature is about 27 °C. The hottest month is February with a mean temperature of about 33°C while the lowest temperatures occur in the month of November, reaching 15.86°C.

2.1.2 Geology, Relief and Drainage

Enugu sits at 223 metres (732 ft) above sea level, endowed with the Udi, Awgu and Nsukka highlands and with well-drained soil during its rainy seasons. Enugu State occupies much of the highlands of Awgu, Udi and Nsukka. The hills are flanked by the rolling lowlands of Oji River, Adada and Anambra Basins to the west, and the Ebonyi (Aboine) River Basin to the east.

Enugu's hills at the extreme may reach an elevation of 1,000 meters (3,300 ft.). Highlands surrounding Enugu for the most part are underlain by sandstone, while lowlands are underlain by shale.

Much of the escarpment stretching from Enugu to Orlu has been ravaged by soil and gully erosion. Other geological features in Enugu include the Nike Lake near which the Nike Lake Hotel. The Ekulu, Asata, Ogbete, Aria, Idaw and Nyaba rivers are the six largest rivers located in the city. The Ekulu River is the largest body of water in Enugu urban and its reservoir contributes to part of the city's domestic water supply.

2.1.3 Vegetation

The vegetation on the highlands are of semi-tropical rainforest type. It is characteristically green and is complemented by typical grassy vegetation. Fresh water swamp forests occur in the Niger Anambra Basin.
2.2 Socio-Economic Setting of Enugu State

The state, which homogeneously consists of the Igbo ethnic group, has an estimated population of 3,257,298 (2006 census). With an area of 7,618 sq. km, this gives a population density of approximately 622.7 persons/km$^2$.

Enugu state is predominantly known for her agriculture and presence of coal. Economically, the state is predominantly rural and agricultural, with a substantial proportion of its working population engaged in farming. Yam tubers, palm produce and rice are some of the state’s main produce. Trading (18%) and services (12.9%) respectively, are also important. Trading is the dominant occupation in the urban areas, followed by a public service workforce.

2.3 Overview of Promise Kept FMCS

The Promise Kept Services FMCS is a commodity interest group that is involved in the production of fresh fruit juice. Promise Kept Services FMCS is located at Pocket Layout, Thinkers Corner, Enugu North L.G.A. The area lies approximately on N06° 56'388 E07° 59'157. It is bounded in the north by Enugu East L.G.A, to the south by Enugu South L.G.A, to the east by Nkanu East L.G.A and in the west by Udi L.G.A. Promise Kept FMCS is located within a private residence and is surrounded by residential buildings, a School – Nike Grammar School and a Hospital – National Orthopaedic Hospital, Thinkers Corner.

The CIG is made up of ten (10) primary beneficiaries (seven (females and three males) and over 1000 secondary beneficiaries (including households and the entire Urban Community in Enugu).

2.3.1 General Biophysical Conditions

The average day temperatures for the project area vary between 27°C and 29°C. The area has a tropical savannah climate.

The group is involved in fruit juice processing and packaging of orange and pineapple.
2.3.2 Socio Economic Setting

The group is involved in fruit juice processing and packaging, with product sold in almost all supermarkets in Enugu metropolis, stores, shops, sporting centres and markets. Presently, the society produces different fruit juice using different fruits like orange and pineapple.

The intervention will equip the CIG with modern machines and equipment. This will increase production of the fruit juices from 30 litres/day to 50 litres/day. The CIG stated that the sub-project would assist in improving their livelihood and create employment.
CHAPTER 3  PROJECT DESCRIPTION

3.1 Background

In Nigeria, the availability of fruits is short-lived due to their seasonal and perishable nature. In order to minimize these losses, fruits should be processed and packaged to ensure availability during all seasons. However, local commercial scale production and packaging is relatively low in the country, although in recent times fruit juice production has garnered investment attention. The CADP identifies Promise Kept FMCS as one of the foremost juice productions and packaging company in Enugu State. Promise Kept FMCS is a fruit juice processing company engaged mainly in orange and pineapple fruit production chains. Over the years it has built an appreciable customer base around Enugu metropolis.

The CIG currently produces 30 litres/day but with the intervention of CADP through the provision of modern machines and equipment, it expected to increase production to 50 litres/day. The support to the Promise Kept FMCS for improved fruit juice production package is intended to strengthen the production of good quality fresh fruit juice within the CIG and in the state. Furthermore, the sub-project is proposed to increase the quantity of fruit juice produced; strengthen commercial fruit production and encourage the CIG and locals to embrace new technology in fruit juice production. The impacts that are expected from the project are not expected to have lasting effect on the environment. Machines to be used are small machines which are easy to maintain. The project will have an overall beneficial impact on the farmers and governments food security programme. It will also provide jobs for the women and youths.
CHAPTER 4 INSTITUTIONAL AND LEGAL FRAMEWORK

The legislations, guidelines and standards that will ensure adherence to Federal Republic of Nigeria, Enugu state and International legal instruments have been identified in this study.

4.1 Nigerian Legislation and Regulations

The National Policy on the Environment (NPE) of 1989

The National Policy on the Environment, 1989 (revised 1999), provides for “a viable national mechanism for cooperation, coordination and regular consultation, as well as harmonious management of the policy formulation and implementation process which requires the establishment of effective institutions and linkages within and among the various tiers of government – federal, state and local government”.

The objective of the policy is to achieve sustainable development in Nigeria and in particular to:

- Secure a quality environment adequate for good health and well-being
- Conserve the environment and natural resources for the benefit of present and future generations.
- Raise public awareness and promote understanding of the essential linkages between the environment resources and development and encourages individual and community participation in environmental improvement efforts
- Maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity;
- Co-operate with other countries, international organizations and agencies to achieve optimal use and effective prevention or abatement of trans-boundary environmental degradation.

The National Environmental Standards and Regulations Enforcement Agency Act 2007 (NESREA Act)

After the repealing of the Federal Environmental Protection Act of 1988, the NESREA Act, 2007 became the major statutory regulation or instrument guiding environmental matters in Nigeria. It specially makes provision for solid waste management and its administration and prescribes sanction for offences or acts, which run contrary to proper and adequate waste disposal procedures and practices
Harmful Waste (Special Criminal Provisions) Act Cap H1, LFN 2004

The Harmful Waste Act prohibits illegal, carrying, dumping or depositing of harmful waste in the air, land or waters of Nigeria. The following sections are notable:

- Section 6 provides for a punishment of life imprisonment for offenders as well as the forfeiture of land or anything used to commit the offence.
- Section 7 makes provision for the punishment accordingly, of any conniving, consenting or negligent officer where a company commits the offence.
- Section 12 defines the civil liability of any offender. He would be liable to persons who have suffered injury as a result of his offending act.

National Environmental Protection (Pollution abatement in Industries and Facilities generating Waste) Regulations, 1991

Restrictions are imposed hereunder on the release of toxic substances and requirement of Stipulated Monitoring of pollution to ensure permissible limits are not exceeded; Unusual and accidental discharges; Contingency plans; Generator's liabilities; Strategies of waste reduction and safety for workers.

National Environmental Protection (Effluent Limitation) Regulations S.I.8 (FEPA, 1991)

This instrument makes it mandatory that industrial facilities install anti-pollution equipment, make provision for further effluent treatment, prescribe maximum limit of effluent parameters allowed for discharge, and spell out penalties for contravention. It also provides that all industries in Nigeria should be operated on the basis of Best Available Technology (BAT).

National Environmental Protection (Management of Solid and Hazardous Wastes) Regulation S.I. 15

These regulate 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.

