Environmental and Social Management Plan (ESMP) for Improved Poultry Production

For Odaliye FMCS

May, 2013
Final Report

Environmental and Social Management Plan (ESMP) for Improved Poultry Production
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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>ENSCA DO</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>ES MF</td>
<td>Environmental and Social Management Framework</td>
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<td>ES MP</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>LGA</td>
<td>Local Government Area</td>
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<td>MDA</td>
<td>Ministries Departments and Agencies</td>
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<tr>
<td>MDG</td>
<td>Millennium Development Goal</td>
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<tr>
<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>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 fulfill 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 Improved Poultry Production for the Odalije Farmers’ Multi-Purpose Cooperative Society (FMCS), located in Ngwo, Enugu North L.G.A, Enugu State. 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 redress 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 Improved Poultry Production project. It also defined a proposed institutional structure to govern the implementation of the project.

Policy and Legislations
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 Improved Poultry Production for the Odalije FMCS Ltd, the WB safeguards requirements will take precedence.

The Proposed Project

This CADP sub-project focuses on technology advancement, with an utmost objective to improve poultry production in Odalije FMCS, Ngwo. It is expected that the implementation of the CADP intervention, will boost the egg production system of the CIG. The intervention is focused on the adoption of the Nipple-fitted Battery Cage Technology. The project is expected to increase daily production of table eggs in the farm from 462 to 479 crates/day. The project will also ensure reduction in cost of production.

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 revenue generation for the commodity interest group (CIG)
- The project will contribute to the employment of skilled and unskilled workers within the Ngwo community.
- Human capacity building for CIG members and locals on improved poultry production techniques
- Improved bio-security measures and Efficiency in drug administration to birds
- The project will empower women economic participation
Adverse Environmental and Social Impacts

- Impact on air quality during the construction and operational phases of the project from fouling of air (due to increased wet litter production), and some construction activities.
- Increase in solid wastes generation and handling during the construction and operation phase.
- Conflict within the CIG and Service Providers.
- Bio-security issues during relocation and handling of birds.
- Social vices during construction and operation phase.

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

Mitigation Measures

A number of mitigation measures have been proposed in the report. First in the list is the location of the project site away from residential areas to handle the salient concerns such as odour, dust and general bio-security. A monitoring plan has also been developed, 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 the 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 $6,010.

Public Consultation

The public consultation formed a very important forum for the stakeholders to raise their concerns about the project.

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 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”.

Roles and responsibilities of Stakeholders

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 guiding, supervisory and coordinating role, through the State SCADO which directly ensures the enforcement of these dictates of the ESMP to the Odilije FMCS which ensures the day to day implementation of the mitigation measures outlined in the ESMP with the technical support of the safeguards Unit of the SCADO. The detailed implementation arrangement is in Chapter 6 of this report.
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 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 will focus primarily on the selected value chains. The component has four sub-components.

a) Technology Demonstration and Adoption
b) Support to Staple Crop Production System
c) Market Facilitation
d) Capacity Building
Component 2: Provision, rehabilitation and maintenance of rural infrastructure.

This component provides resources for 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:

a) Network of Farm Access Roads
b) Rural Energy


The project finances Project Management, Monitoring and Evaluation and selected studies as follows:

a) Project Management
b) Monitoring and Evaluation
c) Strengthening of relevant institutions at Federal and State levels
d) Studies

1.2 Project Development Objectives of CADP

The CADP strengthens agricultural production systems and facilitate 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 ensuring that CIGs benefit from this initiative. The 3 (three) value chains being supported by the project in the state includes:

- Poultry
- Maize and,
- Fruit Trees

The Project Development Objectives 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 Improved Poultry Production for the Odalije Farmers’ Multi-purpose Cooperative Society (FMCS) Ltd, located in Ngwo, 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. Improved Poultry Production for the Odalije FMCS Ltd, located in Ngwo, Enugu North L.G.A, Enugu State. It has also been prepared to ensure the effective long-term protection of the farm, 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 and Methodology

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 Odalije FMCS Ltd.

b) Impacts Identification and Assessments

c) Potential Impacts Assessment and Definitions

d) Oral interviews with farm employees 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 project area and the 17 (seventeen) LGAs in Enugu State
2.1 Biophysical Setting of Enugu State

2.1.1 Climate and Meteorology

Enugu State 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 cm to 203 cm, with the heaviest rainfall occurring between June and July. Enugu’s climate generally 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/km².

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 the Odaliże FMCS

Odalije Farmers’ Multi-Purpose Co-operative Society (FMCS) Limited is a Commodity Interest Group (CIG) located in Idume Hilltop Ngwo, Enugu North Local Government Area (L.G.A) of Enugu State. The area lies approximately within latitude N06° 43 000 and longitude E007° 46 025 of the equator. It is bounded in the south by Enugu South L.G.A, in the east by Nkanu East L.G.A, north by Enugu East L.G.A, and in the west by Udi L.G.A. The farm is engaged in poultry production.

The CIG has a total of 17 Primary beneficiaries (8 females and 9 males), 265 secondary beneficiaries; consisting of people from Ngwo community and Enugu metropolis.

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 whole of Ngwo is located on a hill which gives it the unique climate that is conducive for poultry business.

