



Infrastructure
Concession
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Commission

CONCESSION OF 33 SILO COMPLEXES IN NIGERIA

TRANSACTION ADVISORY SERVICES

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LION'S HEAD
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YOEB CONSULTANTS LIMITED



Benchmac & Ince

Triple 'E' Systems

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List of Acronyms

EAR: Environmental Audit Report

EIA: Environmental Impact Assessment

FGN: Federal Government of Nigeria

FMARD: Federal Ministry of Agriculture and Rural Development

FMEEnv: Federal Ministry of Environment

ICRC: Infrastructure Concession Regulatory Commission

KEPA: Kaduna State Environment Protection Authority

KWEPA: Kwara State Environment Protection Agency

LHGP: Lion's Head Global Partners

NESREA: National Environmental Standards and Regulations Enforcement Agency

OGEPA: Ogun State Ministry of Environment and Environmental Protection Agency

PPE: Personal Protective Equipment

PPP: Public-Private Partnership

1 Executive Summary

The environmental and social due diligence assesses the environmental and social status of each of the silo complexes. It also highlights the various environmental and social risks with a view to recommending practical and simple mitigation options to the identified impacts.

Relevant regulatory provisions that pertain to the silo project were also reviewed. They are presented in the report and cover both federal and States environmental regulations as well as the social provision, which is the land use Act of 1978, were highlighted. The federal regulations are the Environmental Impact Assessment (EIA) Act, 1992 and the National Environmental Standards and Regulations Enforcement Agency (NESREA), 2007. Relevant sections of environmental regulations of the States where the silo complexes are domiciled are also highlighted in the report.

The assessment focuses on the following key environmental issues:

- waste disposal;
- erosion and flooding;
- presence of surface water bodies;
- employee health and safety policies, availability and strict use of relevant personnel protective equipment; and
- compliance with relevant environmental assessment, monitoring and audit policies.

In terms of social impact, the assessment focuses on the following key issues of

- encroachment;
- relationship with host community; and
- emergency response procedure.

These issues have been highlighted in this assessment for the following reasons:

Waste disposal: This is one of the common environmental issues faced by a number of infrastructure assets in Nigeria. While some facilities may consider themselves compliant in terms of waste management procedures, recent studies have shown that waste management practices in some cases contravene the Federal Ministry of Environment guidelines. Common waste associated with silo complex operations include grain dust, spoilt grains, diesel, spent oil and used generator service parts.

Erosion and flooding: The tropical weather conditions of the country create high levels of precipitation. Consequently, the problem of erosion and flooding in most cases affect some infrastructure assets. This is especially important given the loose nature of soils in some areas around the country. Effective drainage system can play a major role in preventing erosion.

Presence of surface water bodies: One of the most sensitive components of environment management for silo operations is possible pollution (solid and liquid) of surface and ground water. For the silo projects, possible indiscriminate management/disposal of wastes may ultimately find its way into nearby surface water bodies. These water bodies sometimes serve as source of water for domestic use for communities' inhabitants. It is therefore necessary to check the presence of water

bodies in proximity to the Silo Complexes and ensure that such water bodies are kept free from pollution.

Availability and use of personal protective equipment: Workers in a silo environment are exposed to a number of harmful substances (chemicals, grains dust) and dangerous equipment which require the use of Personal Protective Equipment (PPE). Lack of availability or improper use of such equipment may result in accidents or death. For the well-being of the workers and the effective operations of the Silos it is therefore important to assess the availability and strict use of relevant PPEs at the Silo Complexes.

Emergency Response Procedure: In an environment where accidents happen, the availability of appropriate emergency and first aid equipment can help curtail the consequences of the accident and even make the difference between life and death. The Silo Complexes should each be equipped with an adequately stocked sick bay or clinic. For each of them we have assessed the availability of these facilities.

Compliance with relevant environmental assessment laws and regulations: Every industry and infrastructure in Nigeria is mandated by the law of the Federal Ministry of Environment to comply with relevant environmental assessment/compliance studies. For instance, prior to development of any infrastructure including the silo complexes, the FMEnv stipulates under the EIA Act of 1992 that an Environmental Impact Assessment be carried out. During the operational phase of such project, the FMEnv also made relevant provisions for other environmental monitoring and compliance studies such as environmental audit. It is based on this that the silo project needs to be assessed for compliance with relevant statutory studies. Failure to comply with these laws and regulations could result in the facilities being shut down.

Encroachment: One of the common social issues experienced by most government facilities in Nigeria is encroachment on the land by nearby populations, which use land for dwellings, agriculture, access to water and power and similar. Encroachment is often attributed to poor management, lack of fencing of the facility's perimeter and inadequate security. Encroachment often results in long and difficult procedures to negotiate rights access with encroaching parties. These negotiations contribute to deteriorating relationships with the local population.

Relationship with host communities: Productivity and effectiveness of any establishment can only be actualized in the context of amicable and harmonious relationship with the local community. The need for the silo complexes to have good and cordial relationship with the host communities is paramount for the existence of a peaceful working atmosphere around the complexes.

Generally, the environmental due diligence revealed the following significant environmental risks:

- No Environmental Impact Assessment was conducted on any of the silo complexes prior to construction of the complex and commencement of grain storage operations (for those sites that are operational). In addition, none of the silo complexes has been audited or monitored in line with the Federal ministry guidelines.
- Waste management is poor in most of the silo complexes. Open burning of wastes is the general practice.

- Portions of some silo complexes have overgrown flora, specifically unmanaged grass areas. These areas create conditions for pest proliferation, which can lead to grain spoilage and be harmful to the staff working at the silo sites.
- Structures (roofs and ceiling) of some silo complexes especially those that do not have deliberate planting of protective tree lines suffer from wind damage.
- Staff members are aware of health and safety policies in almost all the silo complexes. Relevant personal protective equipment (PPE) is generally provided to workers. However, these PPEs are often not enough and in most cases, strict compliance to implementation of policies and use of provided PPEs is not enforced.
- Few cases of respiratory health challenges due to exposure to fumigants were also reported. There is therefore, the need to educate workers on effective, safe chemical handling practices.
- Emergency response facilities (e.g. sick bays) are lacking in most of the silo complexes.

The following Table summarizes the situation of each Complex with regards to key environmental and social issues. The potential impact of environmental issues affecting the silos was measured in accordance to the proximity of water bodies and local population.

Section 3 of the report details the assessment for each of the Silo Complex and presents the recommended mitigation measures along with their cost implications.

	staff	Const. Completed	Grain operations	EIA Compliance	General Maintenance	Waste management	Storage of chemicals	Erosion	Env. risks sensitivity	Health and Safety	Encroachment	Community relations
Ado Ekiti	N/A	No	No	No	Good	N/A	N/A	Low	High	N/A	No	Good
Akure	11	Yes	Yes	No	Average	Poor	Poor	Low	High	Poor	Yes	Good
Bauchi	N/A	No	No	No	Good	N/A	N/A	Medium	High	N/A	No	Good
Bulasa	8	Yes	No	No	Good	N/A	Poor	Low	High	Average	No	Good
Dutsin- ma	3	Yes	No	No	Good	N/A	N/A	Low	High	N/A	No	Good
Ezillo	10	Yes	No	No	Average	N/A	N/A	Low	Medium	Average	No	Good
Gaya	N/A	No	No	No	Average	N/A	N/A	Low	High	N/A	No	Good
Gombe	27	Yes	Yes	No	Good	Average	Average	Medium	High	Average	No	Good
Gusau	N/A	No	No	No	Good	N/A	N/A	Medium	Medium	N/A	No	Good
Ibadan	14	Yes	Yes	No	Good	Poor	Poor	Medium	High	Average	Yes	Good
Igbariam	N/A	No	No	No	N/A	N/A	N/A	Low	Medium	N/A	No	Good
Ikenne	N/A	No	No	No	Good	N/A	N/A	Medium	High	N/A	No	Good
Ilesha	2	Yes	No	No	Average	N/A	N/A	Low	High	Average	No	Good
Ilorin	11	Yes	Yes	No	Average	Average	Average	Low	Medium	Poor	Yes	Good
Irrua	14	Yes	Yes	No	Poor	Poor	Average	Medium	Medium	Average	No	Good
Jahun	9	Yes	Yes	No	Good	Poor	Average	Low	High	Average	Yes	Good
Jalingo	N/A	No	No	No	Poor	N/A	N/A	Medium	Medium	N/A	No	Good
Jos	13	Yes	Yes	No	Good	Average	Poor	Low	High	Average	No	Good
Kaduna	10	Yes	Yes	No	Good	Poor	Average	Medium	Medium	Average	No	Good
Kwali	4	Yes	Yes	No	Average	Poor	Average	Low	High	Average	No	Good
Lafia	N/A	No	No	No	Average	N/A	N/A	Low	High	N/A	No	N/A
Lafiagi	7	Yes	Yes	No	Average	Poor	Good	Low	High	Average	No	Good
Lokoja	N/A	No	No	No	Poor	N/A	N/A	Low	High	N/A	No	Good
Makurdi	17	Yes	Yes	No	Average	Average	Average	Low	High	Average	No	Good
Minna	25	Yes	Yes	No	Good	Average	Average	Medium	Medium	Average	Yes	Good
Ogoja	12	Yes	No	No	Good	Poor	Average	Medium	High	Average	No	Good
Okigwe	N/A	No	No	No	Average	N/A	N/A	Medium	High	Average	No	Good
Sokoto	7	Yes	Yes	No	Good	Good	Average	Low	Medium	Average	No	Good
Uyo	N/A	No	No	No	Average	N/A	N/A	Low	High	N/A	No	Good
Yenagoa	N/A	No	No	No	Poor	N/A	N/A	High	High	N/A	No	Good
Yola	N/A	No	No	No	Good	N/A	N/A	Low	Low	N/A	No	Good

2 Introduction

2.1 Authority for the Project

This project is carried out under a contract dated September 30, 2014 between the Federal Government of the Federal Republic of Nigeria represented by the Federal Ministry of Finance and the Lion's Head Global Partners Consortium ("LHGP Consortium"). The contract is for the provision of professional advisory services for the Concession of 33 Silo Complexes in Nigeria.

The LGHP Consortium includes:

- 1) Lion's Head Global Partners, an African-focused investment bank with offices in London and Nairobi actively advising investors, corporates and governments in the agriculture and infrastructure sectors.
- 2) CPCS, a global development consultancy with offices in Abuja and experience supporting FGN on previous PPP concessions as well as international legal expertise.
- 3) Yoeb Consultants Ltd, a Nigerian management and engineering firm with substantial experience evaluating the technical viability of agriculture infrastructure assets;
- 4) Triple E, a Nigerian environmental assessment consultancy experienced at completing high quality assessment for public and private clients
- 5) Benchmac and Ince, a Nigerian full service law partnership with substantial experience in infrastructure transactions and regulation, PPPs and privatisations.
- 6) MySilo, a global technical and engineering consultancy specialising in grain storage, handling and processing.

