

8.1 INTRODUCTION

This chapter introduces the Environmental and Social Management and Monitoring Plan (ESMMP) of ERANOVE project, developed as part of the Environmental and Social Impact Assessment (ESIA) of the project.

It compiles ESMP mitigation measures proposed to manage the potential impacts of the project (see Chapter 7 dealing with environmental, social, cumulative and ecosystem services impacts) and defines the implementation and monitoring methods of these measures. Thus, it should facilitate the management and monitoring by ERANOVE and subcontractors in construction and operation of the project.

The ESMMP was developed in line with the following applicable standards:

- The Ivorian regulations, especially the Environmental Code (Act No. 96-766 of 3 October 1996) and regulations thereunder, as well as under international conventions of which Ivory Coast is a party (as described in Chapter 2, legal and regulatory framework).
- International good practices for social and environmental management, in particular the requirements of the Environmental and Social Performance Standards of the International Finance Corporation (IFC).

8.2 STRUCTURE OF THE ESMMP

This ESMMP contains:

- The list of planned measures to avoid, reduce or offset environmental and social impacts of the project (Section 8.4, Impact Mitigation and Improvement Plan);
- Two sections presenting the specific environmental and social thematic management plans that will be developed in detail and implemented by project in the detailed design and project implementation phase (Section 8.5 and Section 8.6); and
- An implementation plan that defines the project's commitments in terms of roles and responsibilities, training program, environmental monitoring, social monitoring, and communication of its environmental and social performance.

8.3

RESPONSIBILITIES

As the main sponsor of the project, ATINKOU will have the final responsibility for the proper implementation of this ESMMP during all phases of the project for the plant. The State of Côte d'Ivoire, in charge of the construction of the transformer electrical substation and electrical transmission line, will be responsible for the implementation of ESMMP on these activities.

During the construction phase, ATINKOU, as project owner, will be responsible for the implementation of the measures directly incumbent on it or which are under the responsibility of the company in charge of the project management (Engineering, Procurement and Construction or EPC).

The development of detailed operational procedures required to meet its environmental and social commitments during construction of the project will be borne by the EPC for activities related to construction and ATINKOU for more general activities (eg stakeholder engagement).

ATINKOU ensures that the company and all EPC contractors are informed of the commitments of this ESMMP and they force themselves to adopt the necessary measures to incorporate these commitments in their own activities on the project.

8.4

IMPACT MITIGATION AND IMPROVEMENT PLAN

8.4.1

Approach to the development of mitigation and improvement plan

This plan compiles the mitigation and enhancement measures developed in Chapter 7, Impacts and Mitigation Measures of the ESIA report.

Mitigation measures were grouped according to themes, evaluation of impacts, and sequences of chapters of the ESIA, in Table 8.1, Table 8.2 and Table 8.3.

8.4.2

Means of verification and implementation

For each measurement are indicated:

- monitoring means;
- the implementation schedule;
- the entity and / or personnel responsible for the implementation;
- where applicable, an assessment of the cost of implementation.

Detailed information about the monitoring means, frequency and responsibilities are developed further in Section 8.8.4.