Land Use Decree of 1978 (amended 1990)

The land-use Act of 1978 states that “...It is also in the public interest that the rights of all
Nigerians to use and enjoy land in Nigeria and the Natural fruits thereof in sufficient quality to enable them to provide for the sustenance of themselves and their families should be assured, protected and preserved”. This implies that acts that could result in the pollution of the land, air, and waters of Nigeria negates this decree, and is therefore unacceptable.

Furthermore, the Land Use Act of 1978 (modified in 1990) remains the primary legal means to acquire land in the country. The Act vests all land comprised 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.

According to the Act, administration of land area is divided into urban land, which will be directly under the control and management of the Governor of each State; and non-urban land, which will be under the control and management of the Local Government. State Governors are given the right to grant statutory rights of occupancy to any person or any purpose; and the Local Government will have the right to grant customary rights of occupancy to any person or organization for agricultural, residential and other purposes.

**Criminal Code**

The Nigerian Criminal Code makes it an offence punishable with up to 6 month 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
- Does 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?

**Federal Environmental Protection Agency (Amendment) Act No 59 of 1992**

The Federal Environmental Protection Agency (FEPA) was created by Act No.58 of 1988, as part of the attempts by the Federal Government to implement appropriate projects designed to ameliorate ecological problems in the country. The Act was amended in 1992. Section 4 of the Act, defines the functions of the agency as the “protection and development of the environment in general and environmental technology, including initiation of policy in relation to environmental research and technology.” A significant feature of the FEPA law is the emphasis placed on pollution control and prohibition.
4.2 Sector Institution

The Federal Ministry of Environment

The act establishing the Ministry places on it the responsibility of ensuring that all development and industry activity, operations and emissions are within the limits prescribed in the National Guidelines and Standards, and comply with relevant regulations for environmental pollution management in Nigeria as may be released by the Ministry. To fulfill this mandate a number of regulations/instruments are available, however the main instruments in ensuring that environmental and social issues are mainstreamed into development projects is the Environmental Impact Assessment (EIA) Act No. 86 of 1992. With this Act, the FMENV prohibits public and private sectors from embarking on major prospects or activities without due consideration, at early stages, of environmental and social impacts. The act makes an EIA mandatory for any development project, and prescribes the procedures for conducting and reporting EIA studies.

Federal Ministry of Agriculture and Rural Development

The Federal Ministry of Agriculture and Rural Development regulate agricultural research, agricultural and natural resources, forestry and veterinary research. The Ministry 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.

The mandate of the Ministry is to be a significant net provider of food to the global community, through the promotion of Agricultural Development and Management of National Resources in a value-chain approach to achieve sustainable food security, enhance farm income and reduce poverty.

Enugu State Commercial Agriculture Development Office (ENSCADO)

The ENSCADO is responsible for complying with all Federal, State and Local Laws regarding the environment and with all social/poverty guidelines; parameters and targets set by the project, and of all triggered World Bank Safeguards policies.

Commercial Agriculture Development Association (CADA)

The Commercial Agriculture Development Associations (CADAs) are apex organizations of economic interest groups, which have a common interest in agricultural commercialization. They identify, prepare, execute, supervise, operate and maintain their subprojects. The team of facilitators and other specialists will be deployed to provide related and necessary technical assistance and training support. The CADAs will use participatory planning process and establish a management committee, consisting of a chairperson, secretary, treasurer, commercial
agriculture development officer (including disadvantaged groups). The CADAs will play a major role in applying the environmental and social checklist to screen sub-projects.

4.3 Relevant State Legislation

**Enugu State Ministry of Environment and Mineral Resources (ESMEMR)**

The Enugu State Ministry of Environment has the responsibility of environmental protection within the state. The functions of the Ministry like other state ministries in Nigeria include:

- Liaise routinely and ensure effective harmonization within FMEnv in order to achieve the National Policy on Environment;
- Co-operation with FMEnv and other relevant national directorates/Agencies in the promotion of environmental education in the citizenry;
- Responsible for monitoring compliance with waste management standards;
- Responsible for general environmental matters in the state including the negative effects of soil degradation due to flooding and erosion, deforestation, physical planning including amusement park, garden and beautification programmes, sewage matters, water quality and pollution control; and
- Monitor the implementation of the EIA and the Environmental Audit Report (EAR) guidelines and procedures on all development policies and project within the state.

**Enugu State Ministry of Agriculture and Natural Resources**

The Enugu State Ministry of Agriculture and Natural Resources has the responsibility of promoting agricultural development in the state. The role of the ministry include the following:

- Agricultural Extension services involving crop production (including pests and diseases control, training, seed multiplication and distribution as well as agricultural publicity)
- Animal production, husbandry and animal health (including provision of extension services to farmers)
- Conservation of land and water resources (including maintenance of soil fertility).
- Development and maintenance of farm structures.
- Fertilizer use and distribution.
- Provision of Agricultural Credit to farmers.
- Fish production (including provision of fishery extension services to farmers).
- Irrigation and drainage of agricultural lands.
- Food Preservation, Storage and Processing (including produce inspection)
• Provision of Veterinary Services (including dog health and licensing).
• Promotion of food and fiber production.
• Control of Agricultural Agencies and Parastatals (including Enugu State Agricultural Development Program (ENADEP).
• Co-ordination of all State Agricultural Projects.
• Relation with the Federal Government, other State Governments and all External agencies in matters relating to Agricultural Development.
• Promotion of Programmes generally aimed at achieving higher income for farmers and improving their standard of living.

4.4 International Laws and Regulations

Among these are:

*The World Bank Safeguards Policies*

The World Bank provides a number of operational and safeguards policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. These policies provide guidelines, aimed at preventing and mitigating undue harm to people and the environment, when implementing development projects. The safeguard policies include:

- Environmental Assessment (OP/BP 4.01)
- Forests (OP/BP 4.36)
- Involuntary Resettlement (OP 4.12)
- Indigenous Peoples (OP/BP 4.10)
- Safety of Dams (OP 4.37)
- Pest Management (OP 4.09)
- Physical Cultural Resources (OP/BP 4.11)
- Natural Habitats (OP 4.04)
- Disputed Areas (OP/BP 7.60)
- International Waterways (OP/BP 7.50)
- Use of country systems (OP/BP 4.00)

The safeguard policies, which will be triggered as a result of the sub-project is highlighted below:

**Environmental Assessment (OP/BP 4.01)**

Environmental Assessment (EA) is used in the World Bank to identify, avoid, and mitigate the potential negative environmental and social impacts associated with Bank’s lending operations early on in the project cycle. In World Bank operations, the purpose of EA is to improve
decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted and their concerns addressed. This policy is triggered if a project is likely to have potential adverse environmental and social risks and impacts in its area of influence. The EA has various tools that can be used, including amongst others Environmental Impact Assessment (EIA) or Environmental and Social Management Plan (ESMP). The selection of EA instruments to be used for a particular project is made through the Environmental and Social Screening process; all projects proposed for World Bank financing are to be screened, and are categorized according to their potential environmental and social impacts as preliminarily assessed during the screening process.

4.5 Other International Laws and Regulations

- International Union for Conservation of Nature and Natural Resources (IUCN) Guidelines
- Convention of Biological Diversity
- Convention Concerning the Protection of the World Cultural and National
- Heritage Sites (World Heritage Convention)
- United Nations Framework Convention on Climate Change (1992)

**Convention on Biological Diversity**

The objectives of the Convention include the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

**International Environmental Agreements**

International protocols signed by Nigeria, that are relevant to the project include:

**Convention Concerning the Protection of the World Cultural and Natural Heritage Sites (or World Heritage Convention)**

The convention sets aside areas of cultural and natural heritage for protection. The latter is defined as areas with outstanding universal value from the aesthetic, scientific and conservation points of view.

**United Nations Framework Convention on Climate Change (1992)**

In order to achieve sustainable social and economic development, energy consumption for
developing countries needs to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general. This also includes the application of new technologies on terms, which make such an application economically and socially beneficial, determined to protect the climate system for present and future generations.

