

Diaoune Agro-Industrie (DAI) Sarl Cashew Nut Processing Plant ESIA

Non-Technical Summary

Introduction

Richflood was appointed by Diaoune Agro-Industrie (DAI) Sarl to conduct an Environmental and Social Impact Assessment (ESIA) for the new Cashew Nuts Processing Plant in Boke Region, Republic of Guinea. Part of the ESIA is also to assess the potential impacts associated with the proposed processing plants. This ESIA is required to meet the requirements of international lenders, from whom DAI intends to obtain funding for the project. The U.S. International Development Finance Corporation (DFC) is the particular lender organisation involved, and to approve the loan it must be demonstrated (via this ESIA and other documents) that DAI Cashew nut processing plant project and ESIA process meet the requirements.

Diaoune Agro-Industrie (DAI) is a subsidiary of Diaoune et Frères Sarl, established in Côte d'Ivoire in 2004. Diaoune et Frères Sarl has been a major player in the Cashew Nut business, initially engaging in the cultivation and export of raw cashew nuts to the processing plant in Asian countries, particularly Vietnam and India. With the vast experience in the cashew nut agro-business industry spanning more than fourteen (14) years, the management of Diaoune Agro-Industrie is deploying this rich knowledge and experience to bring more added value to the cashew industry in the Republic of Guinea, and has already constructed and operated a 10,000 metric tons per annum cashew processing plant in the city of Kankan in upper Guinea. Diaoune Agro-Industrie Sarl is a registered agro-processing company in Guinea and has its headquarters in Conakry.

As part of its expansion drive into the business, Diaoune Agro-Industrie Sarl has proposed to construct and operate a Cashew nuts processing factory (of similar capacity of 10,000 metric tons per annum) in Boké, which is considered the largest cashew production basin in Guinea. The project will involve sourcing raw cashew nuts from licensed brokers and smallholder farmers in the Boke region and processing them into unflavoured cashew kernels majorly for export and a smaller percentage of local consumption.

Purpose of the ESIA

The purpose of the ESIA is to identify the key environmental and social impacts which are likely to result from the construction, operation and closure phases of the proposed DAI Cashew Nut processing plant. The goal of the ESIA process is to inform an Environmental and Social Management Plan (ESMP), which sets out the management measures that will be implemented to address environmental and social impacts that may result from the project. Compliance with the

measures listed in the ESMP will minimise negative impacts and ensure that the DAI project is implemented in a responsible and sustainable manner.

Project Description

Location and overview

The location of the proposed Cashew nut processing project facility is Kataba village, an outskirts community in Boke, Boke region of Guinea. The project will be situated on a land area of 30,000m² along the major Boke-Kalaboui Road. The location of the site is approximately 14.3km due west, of the main Boke town. Accessibility by road through the project site to Boke town from Conakry is through the Boke-Kalaboui Road. The project site boundary coordinates include: Latitude 10° 50' 11.1"N & Longitude 14° 21' 23.2"W (SW corner), Latitude 10° 50' 11.8"N & Longitude 14° 21' 25.2"W (SE corner), Latitude 10° 50' 4.3"N & Longitude 14° 21' 28.2"W (NE corner), and Latitude 10° 50' 3.9"N & Longitude 14° 21' 24.4"W (NW corner).

Project Components

The description of the key sections of the cashew processing plant project includes: Administrative and service block, Processing factory, Processing and storage warehouse, Sorting and Calibration warehouse, Security Gate and Weighing bridge area and Car/ trailer park.

Machinery and Equipment

DAI plans to install and operate a modern automated cashew nut processing factory. The processing equipment for the cashew processing factory will be sourced majorly from Mekong Technology in Vietnam as well as other peer companies offering similar cashew processing equipment.

Project Phases

Pre-construction Phase

This stage involves carrying out various studies to ascertain the economic, financial and environmental viability of the proposed Cashew processing project. Also, included in this stage are designing, feasibility studies, socio-economic surveys and community engagement etc. for the proposed project. More so, the construction of residential camps and offices for the construction workers and provision of associated facilities.