2.2 Objective of this Report

The objective of this report is to provide prospective investors or operators for Silo Complexes with:

- A summary of the legal and regulatory framework with regards to environmental and social impact
- The current environmental and social impact status of the Silo Complexes
- An assessment of the environmental and social impact issues affecting the Silo Complexes
- Recommendation for mitigation measures with associated costing.

2.3 Methodology

An environmental and social questionnaire was prepared for the technical survey team which visited the Silo Complexes. Based on the questionnaire, the technical survey teams then performed an exhaustive investigation at each of the Silo Complex, between November 10 and November 21, 2014. The questionnaire is provided as Appendix A.

Data and responses collected were then processed to produce a strategic environmental assessment that summarizes key environmental and social risks associated with the development of each Silo Complex.

3 Legal, Regulatory and Policy Framework for Environmental and Social Management

This section provides information on the relevant regulatory provisions for the operations of the Silo Complexes. It comprises of both the relevant Federal and State regulations.

3.1 Federal Environmental Regulations

For the purpose of the Silo Complexes, relevant provisions of the Federal Ministry of Environment, which is the only legally authorised ministry to issue the Environmental Impact Assessment Statement, are highlighted. To this end, the Federal Ministry of Environment (FMEnv) has in place statutory documents for the control and abatement of industrial wastes and indiscriminate pollution of the environment including that of the Silo Complexes. These documents among others include:

- S.I.8 - National Environmental Protection (Effluent Limitations) Regulations of 1991;
- S.I.9 - National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) of 1991;
- S.I.15 - National Environmental Protection Management of Solid and Hazardous Wastes Regulations of 1991;
- EIA Act No 86 of 1992;
- The Harmful Wastes (Criminal Provisions) Act 42 of 1988; and
- The 1989 National Policy on the Environment.

These documents spell out the restrictions imposed on the release of toxic or noxious substances into the environment and the responsibilities of all industries whose operations are likely to pollute the environment.

The Silo Complexes fall into this category since they may house specific chemicals and agents for insect pest control. Recommended chemical sprays are applied to stored grains to avoid contamination. Emissions from the power generating sets used in the Complex are potential air pollutants especially when certain limits are exceeded.

Agents in industries whose operations are likely to pollute the environment are responsible for provision of anti-pollution equipment, adequate treatment of effluent before discharge into the environment, etc. (S.I.8 and 9). Also paragraph 17 states that an industry or a facility which is likely to release gaseous, particulate, liquid or solid untreated discharges shall install into its system, appropriate abatement equipment in such a manner as may be determined by the Ministry.

Specifically, S.I.15 provides a comprehensive list of wastes that are classified as dangerous to the environment. It also gives detail on the contingency planning and emergency procedure to be followed in case of sudden release of any of these hazardous wastes into the environment.

Highlights of some relevant statutory documents relevant to the Silo Complexes are presented below.

3.1.1 EIA Act 86 of 1992

The EIA Act (“the Act”) clearly stipulates among other things:

- the objectives of an Environmental Impact Assessment (EIA);
- the list of project activities for which an EIA is mandatory;
- the minimum content of an EIA;
- the regulatory authorities of FMEnv; and
- environmental offences and their penalties.

Specifically, this Act states that the objectives of any environmental impact assessment shall be:

- To establish, before a decision is taken by any person, authority, corporate body or unincorporated body including the government of the federation, state or local Government intending to undertake or authorize the undertaking of any activity that may likely or to a significant extent affect the environment or have environmental effects, the extent of the effects of these activities on the environment.
- To promote the implementation of appropriate policy in all federal lands, states, and local government areas, consistent with all laws and decision-making processes through which the goals and objectives in paragraph (i) of this section may be realized.
- To encourage the development of procedures for information exchange, notification and consultation between organs and persons when proposed activities are likely to have significant environmental effects on boundary or on the environment of border towns or villages.

To achieve these objectives, the act stipulates that no public or private sector agent shall undertake or embark on any project without first carrying out an Environment Impact Assessment study. However, Section 15(1) of the Act highlights some classes of projects to which an EIA study might be exempted. These classes of projects include:

- Projects considered likely to have minimal impact on the environment by the President, Commander-in-Chief of the Armed Forces or the council of the FMEnv;
- All projects to be carried out during national emergency for which the Government has put temporary measures in place.
- All projects that are to be carried out in response to circumstance that is beneficial to the populace.

Apart from the projects that fall into these categories, all other projects require that an EIA should be carried out before the project commences. Section 64 of the Act presents a comprehensive list of activities in each sector to which an EIA study is mandatory. The sectors include agriculture, aviation, housing, industry, mining, petroleum, power generation and transmission etc. This transaction relates to agriculture. In this sector, the activities that require a mandatory EIA study include:

- Land development schemes covering an area of 500 hectares or more to bring forest and into agricultural production.
- Agricultural programmes necessitating the resettlement of 100 families or more.
- Development of agricultural estates covering an area of 500 hectares or more involving a change in type of agricultural use.

Statutorily, the FMEnv is the regulatory agency that is solely responsible for certifying all Environmental Impact Assessments in Nigeria.

No Environmental Impact Assessment has been performed for any of the silos. As a result there are no environmental baseline conditions to measure the environmental performance of the facility. Therefore, we recommend that comprehensive periodic environmental audit should be carried out every three years in compliance with existing Federal Ministry of Environment regulations.

3.1.2 National Environmental Standards and Regulations Enforcement Agency (NESREA)

The NESREA Act 27 of 2007 established the National Environmental Standards and Regulations Enforcement Agency (NESREA). The Agency, which works under the Federal Ministry of Environment is responsible for the protection and development of the environment, biodiversity conservation, sustainable development of Nigeria's natural resources in general, environmental technology, and coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines.

By the NESREA Act, NESREA is the organisation with oversight of the Silo Complexes especially with respect to compliance to environmental regulations. NESREA therefore is responsible for ensuring that the relevant environmental studies (e.g. periodic environmental audit) is duly carried out by each of the Silo Complexes as and when due.

3.2 States' Environmental Regulation

Like the Federal Ministry of Environment, the States are also empowered to establish environmental regulatory agencies responsible for the enforcement of environmental regulations within the States. To this end, the environmental and social assessment due diligence of each Silo Complex transaction is by law also expected to be guided by the environmental regulations of the State where the respective silo is located. Nine states have developed environmental regulations backed by law. Therefore, relevant provisions of regulations of the States that have such provisions are presented below:

3.2.1 The Enugu State Waste Management Authority Law No. 8 of 2004

The Enugu State Waste Management Authority Law No. 8 of 2004 established the Enugu State Waste Management Authority and Other Matters connected thereto. Therefore, the statutory responsibility of protecting and/or ensuring the protection of the environment in Enugu State rests on the Enugu State Waste Management Board. Some of the functions of the Authority include:

- To collect, remove, process, treat and safely dispose of domestic, hospital, commercial, institutional and industrial waste;
- To recycle waste;
- To design blueprints for establishment of sewage disposal system and clearing of sewage;
- To advise and make recommendations to the Ministry for improvements in collection, removal, processing, treatment and safe disposal of wastes;
- To clean streets;
- To remove and dispose of abandoned vehicles;
- To remove and dispose of carcass of dead animals from public places;
- To monitor the clearing, cleaning and maintenance of drainage facilities within the State;
- To design, operate and maintain waste disposal facilities;
- To prepare and update from time to time master plans for waste collection disposal in the cities, towns and villages within the State and the control of the resultant waste system within the State;
- To approve and keep close watch on all waste disposal systems in the State; and
- To do all such acts as appear to it to be required advantageous, convenient for or in connection with the carrying out of its functions or to be incidental to their proper discharge

3.2.2 Kaduna State Environment Protection Authority Edict 1997

The Kaduna State Environment Protection (KEPA) Edict came into operation in January 1997. Under the edict, the authority (KEPA) has the general responsibility for all matters relating to environment. The main duties are to:

- Enact and enforce State regulations control criteria, procedures, guidelines and environmental standards for effective prevention, remediation, control and prevention of point and non-point sources of pollution and degradation;
- Formulate, implement, and review environmental policy in the State and in particular to demand and review Environmental Impact Assessment and Statements for new development projects and to also demand and review environmental audit reports for existing developments and such other operations which are deemed to have significant impact on the environment;
- Prepare, in accordance with the State Policy and Edict on the environment, periodic master plans for the development and the financial requirements for implementation of such plans;

- Prevent, stop any act of omission or commission which consequences are likely to adversely affect the environment and to generally deal with any discharge solid, liquid or gaseous, deposited wilfully or otherwise in the environment and to deal generally with any violations which the Authority may deem hazardous to the environment and ecosystem.

3.2.3 Plateau State Environmental Protection Law, 2000

The statutory responsibility of protecting and/or ensuring the protection of the environment in Plateau State rests on the Plateau State Ministry of Environment and/or any of its designate agencies. The main duties and responsibilities are to:

- Authorize any of its officers or employees to inspect, clear or clean any street, open space, public place, recreational ground, drain, drainage system or to carry out any other work in a lawful way for the purpose of maintaining a continuous flow of a drainage system.
- Remove or demolish without payment of compensation, any structures of whatever description, if it impedes or is likely to impede the continuous flow of a drain or of a drainage system or if it obstructs the clearing, construction or inspection of a drain or of a drainage system.
- Construct any structures of whatever description for the purpose of clearing, cleaning or inspecting a drain or a drainage system to ensure a continuous flow thereof. In exercising its powers, the ministry or its designate under ii and iii shall give one-month notice to the owner or occupier of the tenement.
- Designate refuse disposal site for the purpose of disposing of the contents of any dustbin.
- Issue a permit to any person to deposit refuse or waste on designated refuse disposal site and may charge such fees as it deems necessary for the permit.
- Provide vehicle for the transportation of any refuse from the designated disposal site to the ultimate or final disposal site. Any motor vehicle provided for the disposal of any refuse shall be properly and securely covered to prevent its contents from littering the street.

3.2.4 Edo State Sanitation and Pollution Management Law No. 5 of 2010

The statutory responsibility of protecting and/or ensuring the protection of the environment in Edo State rests on the Edo State Ministry of Environment. Relevant sections of this provision are as follows:

Section 8 is a provision on Disposal of Refuse. Subsection 1 prescribes that No person shall dispose of refuse or waste except through a Waste Manager approved by the Board or appropriate authority for the area where he resides or carries on business.