Table 8.1 Environmental Mitigation and Improvement Plan

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
Air Quality and Climate (AQ)								
CONSTRUCTION								
AQ1 - Construction activities (earthworks, piles, concrete slab, buildings, installations).	Dust emissions from work and vehicle traffic on unpaved surfaces.	<p>Implement a grievance management mechanism.</p> <p>Tracking the number of air quality complaints, identifying problem areas and resolving by reducing dust generated by construction work where needed.</p> <p>Implementing good construction practices, including:</p> <ul style="list-style-type: none"> • prioritize the use of asphalt roads wherever possible; • reduction of dust by water spraying on the dry season access road near residential areas; • speed limits for construction vehicles (maximum 30 km / h for heavy vehicles in populated areas); • prohibition of the movement of construction vehicles outside designated areas; • cover vehicles carrying dusty equipment;; • maintenance of vehicles and all construction equipment in a clean condition; • minimizing the storage of dusty material and remote location of populated areas; <p>no burning of cleared vegetation or waste (unless specifically authorized);</p> <ul style="list-style-type: none"> • installation of wind barriers around key construction areas. 	<p>Number, nature and location of dust emission complaints.</p> <p>Visual findings related to dustfall near runways and worksite areas during HSE site audits.</p>	<p>Registry of complaints.</p> <p>Report on site HSE audit</p>	Throughout the duration of works	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
AQ2 - Presence of transport vehicles / equipment transport and construction.	Emissions of PM10, PM2.5, NOx, NO2 and SO2 by vehicles and generators running on diesel.	<p>Educate subcontractors on use of construction equipment that meets international standards in terms of exhaust gas and their regular maintenance to ensure optimal combustion and limit emissions of pollutants (soot, unburned, NOx).</p> <p>Check the use of construction equipment that followed the regulatory technical visits by the service providers.</p> <p>Implementing good construction practices, including:</p> <ul style="list-style-type: none"> • speed limits for construction vehicles (max 30 km / h); • prohibition of the movement of construction vehicles outside designated areas; • maintaining vehicles and all construction equipment in good working order; and • travel management to reduce the movement of vehicles. 	<p>Provision of periodical motor technical visits.</p> <p>Percentage of vehicles that have undergone technical inspection or maintenance during the last 12 months. 80% goal</p>	Technical Visit report	<p>Upon drafting the tender to EPC.</p> <p>Throughout the duration of construction</p>	EPC	ATINKOU for the plant. State RCI for the substation and the line	Operating expenses, additional investment estimated at about € 10k / 6, 5

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
OPERATIONS								
AQ3 - Air emissions from the cooling system.	Emission of salt water droplets that may affect vegetation, soil quality and infrastructure.	Installation of drift eliminators that can reduce emissions to 0.0005% of the water flow.			Upon drafting the tender to EPC.	ATINKOU	ATINKOU	To be determined by Tractebel and the EPC.
AQ4 - Air Emissions of the plant	Emission of atmospheric pollutants PM10, CO, and NOx Emission of Greenhouse Gases	Implement an air quality monitoring program for the first 3 years of the operation phase to measure ongoing real NO2 and PM10 concentrations at the community level. Define an alert procedure in case of exceeding the air quality standards (public information, protection of sensitive persons). <ul style="list-style-type: none"> Continuous centralized monitoring of emissions from the GCC stack to ensure emission levels in accordance with facility specifications. Perform periodic maintenance of the installations to ensure their maintenance in good working order. Quantify the annual GHG emissions of the plant in accordance with international methodologies and best practices. 	Average annual ground concentrations of NO2. Emissions results at the chimney outlet (annual average equipment specifications). Consumption of fuel, grid electricity and refrigerant gases.	Report on emissions analysis	Throughout the operation phase, every 5 years except for the first two years.	ATINKOU	ATINKOU	Approximately € 200k (130m FCFA) per year over 3 years (purchase and operation of air quality measurement stations)

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
Noise and vibration (BR)								
CONSTRUCTION								
BRI - Construction activities (clearing, earthworks, dock and access path development, piles, concrete slab, buildings, installations).	Nosie emissions generated by construction activities.	<p>Implementation of good construction practices.</p> <ul style="list-style-type: none"> plan and promote the construction activities that are noisy and close to the receivers during the day; Avoid, as far as possible, noisy construction activities on the project site at night; install noisy project elements as far as possible from receivers (eg generators, storage and loading areas, etc.); and Implementation of a plan for monitoring noise emissions and ambient noise levels at the receivers near the plant site. Establishment of a grievance management system and follow-up of noise complaints to take additional action if necessary. 	<p>Number of observed deviations.</p> <p>Number of complaints about noise, location and repetition.</p>	Biannual report on nosie level measurements	<p>From the start of construction.</p> <p>Throughout the construction phase.</p>	EPC	ATINKOU for the plant. RCI for the substation and the line	Approximately € 10k (6.5 million CFA francs) per year (periodic measurements of noise levels)