The agricultural activities practiced in the farm include poultry and manure production. Deep litter system is the current poultry production system in use. The farm location is mostly secluded. Some areas of the farm have been subject to erosion.

Some of the vegetation present at the project site included: *Gmelia aborea* (melina), *Delonix regia* (flame of the forest), *Cassia sp.* (cassia) and *Musa paradisiaca* (Banana)
2.3.2 Socio Economic Setting

The predominant occupation of the people of Enugu North LGA is farming and poultry production. Ngwo is the widely known poultry community of Enugu state and poultry business is the major source of income in the community. The biggest poultry farmers in the state are found in the community and it is the home for egg marketers in the whole of the south east.

The CIG is engaged in commercial egg production, and is one of the CADP’s lead farmers in commercial egg production. The population of layers at Odalije FMCS is predominately chi-Ajanla species. An average of about 442 crates is sold at the farm daily. The farm has a staff strength of about 7 (seven) people.

It is intended that the CADP intervention will improve egg production on the farm and improve the CIG market links. The CIG stated that the sub-project would assist in improving their livelihood and create employment.
CHAPTER 3 PROJECT DESCRIPTION

3.1 Background

Poultry farming and most especially egg production is currently one of the lucrative agricultural businesses in Nigeria. It is widely a widely practiced form of agriculture in all geopolitical zones of the country. Poultry farming involves the raising of domesticated birds for the purpose of egg or meat production. Odalije FMCS focuses on egg production; the CADP identifies Odalije FMCS as one of the lead farmers in egg production in Enugu State. Numerous small and large scale businesses as well as household rely on egg produced by the Odalije FMCS for consumption.

The current system of production in Odalije FMCS (Ngwo) is entirely deep litter with a total laying bird population of 19,500 and production rate of 68%. Odalije FMCS produces over 442 crates of eggs daily, therefore produces 13,260 crates monthly and 161,330 crates annually.

The sub-project will support the strengthening of the egg production system and increase in technology dissemination and adoption. This when implemented will boost the overall production system (including production capacity; produce quality and availability and; increase egg sales) of the group. It is envisaged that after CADP’s intervention, the production of the birds in the cage will rise from 68% to 75%.

The sub-project will involve the procurement of 61 units of battery cages with nipple-fitted drinkers. Each unit is expected to store up to 120 layer birds. It will also involve the procurement of Pullets, feed, drugs and vaccines. It is expected that the project will increase the laying capacity of the birds and increase the income of the CIG. The project further seeks to increase the capacity of the CIG in bio-security measures which will aid the decrease of farm expenses on drugs.

This support to the Odalije FMCS is expected to promote the adoption of nipple fitted battery cage technology by other farmers nearby. The project will also help to reduce the dependence of the maize farmers on inorganic fertilizers and will have an overall beneficial impact on the farmers and governments food security programme.
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 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).
• Coordination 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 more stringent requirement 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

- **Increased Egg Production:** The battery cage will aid increase in egg production. Odaliije FMCS currently uses the Deep litter system and generates about 127,750 crates annually, with the introduction of the battery cage system, it is envisaged that egg production will increase to about 194,545 crates annually.

- **Agricultural Commercialization:** The introduction of battery cages will bring about increase in production capacity and product availability.

- **Revenue Generation:** Increase in the stocking capacity of the commodity interest group (CIG) will increase revenue generated from egg production. In addition, the sale of manure to local crop farmers will generate revenue.

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

- **Ease of Stock Count:** In the battery cage system, the eggs roll out of reach after laying and so a stock count of the eggs produced can easily be carried out.

- **Personnel Health:** The use of the battery cage system will help in managing the risk of disease transfer from birds to farmer during collection.

- **Production of healthy eggs:** Decrease in egg contact with fecal droppings will help reduce potential health risks to consumers such as food poisoning.

- **Efficiency in drug administration:** The water cisterns on battery cages are used to mix and administer oral drugs to the birds. The mixed drug is reticulated through the watering pipes and it gets to the birds through the nipples. This is easier, reduces labour, and ensures that the drug gets the birds.

- **Capacity Building:** The CIG and locals would be trained on improved poultry production techniques, biosecurity measures and especially the operation and maintenance of nipple fitted battery cages.

- **Gender Issues:** The project will empower women economic participation.

- **Improved Waste Management:** The battery cage system will accommodate the collection of chicken droppings in trays or underneath the cages. This will enable the proper gathering and disposal of the waste.

- **Decrease in loss of income:** In the battery cage, chicken contact with eggs will be reduced, thus the potential loss of income through destruction of eggs will be decreased.
Non-oil sector development

**Manure Production:** Increase in wet litter production will assist in reducing local farmer’s dependence on inorganic fertilizer.

**Maximizing available Space:** The use of battery cages makes it possible for poultry farmers to stock higher population of birds.

### 5.3 Adverse Impacts

- Impact on air quality during the construction and operational phases of the project from fouling of air (due to increased wet litter production), and some construction activities.
- Increase in solid wastes generation
- Conflict within the CIG and Service Providers
- Biosecurity issues during relocation and handling of birds.
- Accidents and injuries to farm and temporary workers
- Noise pollution during the construction phase of the project.
- 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 battery cages to the site.
- Soil compaction and soil structure changes due to movement of vehicles on 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 61 nipple fitted drinkers (semi-automated) battery cages for the housing of egg layers on Odalije FMCS.
- The CIG will benefit from trainings on procurement process.

