



SIAT NIGERIA LIMITED

ENVIRONMENTAL IMPACT ASSESSMENT OF OIL PALM REPLANTING AND MILL REHABILITATION/CAPACITY UPGRADE



FINAL REPORT

November 2017

Environmental Evaluation Report (EER) of Oil Palm Replanting and Mill Rehabilitation/Capacity Upgrade at Ubima and Elele Estates, Ikwerre and Emuoha Local Government Areas, Rivers State, Nigeria

Final Report

Submitted To:

Federal Ministry of Environment

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EXECUTIVE SUMMARY (ES)

ES 1.0 Purpose and Need for the Project

The proponent of the oil palm replanting and mill rehabilitation/capacity upgrade project at Ubima and Elele; Siat Nigeria Limited is a Belgian agro-industrial company that specializes in industrial as well as smallholder plantations of tree crops, mainly oil palm and rubber, and allied processing industries such as palm oil mills, palm oil refining/fractionation, soap works and crumb rubber factories in Africa including Nigeria (Oil Palm), Cote D'Ivoire (rubber, oil palm), Ghana (Oil palm), Gabon (Rubber, oil palm, cattle ranch) and Cambodia (mainly rubber).

In 2011, the Siat Nigeria Limited (SNL) on a long term lease agreement, acquired from the Rivers State Government the moribund Rivers State of Nigerian Palm (RISONPALM), which comprises 16,000 hectares of old oil palm plantations plus the entire social and industrial infrastructure and began operations at the Ubima and Elele Estates. Part of the acquisition is a moribund palm oil mill. SNL wished to rehabilitate and upgrade the mill from 40T to 60T FFB/Hr.

The entire oil palm plantation is now due for felling and replanting. It now became imperative for the company to establish baseline information and at the same time determine the present environmental and social impacts of the plantations and mill operation over the years and consequently, proffer solution to any impacts identified.

As a responsible and responsive organization, the company deemed it necessary to establish baseline information, which has never existed in the history of the two plantations and mill operation.

ES 2.0 The Proponent

Siat Nigeria Limited is an Agro-industrial company that is wholly owned by the SIAT (Societe d'investissement pour l'Agriculture Tropicale) Group, based in Brussels, Belgium. The company specializes in the establishment and management of industrial oil palm plantations as well as small holders' plantations and allied processing of palm oil and downstream industries. The main focus remains on oil palm and rubber, while cattle ranching are gaining importance in the group.

Siat Nigeria Limited (SNL) is a private limited liability company with corporate head office at the company's Ubima Estate near Port-harcourt, River State,

Nigeria. The company formally known as RISONPALM was originally owned by Rivers State Government.

The company operates the Ubima Estate (a concession of 10,000 hectares) and the Elele Estate (a concession of 6,000 hectares), both located in Rivers State. It employs about 3,213 people of which 289 are permanent staff and 2,924 are contract workers.

ES 3.0 Proposed Project Locations and Description

The oil palm replanting involves two locations while mill rehabilitation/capacity upgrade involves one location as follows;

The oil palm replanting first location is Ubima estate at Ubima where the company headquarters is situated while the second location is Elele estate at Elele. The mill rehabilitation/capacity upgrade only involves Ubima estate at Ubima.

Both estates are located east of Port Harcourt on Port Harcourt-Owerri road in Rivers State. The company operates about 10,000 hectares at Ubima and 6,000 hectares at Elele.

The total area of these two locations is about 16,000ha situated within Ikwerre and Emuoha Local Government Areas of Rivers State.

