

REPORT PREPARERS

- Ademola Olayioye (BSc. Env. Mgt., Dip.,OHS.) - Overall Project Management
(vynenurt@gmail.com)
- Ikomoni Samuel (MSc. BSc. Env. Mgt.) - Project Management
(Ikomonisamuel@gmail.com)
- David - Nyanah (HND, SLT) - Air quality/Meteorology
(imeobom_1@yahoo.com)
- Azeem Adeyemi (MSc., BSc. Env. Mgt) - Water Chemistry
(Azeemite@yahoo.com)
- Samson Olanipekun (Phd., MSc Agronomy) - Ecology
(olanipekunsam@yahoo.com
- Adeosun Taofeeq (HND SLT) - Laboratory Analysis
(anilaresources@yahoo.com)
- Ogundehi A. (OND SLT) - Field Assistant
(bdnogundehi@gmail.com)

boundaries of infringement of operations on human health and safety and on the environment; as captured in this report. The company, in compliance with environmental regulations relevant to the project, carrying out this EIS of the proposed project, has hence produced this document, the EIS Report, to concur with set guidelines that encourage environmental sustainability and engender industrial best practices. Sertom Nigeria Limited is a foreign investor proposing to manufacture Liquefied Petroleum Gas (LPG) Cylinders in Ogun State. Sertom Nigeria Limited, RC 1215246 is a registered limited liability company established and incorporated in year 2014. Its core business in the production and sale of steel products. The Proposed LPG Cylinder Manufacturing factory is sited in Km 46, Lagos- Ibadan expressway, Loburo village, Mowe, Ogun state.

ES 02 OBJECTIVES OF THE EIS

The main purpose of this EIS is to establish the environment sensitivities, impacts and mitigation measures necessary to carry out the Liquefied Petroleum Gas (LPG) Cylinder manufacturing project with minimum harm to the environment.

Its objectives are:

- Provide a management planning tool that will allow for environmental consideration to be taken into account with other design considerations at the conceptual design stage. Thus allowing important decisions to be built into the project while avoiding undue damage to the environment.
- Establish existing baseline (biological, physical and socio-economic) of the project location that would allow a systematic evaluation of potential environmental problems from the proposed development and identification of key (peculiar) issues which require special consideration for effective environmental management and control.



ACKNOWLEDGEMENT

The Management of Sertom Nigeria Limited (SNL) wishes to recognize and appreciate the entire Management and Staff of VyneNurt Limited for their commitment to the preparation of this Environmental Implication Study and all staff that contributed in the preparation of the report.

Special appreciation also goes to the regulatory agencies that have been supporting our operations and ensuring smooth flow of activities among them are Ogun State Ministry of Environment and Ogun State Environmental Protection Agency (OGEPA), among others.

Thank you all.

EXECUTIVE SUMMARY

ES 01 INTRODUCTION

The Steel Manufacturing Industry has been a major contributor not only to the infrastructural development, manufacturing needs and urban development of an industrialized world, but also to the economic growth and development of many developing nations. At the same time, however, there are indications that the environment and its natural resources are being threatened by the activity of this Industrial Sector, notably in developing countries, like Nigeria. The gains from the sector in the form of increased investment are being achieved at great environmental, health and social costs to the people, as challenges posed by the extractive industry bring to the forefront the need to have an efficient management in place as regards the current operations by deploying investment in new technologies in order to minimize the impacts that directly or indirectly affect the environment and human health with considerations of the cost of a polluted environment.

In compliance with regulatory bodies, like the Federal Ministry of Environment (FMEnv) statutory provisions and in accordance to the Environmental Impact Assessment (EIA) Act Cap E12 LFN 2004, well as good industry practice of National and International Regulations, Sertom Nigeria Limited (the project proponent) has commissioned VyneNurt Limited, being a reputable environmental consultant, to conduct an Environmental Implication Study (EIS) of the proposed Liquefied Petroleum Gas (LPG) Cylinder Manufacturing Plant construction and operations. The proposed factory is sited in Km 46, Lagos-Ibadan expressway, Loburo village, Mowe, Ogun state. To this regard, relevant regulatory & legislative guidelines and national & international environmental standards are been employed as the yardstick for assessments, thus, setting the

- Involve all stakeholders through consultation so as to address common problems, impacts, and mitigating measures that might be proposed in order to obtain a social license for the project;
- Recommend preventive, reduction and control measures for identified potential / adverse effect of the proposed project
- Develop a preliminary Environmental Management Plan (EMP) for the proposed project.
- Obtain authorization / certification; which is required by proponent to carry out legitimate business activities in the state.