4.6 Nigeria EIA Guidelines and World Bank EA Guidelines

The Environmental Impact Assessment Act No. 86 (Decree No. 86) of 1992 requires that developmental projects be screened for their potential impact. Guidelines issued in 1995 by the former Federal Environmental Protection Agency (FEPA) direct the screening process.

According to these guidelines:

**Category I** projects will require a full Environmental Impact Assessment (EIA).

**Category II** projects may require only a partial EIA, which will focus on mitigation and Environmental planning measures, unless the project is located near an environmentally sensitive area—in which case a full EIA is required.

**Category III** projects are considered to have “essentially beneficial impacts” on the environment, for which the Federal Ministry of the Environment will prepare an Environmental Impact Statement.

With regard to environmental assessment, the Bank has also categorized projects based on the type of EA required, namely:

**Category A** - projects are those whose impacts are sensitive, diverse, unprecedented, felt beyond the immediate project environment and are potentially irreversible over the long term. Such projects require full EA.

**Category B** - projects involve site specific and immediate project environment interactions, do not significantly affect human populations, do not significantly alter natural systems and resources, do not consume much natural resources (e.g., ground water) and have adverse impacts that are not sensitive, diverse, unprecedented and are mostly reversible. Category B projects will require partial EA, and Environmental and Social Management Plans.
**Category C** - Projects are mostly benign and are likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project, although some may require environmental and social action plans.

**Category FI** - A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

This World Bank categorization (A, B, & C) corresponds in principle with the Nigeria EIA requirements of Category I, II and III, which in actual practice is done with regard to the level of impacts associated with a given project. However, in the event of divergence between the two, the World Bank safeguard policy shall take precedence over Nigeria EA laws, guidelines and or standards.

Thus for this ESMP, the Nigeria’s *EIA* requirements and World Bank operational procedures were harmonized as far as possible, hence it is made responsive to the objectives of good practice. It is especially made responsive with regard to the followings:

- Early consideration of environmental and social issues;
- Identification and early consultation with stakeholders;
- Prevention of adverse impacts through the consideration of feasible alternatives; and
- Incorporation of mitigation measures into planning and (engineering) design.

The World Bank provides a number of operational and safeguard policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. The Nigerian EIA Act and the World Bank safeguard policies are similar. OP.4.01 and Nigerian EIA Act are also similar. World Bank EA Screening Category A is similar to Nigerian EIA Act category I, World Bank EA Category B is equivalent to Nigeria EIA Act Category II, World Bank EA Category C is equivalent Nigeria EIA Act Category III. However in the event of divergence between World Bank safeguard policies and the Existing Environmental laws in Nigeria the policies of the World Ban will take precedence.
CHAPTER 5 SUMMARY OF IMPACTS

5.1 Introduction

This chapter focuses on the potential beneficial and adverse impacts associated with the sub-project. For the identification of these potential impacts, the most useful tools in identifying, assessing, and managing the impacts will be fully engaged so that critical social and environmental issues associated with the sub-project will be fully identified, to ensure that all positive impacts are optimized and negative impacts mitigated.

For the purpose of this sub-project, identified impacts that are likely to be associated with the Project have been classified to occur in three (3) phases for the lifespan of the sub-project activities.

The phases include:

- Pre-Construction phase
- Construction phase
- Operational and Maintenance phase
5.2 Beneficial Impacts

- **Agricultural Commercialization:** The introduction of pineapple extracting machine and packaging equipment will bring about increase in current production output and also increase in the fruit juice factory’s capacity.

- **Revenue Generation:** Increased revenue generation for CIG members as a result of strengthening of the fruit juice factory’s production capacity.

- **Employment Opportunities:** The project will contribute greatly to the employment of skilled and unskilled workers within the community.

- **Reduce Post Harvest losses:** As fruits produced during harvest will be fully utilized.

- **Provision of food:** Processing of fruits into fruit juice help to longer shelf life.

- **Availability of locally made processed juice in the market.**

- **Capacity Building:** The CIG and locals would be trained on modern fruit juice processing and packaging techniques and most especially the operation and maintenance of fruit extraction machine.

- **Gender Issues:** The project will empower women economic participation. CIG members include seven (7) females and three (3) males.

- **Improved Waste Management:** This will enable the proper gathering and disposal of the waste.

- **Appreciation of fruit in terms of price**

- **Marketing linkages due to increased productivity**

- **Food Security Programme:** Strengthen agricultural production of fruit trees in the state.
5.3 Adverse Environmental and Social Impacts

- Noise pollution during construction and operation phase due to installation works and operation of fruit juice processing and packaging machines.
- Safety issues for processing factory workers due to location and tight spacing
- Increase in solid and liquid wastes generated
- Increase in biosecurity issues.
- Conflict within the CIG and Service Providers
- Possibility of spread of Sexually Transmitted Infections (STIs) amongst permanent and temporary workers.
- Social vices during construction and operation phase.
- Unemployment: This will occur at the end of the project implementation

5.4 Identified Potential Impacts

The project is envisaged to have a range of positive and negative environmental and social impacts. Some of these are a function of the objectives of the project, while others are a function of the way in which the project is designed to meet its objectives.

5.4.1 Pre-Construction phase

5.4.1.1 Environmental Impacts

Positive

- Prior to the commencement of installation works, a feasibility study and environmental assessment will be conducted. This is to identify potential environmental and social impacts that may occur during the course of the project, and also further recommend possible mitigation measures.
- The CIG will benefit from trainings on the implementation and monitoring of ESMP.
Negative

- The pre-construction phase will give rise to fugitive dust and vehicle exhaust emissions during the delivery of fruit juice processing machines and equipment to the site.
- Pre-construction activities may lead to the permissible noise level (90dB) being exceeded due to operations and vehicular movement in the site.

5.4.1.2 Social Impacts

Positive

- Procurement of fruit juice extracting machine and packaging equipment for Promise Kept FMCS

Negative

- Damage to machines and packaging equipment during conveyance to the site and handling
- Loss/Theft of machines and equipment left on site

5.4.1.3 Occupational Health and Safety Impacts

Positive

- During the pre-construction phase, Occupational Health and Safety (OHS) awareness will be conducted. Awareness programs and interactive sessions will benefit the CIGs, surrounding residences and service provider, as guidelines on safe practices and safe behaviours will be made available to these groups in order to minimize the occurrence of occupational incidents or accidents in the course of implementing project activities on and off the premises.

Negative

- Accidents and injuries may occur during the movement and handling of equipment, machines and materials.
5.4.2 Construction Phase

5.4.2.1 Environmental Impacts

Positive

- Installation of procured fruit juice extraction machines and packaging equipment for fruit juice processing at Promise Kept FMCS.
- A housing unit has been constructed for the machines and equipment

Negative

- Installation works may cause changes in the air conditions of the area and surrounding environment. Cement dusts, machinery exhaust fumes (nitrogen oxides (NO\textsubscript{x}), carbon monoxide (CO), sulphur oxides (SO\textsubscript{2}), hydrocarbons and total suspended particulates) and dusts from construction phase activities will impact negatively on air quality. Air pollution from these activities, will be short term, moderate and localized.

- Noise impact will be high during installation works and may affect the surrounding residences, Nike grammar school and National Orthopaedic Hospital. Impact will be short term.

5.4.2.2 Social Impacts

Positive

- Employment of skilled and unskilled labour will be promoted.

- There will be improved security on the processing site. This improvement will positively affect the surrounding residents and businesses.