The replanting of the existing oil palm plantations at Ubima and Elele estates and mill rehabilitation/capacity upgrade at Ubima estate of Siat Nigeria Limited. The oil palm replanting project covers about 16,000 hectares at Ubima and Elele locations. The replanting project is meant to replace the existing old oil palm in order to achieve commercial production over another period. The replanting project will take place in phases to achieve a total planted area of about 16,000 hectares while the mill rehabilitation/capacity upgrade project will consist of three (3) major components namely:

- i) **Mill Processing Line:** This will include the sterilizer unit, the press unit, clarification unit and kernel recovery unit.
- ii) **Steam Boiler:** A new Vickers boiler will be installed. The boiler will run entirely on the solid waste of oil palm including empty fruit bunches (EFB), fibres, shells and palm kernel cake.
- iii) **Steam Turbine:** A 1.5mW condensing and back pressure steam turbine. The turbine will convert the steam produced by the Vickers boiler into electricity. Although, there will be 1500 kVA heavy duty generator as back up

The existing plantation includes the initial plantation development, originally owned by the Rivers State Government, Nigeria known as “Risonpalm” which has been in operation for over 30 years. Suffice it to say that the proposed oil palm replanting project land being in the same location shares the same environmental and social characteristics as the existing development.

The vegetation of the proposed project sites is monoculture of oil palm with remnants of natural freshwater swamp (wet land) forest mainly at Elele estate. The proposed development will therefore not involve clearing of natural forest but will essentially involve the felling of existing old palm trees which will be left in the field to decompose as organic manure. The best agricultural practices the company has sustained in its other existing plantation development and operations will be used. These include zero burning, minimum to zero tillage, integrated pest management and minimal use of agrochemicals.

However, it is intended to conserve the existing freshwater swamp forest at Elele estate; hence the vegetation at minimum of 100 meters on each side of the swamp will be retained and conserved.

The replanting of the proposed site will be done in phases; with the first phase of replanting intended for 2015 at Elele estate and subsequent plantings will be achieved over 14 years to terminate in 2029. The average rate of planting is estimated at 1000 hectares per year.

The planting materials to be used are the types that are very well adapted to the Nigerian environment and local conditions. The fresh fruit bunches (FFB) to be harvested from the two estates will be processed in the Palm Oil Mill (POM) which is located at Ubima estate. This implies that the operations of the project will generate industrial liquid waste (effluent) only where the mill is located. The bulk of the solid waste arising from the operations of the project will be essentially organic waste that will be managed by recycling within the plantation.

ES 4.0 EER Study Procedure

The EER study was carried out after due consultation with the local communities or indigenous peoples, and in accordance with the Ministry’s Environmental Assessment Procedural Guidelines.

ES 5.0 Consultations with Stakeholders

The Stakeholders identified were: (i) The host communities; (ii) Ministry of Environment, Rivers State; (iii) Ikwere and Emuoha Local Government Areas.

The objective of the consultation was to identify those areas the existing oil palm plantation and palm oil mill have adversely impacted and also address those issues that might have arose from such impacts. The consultation is also meant to educate stakeholders particularly the local communities on details of the oil palm replanting and mill rehabilitation/capacity upgrade project, its justification, discuss the scope of study and the project's present and potential and associated environmental impacts, and obtain their views and comments. This shall foster good relationship between the company and the local communities.

The summary of the communities' assessment of the likely environmental and social impacts of the proposed oil palm replanting and mill rehabilitation/capacity upgrade project was that the proposed project would largely have insignificant adverse impacts.

ES 6.0 Project Justification

The proposed project will complement considerably both the Agricultural Transformation Agenda (ATA) and the economic transformation strategy and plans of the country. Justification is therefore found for the proposed oil palm replanting and mill rehabilitation/capacity upgrade in its potential to: i) Add value to the existing production of the company, ii) Provide and sustain direct employment, iii) Continuous creation of additional jobs, iv) Contribute to the socio-economic development of neighboring communities, and iv) Increased economic benefits to the nation.

ES 7.0 Envisaged Sustainability

The project will be financed by internal funds and loans. The oil palm replanting project will be executed in phases spanning 14 years (i.e. 2015 to 2029). Therefore, the estimated cost of the project is over N10.8 billion Nigerian Naira.

Technically, best hands and agricultural practices shall be employed to carry out the project to ensure its technical sustainability while environmental sustainability will be attained through the Siat Nigeria Limited internal Environmental Management System (EMS) that is already in place. The life span of an oil palm

plantation is about 30 years or more after which the palm trees are felled and then replanted as it is the case presently. With proper upkeep, the oil palm can produce for more than two decades. The envisaged upkeep practices include routine ring weeding, pruning, slashing and fertilizer application.