03 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

Applicable laws and guidelines relevant to the execution of this study and subsequent report are as follows:

- Environmental Impact Assessment (EIA) Act CAP E12, LFN 2004
- National Environmental (Base Metals, Iron and Steel Manufacturing/Recycling Industries Sector) Regulations, 2011, S.I. No.14.
- National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations S.I.9
- National Environmental Standards and Regulations Enforcement Agency Act, 2007.
- National Environmental (Surface and Groundwater Quality Control) Regulations, 2011
- National Environmental (Mining and Processing Of Coal, Ores and Industrial Minerals) Regulations 2009.

- National Environmental (Control of Vehicular Emissions from Petrol and Diesel Engines) Regulations, 2011
- *National Environmental (Noise Standards and Control) Regulations, 2009 (S.I.35)*
- *National Environmental (Sanitation and Wastes Control) Regulations, 2009 (S. I. 28)*
- *National Environmental (Ozone Layer Protection) Regulations, 2009 (S.I.32)*
- *National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations of 1991 (S.I.15)*
- *Standards Organisation of Nigeria Act Cap S9 Laws of the Federation of Nigeria 2004*
- *Factory Act Cap F1 LFN 2004*
- *Employee Compensation Act, 2010*
- *Land Use Act 1978*
- *National Building Code*
- *Labour Act (Cap L1 LFN 2004)*
- *Ogun State Urban and Regional Planning Law, 2005*

S 04 TERMS OF REFERENCE (TOR)

The purpose of preparing the ToR before undertaking an EIS of a proposed project is to provide a framework for achieving the overall objectives of the EIS and ensure that the resulting EIS report will be suitable for review and evaluation by the relevant government authorities. Its objectives include:

- Outlining the general scope of the EIS including the overall data requirements for the proposed project and the affected environment
- Defining the relevant framework of the legal and administrative requirements for the proposed project



- Defining the procedures and protocols for identification and assessment of associated and potential impacts, and for selection of appropriate mitigation (prevention, recovery, control) measures for such impacts; and
- Defining the elements expected to be included in the Environmental Management Plan (EMP)

ES 05 BENEFITS OF THE PROJECT

It is envisaged that the project will offer the following benefits:

- Creation of direct employment.
- Provision of economic and social linkage due to influx of people to the community.
- Boost the utilization of Nigeria's Gas reserve
- Provision of socio amenities in respect to Cooperate Social Responsibility
- Provision of LPG Cylinders of different sizes for petroleum industries in the downstream sector of LPG bottling as a form of support for Oil and Gas industries.
- Promote business development of Sertom Nigeria Limited.
- Increase income base of the Local, State and Federal Government.
- Capacity building for the employees.

ES 06 NEED FOR THE PROJECT

The main Justification for embarking on the project includes; among others:

- ❖ Low number of local manufacturers and need to promote self-sufficiency.
- ❖ About 40% capacity utilization in the Industry and potential for growth.
- ❖ Our huge LPG reserve waiting to be fully harnessed.
- ❖ Existing large demand in the Country due to the population growth.
- ❖ Increased Research and Development (R & D) efforts at the research institutes and in Universities.



- ❖ The ban on importation of some LPG accessories, for which there is adequate local capacity and technical skills.
- ❖ Create new jobs.

ES 07 VALUE OF THE PROJECT

Sertom Nigeria Limited's proposed project is valued at **Two Million Dollars (\$2,000,000)** which is equivalent to **Seven Hundred and Twenty Million Naira (₦720,000,000)**. This value covers for the cost of land purchase, Construction of the factory and installation of production equipment.

ES 08 DESCRIPTION OF PRODUCTION PROCESS

The proposed LPG Cylinder Manufacturing Plant of Sertom Nigeria Limited will produce LPG cylinders in different sizes of 3kg, 6kg, 12.5kg, and 50kg and so on.

The process of manufacturing LPG cylinders is summarized as follows:

- Procurement of steel for LPG cylinders
- Blanking
- Deep drawing of cylinder cups
- Bevelling
- Set up of both cups and welding by automatic process
- Welding of nozzle
- Welding of top and bottom foot ring
- Heat treatment of cylinder in furnace
- Hydrotesting of cylinder
- Internal cleaning and external Shot blasting
- Painting and drying in paint booth
- Fixing of valves
- Pneumatic testing
- Marking and packing



Cylinders need to be re-approved every 5 or 10 years from the date of manufacture or date of re-testing as per local regulations. The date is stamped on the cylinder collars and shows the month and year. Out-of-test-date cylinders must not be filled until tested and re-stamped by a certified gas cylinder test station.