Negative

- Due to the farm location on a steep slope, damage to cages may occur during transportation to the site and handling.
- Loss/Theft of battery cages 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 residents 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 in/off the Farm premises.

Negative

- Accidents and injuries may occur during the movement of equipment’s and materials, Odalije FMCS is located on a slope and so movement of site workers may be difficult
5.4.2 Construction Phase

5.4.2.1 Environmental Impacts

Positive

- Installation of 61 units of battery cages with nipple fitted drinkers for the housing of egg layers on Odalije FMCS.
- The installation of battery cages will help in maximizing available farm space.
- A housing unit has been constructed for the procured battery cages

Negative

- Installation works may cause changes in the air conditions of the area and surrounding environment. Cement dusts, machinery exhaust fumes (nitrogen oxides (NO_x), carbon monoxide (CO), sulphur oxides (SO_x), 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.
- There is the possibility for contamination of surface water during works on site could impact on water quality.
- Noise impact will be high during installation works although it will be short term.

5.4.2.2 Social Impacts

Positive

- Employment of skilled and unskilled labor will be promoted.
- There will be improved security on the farm site. This improvement will positively affect the surrounding residents and businesses.
- During the construction phase an effective waste management plan 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.
- Capacity building in cage installation 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 Farm site may lead to noise generation, which will impact negatively on the social environment.
- 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 within the CIG and with Service providers

5.4.2.3 Occupational Health and Safety

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

- Injury to personnel
- Welding works may lead to fire outbreak
- Exposure of diseases to the birds and to personnel during handling.

“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 use of the battery cage at the Odalije FMCS will give rise to an effective waste management collection system, such as chicken droppings collected in trays or pits beneath the battery cages.
- The waste (poultry droppings) generated would serve as manure and improve soil fertility.
- Vehicular emissions generated during the operation of the farm are expected to be minimal.
- The operation of the battery cages will not pose any significant adverse impact on baseline noise conditions. As noise will only be site-specific.

Negative

- With the increase in the poultry stockings on site, farm waste (particularly wet litter production) is expected to increase.
- Air quality impacts would arise during the operation of the battery cages with the increased fouling of air from chicken droppings.
- Contamination of surface water may occur through improper disposal of waste and farm chemicals (disinfectant) in the water drainage channel. This will pose a negative environmental impact as contaminants may affect the aquatic environment.
- Increase in bio-security issues.

5.4.3.2 Social Impacts

Positive

- Improve poultry productivity (egg production)
- Employment generation
- Increased revenue from improved egg production and wet litter production.
The upgrade to the battery cage system will assist in the improvement of waste management in the farm.

Improvement in pest and disease management in Odalije FMCS and its surrounding areas.

The battery cages are fitted with feeders for feeding the chickens and nipple drinkers for dispensing water and medicine, which helps to reduce labor required in catering for the birds on the farm. This development will be of huge economic benefit to the CIG.

Safety of Birds

The provision of the battery cages will bring about community development via technology advancement in poultry farming.

Ease of stock count

Production of healthy eggs

Manure production for use by local farmers

Increased financial and technical collaboration may occur in the community as the upgrade in technology from deep litter to battery cage system might serve as an educational experience as well as prompt interest in poultry farming technology modernization.

The operation of the battery cage system will not pose any significant adverse impact on baseline noise conditions. As noise or vibrations will be only site specific

**Negative**

- Foul smell from poultry may pose a nuisance to surrounding residents.
- Issues of egg theft may arise.
- Poor installation of battery cages
- Malfunction or breakdown or collapse of Battery cage. This could result in loss of birds and disrupt poultry farm activities.
- Some site workers engaged during the installation phase may be relieved of their duties at the commencement of the battery cage operation.
- The lack of stable electricity in Ngwo region may affect the efficiency/performance of the nipple fitted drinkers battery cage with as it is a semi-automated system.
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 the farm site medical 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
- Bird deaths
- 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 adoption of the battery cage system (with nipple drinkers) at the Odalije FMCS, Ngwo 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- Adoption of 61 units of Battery Cages fitted with Nipple Drinkers - 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; Odalije FMCS Farm Management; ENSMEnv; Service provider</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Review site-specific battery cage requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Undertake public consultation exercise for sensitization purposes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transportation of battery cages into Odalije Farm (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>20</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 battery cages to the site</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil compaction and soil structure changes due to increased vehicular movement on the site</td>
<td>Limit zone of vehicle and equipment weight impacts</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td>Social</td>
<td>Procurement of Nipple Fitted Battery cages</td>
<td>Procurement of poor quality battery cages</td>
<td>The CIG should ensure all procurement, construction and installation activities and expenses are within the scope of the project's budget</td>
<td>CIG; Odalije FMCS Farm Management; ENSCADO</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ENSCADO should assist the CIG in the selection and purchase of</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