Subsection 2 states that it shall be an offence for any person to bury; burn or dispose waste in drains or moat.

Section 13 provides for Maintenance of Drains, Sewage and Septic Tanks. Subsection 1 prescribes that every person shall:

- Clean and maintain any drain in the frontage, sides or rear of his tenement or building; and
- Provide suitable holding tank for liquid waste or sewage and ensure regular evacuation and disposal of same.

3.2.5 Kogi State Environmental Protection Board, 2005

The statutory responsibility of protecting and/or ensuring the protection of the environment in Kogi State rests on the State Environmental Protection Board. The Board is mandated to:

- Implement policies and programmes within the context on the Federal Ministry of Environment's plans aimed at enhancing the position and improvement of the protection of the environment in the State;
- Enforce policies, rules and regulations on general environmental protection, control and regulation of the ecological system or all activities related thereto;
- Formulate master plans for drainage, solid and liquid wastes management and the development of environmental standard;
- Monitor sources of toxic pollution in the air, land and water and offer the necessary advice to the government and ensure proper abatement by industrial establishments;
- Initiate measures to ensure pollution-free air, land and water throughout the State including any other steps to inculcate environmental discipline in individuals or groups;
- Enforce applicable laws and standards on activities related to the environment in co-operation with the Federal Ministry of Environment and any other body.

3.2.6 Oyo State Ministry of Environment

The statutory responsibility of protecting and/or ensuring the protection of the environment in Oyo State rests on the Oyo State Ministry of Environment. The main duties of the Ministry are to:

- Be responsible for formulation, enforcing and coordinating policies, statutory rules and regulation on Solid Waste collection and disposal, general environmental protection, flood control and regulation of the ecological, system and all activities related therein, throughout the State;

- Monitor of sources of toxic pollutants in air, land and water and offering of necessary advice to industrial establishments; Monitoring of the Implementation of the Environmental Impact Assessment (EIA) and the Environmental Audit Report (EAR) guidelines and procedures on all development policies and projects within the State;
- Initiate measures to ensure pollution-free air, land and water throughout the State including other steps to obviate, mitigate or climate environmental discomfort to individuals or groups or danger to lives and properties

3.2.7 Kwara State Environment Protection Agency Law, 1992

The Kwara State Environment Protection Agency (KWEPA) Law came into operation on the 23rd day of November, 1992. Section 12 provides the functions of the Agency. The Agency is mandated to:

- Formulate policies and programmes within the context of the Federal Ministry of Environment plans aimed at enhancing the position and improvement of the protection of the environment in the State;
- Formulate and enforce policies, rules and regulations on solid waste collection and disposal, general environmental protection and control and regulation of the ecological system or all activities related thereto;
- Co-ordinate the activities of all the agencies in the State connected with environmental and ecological matters;
- Initiate measures to ensure pollution-free air, land, and water throughout the State including any other steps to inculcate environmental discipline to individuals or groups;
- Implement applicable laws and standards on activities related to the environment in co-operation with the Federal Ministry of Environment and any other body.

3.2.8 Kano State Environmental Planning Protection Agency Edict, 1989 (Edict No. 15 of 1990)

The statutory responsibility of protecting and/or ensuring the protection of the environment in Kano State rests on the Kano State Environmental Planning Protection Agency. Some of the duties of the agency applicable to the silo project are to:

- Collect and public demographic economic environmental social and other relevant information about the Urban Areas and the land development plans that are being or have been prepared by such Urban Areas.
- Take all lawful measures to ensure an effective and continuous sanitation as well as general cleanliness of the State.

- Remove dirt, filths, and industrial wastes, unauthorised or illegal structures from streets, open spaces and parks.

3.2.9 Ogun State Ministry of Environment and Environmental Protection Agency (OGEPA)

The State Ministry of Environment in Ogun State and the Ogun State Environmental Protection Agency have the responsibility to protect the environment in the State. The applicable State regulations have been taken into cognizance as part of the proposed project. Some of the functions of the State Ministry of Environment include:

- Liaising with the Federal Ministry of Environment, FMEnv to achieve a healthy or better management of the environment via development of National Policy on Environment
- Co-operating with FMEnv and other National Directorates/Agencies in the performance of environmental functions including environmental education/awareness to the citizenry
- Responsibility for monitoring waste management standards,
- Responsibility for general environmental matters in the States, and
- Monitoring the implementation of EIA studies and other environmental studies for all development projects in the State.

4 Assessment of the Silo Complexes

4.1 Ado-Ekiti Silo Complex

The Silo Complex is located along Polytechnic Road in Ado-Ekiti, Ekiti State. The Complex has a storage capacity of 100,000 metric tons. Construction is still on-going at the Silo Complex. The completed sections of the Complex are well maintained and kept clean (Figure 1, Figure 2).



Figure 1: Aerial view of Ado-Ekiti Silo Complex during construction



Figure 2: View from Gantry, Ekiti Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no issues of soil erosion or wind gust affecting the Silo Complex.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water.

The construction workers do not comply with HSE standards (Figure 3) but no accidents have been recorded so far. Since the Silo Complex is not yet operational, there are no complaints or observed threats to the environment and personnel health resulting from the Complex operations.

The nearest inhabited area is about 50 meters from the Silo Complex. The relationship between the local community and the Silo Complex has been cordial thus far with no recorded conflicts or misunderstanding between the Silo Complex and the residents of the host community.

Members of the local community have benefited from the Silo Complex, as many of them have served as paid labourers during its construction.



Figure 3: Construction work without appropriate PPE

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Ado-Ekiti Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Ado-Ekiti Silo Complex	NO EIA: Non-compliant with environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EIA study
Ado-Ekiti Silo Complex	Non-Compliant with HSE standards	Provide staff members with appropriate Personal Protective Equipment (PPE) and ensure strict enforcement of use.	N20,000/staff

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.2 Akure Silo Complex

The Akure Silo Complex (Figure 4, Figure 5) is located along Oda Road in Akure South Local Government Area of Ondo State. It has a capacity of 25,000 metric tons and was commissioned in 1991 and is currently operational. The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke/noise emissions.



Figure 4: Akure Silo Complex



Figure 5: Aerial View of Akure Silo Complex

The Silo Complex is relatively well kept (Figure 6). However, disposal of waste/spoilt grains are a problem at this site. Waste generated in this Silo Complex is mainly from caked grain, moulded grain and spill-over wastes. Collected wastes are openly burnt. Waste oil and service parts (oil filters) are either indiscriminately poured away or disposed. Chemicals (such as Coopex Grain Dust and Phosphine) are stored in pallets at the nearest Administrative block to the silos.

The nearest local inhabitants live approximately 30 metres from the Silo Complex – immediately adjacent and therefore potentially exposed to waste materials and chemical spills.

The nearest surface water body to the Complex is about 120m and there has never been any reported case of its pollution as a result of the activities of the Silo Complex. However, due to the relative proximity of this water body, it is important that waste disposal methods are quickly improved and brought in line with applicable standards.



Figure 6: Administrative Buildings in Akure Complex

The Complex presently employs 11 staff. There is inadequate supply of PPEs as the workers are exposed to chemical hazards. The sick bay is poorly equipped to tackle medical emergencies. Fire extinguishers need to be refilled and serviced.

There have not been complaints of noise pollution emanating from available generators. There has not been any recorded incidence of wind gusts at the Silo Complex.

Socially, there has been conflict over land encroachment. Local farmers encroach on unfenced portion of the Silo land for farming.

Despite these vulnerabilities and issues, overall there has been positive social impact on the livelihood of the local people, as locals are provided with temporary labour and also allowed to purchase grain from stocks during grain release.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Akure Silo Complex, recommended mitigation measures and estimated cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	NO EIA: Non-compliant with environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EIA study
Silo Complex	Indiscriminate waste disposal and open burning	Provide appropriate and well contained waste dump site and enforce strict adherence to its use. Develop and enforce relevant policies within the Complex. Educate workers against indiscriminate waste burning	N150,000/waste dump construction
Silo Complex	Inadequate provision of relevant PPEs	Provide appropriate and relevant PPE to all staff members and enforce strict use.	N20,000/staff
Silo Complex	Fire extinguishers	Refill and service	N150,000
Silo Complex	Encroachment	Confirm status of land acquisition and take required measures to normalize the situation.	

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility and sustainability of the privatization.

4.3 Bauchi Silo Complex

The Bauchi Silo Complex is located in Wailo, about 75km away from the city of Bauchi in Bauchi State under the jurisdiction of Ganjuwa Local Government Area (Figure 7). Construction is still on-going at the Silo Complex. The facility will have a storage capacity of 25,000MT on completion.



Figure 7: Aerial View of Bauchi Silo Complex



Figure 8: Bauchi Silo Complex Relatively Well Maintained Generator House

The Silo Complex has been well maintained and the generator house is good condition (Figure 8).

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission. There are no chemicals currently stored on site.

The Complex is located on well-drained terrain. There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by future operations of the Silo Complex.

Wind gusts have been reported to have had some effect on ceiling soffits on the administrative block (Figure 9, Figure 10).



Figure 9: Wind damaged roof



Figure 10: Wind damaged roof (2)

The Complex includes fire hydrants but it has yet to be fitted with fire extinguishers. A sick bay also needs to be installed. Additionally, any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

There have not been any complaints from the nearby villages which are between 500m and a kilometre from the Silo Complex. Rather, the village people welcome the presence of the Complex within their community. Presently, the Chiefs and Seriki of Wailo community provide support to the Silo project in the form of security patrols. The Seriki of Wailo community, Liasu Musa also indicated that the community is making sure that no encroachment takes place on the land of the Silo Complex.

The Silo Complex has brought value to the community, and has the potential to impact positively on the livelihood of the local people when operational.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Bauchi Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA and therefore non-compliant with environmental laws and regulations related to EIA	Ensure regular and periodic conduct of environmental audit every 3-4 years in line with FMEnv regulations.	N15m/EIA
Admin and weighing buildings	Wind gust effect on ceiling and roofs	On the immediate term, ensure proper use of quality roofing materials.	N5,000/m ² N2,500/tree

		As a long term options, plant trees against wind path around Silo Complex.	
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The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility and sustainability of the privatization

4.4 Bulasa Silo Complex

The Silo Complex is located in Bulasa community in Birnin-Kebbi Local Government Area of Kebbi State. It has an installed grain storage capacity of 100,000 tons (Figure 11, Figure 12). The Complex is not yet handling grains.