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
BR2 - Presence of construction vehicles during construction	Noise emissions generated by traffic and the presence vehicles / transport and construction equipment.	<p>Construction machinery will be regularly maintained to minimize noise.</p> <p>Implementation of good construction practices, including:</p> <ul style="list-style-type: none"> • limit the use of construction and transport equipment at night in the vicinity of the receivers (eg at the quay of the CHEC and the northern half of the access road); • turn off machine horns during night time activities; • speed limits for construction vehicles (max 30 km / h for heavy vehicles in residential premises.) • prohibition of construction vehicles; • training drivers on good driving practices (ie avoid using the horn, smooth acceleration, etc ...); • taking into account the manufacturer's data for noise emissions for the selection of vehicles under lease procedures and / or outsourcing; • implementation of mitigation devices for noise emissions on trucks, where necessary and possible (eg exhaust silencer); • establishing a plan for monitoring ambient noise levels at the receivers near the access road; and 	Number, percentage, of vehicles that have been serviced.	Service Report for vehicles.	<p>From the start of construction.</p> <p>Throughout the construction phase.</p>	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.

		<ul style="list-style-type: none">• vehicle maintenance in good condition.• Establishment of a complaints management system to take additional measures if necessary.						
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Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
BR3 – River transport.	Noise emissions from the transport boats	Avoid operations at loading and unloading dock and river transport on Ebrié lagoon at night.	Field visit report		Throughout the construction phase	EPC	ATINKOU for the plant.	Not applicable

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
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OPERATIONS

BR4 – Noise emissions.	Noise emissions from the power plant operating on the nearest receptors.	<p>Conduct a measurement campaign the sound environment the first year operation of the plant in open cycle and the first year of operation in combined cycle, day and night at the relevant receptors to verify the actual exceedance of applicable standards.</p> <p>Plan a consultation with the rights holders two houses near the plant to consider:</p> <ul style="list-style-type: none"> • An improvement of homes to make them less prone to station noise; • Either a purchase of property and a relocation to a site less close to the plant (point to be treated under the RAP). 	<p>Results (dBA) of measuring campaign of noise emissions from equipment for affected receptors.</p> <p>Number and nature of sound-proofing measures</p>	Report on noise emission analysis	Upon putting the Plant in service	ATINKOU	ATINKOU	Allow approximately € 10k per measurement campaign;
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Living Environment and Landscape (CP)

CONSTRUCTION

CPI - Construction activities (clearing, earthworks, dock and access path development, piles, concrete slab, buildings, installations).	Presence of vehicles and construction machinery, and aesthetic impact on the landscape between the dock and the project site.	<p>Implementation of good construction practices.</p> <p>Minimize lighting.</p> <p>The sites will be restored at the end of work. In particular, all waste and unused material will be removed.</p> <p>The relief of the ground around the site should be returned to its baseline state (eg evacuation or replacement of excavated material).</p>	<p>Number of observed deviations.</p> <p>Approval of waste shipping slips</p>	<p>Audit Report.</p> <p>Waste Management Report.</p>	During the construction phase.	EPC	ATINKOU	<p>Operating costs.</p> <p><€ 10k (6.5 million CFA francs)</p>
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Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		Leveling of construction areas to avoid the effects of topography and soil erosion or turbid water runoff.	<ul style="list-style-type: none"> • volume; • kind; and • destination. 					
CP2 - Land use of the plant, associated infrastructure (road, dock).	Presence of facilities and project infrastructure and aesthetic impact on the landscape.	Implementation of good construction practices.	field visit report.		From the plant design phase.	EPC	ATINKOU	Operating costs.
CP3 - Development of the site and related infrastructure for the construction of the line, the gas line, and the water discharge pipe	Impacts on the landscape from clearing.	<p>The construction area will be reclaimed at the end of the work. In particular, any unused waste materials will be removed.</p> <p>Leveling areas of construction to avoid the effects on topography and soil erosion or turbid water runoff.</p>	Number of rehabilitated sites	field visit report.	At the end of the construction phase	EPC	ATINKOU	Operating costs
OPERATIONS								
CP5 - Waste generation	Presence and accumulation of waste impacting the landscape	<p>Implementation of Waste Management Plan based on hierarchy principle of waste management: reduce, reuse, recycle, recover, and finally disposal</p> <p>Conduct an inventory of waste and put in place a performance monitoring system</p>	Amount of waste produced (weight, volume, units) by category and monitoring of trends	Waste Management Report	During the operational phase	ATINKOU	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
CP6 - Presence of the electrical transmission line (pylon line) and water discharge pipe	Changing the landscape	Optimize track of the line to avoid the most populated areas (see Chapter 3).	-	-	From the design phase.	RCI	RCI	Operating costs