May 24, 2013
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Responsible Party</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>Transportation of battery cages into Odalije Farm (FMCS)</td>
<td>ENSCADO</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Nuisance to commercial establishments and residential areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damage to equipment and battery cages during transportation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vehicles used in conveying machines and equipment should be in good condition</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Equipment and Battery Cages should be securely and carefully fastened during transportation</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Secure vehicles should be used to transport the battery cages</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>Loss/Theft of battery cages</td>
<td>Service provider</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Battery cages should be kept in a secure storage and/or security should be provided on site to prevent loss/theft.</td>
<td>Service provider</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular project meetings should be organized</td>
<td>Service provider</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Conflict within the CIG and Service Providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conflicts Resolution</td>
<td>CIG; Odalije FMCS Farm</td>
<td>-</td>
</tr>
</tbody>
</table>
### Occupational Health and Safety

<table>
<thead>
<tr>
<th>Description</th>
<th>Action</th>
<th>Provider/Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation of battery cages into Odalije Farm (FMCS)</td>
<td>Accidents occurring during the handling and conveyance to the site – injury to workers or unsuspecting persons</td>
<td>Management; ENSCADO</td>
</tr>
<tr>
<td></td>
<td>Education and training of workers on safety on site and in handling equipment.</td>
<td>Service provider</td>
</tr>
<tr>
<td></td>
<td>Enhanced fastening of equipment to carriage section of vehicles</td>
<td>Service provider</td>
</tr>
<tr>
<td></td>
<td>Provision of a First aid facility on site</td>
<td>CIG; Odalije FMCS Farm Management</td>
</tr>
</tbody>
</table>
Table 2: ESMP- Adoption of 61 units of Battery Cages fitted with Nipple Drinkers - 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><strong>Environment</strong></td>
<td>Site development (installation works)</td>
<td>Fugitive dust and exhaust fumes (NOx, CO, SOx, PM_{2.5}, PM_{10}), Oxides from welding activities.) Noise pollution</td>
<td>Proper maintenance of equipment being used must be carried out to minimize exhaust fumes</td>
<td>Service provider, CIG; Odaliye FMCS Farm Management, ENSCADP; ENSMEnv</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>Disposal of waste the drainage or water channels</td>
<td>Contamination of surface water Blockage of drainage channels Water contamination by human fecal waste</td>
<td>Implement effective waste management plan Provision of sanitary toilets and personnel hygiene sensitization</td>
<td>Service provider, CIG; Odaliye FMCS Farm Management; ENSMEnv</td>
<td>100</td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Installation of battery cages</td>
<td>Poor installation Due to influx of site workers, increase in sexual relationships may occur thereby increasing spread of infections (STIs) and HIV. Increase in quantities of waste generated</td>
<td>Training should be conducted for the CIG, its members on the proper installation process of nipple fitted battery cages. Awareness campaign on sexual diseases, and distribution of male and female condoms. Ensure that all installation wastes are gathered on-site and disposed off as</td>
<td>Service provider, CIG; Odaliye FMCS Farm Management; ENSMEnv</td>
<td>-</td>
</tr>
<tr>
<td>Category</td>
<td>Issue</td>
<td>Mitigation Measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Noise Pollution</td>
<td>Noise generating activities should be conducted at reasonable times of the day when its impacts will be reduced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occurrence of social vices (fights, theft, vandalism)</td>
<td>Enforce and ensure proper orientation on acceptable behaviors for construction personnel on/off-site.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Relocation of Birds to battery cages/Handling of birds</td>
<td>PPE should be provided and its use enforced particularly during handling of birds; Disinfection of new battery cages and housing unit; Training of CIG on bio-security measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spread of Diseases</td>
<td>Service provider, CIG; Odalije FMCS Farm Management; ENSCADO; ENSMEnv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exposure of workers and birds to diseases</td>
<td>Service provider, CIG; Odalije FMCS Farm Management; ENSCADO; ENSMEnv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injury to personnel during handling/installation of battery cages</td>
<td>Service provider, CIG; Odalije FMCS Farm Management; ENSCADO; ENSMEnv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Welding works may lead to fire outbreak</td>
<td>Service provider, CIG; Odalije FMCS Farm Management; ENSCADO; ENSMEnv</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ENSCADP - OdaLije FMCS, Ngwo**

May 24, 2013
| Relocation of Birds to battery cages | Exposure and spread of diseases | Provision and Use of PPE Training of CIG members on Bio-Security measures should be conducted New battery cages should be disinfected before birds are relocated | Service provider, CIG; Odaliye FMCS Farm Management; ENSCADP; ENSMEv | 150 | 200 |