- During the construction phase an effective waste management plan particularly for effluent will be implemented. The proper management of waste will create a clean environment as it will oversee the removal of domestic waste and clogging of drainage channels. From a health perspective, the clearing of the drainage channels will reduce the breeding rates of mosquitoes and water-borne diseases vectors, whereby improving the health status in the area.
• Capacity building in the use of fruit juice processing machine and packaging materials for CIG members and locals

**Negative**

• Associations between site workers and local residents may lead to cases of casual sexual relationships, thereby increasing the risks associated with sexually transmitted infections (STIs) and HIV.

• Installation works on the processing site may lead to noise generation, which will impact negatively on the social environment (particularly the nearby school and hospital).

• The construction phase will lead to increase in on-site quantities of generated waste. If the waste is not properly managed, through the implementation of an effective waste management plan it may lead to negative social perceptions on the project.

• Conflict with the CIG and Service providers

5.4.2.3 *Occupational Health and Safety*

In the course of installation of the machines, there would be a moderate to severe likelihood of the occurrence of hazards such as the following:

• Accidents
• Injury to personnel
• Installation works may lead to fire outbreak

“Unsafe behaviours” and “unsafe conditions” will pose a serious occupational health and safety risk.
5.4.3 Operation and Maintenance Phase

5.4.3.1 Environmental Impacts

**Positive**

- The processing of fruit juice will help reduce post-harvest losses
- Processing of fruits into fruit juice secures a longer shelf life
- Implementation of waste management plan
- Vehicular emissions generated during the operation of the processing are expected to be minimal

**Negative**

- With the increase in the fruit juice production, waste generated is expected to increase.
- The operation of the fruit juice extraction and packaging machines may impact on baseline noise conditions particularly to the nearby Nike Grammar School, National Orthopaedic Hospital, Thinker’s corner and well as surrounding residences.
- Air quality impacts would arise during the operation of the machines and equipment
- Increase in food quality issues
- Increased use of plastic packaging materials

5.4.3.2 Social Impacts

**Positive**

- Improved fruit juice processing productivity
- Income generation for the CIG members.
- Employment generation
- The technology upgrade will assist in the improvement of waste management in the processing site
Increased financial and technical collaboration may occur in the community as the use of modern technology might serve as an educational experience as well as prompt interest in fruit juice processing and packaging technology modernization.

Community development via technology advancement in fruit juice processing and packaging.

Ease of fruit juice production

Reduce post-harvest losses

Provision of fruits with longer shelf life

Availability of locally made processed juice in the market.

The CIG and locals would be trained on fruit juice processing and packaging techniques and most especially the operation and maintenance.

Promise kept FMCS revenue will further be increased from the marketing linkages that would result from improved production.

Strengthen agricultural production of fruit trees in the state by giving farmers good return on their investment.

Negative

Liquid and solid waste generated may pose a nuisance to surrounding residences, Nike Grammar School and National Orthopaedic Hospital Staff quarter

Noise pollution may pose a nuisance

Issues of theft may arise.

Contamination of products

Poor maintenance of machines and equipment

Some site workers engaged during the installation phase may be relieved of their duties at the commencement of the processing site operation.

The lack of stable electricity in area may affect the efficiency/performance of the machines and equipment installed.
5.4.3.3 Occupational Health and Safety Impacts

Positive outcomes during the operation phase on occupational health and safety will be as follows:

- Disease Control
- Development and implementation of site-specific occupational health and safety management plan (OHSMP)
- Institution of a first aid officer
- Availability of a fire safety and emergency plan.
- Availability of electric safety plan
- OHS Training
- PPE availability

During the operation phase, the under-listed Occupational health and safety hazards are likely to occur:

- Disease outbreak
- Electric fires
- Injury from equipment use
CHAPTER 6 ENVIRONMENTAL MITIGATION AND ENHANCEMENT MEASURES

6.1 Environmental and Social Management Plan

The range of environmental, social and occupational health and safety issues associated with the Fruit Juice Production and Packing system at Promise kept FMCS Ltd will be described in a matrix table format for the environmental and social management plan (ESMP).

This will outline the corresponding management strategies that will be employed in mitigating the adverse environmental and social impacts; and occupational health and safety issues. Since the upgrade process consists of civil works, majority of the environmental and social impacts and occupational hazards will be expected to arise mainly during the construction and operational phase of the project.

Measures have been developed to ensure that identified negative impacts during the pre-construction, construction and operation phases of the project are effectively mitigated and controlled.

The costs for the implementation of mitigation measures for this ESMP has been calculated in United States Dollars (USD) at an exchange rate of ₦160 (one hundred and sixty Naira) to 1USD (one united states dollar).
Table 1: ESMP - Provision of Fruit Juice Processing Equipment and Packaging for Promise Kept FMCS - PRE-CONSTRUCTION PHASE

<table>
<thead>
<tr>
<th>Component</th>
<th>Activities</th>
<th>Impact Description</th>
<th>Mitigation Measures</th>
<th>Institutional Responsibility</th>
<th>Costs (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Site Selection</td>
<td>Improper site selection process</td>
<td>Conduct feasibility studies</td>
<td>CIG; Promise Kept FMCS;</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Review site-specific housing requirements for equipment and machines</td>
<td>ENSMEnv; Service provider</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Undertake public consultation exercise</td>
<td>ENSMEnv; Service provider;</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ENSCADO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation of machines and equipment into Promise Kept FMCS</td>
<td>Increase in amounts of fugitive dust and exhaust fumes from vehicle movement on the site</td>
<td>Sprinkling of water via spraying devices to limit dusts.</td>
<td>Service provider</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase above permissible noise level, (90Db) due to movement of vehicles to the site</td>
<td>Disturbance should be minimized as much as possible during transportation of equipment to the site</td>
<td>Service provider</td>
<td>TBD</td>
</tr>
<tr>
<td>Social</td>
<td>Procurement of fruit juice extracting machine and packaging equipment and Engagement of Service Providers</td>
<td>The CIG should ensure all procurement, construction and installation activities and expenses are within the scope of the project’s budget. ENSCADO should assist the CIG in the selection and purchase of reliable and quality fruit juice processing machines and equipment. Training should be provided for the CIG and its members on proper procurement procedures prior to equipment purchase. Selection of service providers through indicated procurement procedure.</td>
<td>CIG; ENSCADO</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Transportation of machines and equipment into Promise Kept FMCS</td>
<td>Nuisance to commercial establishments and residential areas. Vehicles used in conveying machines and equipment should be in good condition.</td>
<td>Service provider</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damage to during transportation.</td>
<td>Equipment and machines should be securely fastened during conveyance. Secure vehicles should be used during transportation.</td>
<td>Service provider</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>Loss /Theft. Procured equipment should be kept in a secure storage and/or security should be provided on site to prevent loss or theft.</td>
<td>CIG; Promise Kept FMCS</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>
### Occupational Health and Safety

<table>
<thead>
<tr>
<th>Conflict between the CIG and Service Providers</th>
<th>Regular project meetings should be organized</th>
<th>CIG; Promise Kept FMCS; ENSCADO</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conflict Resolution</td>
<td></td>
<td>ENSCADO</td>
<td>TBD</td>
</tr>
<tr>
<td>ENSCADO should intensify monitoring to avoid conflict</td>
<td></td>
<td>ENSCADO</td>
<td>TBD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation of machines and equipment into Promise Kept FMCS</th>
<th>Accidents occurring during the handling and conveyance to the site – injury to workers or unsuspecting persons (including school children at Nike Grammar School and surrounding residences)</th>
<th>Education and training of workers on safety on site and in handling equipment.</th>
<th>CIG; ENSCADO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provision of signage</td>
<td>Provision of a First aid facility on site</td>
<td>CIG; Promise Kept FMCS</td>
</tr>
<tr>
<td></td>
<td>Enhanced fastening of equipment to carriage section of vehicles</td>
<td></td>
<td>Service Provider</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CIG; Promise Kept FMCS</td>
</tr>
</tbody>
</table>