The company will leverage on its foreign and local expertise and experience in palm oil mill construction and operation to ensure that the palm oil mill rehabilitation/capacity upgrade enjoys sound technical complements from design to implementation and operation. Such practices will include adequate practices to safe handling of machines, equipment, minimizing emissions and in general operating in an environment friendly manner. They will also effectively protect the environment and its ecological system through a proper management of the POME generated. In addition, the construction material will be of the highest quality available. Essentially, best hands and best management practices will be employed to execute the project. Importantly, all staff and workers will be competent and adequately trained to ensure the technical sustainability of the mill rehabilitation/capacity upgrade.

ES 8.0 Relevant Environmental Laws, Decrees, Regulations and Edicts

The following laws and regulations apply to the proposed oil palm replanting project: (i) National Policy on Environment (FEPA, 1989); (ii) Environmental Impact Assessment Act 86, 1992; (iii) National Guidelines and Standards for Environmental Pollution Control in Nigeria, (FEPA,1991); (iv) National Effluent Limitations Regulations S.I.8 (FEPA,1991); (v) National Pollution Abatement in Industries and Facilities Generating Wastes Regulations S.I.9 (FEPA,1991); (vi) Waste Management and Hazardous Waste Regulations S.I.15 (FEPA,1991); (vii) National Environmental Standards and Regulations Enforcement Agency (NESREA), 2007. (viii) Environmental Edicts of Rivers States' Ministry of Environment; (ix) Rivers State Environmental Waste Management Board Edicts/Mandate; (x) Local Government Area Mandate on environmental sanitation and solid waste management; (xi) Factory Act 1990; (xii) Nigerian Land Use Act, 1978.

ES 9.0 Existing Baseline Environment

The biophysical and human socio-economic environments that might be impacted by the proposed project were ascertained from field data gathering, previous natural resources and environmental studies and in-house environmental records of

the company. Rainfall, temperature and sunshine hours were only obtained for 2013 from meteorological record of Siat Nigeria Limited.

Automatic reading equipment was employed to determine air quality, north and south of the project site. The concentrations of SO₂, H₂S, CO, CO₂, NO_x, were all below the limits set by FMEnv. The concentrations of particulates are also below the set limit, showing clean, unpolluted ambient air in the locations.

Except for the palm oil mill (POM) and the main powerhouse with noise levels of 96.2 dBA and 95.5 dBA, the noise levels were well below the FMEnv exposure level of 90dBA.

The groundwater quality is good and free from pollution except for pH that is generally low. The water samples from nearby sources have all the physico-chemical and microbiological parameters within the permissible limits recommended by WHO and FMENV for wholesome water.

The palm oil mill effluent quality does not conform to the FMEnv permissible limits for wastewater/effluent discharge as all the critical parameters such as BOD, COD, TSS and oil and grease were outside the limits. This implies that the effluent lagoon which is basically the biological system of effluent treatment is not working efficiently as a result of long neglect of the plantation estate. Meanwhile, the distance of the lagoon from nearby Surface River is about 8 km.

The entire land area is mainly flat and only slightly medium inclined with slope not exceeding 2°.

In addition, the soils are generally well drained without structural impediments of stones, concretions or mottles. There were no indications of on-going redox processes or indications of inundation exceeding 2 to 3 months in the lowest portions.

The laboratory results on the soil samples showed that the pH of soils at Ubima estate ranged between 3.3 and 4.2 with a mean value of 3.8 indicating acidity and a range from 3.8 to 4.5 at Elele estate with a mean value of 4.1 also indicating acidity.

The texture of soils at Ubima estate are generally sandy clay loam with sand dominating the entire texture with a mean value of 83.5%, while the soils texture at Elele Estate were generally sandy clay loam (SCL) with sand dominating the entire texture class with a value of 85.7%.