Figure 12: Aerial view of Bulasa Silo Complex



Figure 11: Bulasa Silo Complex, Kebbi State

The Complex is well maintained such that no environmental concerns which could be attributed to operational activities of the Complex. Chemicals used are cypamethrin, phosphate base and copex dust. The chemicals are stored on the floor about 50m from the Silo Complex.

The Complex is well drained and there are no problems of soil erosion or wind gusts. This may be attributed to the presence of drainage and trees around the Complex (Figure 13, Figure 14).



Figure 13: Drainage with the Complex



Figure 14: Trees within the Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex.

The Complex presently employs 8 staff. Though the Complex is yet to be commissioned and staff has reportedly been provided with PPEs, respiratory health concerns such as cough and catarrh had been reported by some of the workers during routine environmental fumigation. The complex has not been equipped fire extinguishers. A sick bay also has yet to be installed.

The nearest community to the Complex is about 300m away and there has not been any report of social or community disagreement between the Complex and host community.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Bulasa Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA - non-compliance with relevant environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA study
Silo Complex	Occupational Health problems	Provide appropriate nose masks and other PPEs and enforce strict use. Train staff on safer methods of handlings chemicals.	N20,000/staff
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m
Silo Complex	Fire Extinguishers	Provide and refill	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization

4.5 Dutsin-ma Silo Complex

The Dutsin-ma Silo Complex is located in Darawa village in Dutsin-ma Local Government Area of Katsina State (Figure 15). The Complex has an installed storage capacity of 25,000 metric tons. It has been completed but has yet to be commissioned. The Complex is not yet handling grains.



Figure 15: Dutsin-ma Silo Complex Gate and Aerial View

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex. There were no observable bushes within the Complex. The generator and maintenance buildings are still very clean as operational activities are yet to commence (Figure 17). Overall, the Complex is well maintained.

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex is equipped with fire hydrants and fire extinguishers. A sick bay still has to be provided.

The Complex presently employs three staff. Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.



Figure 16: Loading Bays



Figure 17: Generator House

The nearest inhabited area is about 500 meters from the Silo Complex. The relationship between the local community and the Silo Complex has been cordial thus far with no recorded conflicts or misunderstanding between the Silo Complex and the residents of the host community.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Bulasa Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA - non-compliance with relevant environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA study
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study. Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.6 Ezillo Silo Complex

The Ezillo facility in Ishielu Local Government Area of Ebonyi State has been completed but is yet to be commissioned (Figure 18). The Complex is not yet handling grains. It has an installed storage capacity of 25,000 metric tons.

Although portions of the Complex premises are overgrown with weeds (see Figure 19 and Figure 20), the Complex is generally well maintained. The generator house is clean and free from any oil or diesel spill. This may also simply be as a result of the non-operational status of the Complex (Figure 21).



Figure 18: Aerial View of Ezillo Silo Complex



Figure 19: Fencing overgrown with weeds



Figure 20: Electricity Transformer



Figure 21: Generator House



The chemicals store is about 70 metres away from the administrative block. However, there were no chemicals in the store at time of visit to the site. Regular sensitization programmes are carried out for the staffers of the facility on chemical handling; the last was done about a year ago.

The waste from the Silo Complex consists of waste papers, polythene and packaging/wrapping materials.

There has not been any incidence of wind gusts affecting structures in the Complex. This is in spite of the juvenile nature of the trees planted for mitigation in the Complex.

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex employs 10 staff. Compliance with HSE standard is average and the PPEs in use in the Complex include dust respirator, coveralls, hand gloves, eye goggles, safety boots and rain boots. The Complex is equipped with fire hydrants and fire extinguishers. The fire extinguishers need to be refilled. A sick bay has yet to be provided.

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

The Silo Complex enjoys cordial relationship with the host community, which is about 2km away. The Complex also provides water to residents of host community at times of shortage of public pipe borne water supply.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Ezillo Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Perimeter of Silo Complex	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour	N100,000 per/year
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations related to EIA	Ensure conduct of periodic environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA study
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m
Silo Complex	Fire Extinguishers	Refill	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study. Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.7 Gaya Silo Complex

Gaya Silo Complex which is one of the Complexes under construction in the country is located behind Gaya Local Government secretariat in Gaya Local Government Area of Kano State (Figure 22). It is proposed to have an installed grain storage capacity of 25,000metric tons.



Figure 23: Aerial View of Gaya Silo Complex



Figure 22: Patches of Grass Growing on Pavement

Though the Complex is still under construction, the premises is well drained and relatively clean, though patches of grasses were observed growing on the concrete pavement (Figure 23).

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no surface water bodies nearby the Gaya Silo Complex. In addition, some of the drainages were observed to be blocked with cleared grasses (Figure 24) and would require to be cleared to allow free flow of storm water.

The generator house is still clean with no trace of oil or diesel spill (Figure 25).

The Complex includes fire hydrants but no fire extinguishers. A sick bay also has yet to be provided. Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

The Complex presently enjoys a cordial relationship with the nearby community, which is about 250m away. The community also enjoys some privileges from the Complex as some of the resident youths are presently engaged in local construction labour with the Complex.



Figure 25: Drainage at Perimeter



Figure 24: Generator House

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Gaya Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.8 Gombe Silo Complex

The Gombe Silo Complex (Figure 26, Figure 27) is located in Kwami Local Government Area of Gombe State. It has an installed storage capacity of 25,000 metric tons. The Complex is operational.



Figure 27: Aerial view of Gombe Silo Complex



Figure 26: Gombe Silo Complex Entrance

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Disposal of waste/spoilt grains is done outside the immediate vicinity of the Silo Complex. Waste/spent oil is carried off the site by the service repair personnel. Chemicals (such as Phostoxin and Cypermethrin) are stored on pallets, within a chemical storage place near the administrative building.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex.

The Complex employs 27 staff. No health related problems, from the use of these chemicals have been reported among the workers of the silos so far. According to the respondents, PPE's are effectively put to use at this site but claimed that they are not adequate to go around the staff members. The sick bay is poorly equipped to handle medical emergencies. The Silo Complex is equipped with a fire hydrant and fire extinguishers. However the fire extinguishers need to be refilled and serviced.

Three out of four available electric generators are functional at the Gombe Silo Complex and there are no problems of waste oil or diesel spill. The waste oil and used services such as oil filters are disposed of by the service engineer.

In spite of the existence of trees planted around the Complex, parts of structures within the Complex were observed to be affected by possible wind gust (Figure 28, Figure 29).



Figure 29: Roadways and Trees



Figure 28: Damaged building, possibly by wind

Socially, while the relationship between the Silo Complex and its host community has been cordial for the most part, there has been conflict over land encroachment in the past. This issue was however resolved by the Federal and State Land Surveyors-General, along with the State Development Board.

There has been positive social impact on the livelihood of the local people, as junior staff of the Complex are employed from the community, casual staff are also sourced locally, there is a Federal Government approved contract to buy grains from local farmers for storage in the Complex, and the presence of the Complex has aided the business of local kiosks and food vendors, as well as transport providers.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Gombe Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Cost	Mitigation
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA	
Admin and weighing buildings	Wind gust effect on ceiling and roofs	Ensure adequately reinforced materials. As a long term measure, plant trees against wind path around Silo Complex.	N5,000/m ² N2,500/tree	
Silo Complex	Fire extinguishers	Refill and service	N150,000	
Silo Complex	Inadequate provision of PPEs for staff members	Ensure provision of adequate relevant PPEs to all staff members.	N20,000/set of PPE/staff	

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.9 Gusau Silo Complex

The Silo Complex is located in Gusau in Zamfara State (Figure 30, Figure 31). Construction is on-going at the Complex. When completed, the Complex will have a storage capacity of 100,000 metric tons.



Figure 31: Aerial View of Gusau Silo Complex



Figure 30: Gusau Silo Complex entrance

The Complex is well maintained with little or no significant environmental concerns which could be attributed to operational activities as the facility is yet to be put to use (Figure 32, Figure 33).



Figure 33: Loading Pad



Figure 32: Generator House

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The nearest surface water body to the Complex is about 5m but there has never been any reported case of its pollution as a result of the activities of the Silo Complex. However, due to the relative proximity of this water body, it is important that waste disposal methods are in line with applicable standards.

There are two generators at the Gusau complex and the generator house is well maintained.

Construction of the sick bay is on-going.

The Silo Complex has no record of social or community issues with the host community. The local community occasionally fetch water from the Complex for their daily use and cut the grasses in the Complex to feed their cattle.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Gusau Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations related to EIA	Ensure periodic conduct of environmental audit every 3-4 years in line with the provisions of the FMEnv regulations.	N15m/EA study

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.10 Ibadan Silo Complex

The Ibadan Silo Complex (Figure 34, Figure 35), is located in Lagelu Local Government Area, Oyo State. It was commissioned in 2006 and has a capacity of 25,000 metric tons. The Complex is operational and handling grains.



Figure 35: Ibadan Silo Complex



Figure 34: Aerial view Ibadan Silo Complex

The terrain of the Complex is well drained. The grounds appear well maintained, with no part of the compound looking overgrown with weeds or bushes.

Disposal of waste/spoilt grains is a problem at this site. Waste generation in the Complex is mainly from grain waste, which is usually incinerated as soon as they are generated while the spoilt grains are disposed in the open field in the Silo Complex. This causes environmental issues, including spreading pollution particulates to the neighbouring population.

Chemicals such as Coopex Grain Dust and Phostoxin are stored on the floor at close proximity to neighbourhood dwellers around the silos location. Health related problems, from the use of these chemicals have been reported among the workers of the silos.

The generator house is clean and there have not been any complaints of noise pollution emanating from the three available generators (Figure 36).

The nearest surface water body to the Complex is about 400m but there has never been any reported case of its pollution as a result of the activities of the Silo Complex. However, due to the proximity of this water body, it is important that waste disposal methods are quickly improved and brought in line with applicable standards.

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.



Figure 37: Generator House



Figure 36: Loading Area and Bins

The Complex employs 14 people. Management complies with relevant health, safety and environment (HSE) standards, by providing staff members with appropriate Personal Protective Equipment (PPE) and strictly enforcing its use. However, the number of PPEs is inadequate. There is no sick bay or clinic to attend to possible medical emergencies.

The Complex is equipped with fire hydrants and fire extinguishers. Additional points should be provided for the fire hydrant. Fire extinguishers require servicing.

Socially, while the relationship between the Silo Complex and its host community has been reportedly cordial for the most part, there has been conflict over land encroachment issues. Local farmers encroach on the Silo Complex, cultivating sections of the land. The land encroachment issue was reported to the Silos management headquarters and other relevant authorities within the state.