May 24, 2013
Table 3: ESMP- Adoption of 61 units of Battery Cages fitted with Nipple Drinkers - 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 (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Operation of Nipple fitted battery cages at Odalije FMCS</td>
<td>Increase wet litter production</td>
<td>Wet litter produced should be dried, packaged and sold as manure to local farmers (e.g. maize and vegetable farmers) whereby generating alternative revenue for the Odalije FMCS</td>
<td>CIG; Odalije FMCS Farm Management; ENSMEnv</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimize leakage from water pipes on site</td>
<td>CIG; Odalije FMCS Farm Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased fouling of air from chicken droppings</td>
<td>Installation/Provision of fine nets to ensure battery cages are properly ventilated and at the same time reduce effect on air quality</td>
<td>CIG; Odalije FMCS Farm Management; ENSMEnv</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wet litter produced should be dried to reduce foul smell.</td>
<td>CIG; Odalije FMCS Farm Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contamination of surface water from improper disposal of waste and chemicals (e.g. disinfectant).</td>
<td>Implementation and Monitoring of effective waste management system. Ensure environmentally sound and safe storage and containment of disinfectant.</td>
<td>CIG; Odalije FMCS Farm Management; ENSMEnv, ENSCADP</td>
<td>100</td>
</tr>
<tr>
<td>Environment</td>
<td>Disease Spread</td>
<td>Provision of PPE for site workers and ensure use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
<td>-------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular cleaning of poultry litter and disinfecting of battery cage units</td>
<td>CIG; Odalije FMCS Farm Management; ENSMEnv, ENSCADO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Proper disposal of wastes such as chemical and dead diseased birds in designated sites</td>
<td>CIG; Odalije FMCS Farm Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Implementation of Bio-security measures (such as use of foot dips) and monitor to ensure compliance</td>
<td>CIG; Odalije FMCS Farm Management; ENSCADO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Timely evacuation of poultry litter</td>
<td>CIG; Odalije FMCS Farm Management; ENSMEnv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular internal (environmental and social) audit</td>
<td>CIG; Odalije FMCS Farm Management; ENSCADO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Poor implementation of environmental management policies and /or practices | The CIG should comply with the relevant environmental policies and build the capacity of its members and staff on environmental law and regulations compliance. |
|                                                                      | CIG should endeavor to participate in training and enlightenment sessions/programmes on means of improving farming practices and creating and environmentally sound poultry business. |
|                                                                      | CIG; Odalije FMCS Farm Management; ENSMEnv, ENSCADO |

<table>
<thead>
<tr>
<th>ENSCADO CIG; Odalije FMCS Farm Management; ENSMEnv, ENSCADO</th>
<th>150</th>
<th>-</th>
</tr>
</thead>
</table>
## Social

<table>
<thead>
<tr>
<th>Problem Area</th>
<th>Impact</th>
<th>Proposed Action</th>
<th>Responsible Party</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<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>CIG; Odalije FMCS Farm Management;</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Educational experience</td>
<td>The operation of the nipple fitted battery cages on Odalije FMCS could use to</td>
<td>CIG; Odalije FMCS Farm Management;</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Battery cage failure and subsequent disruption of poultry farm activities</td>
<td>Ensure routine maintenance of battery cages</td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular training of CIG staff on operation and maintenance procedure for nipple</td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>fitted battery cages</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Regular internal (environmental and social) audit</td>
<td>CIG; Odalije FMCS Farm Management, ENSCADO</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Foul smell from poultry</td>
<td>Wet litter produced should be dried – a dryer may be provided for this purpose.</td>
<td>CIG; Odalije FMCS Farm Management;</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provision of fine nets to reduce effect on air quality for surrounding businesses</td>
<td>CIG; Odalije FMCS Farm Management;</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and residents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste management</td>
<td>Eggs packaging materials</td>
<td>When possible, egg packaging materials (e.g. crates) should be re-used to avoid</td>
<td>CIG; Odalije FMCS Farm Management;</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wastrage. However they should be properly cleaned before re-use to avoid transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>of diseases from chicken droppings</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health impact on humans and poultry - Disease Outbreak</td>
<td>Waste streams (human fecal matter, chicken droppings, chemicals) from Odalije FMCS should be managed in an environmentally safe and sound manner.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wastes should be collected, stored and managed on-site. Measures to ensure that wastes do not enter the state municipal water ways must be ensured at all times during operations and maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Social**

<table>
<thead>
<tr>
<th>Social</th>
<th>Poultry Management</th>
<th>Poultry Deaths</th>
<th>Regular medical check-ups of birds on the farm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Proper and regular administration of vaccines, medicines. The nipple drinkers fitted in the battery cages will be useful in administering drugs or vaccines to the birds housed in the battery cages</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The housing unit (battery cages) should be cleaned regularly to avoid an outbreak of diseases.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>In cases of bird death as a result of diseases, the bird should be disposed off appropriately</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Regular internal (environmental and social) audit</td>
</tr>
</tbody>
</table>

- **Power Outage**

<table>
<thead>
<tr>
<th>Power Outage</th>
<th>Shutting down of battery cage due to power outage</th>
<th>Provision of alternative source of power</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>CIG; Odalije FMCS Farm Management; ENSMEnv</th>
<th>CIG; Odalije FMCS Farm Management</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management; (Monitoring Officer; Poultry Facilitators), Veterinary council</td>
</tr>
<tr>
<td></td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
</tr>
<tr>
<td></td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
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<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
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<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
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<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
</tr>
<tr>
<td></td>
<td>CIG; Odalije FMCS Farm Management</td>
<td>CIG; Odalije FMCS Farm Management</td>
</tr>
<tr>
<td>Social</td>
<td>Increase in wet litter production</td>
<td>Dried litter should be packaged and resold to local farmers, whereby generating revenue for the farm and at the same time provide cheap fertilizer for local farmers.</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Breaking of eggs</td>
<td>Farm hands should be trained on the proper handling of eggs to prevent breaking of eggs and loss of income Provision of quality egg packaging materials e.g. crates</td>
</tr>
<tr>
<td></td>
<td>Social vices – theft of eggs</td>
<td>Provision of security on site</td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Battery cage operation</td>
<td>Disease outbreak Implement disease and pest management plan Implement on-site occupational health and safety management plan; Routine OHS training and education; Use of PPE; Establish electrical safety program; Implement fire prevention program; Regular internal (environmental and social) audit.</td>
</tr>
<tr>
<td></td>
<td>Pest infestation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Electric fires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injury from equipment use and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Collapse of Battery Cages</td>
<td></td>
</tr>
</tbody>
</table>
### 6.2 Monitoring Plan