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| | | | 1,245 |
# Table 2: ESMP- Provision of Fruit Juice Processing Equipment and Packaging for Promise Kept FMCS - CONSTRUCTION PHASE

<table>
<thead>
<tr>
<th>Component</th>
<th>Activities</th>
<th>Impact Description</th>
<th>Mitigation Measures</th>
<th>Institutional Responsibility</th>
<th>Costs (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Site development (installation works)</td>
<td>Fugitive dust and exhaust fumes (NOx, CO, SOx, PM&lt;sub&gt;2.5&lt;/sub&gt;, PM&lt;sub&gt;10&lt;/sub&gt;), Oxides from welding activities.</td>
<td>Proper maintenance of equipment being used must be carried out to minimize exhaust fumes</td>
<td>Service Provider</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Noise pollution</td>
<td>Perform heavy noise producing activities during less busy hours to avoid excessive nuisance to surrounding establishments (Nike Grammar School and National orthopaedic hospital, thinkers corner) and residences</td>
<td>Service Provider</td>
<td>TBD</td>
</tr>
<tr>
<td>Disposal of waste in drainage or water channels</td>
<td></td>
<td>Blockage of drainage channels</td>
<td>Develop and Implement effective waste management plan</td>
<td>Service provider; Promise Kept FMCS</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Personnel hygiene/proper waste management sensitization</td>
<td>ENSCADO; CIG; Promise Kept FMCS</td>
<td>50</td>
</tr>
<tr>
<td>Social</td>
<td>Installation of Fruit Juice Processing and Packaging equipment</td>
<td>Poor installation</td>
<td>Engagement of reputable service providers</td>
<td>ENSCADO; Service Provider; Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Training should be conducted for the CIG, its members on the proper installation process of fruit juice extracting machines and packaging equipment.</td>
<td>ENSCADO; Service Provider; Promise Kept FMCS</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase in sexual relationships, thereby increasing spread of infections (STIs) and HIV.</td>
<td>Awareness campaign on sexual diseases, and distribution of male and female condoms.</td>
<td>CIG; Promise Kept FMCS ; ENSCADO</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase in quantities of waste generated</td>
<td>Development and Implementation of waste management plan</td>
<td>Service provider ; Promise Kept FMCS ; ENSCADO; ENSMEnv</td>
<td>250</td>
</tr>
<tr>
<td>Activity/Issue</td>
<td>Description</td>
<td>Responsible Parties</td>
<td>Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of waste bins and liners</td>
<td>Ensure that all wastes are gathered on-site and disposed off as approved by the Enugu Waste Management Authority (ESWAMA)</td>
<td>CIG; Promise Kept FMCS; ENSMEnv</td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise pollution</td>
<td>Noise generating activities should be conducted at reasonable times of the day when its impacts on surrounding establishments and residences will be reduced.</td>
<td>Service provider; Promise Kept FMCS</td>
<td>TBD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occurrence of social vices (fights, theft, vandalism)</td>
<td>Enforce and ensure proper orientation on acceptable behaviours for construction personnel on/off-site.</td>
<td>Service provider, CIG; Promise Kept FMCS, ENSCADO</td>
<td>TBD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict within the CIG, Service providers, contractors and/or workers which may affect completion of tasks</td>
<td>Good work enforcement; Conflict resolution; Regular stakeholders meeting on site</td>
<td>Service provider, CIG; Promise Kept FMCS, ENSCADO</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>All installation activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidents/Injury to personnel</td>
<td>Develop and implement on-site occupational health and safety management plan; Establish fire prevention program; Provision and Use of PPE; Training of CIG members on personnel safety during test running of installed equipment should be conducted.</td>
<td>CIG; Service provider; Promise Kept FMCS; CIG; Service provider; Promise Kept FMCS; ENSCADO</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Outbreak</td>
<td></td>
<td></td>
<td>500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,875</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3: ESMP- Provision of Fruit Juice Processing Equipment and Packaging for Promise Kept FMCS - OPERATIONAL PHASE

<table>
<thead>
<tr>
<th>Component</th>
<th>Activities</th>
<th>Impact Description</th>
<th>Mitigation Measures</th>
<th>Institutional Responsibility</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Operation of Fruit juice processing and packaging Equipment</td>
<td>Poor packaging material</td>
<td>Use of recyclable PET bottles</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality Control measures for packaging materials should be put in place and monitored</td>
<td>Quality Control measures for packaging materials should be put in place and monitored</td>
<td>CIG; Promise Kept FMCS</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increase in waste produced</td>
<td>Implementation and Monitoring of effective waste management system.</td>
<td>Promise Kept FMCS; ENSMEnv</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provision of waste bins and heavy-duty waste disposable bags.</td>
<td>Provision of waste bins and heavy-duty waste disposable bags.</td>
<td>CIG; Promise Kept FMCS</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Designation of waste storage sites prior to final disposal</td>
<td>Designation of waste storage sites prior to final disposal</td>
<td>Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provision of PPE for site workers and ensure use</td>
<td>Provision of PPE for site workers and ensure use</td>
<td>Promise Kept FMCS ; ENSMEnv, ENSCADP</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular cleaning of drainage channel, disposal bins and/or disposal site</td>
<td>Regular cleaning of drainage channel, disposal bins and/or disposal site</td>
<td>CIG; Promise Kept FMCS</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Installation of waiting tank for effluent management purposes</td>
<td>Installation of waiting tank for effluent management purposes</td>
<td>CIG; Promise Kept FMCS</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of effluent treatment methods and procedures</td>
<td>Development of effluent treatment methods and procedures</td>
<td>CIG; Promise Kept FMCS</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Training on proper management of solid and liquid wastes</td>
<td>Training on proper management of solid and liquid wastes</td>
<td>ENSCADO</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Timely evacuation of wastes to prevent</td>
<td>Timely evacuation of wastes to prevent</td>
<td>Promise Kept FMCS; ENSCADO</td>
<td>TBD</td>
</tr>
<tr>
<td>Social</td>
<td>Closure of civil works</td>
<td>Loss of Employment</td>
<td>Inform personnel that employment is short-term prior to their engagement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------------------</td>
<td>--------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operation of Fruit juice processing and packaging Equipment</td>
<td>Improper operation and packaging</td>
<td>Training of CIG members and site personnel on the operation of fruit juice processing (fruit juice extraction machine) and packaging equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Members of the CIG and the workers should be trained on fruit juice processing management, administration and organization strategies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Training on product quality standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Implementation and Monitoring of effective waste management system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wastes should be collected, stored and disposed of according to environmental regulations.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue</th>
<th>Compliance with ESWAMA procedures</th>
<th>Regular internal environmental audit</th>
<th>The CIG should comply with the relevant environmental policies and build the capacity of its members and staff on environmental law and regulations compliance.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CIG; Promise Kept FMCS</td>
<td>CIG; Promise Kept FMCS</td>
<td>CIG; Promise Kept FMCS ; ENSMEnv, ENSCADO</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>

| Issue                                                                 | CIG; Promise Kept FMCS ; ENSMEnv, ENSCADO | TBD |
|                                                                      |                                            | |

| Issue                                                                 | ENSMEnv                                | TBD |
|                                                                      |                                        | |

| Issue                                                                 | ENSCADO                                  | 200 |
|                                                                      |                                        | |

| Issue                                                                 | ENSCADO                                  | 50  |
|                                                                      |                                        | |

| Issue                                                                 | CIG; Promise Kept FMCS                                  | 200 |
|                                                                      |                                        | |

| Issue                                                                 | CIG; Promise Kept FMCS                                  | 200 |
|                                                                      |                                        | |

| Issue                                                                 | ENSCADO                                  | 50  |
|                                                                      |                                        | |

<p>| Issue                                                                 | CIG; Promise Kept FMCS                                  | 200 |
|                                                                      |                                        | |</p>
<table>
<thead>
<tr>
<th>Social</th>
<th>Operation of Fruit juice processing and packaging Equipment</th>
<th>Processing equipment malfunction</th>
<th>Ensure routine maintenance checks of all machines and equipment’s</th>
<th>CIG; Promise Kept FMCS</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Regular training of CIG staff on operation and maintenance of equipment</td>
<td>CIG; Promise Kept FMCS</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular internal (environmental and social) audit</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fruit Juice packaging materials</td>
<td>Provision of recyclable PET bottles</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fruit juice packaging materials should be recycled, in compliance with ESWAMA</td>
<td>CIG; Promise Kept FMCS ; ESWAMA</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quality Control checks of PET bottles</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
<td></td>
</tr>
</tbody>
</table>

Managed on-site. Measures to ensure that wastes do not enter the state municipal water ways must be ensured at all times during operation.