There has been positive social impact on the livelihood of the local people, as locals are allowed to purchase grain from stocks allotted for flag off of grain sales.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Ibadan Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA study
Silo Complex	Indiscriminate waste disposal and burning	Provide appropriate waste dump site and create and enforce policies for its use	N150,000/waste dumps construction

		Educate workers against indiscriminate waste burning.	
Silos, weigh bridge, chemical store etc.	Health issues, Accidents and Injuries	Provide appropriate nose masks and relevant PPEs and strictly enforce use by all staff. Educate staff on safer methods of handling chemicals.	N20,000/staff N20,000/staff/training
Silo Complex	Encroachment by local farmers	Confirm status of land acquisition and take required mitigation measures	
Silo Complex	Fire Hydrant	Provide 3 additional points	N150,000
Silo Complex	Fire Extinguishers	Provide and refill	N250,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.11 Igbariam Silo Complex

The Igbariam Silo Complex (Figure 38, Figure 39) is located in Igbariam in Oyi Local Government Area of Anambra State. Construction is still on-going at the Complex. It is expected to have a storage capacity of 25,000MT on completion.



Figure 39: Aerial view of Igbariam Silo Complex



Figure 38: Igbariam Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no surface water bodies in close proximity to the Silo Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex.



Figure 40: Construction areas



Figure 41: Construction materials

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

There is presently cordial co-existence between the Silo Complex and host community. The ongoing construction provides employment opportunities for both skilled and semi-skilled members of the community who are just about 1km away from the Silo Complex.

Social impact on the livelihood of the local people is at present mostly positive, as construction staff of the Complex is employed from the community. Presence of the Complex activities has aided the business of local kiosks and food vendors, as well as providers of local transport also benefit.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Igbariam Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.12 Ikenne Silo Complex

The facility which is near completion is located in Ikenne, Ikenne Local Government Area of Ogun State (Figure 42, Figure 43). Construction is still on-going at the Complex. When completed, it is expected to have a storage capacity of 25,000 metric tons.



Figure 42 – Entrance to Ikenne Silo Complex

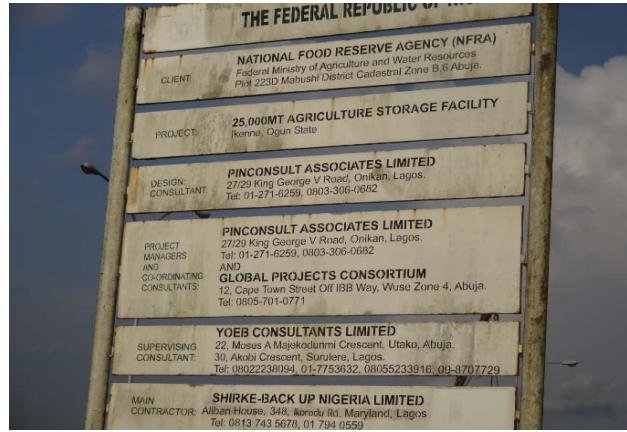


Figure 43: Signage at the Entrance of Ikenne Silo Complex

The Complex is well maintained (Figure 44, Figure 45) and there are no environmental concerns which could be attributed to operational activities as the Silo Complex is yet to be put to use.



Figure 44: Administrative Building



Figure 45: Drainage System

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no surface water bodies nearby the Ikenne Silo Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex. Also, the Complex is well drained and there are no problems of soil erosion or wind gusts.

The Complex is equipped with fire hydrants but no fire extinguishers. There is presently no sick bay or clinic to address emergencies. Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

There is no record of social or community issues as there is an existing cordial relationship between the management of the Silo Complex and the community.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Ikenne Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with relevant environmental laws and regulations	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.13 Ilesha Silo Complex

The Ilesha Silo Complex, which is due for commissioning and has a capacity of 25,000 metric tons, is located along Irojo Road in Ilesha East Local Government Area of Osun State (Figure 46). Construction is completed but the Complex is not yet handling grains.

The Silo Complex looked clean with relatively little or no environmental management concerns as the facility is not in operation (Figure 47).



Figure 47: Aerial View of the Ilesha Silo Complex



Figure 46: Weigh Bridge at Ilesha Silo Complex

There was no environmental assessment in form of Environmental Impact Assessment conducted on the Silo Complex prior to construction.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by future operation of the Silo Complex.

The generator house is clean and there has not been any complaints of noise pollution emanating from the two available generators. The waste oils from the generator are used to lubricate chains (Figure 48).

The Complex is equipped with fire hydrants and fire extinguishers, which require servicing. However, there is currently no sick bay available at the Complex.



Figure 48: Well-Maintained Generator House

The Complex employs 2 staff. Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

There has not been any complaint or grievance by members of the host community over the siting of the silo. The relationship between the silo facility and the local community is cordial.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Ilesha Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations, related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m
Silo Complex	Fire Extinguishers	Refill and service	N100,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations, implying the need to conduct periodic environmental audit estimated to cost N15m.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.14 Ilorin Silo Complex

Ilorin Silo Complex is operational and is located at Km 14, old Jebba Road, Oke-Ose in Ilorin, East Local Government Area of Kwara State (Figure 49). The facility, has an installed capacity of 25,000MT was and commissioned in 2006. The Complex is currently operational.

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Part of the Complex especially by the perimeter fence is overgrown with grasses (Figure 50).



Figure 49: Aerial view of Ilorin Silo Complex



Figure 50: Overgrown bushes within the Complex

Major wastes are the dust, decayed grain and the spill grain. These wastes are disposed by direct burning in a secluded area away from the silos. Few cases of grain spoilage have been observed and spoilt grains are also disposed by burning.

There are no surface water bodies in close proximity to the Silo Complex.

The terrain and entire landscape of the silos Complex are well drained; as such there are no cases of soil erosion. Also, there are no records of wind gust affecting the silos despite the absence of trees within the vicinity.

The generator houses are clean and well kept (Figure 51). Used service parts are usually kept in the store. According to the information gathered at the Complex, the generators are serviced twice a year when receiving and releasing grain. There is no significant noise impact from the generators during operation.

Two major types of chemicals used are the herbicides and insecticides. These chemicals are stored in pallets in the chemical store located about 25 meters away from the administrative building. According to workers, cases of accidents associated



Figure 51: Generator House

with the application of chemicals in the silos Complex have been recorded. Staff have not been trained on adequate chemical handling practices. There are also reported cases of reptile (scorpion and snakes) infestation of the Complex thereby making it unsafe for workers. This may be due to the fact that the last time the Complex was fumigated was October, 2013.

The Complex employs 11 staff. The Silo Complex provides relevant PPEs to workers and strict compliance is enforced. In June, 2013 an accident occurred, which led to the death of a casual worker (trapped in the grains). The sick bay is poorly equipped to address emergencies.

The Complex is equipped with fire hydrants and fire extinguishers, which require servicing.

Cases of theft have been reported at the Silo Complex. A case of encroachment has also been recorded whereby the Ilorin East Local Government Authority sold the land to individuals who have already started development. Despite these issues, the Complex enjoys cordial relationship with the nearby community, which is about 2km away.

Social impact on the livelihood of the local people is at present mostly positive, as construction staff of the Complex mostly come from the community.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Ilorin Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations, related to EIA	Ensure regular periodic conduct of environmental audit every 3-4 years in line with the FMEnv regulations.	N15m/EA
Around perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour	N100,000 per/year
	Reptile infestation and potential scorpion and snake bites	Periodically fumigate the premise with snake repellent fumigants.	N50,000/round
Silo Complex	Open burning of wastes	Provide appropriate waste dump site and strictly enforce its use. Educate workers against indiscriminate waste burning.	N150,000/waste dump construction.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silos, weigh bridge, chemical store etc.	Accidents and Injuries	Provide appropriate PPEs and enforce strict use. Educate staff on safe operations.	N20,000/PPE/staff
Silo Complex	Encroachment by local farmers Potential displacement and resettlement of present occupants	Duly consult with affected persons and agree with them on the need to move out of the Silo Complex property. Locate land title documents and ascertain ownership.	
Silo Complex	Fire Extinguishers	Refill	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization

4.15 Irrua Silo Complex

The Complex which has an installed storage capacity of 25,000 metric tons is located along old Irrua Road, Irrua in Esan Central Local Government Area of Edo State (Figure 52). It was commissioned in 1994. The Complex is currently operational.



Figure 52: Aerial View of Irrua Silo Complex



Figure 53: Gate view of Irrua Silo Complex

The Irrua Silo Complex (Figure 53) as observed during the inspection mission, faces some environmental and social challenges and would therefore require some environmental and social improvements. Though the Complex is located on a well-drained terrain, certain portions of the compound are overgrown with weeds and bushes as shown in (Figure 54). This has also contributed to the presence of rodents, insects and reptiles within the Complex.

At the time of the visit, the Complex did not look properly kept and appeared to be deteriorating as some of the structures were observed to be fast falling away (Figure 55) with algae growing on some parts of the Complex (Figure 56).



Figure 54: Area of Silo Complex Overgrown with Bushes

Chemicals (Coopex dust and Photoxin) are stored in pallets about 50 metres from the silos, which reduces the possibility of chemical contamination of the stored grains. There are no surface water bodies around the Complex.



Figure 55: Dilapidated Structures in the Complex

Waste generation in the Complex is relatively minimal as the primary waste (grain waste) is incinerated as soon as they are generated. Waste oil and service parts are indiscriminately disposed, but because the generators are rarely serviced, the immediate effect of this indiscriminate act may not be felt. The noise emanating from the two available generators is also another issue of concern. However, this may not be unconnected with the irregularity in their maintenance. Sections of some buildings were observed to be without roofs (Figure 57). This may either be as a result of faulty construction (roofing) materials or effect of wind gusts on the structures.



Figure 56: Algae growing on surfaces at the Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.



Figure 57: Wind Damaged building at the Complex

The Complex employs 14 staff. The Complex management complies with relevant health, safety and environment (HSE) standards. Complex staff members are provided with appropriate Personal Protective Equipment (PPE) and use is strictly enforced. The Complex does not include a fire hydrant. The fire extinguishers need to be refilled and serviced.

The Complex in year 2012 and 2014 recorded an accident (hand cuts and head injury) that involved 4 workers. They were taken to the nearby Teaching Hospital for treatment. The complex does not currently include a sick bay to deal with medical emergencies.

There are presently no major social issues in the Complex. Though the Complex is located about a kilometre away from the nearest inhabited area; there were instances in the past when the host community claimed ownership of the land where the silo was setup. This prompted cases of insecurity from attacks by the host community who were embittered about non engagement of the indigenes by the management of the Silo Complex. Sequel to these events, the management of the silo came to an agreement with the host community. It appears all issues have been resolved and the Complex has hitherto enjoyed cordial relationship with the local communities.