Construction Phase

The construction of the Project is not expected to lead to land taken beyond the proposed land plot allocated to the Project. At the time of the site visits undertaken in developing this ESIA (October, 2022), the Project site has been cleared of vegetation and trees for setting up the various units of the processing plant with fencing structures.

The construction phase will involve works such as project site fencing, surface run-off channelization, drilling borehole water source, excavation and foundation work as well as factory and warehouse structure erection and installation. Construction-related nuisances such as noise and dust will be very limited given the temporary nature of the works.

Operational Phase

Activities during the operational phase of the project include:

- Sourcing and supply of raw cashew nuts to the factory
- Processing of raw cashew nut into kernels
- Distribution and export of finished raw cashew kernel

Processing of Raw Cashew Nut

Processing of cashew involves the transformation of raw cashew nuts into high-quality cashew kernels. The transformation process consists of 7 key steps, which are labour intensive and involve a critical choice of technology and methods at each step for efficient and competitive processing. The key steps involved in the processing of RCN into kernels include:

a) Cleaning & Sorting

Grading is the very first step in the processing of raw cashew nuts into final kernel products. This process entails separating the raw cashew nuts from impurities such as; dust, stones, wood particles etc. Cashew nuts brought into the factory in bags are first spread on the ground and manually sorted to take out waste. The cashew nuts are classified into five grades which includes; C₁₈, C₂₀, C₂₂, C₂₄ and C₂₆.

b) Steaming

This is the second phase where the different graded nuts are simmered in a boiler for a period ranging from 24 to 35 minutes depending on the different grades. The cashew steaming process is amongst the most critical processes in the cashew process and decides the quality of the finished cashew kernel. The steaming process prepares the raw cashew nut for the shelling machine, by pressure cooking the cashew nut using saturated steam from the boiler.

c) Shelling and Separating

The process takes place in the shelling machine and involves splitting and separating the steamed raw cashew nuts into cashew shells and cashew kernels. The kernel after shelling will have a moisture content of more than 10%. The automatic cashew cutting line is a mechanical system consisting of many automatic cashew shelling machines connected to an automatic cashew separating system which saves operating labour.

d) Drying and Fumigation

This stage involves the drying of the unpeeled cashew kernel to a moisture content of about 3.5-4.5 %, preparing it for the cashew peeling machine. After the shelling of the kernel obtained from the shelling machines, the products are placed in the oven using a perforated tray, and drying them at a temperature of 60-80°C for eighteen hours (18hrs). Two (2) large ovens will be utilised for the process with each having a capacity of four carts.

e) Peeling

The nuts are transferred from the fumigation chamber to the peeling machine. Peeling the cashew kernels means getting rid of their hush (skin) by removing the silk from the cashew kernel. The peeling stage also serves as the first stage of the grading where whole kernels of all grades as well as broken kernels of all qualities including colour are sorted. This stage basically will involve the use of both manual and mechanised peeling methods.

f) Grading

Grading uses the combination of a cashew colour sorter machine and a manual approach by workers to classify cashew kernel sizes according to the size required by the export market. This process involves both mechanised and manual methods with a classification of the kernels into whole or broken kernels. At this stage, each of these grades (26, 24, 22, and 20) which are unpeeled, peeled as well as rotten kernels are classified and sorted separately. The Cashew Export and Promotion Council (CEPC) specifications are adopted for the grading of cashew kernels.

g) Packaging and Storage

After grading and fumigation, the kernels are packaged and stored in cartons according to grades and labelled for identification. The kernels are then conditioned for packing by maintaining a moisture content of 3.5 % – 4 %, which is ideal for packaging. The maintenance of the ideal moisture content is achieved by either drying or humidification to reach the required moisture content. Low moisture levels result in breakages after packaging, whereas high levels of moisture induce blockage or clamping of kernels after packaging.