Proper sealing of disposal bags to prevent release of foul smell

Provision of PPE for site workers and ensure use

Training on proper management of solid and liquid wastes

Timely evacuation of wastes to prevent fouling of air.

Compliance with ESWAMA procedures and other relevant policies

Regular internal environmental and social audit
<table>
<thead>
<tr>
<th>Social</th>
<th>Power Outage</th>
<th>Shutting down due to power outage</th>
<th>Provision of alternative source of power</th>
<th>CIG; Promise Kept FMCS</th>
<th>TBD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td>Fruit juice storage</td>
<td>After production, fruit juice should be preserved in a cold room or freezer</td>
<td>Provision of security on site</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>Social vices – theft/vandalism</td>
<td>Provision of security on site</td>
<td>CIG; Promise Kept FMCS</td>
<td>50 (monthly)</td>
<td></td>
</tr>
</tbody>
</table>

### Occupational Health and Safety

<table>
<thead>
<tr>
<th>Operation of Fruit juice processing and packaging Equipment</th>
<th>Contamination of fruit juice</th>
<th>Implement quality control management plan</th>
<th>CIG; Promise Kept FMCS</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Training of CIG and staff on personal hygiene</td>
<td>CIG; Promise Kept FMCS; ENSCADO</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electric fires</td>
<td>Implement on-site occupational health and safety management plan; Routine OHS</td>
<td>CIG; Promise Kept FMCS</td>
</tr>
</tbody>
</table>

Contamination of Product

- All equipments should be cleaned thoroughly and regularly to avoid contamination of product
- Use of PPE at all times during fruit production process
- Ensure PET bottles being used are thoroughly cleaned.
- Training of CIG and staff on personal hygiene
- Daily cleaning of processing site
- Implementation of quality control measures
- Regular (environmental and social) audit

Social vices – theft/vandalism

- Provision of security on site
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Responsible Party</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training and education; Use of PPE;</td>
<td>Establish electrical safety program; Implement fire prevention program;</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td>Designate fire emergency exit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accidents/Injury from equipment use</td>
<td>First Aid on site</td>
<td>CIG; Promise Kept FMCS</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Regular internal (environmental and social) audit.</td>
<td>CIG; Promise Kept FMCS</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4, 895</td>
</tr>
</tbody>
</table>
### 6.2 Monitoring Plan

Table 4: ESMP- Provision of Fruit Juice Processing Equipment and Packaging for Promise Kept FMCS – PRE-CONSTRUCTION PHASE MONITORING PLAN

<table>
<thead>
<tr>
<th>Component</th>
<th>What Parameter is Being Monitored</th>
<th>When Should it Be Monitored</th>
<th>Who should Monitor</th>
<th>Performance Indicators</th>
<th>Monitoring Cost (USD)</th>
</tr>
</thead>
</table>
| Environment | Air                               | Transportation of machines and equipment into Promise Kept FMCS | Promise Kept FMCS; Service Provider        | Generated fugitive dusts and exhaust fumes are in line with NESREA environmental limits.  
|            |                                   |                                             |                                            | Service providers have obliged to vehicle emission testing (VET) and vehicle exhaust screening as laid down in the NESREA guidelines | 100                   |
|            | Noise                             | Transportation of machines and equipment into Promise Kept FMCS | CIG; Service Provider ENSMEnv            | Alternative design options; Mitigation at the source                                    | 15                    |
| Social     | Procurement                       | During the procurement of fruit juice processing machines and equipment and selection of service providers | CIG; ENSCADO                             | Ability of the CIG to grasp procurement process; Purchase reliable and quality fruit juice extraction equipment and packaging materials  
<p>|            | Funds/Expenses                    | During the procurement of fruit juice processing machines and equipment | CIG; ENSCADO; Promise Kept FMCS          | Compliance to Budget Plan prepared by the CIG                                          | 75                    |
|            | Noise                             | Nuisance caused by the conveyance of machines and equipment into the site | Service Provider                    | Number of noise related complaints                                                        | 15                    |
|            | Air                               | During increase in amounts of fugitive dusts and exhaust | Service Provider                      | Generated fugitive dusts and exhaust fumes are in line with                             | 22.5                  |</p>
<table>
<thead>
<tr>
<th>fumes</th>
<th>NESREA environmental limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>Provision of adequate security in the site</td>
<td>CIG; Promise Kept FMCS</td>
</tr>
<tr>
<td></td>
<td>Service provider</td>
</tr>
<tr>
<td></td>
<td>ENSCADO</td>
</tr>
<tr>
<td></td>
<td>Number of fruit juice extraction equipment available</td>
</tr>
<tr>
<td></td>
<td>Number of equipment undamaged</td>
</tr>
<tr>
<td></td>
<td>Timely implementation of project</td>
</tr>
<tr>
<td></td>
<td>250</td>
</tr>
<tr>
<td>Conflict within CIG and Service providers</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td></td>
</tr>
<tr>
<td>Accident involving site workers and/or unsuspecting passers-by during transportation and handling</td>
<td>ENSCADO; CIG; Promise Kept FMCS</td>
</tr>
<tr>
<td></td>
<td>Service provider (s) education and training on pedestrian safety</td>
</tr>
<tr>
<td></td>
<td>Training on safety for school children of Nike Grammar School</td>
</tr>
<tr>
<td></td>
<td>Installation of safety signage</td>
</tr>
<tr>
<td></td>
<td>Haulage safety training</td>
</tr>
<tr>
<td></td>
<td>Availability of first aid kit</td>
</tr>
<tr>
<td></td>
<td>500</td>
</tr>
<tr>
<td>Component</td>
<td>What Parameter is Being Monitored</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Environment</td>
<td>Air</td>
</tr>
<tr>
<td></td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
</tr>
<tr>
<td>Social</td>
<td>Quality</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
</tr>
<tr>
<td></td>
<td>Air</td>
</tr>
<tr>
<td></td>
<td>Personal Safety</td>
</tr>
<tr>
<td>Social</td>
<td>Waste</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Accidents/Injuries</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
</tr>
</tbody>
</table>

In the event injury occurs to site personnel during installation

Fire Outbreak

Promise Kept FMCS; CIG Promise Kept FMCS; ENSCADO

Level of awareness of site workers on site safety

Compliance of CIG staff in using PPE

Number of accidents/injury recorded
### Table 6: ESMP- Provision of Fruit Juice Processing Equipment and Packaging for Promise Kept FMCS – OPERATIONAL PHASE MONITORING PLAN