Currently, youth within the host community have access to employment opportunities (including transportation benefits) at the Complex.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Irrua Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Portions within the Complex	Overgrown bushes	Ensure regular clearing of the Complex by engaging local labour.	N100,000 per/year
Parts of the Complex	Algae growth on certain parts of the Complex	Outsource the regular sweeping of the Complex to women association from the host community.	N50,000/month
Silo Complex	Risk of injuries and accidents	Provide appropriate PPEs and strictly enforce use by all staff.	N20,000/staff
Silo Complex	Indiscriminate disposal of solid waste (decayed grains), used oil and service parts.	Provide appropriate dump site that is well contained and enforce strict use of the dumpsite. Develop and enforce relevant policies within the Complex. Educate workers against indiscriminate waste burning.	N150,000 per dumpsite construction

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations, related to EIA	Ensure conduct of environmental audit (EA) every 3-4years in line with the requirement of the FMEEnv.	N15m/EA
Buildings within the Complex	Wind gust effect on buildings	As an immediate measure, ensure proper reinforcement of roofing materials. As a long term measure, plant trees around the Complex.	N5,000/m ² N2,500/tree
Generator	Excessive noise from the generators.	Ensure and maintain the 250 hours maintenance schedule of the generators.	N100,000 per service/generator
Silo Complex	Land ownership tussle	Locate land title documents and ascertain ownership.	
Silo Complex	Security challenges by residents of host community	Ensure regular consultation with host community Develop a programme that gives preference to host community in certain employment opportunities.	
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m
Silo Complex	Fire Hydrant	Provide	N250,000
Silo Complex	Fire Extinguishers	Refill	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.16 Jahun Silo Complex

The Jahun Silo Complex has a storage capacity of 25,000MT and is located in Jigawa State (Figure 58, Figure 59). The Complex was commissioned in 1998 and is presently operational. The Complex is currently handling operational.



Figure 58: Aerial view of Jahun Silo Complex



Figure 59: Gate View of Jahun Silo Complex

Though the Complex has been commissioned over a decade ago, the level of environmental management as observed during the inspection visit seemed to be above average (Figure 61). The maintenance building and the generator house are relatively clean with no form of oil or diesel spill on the floor (Figure 60).

Very few wastes are generated by the Complex and the common waste include, chaff, fine dust and chemical waste. Management of these wastes, which are either by incineration or burying, do not comply with standard environmental management practice. Wastes from the maintenance and generator houses are also buried in most cases. The implication of burying such wastes is that they could contaminate soil and ground water. Fortunately there are no surface water bodies in proximity to the Complex.

The Complex is well drained and there are no issues of soil erosion confronting the Complex. There has not been any reported case of wind gust affecting the Silo Complex. This may be as a result of the



Figure 60: Generator House



Figure 61: Administrative Buildings

trees planted around the Complex, which may have contributed to serving as appropriate wind break for the Complex (Figure 62).

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex employs 9 staff. Appropriate PPEs (eye goggles, hand gloves, respirators, safety boots and overall) are provided for staff members as and when needed. The Complex is equipped with a sick bay, which is not adequately stocked.

The complex includes fire hydrants and fire extinguishers (Figure 63). However, it was observed that some of them may require some recharging and upgrade.

The nearest inhabited community, which shares a common fence boundary enjoys cordial relationship with the Complex. However, the inspection team gathered that there has been some encroachment into the Complex from the unfenced portions as a result of absence of land title documents.

Residents of host community enjoy some benefits from the Complex. Such benefits include water supply, provision of local labour employment and purchase of grains during grain release launch.



Figure 62: Line of Trees for both Shelter and Wind Break



Figure 63: Fire Extinguisher

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Jahun Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Silo Complex	Indiscriminate disposal of solid waste (decayed grains), used oil and service parts.	Provide appropriate dump site that is well contained and enforce strict use of the dumpsite. Develop and enforce relevant policies within the Complex. Educate workers against indiscriminate waste burning.	N150,000/waste dump construction. N25,000/waste bin
Silo Complex	Encroachment by local farmers Potential displacement and resettlement of present occupants	Duly consult with affected persons and agree with them on the need to move out of the Silo Complex property. Locate land title documents and ascertain ownership.	
Silo Complex	Fire Extinguishers	Refill	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.17 Jalingo Silo Complex

The Jalingo Silo Complex is located along Jalingo/Malum Road, about 6km away from Jalingo metropolis in Malum village in Ardo Kola Local Government Area. Construction is still on-going at the Silo Complex. It will have a storage capacity of 25,000MT when completed.

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Although the Complex is relatively well drained (Figure 64), minor flooding was observed by the main entrance gate, which would need to be addressed before commissioning. This is particularly important as unattended flooding could result in erosion in the near future. Parts of unpaved surrounding are overgrown by grasses (Figure 65).



Figure 65: Drainage at Jalingo Silo Complex



Figure 64: Loading Pad and Administrative Buildings

There is no surface water body in close proximity to the Complex. Therefore, there is minimal risk of pollution of surface water body by future operation of the Silo Complex.

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

The nearest inhabited village, Malum, is approximately 1km away. Locals are favourably disposed to the presence of the Silo Complex in their locality, and looking forward to the silo commencing operations in the hope of reaping some of the benefits.

The Silo Complex has added value to the community where it is located, and has the potential to impact positively on the livelihood of the local people when operational.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Jalingo Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
By the entrance gate	Flooded area	Completely drain out the water and pave.	N25,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.18 Jos Silo Complex

The Jos Silo Complex located at Km17 Bukuru Expressway, Zawan in Jos South Local Government Area, Plateau State has an installed storage capacity of 25,000 metric tons and is operational (Figure 66, Figure 67). It is currently operational.



Figure 67: Aerial View of Jos Silo Complex



Figure 66: Gate View of Jos Silo Complex

The Complex appears to benefit from relatively high environmental management standards as the premises look well maintained with no observed environmental concerns that may have resulted from the operational activities in the Silo Complex (Figure 68). The maintenance building and generator house are also relatively clean with no form of oil or diesel spill on the floor.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by the activities of the Silo Complex. Wastes generated are appropriately disposed of. There has not been any issue of soil erosion or wind gust at the Complex. The presence of appropriate drainage and trees around the Complex may have contributed to this (Figure 69).

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.



Figure 69: Loading Pad, Admin Buildings and Silo Bins



Figure 68: Planted Areas, Jos

The Complex employs 13 staff. The management and staff of the Complex comply with HSE standards, although complaints of inadequate PPE was made by the members of staff during the inspection exercise. The workers have also complained of health related problems from the chemicals

used in the Silo Complex, which are stored on the floor 30m from the administrative building, as well as cases of respiratory problems as a result of the grain storage activities.

The Complex is equipped with fire hydrant and fire extinguishers. However the fire extinguishers need to be refilled and serviced. The complex includes a sick bay which is inadequately stocked.

The relationship between the silo facility and the local community is cordial with no reported encroachment by the locals, conflict or disagreement resulting with respect to the silo facility. Residents of the host community enjoy benefits from the Silo Complex such as employment opportunities, water, feed for their livestock etc.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Jos Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Silo Complex	Inadequate provision and use of relevant PPEs and injuries	Provide appropriate nose masks and relevant PPEs and strictly enforce use by all staff. Train staff on safer methods of handling chemicals.	N20,000/PPE/staff N20,000/staff/training
Silo Complex	Fire extinguishers	Refill and service	N150,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.19 Kaduna Silo Complex

The facility is located in Dankande Village, 500m off Kaduna-Zaria Road in Igabi Local Government area of Kaduna State. The Silo Complex is operational and has an installed storage capacity of 25,000 metric tons.

Kaduna Silo Complex (Figure 70, Figure 71) looked very clean with relatively high environmental management standards.



Figure 71: Aerial view of Kaduna Silo Complex



Figure 70: Gate view of Kaduna Silo Complex

The immediate environment is well maintained and cleared to prevent the risk of reptiles and rodents infestation. The Complex is well drained and no form of erosion or water damage was observed during the inspection visit.

There is no surface water body in close proximity to the Complex. Therefore, there is no threat of possible pollution of surface water body by the activities of the Silo Complex.

Wastes in form of dust, used lube oil, generator service parts, caked and broken grains are kept within the Complex (Figure 72) and incinerated. The maintenance building is well managed and free from spilled waste oil (Figure 73).



Figure 73: Packed Waste Grains, Kaduna



Figure 72: Maintenance House, Kaduna

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex employs 10 staff. Workers are provided with personal protective equipment such as goggles, hand gloves, respirators, boots and overall. However, PPEs provided are inadequate there is need for the management of the Complex to ensure that appropriate PPEs are provided and their use strictly enforced. The Complex has not reported any accident or injury that led to time loss at work. However, *a respiratory issue had been reported in the past as a result of the Silo Complex activities*, which could be due to lack of or inappropriate use of PPE. There is not sick bay or clinic to attend to medical emergencies.

The Complex does not include any fire hydrant. Fire extinguishers need to be refilled and serviced.

The Complex enjoys cordial relationship with residents of the nearby community, which is about 2km away. There has not been any form of complaint or grievance concerning the sitting of the Complex.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Silo Complex	Indiscriminate of burning of waste	Provide appropriate and well contained waste dump site and enforce strict adherence to its use.	N150,000 per dumpsite construction

		Train workers	
Silos, weigh bridge etc.	Accidents and Injuries	Provide appropriate PPEs and strictly enforce use by all staff.	N20,000/staff
Silo Complex	Fire Hydrant	Provide	N200,000
Silo Complex	Fire Extinguishers	Provide and refill	N150,000
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency facilities. E.g. sick bay or first aid room.	N2m

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the sustainability of the privatization.

4.20 Kwali Silo Complex

The Kwali Silo Complex is located in the Federal Capital Territory (Figure 74, Figure 75). The Complex was completed in 2014 and is currently storing small quantities of grains. It has a capacity of 100,000 metric tons.



Figure 75: Kwali Silo Complex



Figure 74: Aerial View of Kwali Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The entire compound is well kept except for the overgrown weeds along parts of the perimeter fence. The Complex is well drained (Figure 76) and there is no form of erosion challenge, wind gust or water damage observed during the complex inspection visit

Three major types of chemicals in the store are insecticides, herbicides and fumigants. Workers are well trained on handling of chemicals. There is no record of any health related problem resulting from the use of chemicals by the workers.



Figure 76: Drainage within Complex

Dust and decayed grain are the major wastes generated in the Silo Complex. There is no dump site within the Complex and no recognized waste disposal system. The wastes are transported away to a spot to be burnt.