The total organic carbon content and total nitrogen levels of the soils at Ubima estate were generally low, with mean values of 0.57% and 0.04% respectively, while the total organic carbon content and total nitrogen in the soils at Elele estate were generally low. Mean level of organic carbon was 0.81% while mean level of total nitrogen was 0.04 %.

However, the available phosphorus level in the soils at Ubima estate was generally high with a mean value of 48.09 mg/kg, while the amount of available phosphorus in the soils at Elele estate was relatively high, with mean concentration of 41.76 mg/kg.

The entire CEC of the soils at Ubima estate was between 1.64 meq/100g and 7.63 meq/100g with a mean value of 5.27 meq/100g. It is important to state that there was increased spatial variability in the CEC of entire soils, with calcium dominating the exchange site followed by magnesium. Both cations had mean values of 3.16 meq/100g and 1.48 meq/100g respectively, while the Cation Exchange Capacity (CEC) of the entire soils at Elele estate were generally low. The CEC ranged between 1.14 and 3.27 meq/100g with a mean value of 2.27 meq/100g. Furthermore, the cation exchange site was dominated by calcium ions with a mean value of 1.21 meq/100g. Cation exchange capacity in soil is strongly influenced by the organic matter and clay contents of the soil respectively.

The heavy metals concentration in the soils at Ubima estate was all within acceptable and permissible levels in agricultural soils. The mean concentration of the metals were as follows, Iron (17045.30 mg/kg); zinc (11.76 mg/kg); Copper (4.70 mg/kg); Lead (1.00 mg/kg), Chromium (4.08 mg/kg), while the concentration of the heavy metals in the soils at Elele estate were generally within acceptable and permissible levels in agricultural soils. Hence, their mean concentrations were; Iron (18836.60mg/kg). Zinc (19.86 mg/kg); Copper (9.2 mg/kg), Chromium (13.08 mg/kg) and Lead (1.00 mg/kg).

The total hydrocarbon content at Ubima estate was below 0.05 mg/kg. The total hydrocarbon content of the entire soils at Elele estate was below 0.05 mg/kg while the oil and grease content was less than 3.00 mg/kg.

Fertility of the Soils: Although there was no detailed soil survey to evaluate the fertility class of the soils, the present assessment indicates that soils at both the Elele and Ubima Estates are generally low in potassium and nitrogen and high in phosphorus content. Consistent harvesting without replenishment of soil nutrients could lead to low levels of N and K. Furthermore, the oil palm bioaccumulates K and N in sufficient amounts especially in the fresh fruit bunches. The age of the palms is one of the factors that affect soil nutrient accumulation.

The vegetation of the oil palm estate consists mainly of oil palm (*Elaeis guineensis*) in well maintained plots (block of 100ha) of 1 km². There is a mosaic of rainforest vegetation around the administrative complex that has been kept intact for many years. This has served as refugia for many animal species including monkeys, rodents, birds and reptiles.

The survey of large mammals revealed the presence mammalian fauna recorded within the Ubima and Elele oil palm estates. The terrestrial wildlife fauna of the Ubima and Elele oil palm estates consist of mainly of species of mammals, birds, reptiles, amphibians and invertebrates.

A total of 24 species of mammals (excluding bats) were recorded from the areas during the period of study. These species belong to 6 mammalian Orders, 16 Families, and 23 Genera. They include the rodents (Rodentia), primates (Primates), pangolins (Pholidota), carnivores (Carnivora), insectivores (Insectivora), and ungulates (Artiodactyla). These mammals were reported to be present either within or in the surrounding forests near the oil palm estate.

However, because of the constant clearance of the ground vegetation which provides refuge for wildlife species, most of the large mammals were not seen within the oil palm estate during the survey. The animals usually migrate during the day into adjacent secondary forest around the oil palm estate boundary or suitable forest “island” within the oil palm estate. Two notable insular forests within the oil palm estate at Ubima were observed.