#### Table 4: ESMP- Adoption of 61 units of Battery Cages fitted with Nipple Drinkers – 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>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Air</td>
<td>Transportation of battery cage and installation equipment in the project site – Odalije FMCS</td>
<td>Odalije FMCS; Service Provider</td>
<td>Generated fugitive dusts and exhaust fumes are in line with NESREA environmental limits. Vehicle emission testing (VET) and vehicle exhaust screening as laid down in the NESREA guidelines</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Soil</td>
<td>Transportation of battery cage and installation equipment in the project site – Odalije FMCS</td>
<td>Odalije FMCS; Service Provider</td>
<td>Establishing a Limit zone.</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
<td>Transportation of battery cage and installation equipment into the project site – Odalije FMCS to the site.</td>
<td>CIG; Service Provider ENSMEnv</td>
<td>Alternative design options; Mitigation at the source</td>
<td>50</td>
</tr>
<tr>
<td>Social</td>
<td>Procurement</td>
<td>During the procurement of the nipple fitted battery cage</td>
<td>CIG; ENSCADO</td>
<td>Ability of the CIG to grasp procurement process; Purchase good quality 61 units of nipple fitted battery cage</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Funds/Expenses</td>
<td>During the procurement of the nipple fitted battery cage</td>
<td>ENSCADO; Odalije FMCS</td>
<td>Compliance to Budget Plan prepared by the CIG</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
<td>Nuisance caused by transportation of battery cage and installation equipment and installation equipment into the project site – Odalije FMCS</td>
<td>Service Provider</td>
<td>Number of complaints</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Air</td>
<td>During the transportation of</td>
<td>Service Provider</td>
<td>Generated fugitive dusts and exhaust</td>
<td>150</td>
</tr>
<tr>
<td>Social</td>
<td>Others</td>
<td>During the conveyance of nipple fitted battery cages to the site and other materials and equipment. When conflict arises between CIG and Service providers</td>
<td>Odalije FMCS; Service provider ENSCADO</td>
<td>Number of purchased nipple fitted battery cages available. Number of battery cages and equipment undamaged. Timely implementation of project</td>
<td>150</td>
</tr>
</tbody>
</table>