Only one (1) generator is providing power to the entire silos Complex. Records of maintenance operation carried out on the generator are not available. The generator house is clean and well-kept

with no trace of oil and diesel spill on the floor (Figure 77). The generator noise is not loud enough to cause pollution.



Figure 78 Generator House



Figure 77: Admin Building, Silo Bins

There are no surface water bodies in close proximity to the Silo Complex.

The Complex currently employs 4 staff. The issue of safety is emphasized and enforced in the Complex. It is compulsory for workers to put on PPEs (helmet, hand gloves, safety boots, eye goggles, ear muffs and nose masks) especially during operation. No accidents have been recorded since inception. However, the Complex does not include a sick bay. It is equipped with fire hydrants but no fire extinguishers.

The Complex enjoys a good working relationship with the community and provided some basic amenities as part of corporate responsibilities to improve the living standard of the people. Some of the social contributions of the silos to the community include

- Employment (skilled and unskilled labour);
- Provision of potable water; and
- Distribution of free grain.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Kwali Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour.	N100,000 per/year
Silo Complex	Open burning of wastes	Provide appropriate and well contained waste dump site and enforce strict adherence to its use. Train workers.	N150,000/waste dump construction
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m
Silo Complex	Fire Extinguishers	Provide	N200,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.21 Lafia Silo Complex

The Silo Complex which is located in Lafia in Nasarawa State (Figure 79, Figure 80). Construction is still on-going at the Complex. When completed, it will have a storage capacity of 25,000 metric tons.



Figure 79: Aerial View of Kwali Complex



Figure 80: Lafia Silo Complex

There are no environmental concerns which could be attributed to operational activities of the Silo Complex as it is still under construction (Figure 81). While the immediate surroundings of the Complex are well cleared, there are portions towards the perimeter fence with overgrown grasses (Figure 82).

There is no water body in proximity to the Complex.

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

There is no record of social or community disagreement with the Silo Complex.



Figure 82: Ongoing Construction at Lafia Silo Complex



Figure 81: Overgrown Brush at Lafia Silo Complex

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Lafia Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Towards the perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour.	N100,000 per/year

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.22 Lafiagi Silo Complex

Lafiagi Silo Complex is located 13km away from Lafiagi Town in Edu Local Government area of Kwara State (Figure 83, Figure 84). With an installed storage capacity of 11,000MT, the facility was commissioned in 1988.



Figure 83: Lafiagi Silo Complex



Figure 84: Silo Bins

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Wastes generated are disposed by open burning because there are no dumpsites around the Complex. The major wastes generated are dust, rotten grain, caked and moulded grain. Spoilt grains are also disposed by burning away from the Complex.

The silos Complex has not experienced any form of soil erosion or wind gust issues.

The generator house is clean and well kept. During operation and maintenance, oil and diesel spills are properly cleaned. Information from the Silo Complex indicated that, the generators are serviced every three months. The noise from the generators during operation does not cause noise pollution.

Coopex insecticide and phostoxin are the main type of chemicals used at the Silo Complex. Chemicals are stored in pallets in the chemical store located about 10 meters away from the administrative building. The Complex has not recorded any case of accident associated with the application of chemicals at the Complex.

There are no surface water bodies in close proximity to the Silo Complex.

The Complex currently employs 7 staff. Basic PPEs are provided for worker at the Complex, but compliance is lacking. Despite this lack of compliance, there is no record of any form of accidents at

the Complex. The complex includes fire extinguishers which require servicing but no fire hydrant. It is also missing a sick bay to deal with medical emergencies.

The Complex enjoys a peaceful relationship with the community, while the Complex also provides the community the following amenities:

- Local employment
- Borehole water facilities
- Free grains distribution

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Lafiagi Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Portions within the Complex	Indiscriminate of burning of waste	Provide appropriate and well contained waste dump site and enforce strict adherence to its use. Train workers	N150,000 per dumpsite construction
Silos, weigh bridge etc.	Non total compliance to use of relevant PPEs	Provide appropriate PPEs and strictly enforce use by all staff.	N20,000/staff
Silo Complex	Fire Hydrant	Provide	N250,000
Silo Complex	Fire Extinguishers	Provide and refill	N150,000
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.23 Lokoja Silo Complex

The Lokoja Silo Complex is under construction and is located along Barracks Road, Lokoja (Figure 85, Figure 86). When completed it will have an installed capacity of 25,000MT.



Figure 85: Aerial View of Lokoja Silo Complex



Figure 86: Lokoja Silo Complex

The immediate environment is not well maintained (Figure 87), increasing the risks of reptile and rodent infestation. The immediate area of the perimeter fence is overgrown with bushes (Figure 88).

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There is a surface water body, Otokiti River about 1km to the Complex.

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.



Figure 88: Complex Premises Not Properly Maintained



Figure 87: Section of the Complex Overgrown with Bushes

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Lokoja Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Towards the perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour.	N100,000 per/year

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.24 Makurdi Silo Complex

The Makurdi Silo Complex has an installed storage capacity of 25,000 tons and is located at km 4, Gboko road, Makurdi in Benue State (Figure 89, Figure 90). It was commissioned in 1991 and is currently operational.



Figure 90: Markurdi Silo Complex



Figure 89: Aerial View of Makurdi Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There is no significant noise from the generator operation and no spillage of oil or diesel (Figure 92). Chemicals used including fumigant, coopex dust, phostozin and are stored in pallets about 10 metres from the administrative block.



Figure 92: Storage Facility



Figure 91: Silo Complex Generators

There are no surface water bodies nearby the Makurdi Silo Complex.

The Complex employs 17 staff. Workers are provided with adequate personal protective equipment (PPEs) although compliance to basic HSE standards is not strictly enforced. The PPEs that are used in the Complex include dust respirator, chemical respirator, helmets, hand gloves, goggles, safety boots and rain boots (Figure 94). No accident that resulted in loss time injury has been recorded by the Silo Complex. However, health problems resulting from the use of chemicals have been reported. There is no sick bay or clinic in the Complex to deal with medical emergencies. The Complex includes fire hydrants and fire extinguishers. Fire extinguishers need to be serviced.



Figure 93: Fumigation Equipment



Figure 94: Some PPE Available at the Complex

The closest inhabited area to the Complex is about 200m away. There were no identifiable social or community concerns regarding the operations of the facility even as the relationship between the management and the host community is said to be cordial. Although the local farmers are not making use of the facility, there are indications that they benefit from the water scheme of the Complex while some of the local population (mostly the youths) are engaged as paid labours in the Complex.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Makurdi Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study

Workers	Lack of compliance regarding the use of PPEs by workers	Strictly enforce use of PPEs. Provide training and envisage sanctions for non compliant staff	
Silo Complex	Fire Extinguishers	Refill	N150,000
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.25 Minna Silo Complex

This Silo Complex, located in Minna, about 1km away from Bosso Town in Niger State (Figure 95, Figure 96), is operational. It has an installed storage capacity of 25,000 metric tons.



Figure 96: Aerial View of Minna Silo Complex



Figure 95: Signage, Minna Silo Complex

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The chemical storage is about 50 metres away from the silo bins area. Major chemicals include insecticides, coopex dust, phostozin and Desis.

There is no surface water body in close proximity to the Complex. Therefore, there is minimal threat of possible pollution of surface water body by the activities of the Silo Complex.



Figure 97: Entrance Road

Waste stream in the Complex consist of dust, chemical containers, cake grains, broken grains and empty bags which are disposed by burning. Sometimes poultry keepers do collect the broken and spoilt grains for their birds.

Maintenance around the generator area is above average. Used oil is collected and stored for further recycling. There are three (3) units of power generating set of which only one was functional as at the time of the inspection visit to the Complex. The generators are serviced once in every three (3) months.

A number of trees are planted within the Complex to provide shelter and serve as appropriate wind breaks for the Silo Complex (Figure 98).

The Complex employs 25 staff. The Silo Complex provides relevant PPEs (dust respirator, chemical respirator, helmets, hand gloves, goggles, safety boots, rain boots and safety belts). However, it was reported that some of the staff have encountered some health challenges in the past. It was disclosed that training on chemical handling was last conducted 2 to 4 years ago. In terms of medical emergencies management, the Complex is equipped with a functional sick bay.



Figure 98: Planted area and Admin Building

The Silo Complex includes a fire hydrant. However the hose is perforated and needs to be replaced. Fire extinguishers are also available but need to be refilled.

There were no social or community concerns regarding the operations of the facility. Although the relationship between the Complex management and the host community is cordial, it was reported that there is a land dispute between the management and Gwar people. The Silo Complex is also facing encroachment issues.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Minna Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEnv.	N15m/EA study
Silo Complex	Indiscriminate waste disposal	Provide appropriate and well contained waste dump site and enforce strict adherence to its use.	N150,000/waste dump construction
Silos, weigh bridge, chemical store etc.	Accidents and Injuries	Provide appropriate PPEs and strictly enforce use by all staff.	N20,000/PPE/staff N20,000/staff/training

		Train staff on safer methods of handling equipment and chemicals.	
Silo Complex	Fire hydrant	Replace perforated hose.	N100,000
Silo Complex	Fire extinguishers	Refill	N150,000
Silo Complex	Land dispute with the Gwars	Ensure regular consultation with community stakeholders. Locate land title documents and ascertain ownership.	

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.26 Ogoja Silo Complex

The Ogoja Complex has an installed storage capacity of 25,000 tons and is located at km 6, Abakalki, Okuku, Ogoja in Yala Local Government Area of Cross River State (Figure 99, Figure 100). It was commissioned in 1991 and is operational.



Figure 99 Ogoja Silo Complex



Figure 100: Aerial View of Ogoja Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex premise is properly maintained and no issue of environmental concern was observed in the external areas (Figure 101, Figure 102). No significant noise was noticed from the generator operation and there was no spillage of oil or diesel near the generator area.

The type of waste generated in the Complex includes cake grains, organic wastes and waste baggage materials which are disposed by open burning.



Figure 101 Silo Bins, Generator House



Figure 102: Complex Premise

The major types of chemicals which are stored in pallet and chest are cypermethrin dust phostozin. There have been cases of health challenges resulting from poor chemical handling as the workers are not given any form of training to that effect.

The Complex employs 12 staff. Compliance to basic HSE standards is a little above average. The PPEs that are used in the Complex include eye goggles, safety boot, coverall and rain boot. No accident that resulted in loss time injury has been recorded by the Silo Complex.

The Complex includes a sick bay which is however not properly equipped to address the challenges of medical emergencies. The Complex is equipped with fire hydrants and fire extinguishers. However the fire extinguishers need to be serviced.