Soils (SO)

CONSTRUCTION

SO1 - Excavation, backfill, and land use of the plant, associated infrastructure (road, dock).	Soil deterioration in the areas occupied by the facilities and infrastructure of the project.	<p>Implementation of good construction practices:</p> <ul style="list-style-type: none"> ensure that imported backfill be inert and non-polluted; storage of cleared land for future use as fill or / and rehabilitation of temporary construction areas; and temporary rehabilitation disturbed areas as soon as possible once the work is completed. <p>If necessary, disposal of surplus land in a designated collection site.</p>	Surfaces rehabilitated (ha).	field visit report.	At the end of construction.	EPC.	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
SO2 - Waste production and waste water on the plant site.	Soil contamination caused by waste products and waste water (ordinary household waste, construction waste, chemical waste, and sewage	Implementation of Waste Management Plan based on hierarchy principle of waste management: reduce, reuse, recycle, recover, and finally disposal	Amount of waste produce (weight, volume, units) by category and monitoring of trends	Waste Management Report.	In the design phase and construction phase.	EPC	ATINKOU for the plant. RCI for the substation and line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<p>Monitoring the quality of wastewater for compliance with applicable standards.</p> <p>Ensure proper implementation of the measures in the project design (see Chapter 3):</p> <ul style="list-style-type: none"> • a sorting and storage area for construction waste will be developed; • A complete sanitary sewage collection system will be installed on site for the use of staff during the construction phase. Wastewater will be collected in a tank and treated prior to discharge; and • Hard surfaces will be drained and water treated by an oil separator before being discharged. 	<p>Results of water quality analysis</p> <p>Number of deviations observed</p>	Water quality analysis				
SO3 - Exceptional accidental event	Contamination of soils following a possible spill of oil or other dangerous substances	<p>Implementation of the measures outlined in the Hazardous Substance Management and Spill Response Plan, including:</p> <ul style="list-style-type: none"> • the design of all retention areas with sufficient capacity; • establishment of a program for the inspection and maintenance of storage areas (storage of oil and fuel, etc.) and fuel lines (eg inspection of the refueling supply station) 	Inspection daily	Field Visit report	In design and construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<ul style="list-style-type: none"> the provision spill control kits in areas where hazardous materials are handled (eg pollution absorbent kits: granules, carpet, etc.); procedures for the maintenance of machinery and mobile equipment for these activities to take place on impermeable surfaces under conditions allowing the recovery of oil; and procedures for the storage and processing of oils. <p>Solid fuel for mobile vehicles will be made to the refueling station that is equipped with a concrete surface and overflow gun.</p>						
SO4 - Construction machinery and transport vehicles	Soil compaction	<p>Prepare a traffic plan showing the traffic areas and sites</p> <p>Apply limits to load and speed for the roads</p>	Number of deviations observed	HSE Audit report for construction	During the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
SO5 - Clearing corridors for the gas pipeline, water discharge pipe, access roads and track layouts	<p>Impacts on wetland habitats and species of dependent flora and fauna.</p> <p>Risk of erosion.</p>	<p>Avoid clearing and development in swamp forests (critical habitats).</p> <p>Minimize the crossing (creation of access track, clearing of the corridor) of the shoal areas (if possible, bypass them).</p>	<p>Surface area of sensitive areas avoided</p> <p>Inventory of shoal areas</p>	Report of from field visit	From the design phase and during the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	<p>Operating costs Allow 20-30k € (13-20mFCFA) for detailed inventories prior to clearing.</p> <p>In case of need of compensation, budget to be evaluated within the framework of a specific study.</p>