Distribution and Export

The finished products which are unflavored cashew nut kernels of different calibres will be vacuum-packed into 21-kilogram boxes and shipped to Asia mostly Vietnam and Turkey using 20-foot containers. The distribution circuit will be between the factory, the local market and the international market. DAI has proposed an outlook of 15% of the cashew nut to be distributed and consumed locally, while the remaining 75% will be exported to the international markets.

Water Use Requirements

The water use requirement for the various operations of the proposed project is estimated at 100m³/day. Water required for all aspects of the factory operation including domestic and sanitary use in the facility will be sourced from a dedicated borehole to be drilled in the project site

Power Requirement

Power for the operation of the factory and the various sections in the facility will be supplied through a power generating set to be installed in the facility. Three (3) units of 500 KVA and two (2) units of 200 KVA generating sets are planned to be installed in the facility to provide the required power. This will be alternated at peak operation hours during the day and generation reduced at night for the essential units. The generators will be operated mainly on diesel and a 5,000 litres fuel storage tank is planned to be installed, similar to that of the Kankan factory, where DAI currently operates a 10,000 metric tons per annum Cashew Nut Processing Plant.

Workforce Requirements

Up to approximately 100 workers are expected to be engaged as part of the construction phase to cover the civil, mechanical and electrical engineering tasks. Furthermore, during the operational phase of the project, the workforce required for the proposed project shall be largely residents around the project location. This workforce will be made up of about 90% locals and about 10% foreign workers.

The project is expected to engage both permanent and casual workers (peak workforce) during the operational phase of the factory. The operational cycle of the processing plant will be continuous and to avoid overtime and ensure the continuity of work in the plant, the work will be organized in shifts, for instance, 3 teams will take turns every day with 8 hours of work per team. An estimated 500 individuals are expected to be engaged as a workforce for the project, out of which 15% will be male managers and 10% as female managers.

Casual workers

DAI will directly employ casual workers on a yearly contract basis to engage in various aspects of the project during the seasonal peak period of cashew processing. The majority of the workforce will be women, comprising about 80% (400 individuals) of the workforce. The women will be primarily engaged as casual workers during the project's peak period of cashew harvesting and processing. Payment will be made twice per month (i.e. after every two weeks) in cash. The payroll administrator will create a list of all workers to be paid and each worker will sign the sheet in front of their name upon receiving their salary. Payment to casual workers will be based on their output in each department.

Permanent workers

A permanent workforce comprising 20% of the total workforce will be engaged in the continuous operation of the factory. This permanent workforce will include the plant manager, process manager, plant maintenance supervisor, quality controller, database manager, and sort workshop supervisor. During the cashew off-peak period, the factory's operation will rely on its stocks accumulated during the cashew seasonal supplies. Consequently, the processing plant's operational cycle will continue uninterrupted.

Materials and Source

The Raw Cashew Nuts (RCN) for the cashew processing factory will be sourced from smallholder farmers and suppliers in the Boke region. The sourced cashew nuts will be bagged based on grades after harvest and sun drying, and then delivered to the factory using trucks. The daily input raw material requirement (raw cashew nut) for the cashew processing factory will be 32 tons /day with a 40 feet truck size for the 8-hours operation of the factory.

Decommissioning and Restoration Phase

At the expiration of the useful life of the project which is estimated at 99 years, adequate arrangements will be made to remove all movable assets. When the life span of the project comes to an end, the facility would be decommissioned and put off use. A decommissioning process or plan would be activated. Decommissioning activities will include equipment site securitisation, equipment clean-up, dismantlement of equipment and structures, as well as clean-up of site surfaces in line with applicable regulatory requirements.

Studies Undertaken

The information on the biophysical and socio-economic profile of the project area based on the available desktop information as well as a field visit to the project site and surroundings was carried out from the 2nd to 7th October and 20th to 21st December, 2022 by the Study Team from Richflood. Recognised specialists with relevant qualifications and experience in each discipline were appointed as part of the ESIA team. The studies completed and reported on as part of the ESIA, some of which included on-site sampling, are: Air quality assessment; Biodiversity (both on land and watercourses/ wetland areas); Noise; Surface water; Groundwater; and Socio-economic including Gender and Child Labour Assessment.