The first is the forest around the administrative buildings/guesthouse at management quarters where many species of birds were found together with a large population of monkeys. The second forest island is the swamp/forest around the sludge pit. This later habitat has attracted many species of birds, particularly ducks, raptors, finches, quails, and weavers. Also found within this area are various species of snakes, rodents and carnivores.

The policy of the management of the oil palm estate not allowing hunting within the oil palm estate has encourage an increase in the fragile population of some of these mammalian species. In Elele oil palm estate, the riparian vegetation at the C boundary has also served as suitable refugia for various animal species.

The rodents were the most dominant mammalian group, excluding bats, constituting about 20% of the total number of mammalian species recorded. Except for the Grasscutter and Giant rats, the rodents are small mammals and are very varied in pelage coloration and patterning. They are mostly terrestrial and live in burrows, being mostly nocturnal. They are found in almost all the compartments of the oil palm estate. Because of their large numbers they are neither threatened nor endangered by the existing project but rather considered a pest to plantation crops and stored products. They are listed as Least Concert (LC) by the 2014 IUCN Redlist.

The primates include the monkeys, galagos and pottos. Monkeys were seen in the forest mosaic around the guest houses during early hours of the morning. Mona monkeys (*Cercopithecus mona*) are the most commonly seen in this area and may be threatened by inbreeding because of their isolation from other members of their family within the rainforest region. The Sclater's guenon is the other recorded species but rare in occurrence because of habitat loss through deforestation for timber and conversion of forest to agricultural land. Although with declining population, Pottos and galagos have been reported by trappers and workers within the Estates. However, they were considered as Least Concern by the current IUCN Redlist and are not threatened by the existing oil palm estate.

The carnivores are represented by small to medium-sized species of civet, genet and mongoose. They were all rare and are threatened by habitat loss and over-exploitation by humans for food. Footprints were observed along the sludge pit (05° 09'24.4" N, 006° 54' 26.3" E). Although, considered as Least Concern by the

current IUCN Redlist, dwindling population and loss of forest cover may threaten their existence within the region.

Amongst the Artiodactyla (even-toed ungulates) only the antelopes (family Bovidae) and bush pigs (family Suidae) were reported to occur in the area, particularly when the oil palm estate was abandoned prior to 2011 before the SIAT group took over. They were reportedly found in the area and may not be threatened by the existing oil palm estate. The presence of roaming space within the oil palm plantation and abundant grasses may stimulate the recovery of many artiodactyls species. The buffalo is locally extinct. All the Artiodactyla recorded were considered as Least Concern by the current IUCN Redlist and may not be threatened by the existing oil palm estate.

The pangolins (Order Pholidota) were represented by a single species of tree pangolin, or White-bellied Pangolin *Manis tricuspis* = *Phataginus tricuspis*. This species is considered as Vulnerable by the IUCN Redlist.

In the baseline socio-economic findings of the seventeen communities (Apani, Egbwu Umuorji, Ihie, Izu, Ogida, Omadenma, Omerelu, Ozuzu, Obima, Odisama Egbeda, Eligbo, Elele, Elele Alimini, Itu, Okporomini and Omudioga). The following parameters were critically examined.

- Household Demographic
- Housing
- Infrastructure
- Education
- Health
- Livelihood Strategies
- Income and Expenditure
- Belief Systems and Sacred Sites

ES 10.0 Present Impacts and Significant Potential and Associated Environmental and Health Impacts

The summary of current environmental and social impacts of the existing oil palm plantations at Ubima and Elele estates were determined. Similarly, major/significant anticipated impacts arising from the development and operation of the proposed oil palm replanting and mill rehabilitation/capacity upgrade project were examined and considered at four phases including: (i) Pre Construction; (ii) Construction; (iii) Operation and Maintenance; (iv) Decommissioning and Abandonment.