ES 09 AIR QUALITY ASSESSMENT

Suspended Particulate Matter

The PM_{2.5} concentrations obtained for Particulate Matter from the different points during the Wet Season study ranged from 14 - 40µg/m³ with an average of 23.1 µg/m³ while the PM₁₀ concentrations obtained for Particulate Matter from the different points during the Wet Season study ranged from 17 - 42µg/m³ with an average of 25.8 µg/m³. From thereferenced dry season data, PM_{2.5} concentrations were 13.4 - 17.3µg/m³ with mean of 15.7µg/m³, and PM₁₀ concentrations were 44.7 - 76.6µg/m³ with mean of 57.0 µg/m³. Highest SPM values during the wet season were obtained at Pt 1 while the least was obtained at Pt 8.

Gaseous Emission

The results gathered during the study period showed that carbon monoxide (CO), and Sulphurdioxide (SO₂) were below detectable limits for all the locations in both dry and wet seasons. Nitrogen dioxide (NO₂) concentration ranged from 0.054 - 0.056 ppm during the Dry season study and below detectable limit during the Wet season study. The main effect of breathing in raised levels of nitrogen dioxide is the increased likelihood of respiratory problems. Nitrogen dioxide inflames the lining of the lungs, and it can reduce immunity to lung infections. This can cause problems such as wheezing, coughing, colds, flu and bronchitis.



Noise levels

Noise levels during the wet season ranged from 59.9 - 83.2 dB(A) with mean 68.7dB(A). The referenced dry season noise levels ranged from 37.7- 67.6 dB(A) averaging 56.6 dB(A). Noise level during the wet season was highest at Control point due to its nearness to the expressway and lowest at point 11 within the community. Lowest noise level was recorded at control point and Highest at point 3 during the dry season. All the noise levels recorded during the study were in conformity to the FMEnv limit and Environmental Health Guidelines. Point 2 and control point of the wet season study exceeded the World Health Organisation limit of 70 dB (A). Some points during both seasons study exceeded World Health Organisation's Day and Night time noise limits of 55 and 45 dB (A) respectively.

ES 10 SOIL STUDY

pH (*Soil Reaction*)

Soil pH during the Wet Season study ranged from 8.09 - 8.77 with mean value of 8.45 for the top surface soil and 7.99 - 8.63 with mean value of 8.42 for sub soil. The control soil has a pH 8.16 and 8.21 for top and sub soils respectively. Soil reaction in the top soils for the dry season varied from pH 4.95 to 8.32 with average of 6.39 and 5.2 to 8.45 averaging 6.57 for the sub soil. The dry season control pH values were 6.35 and 6.37 for top and bottom soils respectively. pH for the Wet Season was relatively higher than that of the dry season. Soil pH spanned from slight acidity to slight alkalinity.

Electrical Conductivity

The top soil electrical conductivity obtained during the wet period ranged from 392 - 410 μScm^{-1} with mean value of 399.25 μScm^{-1} . For the sub soil, the conductivity value varied from 382.0 - 530.0 μScm^{-1} with mean of 414 μScm^{-1} . The lower soil electrical conductivity during the dry season may be traceable



to the dryness of the soil and slow movement of soil nutrient. This level of electrical conductivity will be good for crop yield.

Sulphate Concentration

From the data obtained during the study, sulphate concentration in the top surface soil ranged from 18.05 – 48.79 with mean of 30 mg/kg and 1.06 – 1.69 mg/kg with average 1.36 mg/kg in the wet and dry seasons respectively, the sub-surface values varied from 22.93 – 48.79 mg/kg with mean 32.08 mg/kg and 1.1 – 1.8 mg/kg with average 1.52 mg/kg for wet and dry seasons respectively. It was observed that sulphate concentration increases from top to bottom soil which may be traceable to water seeping nutrients down the soil. Higher sulphate concentration was obtained during the wet season data gathering in the study area.

Phosphate (PO_4^{3-})

The surface soils phosphorus concentration determined in the phosphate during the dry season ranged from 2.73 – 4.21 mg/kg with average concentration of 3.67 mg/kg while in the sub-surface soils it ranged from 3.41 – 4.5 mg/kg with average concentration of 4.12 mg/kg. During the wet season, the top soil phosphate concentration varied from 8.88 – 24.4 mg/kg with average 14.61 mg/kg while in the sub-surface, the concentration levels were 8.98 – 22.2 mg/kg averaging 15.93 kg/mg. Phosphate concentration in the top soil remained lower than that of the sub soils in both the wet and dry season.

Nitrate (NO_3^-)

Nitrate levels in the soil varied from 24.21 – 32.63 mg/kg with average 27.24 mg/kg (wet season) top soil and 23.68 – 29.47 mg/kg with average 26.45 mg/kg for sub-surface soil during the wet season. During the dry season its concentrations ranged from 0.35 – 0.55 mg/kg with average concentration of 0.45 mg/kg while the sub-surface soils concentration varied from 0.31 – 0.57 mg/kg averaging 0.44 mg/kg. The nitrate concentration was higher in the