The closest inhabited area to the Complex is about 200m away. Management of the facility has a cordial relationship with the host community and as such there are no identifiable social or community concerns regarding its operations. Although the local farmers are not making use of the facility, there are indications that some of the indigenes (mostly the youths) are engaged as paid labours in the Complex while some others are engaged in flag-off sales within the vicinity of the Complex.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Ogoja Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEnv.	N15m/EA study
Portions within the Complex	Indiscriminate waste disposal	Provide appropriate and well contained waste dump site and enforce strict adherence to its use.	N150,000/waste dump construction
Silo Complex	Fire Extinguishers	Provide and refill	N100,000

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.27 Okigwe Silo Complex

The Okigwe Silo Complex is located in Ezinachi in Okigwe Local Government Area. It is still under construction (Figure 103, Figure 104) and is expected to have a storage capacity of 100,000MT when completed.



Figure 104: Ongoing construction at Okigwe Silo Complex



Figure 103: Aerial View of Okigwe Silo Complex

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Already, grasses has overgrown some parts of the acquired land space for the silo (Figure 105).

There are no chemicals stored on site for fumigation.

There are no surface water bodies in close proximity to the Silo Complex

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.



Figure 105: Overgrown Brush Areas at Okigwe Silo Complex

The Okigwe Silo Complex enjoys the goodwill of the host community. However, complaint regarding “non-payment of compensation” for acquired land by host community was reported.

Social impact on the livelihood of the local people is at present mostly positive, as construction staff of the Complex is employed from the community. Presence of the Complex activities has aided the business of local kiosks and food vendors, as well as providers of local transport.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Okigwe Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Silo Complex	Community issues due to non-payment of compensation	Confirm status and process of land acquisition Locate land title documents Compensate local population if appropriate as per acquisition records Ensure regular ongoing consultation with community stakeholders	

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.28 Sokoto Silo Complex

The Sokoto Silo Complex located along Silame Road, Kasarawa, about 2km away from Sokoto metropolis, Sokoto State is completed and handling grains (Figure 106). It has a capacity of 25,000 Metric tons.

The Silo Complex is one of the best maintained Silo Complexes (Figure 107).

There were no identified external environmental concerns except for the odor complained to be emanating from a nearby poultry farm.



Figure 107: Aerial view of Sokoto Silo Complex



Figure 106: Silo Bins and Hospital Bins, Sokoto Silo Complex

The Silo Complex is well drained with suitably-sited and clear drainages.

There were no dumpsites within or around the Silo Complex. Wastes generated from the silo activities such as chaff, sand from grain and straw are bagged and stored prior to disposal, while the waste oil and used service parts from the mechanical equipments are properly disposed of by the visiting mechanic.

The generator house is kept clean and tidy (Figure 108). The grain storage facility has not experienced problems of erosion or wind gust. Figure 109 shows trees planted around the Complex to serve as



Figure 108: Generator House, Sokoto



Figure 109: Planted Areas, Sokoto

wind break to ensure problems do not arise in the future as a result of wind gust. There is no significant noise impact from the generators' operations.

The Silo Complex has never been assessed, monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no surface water bodies nearby the Sokoto Silo Complex.

There have been no reports of accidents resulting from the silo's operations, although there have been complaints of respiratory problems from the workers as a result of the chemicals in use in the silo.

The Complex employ 7 staff. The workers are provided with adequate PPEs and HSE standards are enforced (Figure 110). Chemicals are stored in a wardrobe at the maintenance house and there are yet no serious health related problems recorded among the workers resulting from the use of these chemicals. Trainings have been conducted for staff on the handling of these chemicals.

There is no sick bay or clinic to address emergencies should they occur. The Complex is equipped with a fire hydrant but no fire extinguishers.



Figure 110: PPEs on Display, Sokoto

The nearest inhabited area is less than 1 Km from the Silo Complex. The relationship between the Silo Complex and residents of the host community has been cordial with no recorded conflict or disagreement. The local community has enjoyed some benefits from the Silo Complex such as job opportunities for the locals.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Sokoto Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEnv.	N15m/EA study
Silo Complex	Fire Extinguishers	Provide	N250,000
Silo Complex	Lack of medical emergency management	Put in place appropriate emergency management plan. E.g. sick bay or first aid room.	N2m

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.29 Uyo Silo Complex

The Silo Complex is located in Uyo in Akwa-Ibom State. Construction is ongoing, and when completed, it will have a storage capacity of 25,000 metric tons (Figure 111, Figure 112).



Figure 112: Aerial View of Uyo Silo Complex



Figure 111: Uyo Silo Complex from the road

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

There are no environmental concerns which could be attributed to operational activities of the Silo Complex as it is still under construction (Figure 113, Figure 114).



Figure 113: Road view, Uyo



Figure 114: Construction Materials, Uyo

There is a surface water body located near the Complex. The immediate surroundings of the Complex are not regularly maintained. Portions towards the perimeter fence show overgrown grasses (Figure 115).



Figure 115: Perimeter Areas, Uyo

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

The nearest community to the Complex is about 1km away. There has been a communal complaint over the siting of the Silo Complex, but there is no record of conflict or disagreements between the Silo Complex and community residents.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Uyo Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Towards the perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour	N100,000 per/year
Silo Complex	No EIA, non-compliance with environmental laws and regulations related to EIA	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.30 Yenagoa Silo Complex

Yenagoa Silo Complex is one of the silo projects under construction in Nigeria. The silo is proposed to have a storage capacity of about 100,000MT on completion (Figure 116).



Figure 116: Signage at Yenagoa Silo Complex

There has been little progress in terms of construction of structures and installation of equipment at this Complex. Work is presently halted as the project site is currently undergoing a re-design due to the nature of the water table in the area – which is prone to flooding and has porous soil.

It is worth noting however that the location is presently overgrown and the construction materials, which were brought on site some time ago, are covered with weed (Figure 117, Figure 118).



Figure 118: Stacked Construction Materials, Yenagoa



Figure 117: Construction Materials, Yenagoa

The present overgrown condition of the Complex may engender some environmental risks such as presence of reptiles, which could be hazardous to workers.

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

The Complex is well secured with fences and there are no issues of encroachment reported during the site inspection mission.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at Yenagoa Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study
Towards the perimeter fence	Overgrown grasses	Ensure regular clearing of the Complex by engaging local labour.	N100,000 per/year

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

4.31 Yola Silo Complex

The Silo Complex, with a capacity of 25,000 metric tons, is located in Yola North Local Government Area, Adamawa State (Figure 119, Figure 120). It is not yet in operation.



Figure 120: Aerial View, Yola Silo Complex



Figure 119: Yola Silo Complex Entrance

The Complex premise has no identifiable environmental concerns about the intended operations of the Complex.

There is no surface water body located near the Complex.

So far, there have been no issues of soil erosion or wind gust affecting the Complex. However, there are presently no trees planted around the Complex as wind break to protect the Silo Complex from possible wind gusts.

The Silo Complex has never been monitored or audited under the Environmental Guidelines for pollution control, waste disposal, and smoke and noise emission.

Any company taking operational control of the site should provide adequate chemical and waste management systems as well as sufficient PPE and other safety equipment to ensure adequate protection for staff and the local community.

The nearest inhabited area is about 18 km from the Silo Complex and there is cordial relationship between the Silo Complex and the host community.

Summary of issues and proposed mitigation measures

The table below shows the various negative environmental and social issues/impacts identified at the Yola Silo Complex, recommended mitigation measures and probable cost of mitigation.

Location	Identified Issue/Impact	Mitigation Measure	Estimated Mitigation Cost
Silo Complex	No EIA, non-compliance with environmental laws and regulations	Ensure periodic environmental audit every 3-4 years in line with the provisions of the FMEEnv.	N15m/EA study

The Silo Complex should be brought into compliance with all necessary environmental and social laws and regulations. This implies the need to conduct periodic environmental audit estimated to cost about N15million per audit study.

Failure to comply with these laws and regulations could result in sealing of the Silo Complex, which could have a significant impact on the operation of the Complex and the feasibility of the privatization.

Appendix A: Environmental Survey Questionnaire

Environmental Issues

- What are the types of waste generated in the Silo Complex?
- How do you dispose of the wastes generated in the Silo Complex?
- Where is the waste deposited and by who?
- Any issue of soil erosion around the Silo Complex
- Any incident of wind gust affecting the silo (Any tree planted as wind break around the Silo Complex)
- Any waste bins around the Silo Complex
- How old is the silo? When was it constructed, and since when has it been put to use (commissioned)
- Has there been any grain spoilage (during storage) since inception? If yes how were the spoilt grains disposed?
- Has there been any form of environmental study on the Silo Complex since inception. If yes, please make details available
- Any stagnant waters/oil sheen in the drainages. (Are the drainages clean)
- What is your personal assessment of the general housekeeping status around the Silo Complex
- Any overgrown bushes within the immediate area of the Silo Complex perimeter fence
- Any dump site within or around the Silo Complex

Generator House

- i. How is the housekeeping within and around the generator house
- ii. Any waste oil/diesel spill on the floor of the generator house and its surroundings
- iii. How do you dispose off your waste oil and used service parts such as oil filters etc.
- iv. How often do you service the generator?
- v. When was the last time the generator(s) was/were serviced
- vi. When is the next service due date of the generator(s)
- vii. How many generators in the silo and how many are operational
- viii. Any significant noise impact from the generator operation
- ix. Any issue of diesel spill during refuelling and/or decantation of fuel

Social Issues

- What is the level of relationship between the Silo Complex and the host community?
- Has there been any form of conflict or disagreement between the Silo Complex and residents of the host community? If yes what is the nature of the conflict and how was it resolved?
- Is there any form of encroachment into the land of the Silo Complex?
- Do residents of host community enjoy any benefit from the Silo Complex? If yes, what type of benefits?

Occupational Health Issues

- Are silo workers provided with appropriate personal protective equipment-PPE (nose mask, ear muffs, eye goggles, hand gloves, boots, coveralls) when spraying the grains with chemicals.
- Has there been any respiratory issue as a result of silo activities reported by any worker
- Are appropriate PPE provided for workers in weigh bridge, grains dryer, grains cleaner, workshop building, grains bagging plant, generator house.
- Has there been any accident that resulted to loss time injury in the silo.
- If yes, when was this accident/incident and how many workers/people were involved?
- What was the nature of injury (ies) sustained?
- How were affected individuals treated?

Photos

Please take copious photographs of the following areas:

- Silo surroundings
- Inside workshop building
- Inside grain bagging plant
- Inside and around generator house
- Drainages
- Truck parking area
- Any other area of interest
- Observed Waste bins
- Visible waste dump site within or around the silo
- If possible, silos - as it is being loaded and offloaded
- Any work activity (such as cleaning/disinfection) inside the silo