ES 11.0 Proposed Environmental Management Plan, (EMP) to be put in Place

All mitigation measures will be adhered to by the Environment, Health and Safety (HSE) department of the company; (i) Emissions testing, Laboratory analysis of groundwater and POME and reporting will be done in accordance with the regulatory requirements and record submitted to FMEnv; (ii) Fire prevention precautions will be in place as required by the State Fire Service; (iii) All fire fighting equipment will be inspected and maintained regularly; iv) Regular inspections will be conducted to verify the integrity of the fuel tanks. v) Written procedures governing the operation of the fuel tanks and precautions to be taken will be developed; (vi) The occupational health, safety and environmental policies shall be implemented; vii) Capacity building programme for plantation staff including awareness, in-plant training, seminars, workshops and short courses shall be undertaken regularly to enhance the implementation of the EMP.

For the oil palm replanting and mill rehabilitation/capacity upgrade project, the environmental monitoring programme would cover a number of parameters including meteorology, ambient air quality, surface water quality, groundwater quality, wastewater and/or effluent discharge quality and noise levels. All these would be regularly monitored by the project proponent.

The schedule of EMP detailing impact, mitigation measures, actions to be taken and the persons responsible for mitigation actions has also been drawn. It will equally be monitored for compliance.

ES 12.0 Decommissioning

The approaches to the decommissioning of the plantation and palm oil mill project would involve the combination of assets recovery, dismantling, demolition, decontamination and remediation.

ES 13.0 Conclusion

The EER process demonstrates that the oil palm replanting and mill rehabilitation/capacity upgrade project at Ubima and Elele estates will fully comply with legislative requirements in Nigeria and other relevant international regulations applicable to the planned activities and operations.

The proposed project is an attestation to the sustainable growth of plantation development, which will result in substantial economic benefits for Nigeria through Employment opportunities generation in particular during the construction and operation phases.

This EER also indicates that discharges including wastewater and/or effluent, gaseous emissions and noise are expected from the operation of the plantation development and mill rehabilitation project. However, any such discharges, which can be considered as potential sources of adverse environmental effects, can be fully managed through preventive actions and mitigating measures. This means that no significant negative impact on the natural, health and social environmental sensitivities of the project area is expected to result from discharges, let alone the occurrence of a residual impact.

The Project is environmentally and socially sound, and will promote balanced and environmentally sustainable operation of Siat Nigeria Limited (SNL).

SUMMARY

CHAPTER EIGHT

8.0 Conclusion

The project is an attestation to the sustainable growth of plantation development and palm oil processing which will result in substantial economic benefits for Nigeria through employment opportunities generation in particular during the construction and operation phases.

This EER also indicates that discharges including wastewater discharge, gaseous emissions and noise are expected from the operation of the plantation development and palm oil mill rehabilitation project. However, any such discharges, which can be considered as potential sources of adverse environmental effects, can be fully managed through preventive actions and mitigating measures. This means that no significant negative impact on the natural, health and social environmental sensitivities of the project area is expected to result from discharges, let alone the occurrence of a residual impact.

The assessment has gathered and analysed the present situation which shall form the basis for baseline data. The data seem adequate and have assisted to determine the present and socio-economic status of the project environment and the kinds of effects and responses that may result from the interaction of the plantation and mill operation project. However, the plantation and mill operation project is not expected to have significant adverse effects on the natural, cultural, environmental and socioeconomic life in the project area.

The assessment further demonstrates that the proposed oil palm replanting and oil mill rehabilitation/capacity upgrade project will fully comply with legislative requirements in Nigeria and other relevant international regulations applicable to the planned operations.

The existing environmental management programme of Siat Nigeria Limited has put in place good solid waste management system, which will fully complement the waste management requirement of the proposed replanting and mill rehabilitation project.

The host communities shall be carried along throughout the replanting and mill rehabilitation project and shall be given employment opportunities appropriately during the project construction and operation.

An EMP involving environmental management and supervision organizations, and environmental monitoring has been established to ensure the environmental performance of the Project. To ensure successful implementation of these measures, the EMP covers major relevant aspects such as institutional arrangement for environmental management and supervision and environmental monitoring. With implementation of the mitigation measures defined in the EER and EMP, all the likely adverse environmental impacts associated with the replanting and mill rehabilitation/capacity upgrade project will be prevented, eliminated, or minimized to an environmentally and socially acceptable levels.