<table>
<thead>
<tr>
<th>Component</th>
<th>What Parameter is Being Monitored</th>
<th>When Should it Be Monitored</th>
<th>Who should Monitor</th>
<th>Performance Indicators</th>
<th>Monitoring Cost (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Air</td>
<td>During operation of Fruit juice processing and packaging Equipment</td>
<td>Promise Kept FMCS; ENSMEnv</td>
<td>Air quality within national standards (NESREA)</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>All waste generating activities</td>
<td>Promise Kept FMCS; ENSMEnv; ENSCADO; ESMEnv</td>
<td>Level of awareness of staff on waste management plan particularly for solid and liquid waste; Effective effluent management; Effective monitoring plan; Compliance with Enugu Waste Management Authority (ESWAMA); Regular environmental and social audit</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>During disposal of waste</td>
<td>Promise Kept FMCS; ENSMEnv</td>
<td>Compliance with Enugu Waste Management Authority (ESWAMA); Level of awareness of staff on waste management plan; Within national water quality limits</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>Management</td>
<td>All through the operational phase</td>
<td>ENSMEnv</td>
<td>Compliance with relevant environmental policies</td>
<td>200</td>
</tr>
<tr>
<td>Social</td>
<td>Air</td>
<td>All through the operational phase</td>
<td>ENSMEnv</td>
<td>Number of complaints from surrounding residents</td>
<td>Within NESREA Air quality limits</td>
</tr>
<tr>
<td>-------</td>
<td>-----</td>
<td>----------------------------------</td>
<td>---------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Water</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS; ENSMEnv</td>
<td>Within NESREA surface water quality limits</td>
<td>Level of awareness of staff on waste management plan</td>
</tr>
<tr>
<td>Social</td>
<td>Waste</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS</td>
<td>Level of awareness of waste management plan- for solid and liquid wastes</td>
<td>Monitoring plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Number of complaints of poor waste management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reports from internal audit</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compliance with ESWAMA</td>
</tr>
<tr>
<td>Social</td>
<td>Maintenance</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS; ENSCADO</td>
<td>Level of awareness of workers on proper maintenance and operation of fruit juice processing machines</td>
<td>Level of awareness of product quality standards</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Quality control implementation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Monthly maintenance checks</td>
</tr>
<tr>
<td>Social</td>
<td>Health</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS; ENSCADO</td>
<td>Level of awareness of staff on health and safety measures</td>
<td>Processing site hygiene conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Others</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS</td>
<td>Number of fruit juice sold per day</td>
<td>200</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------</td>
<td>----------------------------------</td>
<td>-------------------</td>
<td>-----------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Availability of effective security on site</td>
<td></td>
</tr>
<tr>
<td>Personnel Safety</td>
<td>At the occurrence of an accident on site</td>
<td>Promise Kept FMCS; ENSCADO</td>
<td>Safety training conducted</td>
<td>Level of awareness of occupational health and safety management plan</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Compliance with safety measures</td>
<td></td>
</tr>
<tr>
<td>Health</td>
<td>All through the operational phase</td>
<td>Promise Kept FMCS; ENSCADO</td>
<td>Hygienic conditions of the processing site</td>
<td>Level of awareness of staff on health and safety measures</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 7,150
Some specific mitigation measures have been described in the sections below.

6.3 Waste Management Plan

The ESMP will provide detailed information on waste management including the amount and type of waste to be generated, the sources, and the existing waste management practices in the processing site and proffer mitigation measures, which will involve:

- Sensitization amongst the CIG, and staff on the need for effective waste management in and around the project site throughout the sub-project activity.
- Sensitization and mobilization on the adverse consequences of poor waste management.

6.3.1 Recommended Measures for Waste Management

The ESMP details how wastes that will be generated at the project sites will be managed in an environmentally sustainable and socially acceptable manner. To be practical and effective in handling of wastes, (Solid and liquid) the ESMP follows the fundamental principles of waste management:

- Identify and classify the type of waste generated. Proper procedures must be taken regarding their storage, collection, transportation and disposal
- Identify and demarcate disposal areas clearly indicating the specific materials that can be deposited in each.
- Dispose all wastes in authorized areas.
- Identify and demarcate waste disposal areas
- Identify, demarcate and enforce the use of within-site access routes to limit impact to farm.
- Erect erosion control barriers around perimeter
- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for fruit waste.
The management of other kinds of waste that will be generated from the site is highlighted below:

a. General Waste

- There should be adequate number of garbage bins and containers made available at strategic areas of the site. The use of plastic bin liners should be encouraged.
- All organic and inorganic materials will be placed and/or disposed of so as not to directly or indirectly impact any watercourse or groundwater. The placement and disposal of all such products and materials will be done in an environmentally acceptable manner.
- Solids and other pollutants generated as a result of installation and operation or those removed during the course of treatment or control of wastewaters will be disposed of in a manner that prevents their direct or indirect re-entry into any watercourse or groundwater.
- Any waste material that is inadvertently disposed in or adjacent to watercourses will be removed immediately in a manner that minimizes adverse impacts, and the original drainage pattern should be restored.
- Waste materials should be placed and stored in suitable containers. Storage areas and containers will be maintained in a sanitary condition and shall be covered to prevent spreading of wastes by water, wind or animals.
- All food wastes should be collected and stored in containers at appropriate locations and should be emptied at regular intervals and the collected waste should be transported to Government designated waste management facilities.
- Best approaches must be applied in handling and disposing of wastes

**ROLES AND RESPONSIBILITIES**

Implementation of the Environmental and Social Management Plan entails Compliance monitoring of the mitigation measures in the project cycle. Implementation steps are (i) Notification and information disclosure (ii) Capacity Building and Training (iii) Documentation and (iv) Monitoring.

**ESMP Implementation Team and Responsibilities**

<table>
<thead>
<tr>
<th>Title</th>
<th>Responsibilities</th>
<th>Monitoring/Supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Bank</td>
<td>Supervising, monitoring, guidance and review of</td>
<td>WB</td>
</tr>
<tr>
<td>Role</td>
<td>Responsibilities</td>
<td>Department</td>
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<tr>
<td>CADP Environment/Social Unit</td>
<td>Supervising, monitoring, guidance and review of documents.</td>
<td>Enugu CADP</td>
</tr>
<tr>
<td>Enugu State Agencies (Min. of Environment And ESWAMA)</td>
<td>Supervising and monitoring, providing their services as regards waste, environmental issues and to mention a few.</td>
<td>Enugu CADP</td>
</tr>
<tr>
<td>CADP Environment/Social Unit</td>
<td>Develop a process to ensure the implementation of the ESMP occurs in a structured and formal manner and to ensure that personnel identified to assist in performing tasks defined in the ESMP has the necessary skills to manage the environmental aspects of their work. Make sure that the specific system for environmental management is planned, documented, implemented and maintained through all stages of the project Certify that project works is continuing according to the ESMP</td>
<td>Enugu CADP / WB</td>
</tr>
<tr>
<td>Site Manager /Farm Manager</td>
<td>Ensure workers are abreast with all safety measures put in place for the project, bridging communication with all stakeholders</td>
<td>Enugu CADP</td>
</tr>
<tr>
<td>Site Supervisor/Service Provider</td>
<td>Ensure that all workers involved in the project are inducted into environmental and emergency procedures applicable on site Direct site activities according to ESMP. Monitor operations of the ESMP and recommend any necessary changes to project manager Maintain regular contact with all client and personnel to ensure a safe working environment and work practices.</td>
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CHAPTER 7
PUBLIC CONSULTATION AND ANALYSIS OF ALTERNATIVES

7.1 Background and Objectives

The public consultation for the Environmental and Social Management Plan (ESMP) were conducted on the 21st of March, 2013. The public consultation meeting was held within the premises of Promise Kept FMCS, Thinkers Corner, Enugu.