Methodology

In order to carry out a detailed assessment of the impacts on the surrounding environment, the study was undertaken at the micro-local level, i.e. within a 5km radius of the site. The decision for the buffer zone is based on project categorization, literature review of similar projects and qualitative

investigations undertaken with local communities and field assessment. Thus, the environmental and social study area has been defined to include the receiving environment of surrounding environmental components and communities upon which the Project may have an impact.

Sampling

A total of 8 water samples, consisting of two (2) surface water and six (6) groundwater samples were collected. The samples were analysed as per standard procedure/method given in Standard Method for Examination of Water and Wastewater Edition 22, published by the American Public Health Association (APHA). In addition, ambient environmental noise monitoring was undertaken at nine locations in and around the proposed site, while the soil samples were collected from a total eight (8) locations within the study area. Soil samples were collected using tools from a depth of 45 cm from the top soil surface. At each location, soil samples were collected from three spots and homogenized. The homogenized samples were collected following quartering technique and then packed in polythene plastic jars and sealed. The sealed samples were sent to the laboratory for analysis.

Land Use

The land use assessment was undertaken for the proposed cashew processing project. The result of the classification scheme indicates the natural and modified habitats makes up about 28%, Transformed (15%), Riparian forests (32%) and about 25% of the project AoI is covered by freshwater.

Biodiversity Assessment

The project site and surrounding area constitute a secondary forest following gradual ecological succession of natural environment from human anthropogenic activities including; harvesting of wood, deforestation and subsistent farming. The area comprises mainly of fallow agriculture stands of oil palm trees (*Elaeis guineensis*) and flora species such as; *Piliostigma*, *Combretum* and *Anthocleista* including herbs and grasses.

The detail species list assessed for the project area is as contained in the biodiversity study report in Appendix A. The project area is part of the Lower Guinea region with various tributaries of water bodies traversing the area. Within the project footprint, a fresh water stream traverses the area, about 50m away from the edge of the project boundary. The main water bodies within the Boke region include the River Rio Nuñez and Tinguilinta which flows north-west of the project area and empties into the Atlantic Ocean. The project site and surrounding AoI is drained by numerous perennial fresh water streams, considering the low lying vegetation of the area.

Five habitat types were delineated for the project footprint area and the associated AoI. The habitat types include: Riparian habitat, Agricultural Plantation, Fresh water, Transformed and Natural and Modified Habitats. A total of 37 plant species were observed during field survey. Plants were recorded across 21 families, with Caesalpinioideae having the highest proportion of species followed by Poaceae, Mimosoideae and Annonaceae. All of the species have at least one known secondary ecosystem service that it provides to the local community. The three main categories of ecosystem services are medicine, food source or construction materials.

As a large portion of the project area is covered with agricultural plantation and modified vegetation, rodent species were the predominant mammal species occurring in the area. Also, a total of forty-one (41) species of Avifauna were observed during the field assessment

Socio-economic and Health Conditions of the Study Area

The socio-economic and health assessment of the identified communities within the project's area of influence was conducted. The project Area of Influence was calculated based on those villages within a radius of approximately 5 km buffer around the project site. The identified area of influence around the project site includes: Kataba, Kataba Fula, Fodecontea, Madina Kareki, Tambobo, Tambouni and Tamaransi.

The outcome of all specialist study are reported in Chapter four (4) of the ESIA report, and the findings of these studies have been used to identify and rate the significance of the positive and negative impacts expected to result from the construction, operation and decommissioning of the Cashew Nut processing plant project. The specialist studies have also resulted in the recommendation of management measures which are captured in the Environmental and Social Management Plan that forms part of the ESIA.