| Occupational Health and Safety | Accidents | Accident occurrence involving site workers and/or unsuspecting passersby during transportation and handling. Collapse of equipment or battery cages during transportation. | ENSCADO; Odalije FMCS Service provider Service provider | Service provider(s) education and training on pedestrian safety. Installation of safety signage. Haulage safety training. Enhanced fastening of equipment to carriage section of vehicles. | 100 |
Table 5: ESMP- Adoption of 61 units of Battery Cages fitted with Nipple Drinkers – 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>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td>Air</td>
<td>During installation works</td>
<td>Service provider; ENSCADO; Odalije FMCS</td>
<td>Generated fugitive dusts and exhaust fumes are in line with NESREA environmental limits</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Water</td>
<td>During installation works</td>
<td>Odalije FMCS; ENSMEnv</td>
<td>Within NESREA water quality limits</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>During the disposal of domestic and human waste (fecal waste)</td>
<td>Odalije FMCS; ENSMEnv; ESWAMA</td>
<td>Compliance with Enugu State Waste Management Authority (ESWAMA)</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
<td>Noise producing installation works above 90Db</td>
<td>Odalije FMCS; ENSMEnv</td>
<td>Noise levels below 90Db</td>
<td>300</td>
</tr>
<tr>
<td>Social</td>
<td>Procurement</td>
<td>Installation of battery cages</td>
<td>Odalije FMCS; ENSCADO</td>
<td>Proper installation of all 61 units of nipple fitted battery cage equipment</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Noise</td>
<td>Nuisance from operation of equipments and installation works</td>
<td>Odalije FMCS; ENSMEnv</td>
<td>Noise levels below 90Db</td>
<td>-</td>
</tr>
<tr>
<td>Category</td>
<td>Issue</td>
<td>Location/Contact</td>
<td>Indicator</td>
<td>Score</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td>Air</td>
<td>Odaliqe FMCS; ENSMEnv</td>
<td>Air quality within National limit (NESREA)</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal Safety</td>
<td>Odaliqe FMCS; ENSCADO</td>
<td>Level of awareness of the staff on sexual health and good work performance</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waste</td>
<td>Odaliqe FMCS; ESWAMA; ENSMEnv</td>
<td>Level of awareness of workers on waste management plan Compliance with Enugu Waste Management Authority (ESWAMA)</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td>Health</td>
<td>Odaliqe FMCS; CIG; ENSCADO</td>
<td>Level of awareness of biosecurity measures Number of cases of disease/infections as a result of handling birds Number of bird deaths recorded from disease spread</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>ENSCADO</td>
<td>Timely implementation of construction phase activities</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td><strong>Occupational</strong></td>
<td>Accidents</td>
<td>Odaliqe FMCS; ENSCADO</td>
<td>Level of awareness of site workers on site safety Number of accidents recorded</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>Odaliqe FMCS</td>
<td>Level of awareness of farm</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>What Parameter is Being Monitored</td>
<td>When Should it Be Monitored</td>
<td>Who should Monitor</td>
<td>Performance Indicators</td>
<td>Cost</td>
</tr>
<tr>
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<td>------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Environment</td>
<td>Air</td>
<td>During operation of nipple fitted battery cages</td>
<td>Odalije FMCS; ENSMEnv</td>
<td>Air quality within national standards (NESREA) Number of complaints of foul smell from the site</td>
<td>50</td>
</tr>
<tr>
<td>Environment</td>
<td>Waste</td>
<td>Wet litter production</td>
<td>Odalije FMCS; ENSCA DO; ESMEnv</td>
<td>Number of bags of manure produced and number of farmers buying manure from the CIG Compliance with Bio-security measures Level of awareness of staff on Bio-security measures</td>
<td>300</td>
</tr>
<tr>
<td>Environment</td>
<td>Activity Description</td>
<td>Responsible Party</td>
<td>Compliance Details</td>
<td>Points</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td><strong>Water</strong></td>
<td>During disposal of waste and chemicals</td>
<td>Odaliye FMCS; ENSMEnv</td>
<td>Compliance with Enugu Waste Management Authority (ESWAMA)</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Level of awareness of staff on waste management plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Within national water quality limits</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>All through the operational phase</td>
<td>ENSMEnv</td>
<td>Compliance with relevant environmental policies</td>
<td>150</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Air</strong></td>
<td>All through the operational phase</td>
<td>Odaliye FMCS; ENSMEnv</td>
<td>Number of complaints from surrounding residents</td>
<td>100</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Within NESREA Air quality limits</td>
<td></td>
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</tr>
<tr>
<td><strong>Water</strong></td>
<td>All through the operational phase</td>
<td>Odaliye FMCS; ENSMEnv</td>
<td>Within NESREA surface water quality limits</td>
<td>50</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Level of awareness of staff on waste management plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Social</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Waste</strong></td>
<td>During wet litter production At the egg packaging phase</td>
<td>Odaliye FMCS</td>
<td>Number of bags of dried litter produced and number of farmers buying manure from the CIG</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number of packaging materials reused</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Operation of battery cage</td>
<td>Odaliye FMCS; ENSCADO</td>
<td>Monthly maintenance checks</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Trainings conducted for CIG staff</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Level of awareness of farm workers on proper maintenance</td>
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</table>

**May 24, 2013**
<table>
<thead>
<tr>
<th>Health</th>
<th>During generation of waste (including domestic, human/poultry fecal waste and chemicals)</th>
<th>Odalije FMCS; ENSCADO</th>
<th>Hygienic conditions of the poultry</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Level of awareness of staff on biosecurity measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Compliance with ENSMEnv and Waste management authority</td>
<td></td>
</tr>
<tr>
<td>Poultry management</td>
<td>During disease outbreak</td>
<td>Odalije FMCS; ENSCADO</td>
<td>Hygienic conditions of the poultry</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Level of awareness of staff on biosecurity measures</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Bio-security measures compliance</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Regularity of medical check-ups (for poultry) by certified veterinarian</td>
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<td></td>
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<td>Routine administration of drugs and vaccines</td>
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<td></td>
<td></td>
<td>Number of recorded disease outbreak cases (human/poultry)</td>
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<td></td>
<td></td>
<td></td>
<td>Number of poultry/farm workers treated</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>During the operation of the battery cage- • Wet litter production</td>
<td>Odalije FMCS; ENSCADO</td>
<td>Number of dried litter packaged and sold</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Number of eggs sold daily</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Personnel Safety</td>
<td>At the occurrence of an accident on site</td>
<td>Odalije FMCS; ENSCADO</td>
<td>Safety training conducted</td>
</tr>
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</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Health</td>
<td>Disease outbreak/ pest infestation</td>
<td>Odalije FMCS; ENSCADO</td>
<td>Hygienic conditions of the poultry</td>
</tr>
</tbody>
</table>
Some specific mitigation measures have been described in the sections below.

6.3 Waste Management Plan

Waste management practices currently undertaken at Odalije FMCS involve the use of open burning, burying and dumping as final disposal methods (see Figure 7), all of which are not environmentally sound. Wastes generated on site are co-mingled as no efforts are made to separate the different types of waste to be treated and disposed off accordingly.

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

- Sensitization amongst the CIG, farm workers and labourers on the need for effective waste management in and around the farm throughout the sub-project activity.
- Sensitization and mobilization on the adverse effects 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, chicken litter, used chemicals, etc.
- Identify and demarcate waste disposal areas on site.
- Identify, demarcate and enforce the use of within-site access routes to limit impact to
farm soil.