The consultation was conducted to ensure effective participation and awareness of the Project Affected Persons (PAPs) in proposed technology support for the Promise Kept FMCS. The following had been taken into full account:

- Sub-project activities will not impact negatively on PAPs and social sensitivities and if so, suitable mitigation measures will be implemented
- Efforts will be made to enhance positive impacts of subproject activities
- Priority concerns raised by PAPs and relevant stakeholders will be taken into account and a suitable way forward will be realized.

7.2 Objectives of the Public Consultation

- To create general public awareness and understanding of the project, and ensure its acceptance;
- To develop and maintain avenues of communication between the project proponent, stakeholders and PAPs in order to ensure that their views and concerns are incorporated into project design and implementation with the objectives of reducing, mitigating or offsetting negative impacts and enhancing benefits from the project;
- To inform and discuss about the nature and scale of adverse impacts and to identify and prioritize the mitigation measures for the impacts in a more transparent and direct manner;
- To document the concerns raised by stakeholders and PAPs so that their views and proposals are mainstreamed to formulate mitigation and benefit enhancement measures; and
- To sensitize local authorities of the impacts and solicit their views on the project and discuss their share of the responsibility for the smooth functioning of the overall project operations.
7.3 Stakeholder Identification

The consultants alongside the ENSCADP worked together to identify the key stakeholders that should be consulted at various stages of project implementation. This process was completed with the identification of project-affected areas, residents and relevant governmental stakeholders.

The identified stakeholders for consultations were selected as follows:

1. **Governmental Organisations**: This level of public consultation constituted staff from the ENSCADP (proponent)
2. **Community Level**: At this level, the main community consulted was the Commodity Interest Group (CIG).

7.4 Consultation Methodologies

A combination of various consultation methods were used to assess knowledge, perception and attitude of the groups consulted concerning the sub-project and their potential environmental and social impacts with regards to their business. The methods used during the consultation process included interviews with key informants/people and small group discussion.

During the consultation process, the stakeholders identified a number of project implementation related issues and these are presented in this report.

7.5 Major Point of the Consultation

Key agenda points that were discussed with the stakeholders included:

- Project understanding
- Identification of potential impacts of the project-both positive and negative;
- Stakeholders perception/attitudes about the sub-project;
- Other relevant issues as raised by the stakeholders.
7.6 Major Findings from Public Consultation

The concerns raised by the stakeholders during the Public Consultation, are highlighted below:

Challenges

- **Availability of Water:** Water used on site is currently sourced from water vendors. Attempts have been made to drill private boreholes within the site but have thus far been unsuccessful.

- **Limited space:** The project site is located within a private residence. This limits the amount of space to carry out fruit juice processing activities

Response to stakeholders’ Concerns:

- The state government through the Urban water project is presently providing pipe-borne water to many parts of the city. It won’t be long before the area will be given water

- The available space for the group is large enough to accommodate the scale at which the group is operating at the moment. The location is also not densely populated area and much better than where the group is presently using. The group in future will need to move to a new place as it expands.

ANALYSIS OF ALTERNATIVES

The plan to support the Promise Kept FMCS in improved fruit juice production package is an integral part of the Enugu CADP maize value chain support drive. This implies that, this project is meets the requirement for funding the CADP

Therefore, analysis of the alternatives has focused on the implementation modalities of the project taking into account, a combination of factors such as environmental, social and economic dimensions.

The do nothing scenario: this scenario implies that, the Promise Kept FMCS would remain with the present production level and without the support that will enable them adopt better technologies. Under these circumstances the current Fruit Juice production/yr for the state will remain the same thereby interfering with the achievement of the project development objective which is to strengthen agriculture production systems. The do nothing option was dropped from further consideration as it is not in line with CADP mandate.

Maintenance Routine: This option is to carry out the maintenance of the existing machines presently owned by the group. The machines presently in use cannot be used to produce the projected quantity and quality of fruit juice for the group. This option was also rejected for this reason.
Support the Processing package: this option considered the go-ahead for the project to support the proposal from Promise Kept FMCS. This option will help to increase Fruit Juice production in the state and promote technology dissemination among commercial farmers. In view of these, this option was taken as viable for the implementation of the project.
CONCLUSION

The fruit juice production and packaging project will have an overall positive impact for the CIG. Most of the highlighted adverse impacts are expected to be short-term, localised and reversible. The sub-project is intended to strengthen the fruit juice production system in Promise Kept FMCS and also Enugu State. The project will provide jobs for the community, ensure the availability of the product and encourage use of new technology for fruit juice processing. However, it is essential that concerns raised be addressed effectively. This will go a long way in improving the agricultural systems in the community and Enugu state at large.

The Environmental and Social Management Plan (ESMP) describes measures that the authorities responsible for the implementation of the Fruit Juice Production Package for Promise Kept FMCS will take to mitigate potential negative impacts of the project and enhance the positives impacts on the environment and Enugu state at large. The measures in this ESMP are based on the Environmental and Social Management Framework (ESMF) prepared for CADP. The ESMF served as a guidance material for the development of this ESMP which was prepared in accordance with the Nigeria EIA Act No. 86 of 1992 and in line with international standards, as reflected in the Safeguard policies of the World Bank Group.

The ESMP contains a description of measures that will help mitigate the identified adverse impacts and measures for enhancing the beneficial effects, cost for the implementation of the ESMP, specific actions required, roles and responsibilities for these actions, implementation plans, measures for waste management and disposal, noise abatement, maintenance, occupational health and safety, as well as monitoring plans and procedure for grievance redress for project affected persons. The significant identified significant adverse environmental impacts are site specific, and the required mitigation measures can be designed more readily - typical of category B projects. These impacts include Loss of vegetation, Social issues: Noise pollution during construction and operation phase due to installation works and operation of fruit juice processing and packaging machines, Safety issues for processing factory workers due to location and tight spacing, Increase in solid and liquid wastes generated, Conflict within the CIG and with Service Providers, Possibility of spread of Sexually Transmitted Infections (STIs) amongst permanent and temporary workers.

The mitigation measures proposed to take care of the identified impacts include: Noise pollution during construction and operation phase due to installation works and operation of fruit juice processing and packaging machines, Safety issues for processing factory workers due to location and tight spacing, Increase in solid and liquid wastes generated, Conflict within the CIG and with Service Providers and Possibility of spread of Sexually Transmitted Infections (STIs) amongst permanent and temporary workers.

Some stakeholders were consulted at the project site for the proposed project. This formed a very important forum for the stakeholders to be more educated about the safeguard issues triggered by the project and raise their concerns about the project. People consulted include
members of the CIG and members staff of Enugu CADP. The people consulted expressed some concerns about the project which was well addressed by the ESMP team. The report defined a proposed institutional structure to govern the implementation of the project. Capacity of stakeholders will be strengthened to help in the implementation of the report.

The cost of implementing the ESMP is put at $13,982.5

RECOMMENDATIONS

Following on the general observations and findings during the conduct of field visits, environmental assessment, potential impacts identification, consultations with ENSCADP, Promise Kept FMCS management and other stakeholders, the under-listed recommendations have been made to ensure quality throughout the phases of the sub-project.

- Proper waste management practices on Promise Kept FMCS should be promoted such as:
  - Waste segregation prior to disposal;
  - Development of Effluent management procedure such as the use of a waiting tank
  - Use of packaging materials, proper handling and storing of waste;
  - Final disposal as outlined by the waste management authority

  These should be monitored to ensure compliance with ESWAMA and other relevant authorities.

- Fruit juice processing factory staff must be always be kitted with appropriate and durable Personal Protective Equipment (PPE).
- Periodic meetings with the processing plant management should be a continuous process to ensure compliance with bio-security measures amongst other things.
ESMP FOR ENUGU STATE COMMERCIAL AGRICULTURE DEVELOPMENT PROJECT (ENSCADP)- PROMISE KEPT FMCS, THINKERS CORNER.