Environmental and Social Management Plans/Framework

The environmental management framework allows for the identification of environmental and social impacts, the development of mitigation and / or management actions and the establishment of a structure to ensure the effective implementation and adaption of mitigation and management measures.

Air Quality Monitoring Plan

The key pollutants are recommended for monitoring at the project site. Monitoring should continue through construction, operation, and decommissioning. In addition to the ambient monitoring, it is recommended that a weather station be installed to assist with understanding the spatial dispersion of air pollution concentrations across the study area. Other management strategies are recommended in the Air Quality specialist study report (Appendix B).

Noise Monitoring and Management Plan

Significant noise impacts are expected on the community within 500m radius of the project. It is imperative for the DAI's Environmental Management Plan (EMP) to include a noise monitoring programme. Monitoring procedures and assessments will be subject to the provisions of the WBG / IFC guidelines.

Emergency Response Plan

The purpose of emergency procedures is to document, and test, the site's contingency plans that cover all potential accidents and incidents during both construction and operation. Specific emergency procedures are required during construction and operation and DAI has developed an Emergency Preparedness and Response Plan (EPRP) that outlines the procedures for response to accidents and incidents.

Waste Management Framework

This framework provides the overall guidance for a detailed, functional; Waste Management Plan (WMP) will be developed by DAI and must be implemented for the proposed operations on the site. The main objective of the waste management framework is WMP is to ensure proper and efficient management of waste so as to avoid impacts, and where impacts cannot be avoided, minimize the significance of the negative impacts associated with waste.

Environmental Monitoring Plan

This environmental monitoring plan considers the issues for which the Project's potential impacts, prior to mitigation, were significant. It aims to evaluate the efficiency of certain environmental measures and possibly to identify impacts which significance is different to those anticipated. An environmental monitoring plan will thus be implemented to enable regular monitoring of the Project's potential impacts, more specifically of ambient air quality, noise levels, liquid effluent, groundwater and soils. The results of these specific measures will be integrated into the environmental annual report of the Project.

Auditing and Management Reviews

The ESMP will be periodically audited and updated to ensure sustainability and continuous improvement throughout the Project, from detailed design phase to operational phase. It is a key component of all management systems, including ISO 14001 and OHSAS 18001.

Stakeholder Engagement

Following the Guinean regulations on environmental and social impact assessment as well as IFC performance standards, stakeholder engagement activities have been undertaken by Diaoune Agro Industrie SARL as part of the ESIA process for the proposed project. Stakeholder engagements

were undertaken in collaboration with the larger project socioeconomic impact assessment and meetings were held at various locations around the Project site between the 3rd and 6th of October and 20th to 21st December, 2022. The objectives of these engagements were to disclose project-related information and obtain issues and/or comments from the stakeholders. The stakeholder categories engaged include:

- Representatives of the Bureau Guinéen des Etudes et Evaluation Environmental (BGEEE)
- Representatives of local authorities, Boke
- Members of the host community.
- Traditional leaders;
- Representatives of local groups including youth and women groups;
- Representatives of Cashew farmers' cooperative society etc.

The Information dissemination will not be limited to the ESIA's and other regulatory processes, as DAI is committed to continuously providing its stakeholders with project-related information through the following proposed methods of engagement:

- Distribution of project documents (info leaflets);
- Emails, SMS and Social media platforms (WhatsApp messages etc);
- General community/Public meetings;
- Company website updates and information sharing;
- CSI reporting; and
- Using CRCs as a communication mechanism through which a Grievance Mechanism should be managed

Grievance Mechanism

This section provides an external Grievance Mechanism to be adopted and implemented by DAI. The establishment of a grievance management system is a widely accepted international best practice for the management of stakeholder interactions and social impacts. It is a requirement of the IFC Performance Standards and project lenders in this case DFC.

The Grievance Redress Mechanism provides a clear description of the formal process whereby stakeholders can submit a grievance or report an incident regarding the DAI project, through a defined process within a predictable timeframe and receive a response and a resolution (where possible) to the grievance.