- Erect erosion control barriers around perimeter.

- Establish and enforce daily site clean-up procedures, including maintenance of adequate disposal facilities for poultry farm 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 ground waters.

- 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.
• Strict compliance to ESWAMA waste disposal regulations should be ensured.

b. Chemical Waste

• Ensure that all chemical related activities, including making of foot dips, are conducted within demarcated maintenance areas designated for such.

• Ensure that disinfectants and other chemicals are never dumped on the ground, in designated areas.

• Best approaches must be considered in handling and disposal, particularly methods outlined by ESWAMA and ENSMEnv

• All used Chemical containers are to be gathered for disposal at ESWAMA approved sites

• Medical wastes should also be bagged disposed at ESWAMA approved sites

6.4 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 documents.</td>
<td>WB</td>
</tr>
<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>Role</td>
<td>Responsibility</td>
<td>Responsible Party</td>
</tr>
<tr>
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</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.</td>
<td>Enugu CADP / WB</td>
</tr>
<tr>
<td></td>
<td>Make sure that the specific system for environmental management is planned, documented, implemented and maintained through all stages of the project.</td>
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<tr>
<td></td>
<td>Certify that project works is continuing according to the ESMP.</td>
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</tr>
<tr>
<td>Site/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.</td>
<td>CADP Environment/Social Unit</td>
</tr>
<tr>
<td></td>
<td>Direct site activities according to ESMP. Monitor operations of the ESMP and recommend any necessary changes to project manager.</td>
<td>CADP/SMENV/NESR EA /WB</td>
</tr>
<tr>
<td></td>
<td>Maintain regular contact with all client and personnel to ensure a safe working environment and work practices.</td>
<td>CADP/SMENV/NESR EA /WB</td>
</tr>
</tbody>
</table>
CHAPTER 7

PUBLIC CONSULTATION

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 Odalije FMCS, Ngwo.

The consultation was conducted to ensure effective participation and awareness of the Project Affected Persons (PAPs) in proposed technology support for the Odalije 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;
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
7.6 Major Findings from Public Consultation

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

Challenges

- **Access Road**: the road leading to the farm is very steep and unleveled whereby making it difficult for vehicle access.
- **Electricity**: The incessant light situation will be a problem for poultry farming operations, particularly with the proposed adoption of the nipple fitted battery cage system, which is semi-automated and will require the use of electricity.
- **Availability of water**: Water used on the farm is obtained from portable water tankers purchased every one (1) to two (2) weeks, as attempts to drill boreholes have been unproductive. This poses a challenge for the farm.
- **Area Prone to erosion**: The farm location (on a steep slope) is prone to severe erosion particularly from runoff, resulting in sheet wash.

7.7 ANALYSIS OF ALTERNATIVE

The plan to support the Odalije FMCS in improved poultry production package is an integral part of the Enugu CADP poultry value chain support drive. This implies that, this project is meets the requirement for funding the CADP under the poultry value chain

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 Odalije FMCS would remain with the present mode of production which makes the CIG to spend much on drugs and produce eggs that does not attract the right markets. Under these circumstances the current production of the
laying birds will remain at 68%. This state will interfere with the achievement of the project development objective which is to strengthen agriculture production systems in the selected value chains. The do nothing option was dropped from further consideration as it is not in line with CADP mandate.

**Routine Maintenance:** This option is to carry out the maintenance of the existing structures presently used by the group. This will rule out the opportunity for the group to adopt superior technologies that will reduce cost of production and improve the quality of eggs produced. The maintenance work presently in use cannot produce the projected quantity and quality of table eggs 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 Odalije FMCS. This option will help to increase table egg production in the state and promote technology dissemination among commercial poultry farmers. In view of these, this option was taken as the viable for the implementation of the project.
CONCLUSION

The improved poultry production 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 expand the egg production system in Odalije FMCS and also Enugu State. The project will provide jobs for the community; improve biosecurity measures and capacity building. However, it is essential that concerns raised by the farmers 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 Poultry Production Pakage 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 Word 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 Impact on air quality during the construction and operational phases of the project from fouling of air (due to increased wet litter production), and some construction activities, Increase in solid wastes generation and handling during the construction and operation phase, Conflict within the CIG and Service Providers, Biosecurity issues during relocation and handling of birds, Social vices during construction and operation phase.

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 $27,965

RECOMMENDATIONS

Following on the general observations and findings during the conduct of field visits, environmental assessment, potential impacts identification, consultations with ENSCADP, Odalije FMCS farm management and other stakeholders, the under-listed recommendation have been made to ensure quality assurance throughout the phases of the improved poultry production project.

- Proper waste management practices on Odalije FMCS should be promoted such as:
  - Waste segregation prior to disposal;
  - Use of packaging materials, proper handling and storing of waste;
  - Treatment of selected waste prior to disposal
  - Final disposal as outlined by the waste management authority

  and monitored to ensure compliance with ESWAMA and other relevant authorities.

- Periodic meetings with the farm management should be a continuous process to ensure compliance with biosecurity measures amongst other things