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<p>When shoal crossing is necessary: first carry out a detailed inventory of flora and fauna to confirm the absence of endangered species on the IUCN route list; if such species are present, propose a compensation plan.</p> <p>Reduce as much as possible the clearing and disturbance of riparian vegetation.</p>						
<p>SO6 - Management of hazardous waste and products along the route of the line and the gas and water pipes</p> <p>Risk of accidental spill</p>	Contamination of soils following a possible spill of oil or other dangerous substances.	<p>The waste will be evacuated to the appropriate and approved disposal routes.</p> <p>Storage areas for hazardous products and wastes will be designed to prevent waste from being washed away and liquids from flowing to the ground (closed sealed containers, soil sealing, retention, etc.) .</p> <p>Storage of dangerous products, oils and fuels on retention (eg cans and drums on retention).</p> <p>Train staff in accident response procedures for hazardous materials.</p> <p>Provision of emergency response equipment on construction sites and equipment for spills of dangerous goods.</p> <p>Staff will be made aware of the need for good waste management at regular EHS points.</p>	<p>Quantity of waste produced</p> <p>Quantity of hazardous products stored on site</p> <p>Number of discrepancies and incidents noted</p> <p>Proportion of staff trained</p>	Report on HSE Site Audit	During the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
OPERATIONS								
SO7 - Air Emissions.	Emissions of salt water droplets coming out of cooling tower and impacting the immediate vicinity. This results in the accumulation of salt deposits in soil.	Installation of better droplet eliminator systems that can reduce emissions to 0.0005% of the water flow.	Site visit report		In design phase.	ANTINKOU	ATINKOU	Amount of investment to be confirmed by Tractebel / EPC.
SO8- Waste and wastewater generation at the plant site	<p>Soil contamination generated by the waste generated (ordinary and household waste, chemical waste and hydrocarbon).</p> <p>Wherever possible, all wastewater produced by the plant will be recycled. Non-recycled water will be treated on site and discharged into the Ebrié lagoon via a collection basin. The cleaning water of the TAG will be collected in a dedicated pit and treated externally. The water collected at the bottom of the chimney during the shutdown of the plant will be collected in a dedicated pit</p>	<p>Implementation of the Solid and Liquid Waste Management Plan according to the hierarchy principle of waste management: reduce, reuse, recycle, recover, final disposal.</p> <p>Establishment of a Wastewater Management Plan to ensure the proper implementation of the measures described in Chapter 3, Project Description, to recover all wastewater (service, cooling and rainfall on contaminated surfaces), to treat them, to reuse them as much as possible and to check their quality with regard to the norms applicable before their discharge in the lagoon.</p>	<p>Quantity (weight, volume, units) of waste produced by category and trend monitoring.</p> <p>Results of the analysis of wastewater.</p> <p>Number of observed discrepancies.</p>	<p>Waste management register.</p> <p>Water Quality Analysis Report.</p> <p>Audit report.</p>	In operations phase	ATINKOU	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
	and sent to the treatment plant. Rainwater loaded with oil will be stored in a buffer tank and sent to the deoiling unit. After 15 minutes of rain, the runoff water from the surfaces developed on the ground will be sent directly to the storm basin. In case of fire, the fire-fighting water will be sent to the de-oiling unit before being directed to the storm basin. Domestic wastewater will be collected separately and sent to the septic tank. Industrial water will be treated in a neutralization unit before being sent to the storm basin. The quality and flow of the water from each discharge source will be monitored continuously and must comply with local and international standards.							
SO9- Exceptional, Accidental Event	Contamination of soils following a possible spill of oil or other dangerous substances.	Implementation of the measures described in the Management Plan for Hazardous Substances and Responses to Spills, especially:	Number of observed discrepancies.	Monthly Audit Report	During the operation phase	ATINKOU	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<ul style="list-style-type: none"> the design of all retention areas with sufficient capacity; the establishment of a program for the inspection and maintenance of storage areas (aerial chemical tanks, storage of oil and fuel, etc.) and fuel lines; provision of spill kits at locations where hazardous materials are handled (eg oil spill kits: granules, carpets, etc.); procedures for the maintenance of machinery and fixed and mobile equipment for these activities to take place inside the workshops or under conditions allowing the recovery of contaminated oils and water; procedures for the storage and treatment of used oil; and Full fuel for mobile equipment will be provided at the refueling station, which has a concrete surface and overfill pistol. 						
SO10 – Management of hazardous products and waste during maintenance of the line and gas and water pipes.	Impact on quality of the soil	<p>Hazardous products and wastes should be managed to prevent the risk of soil or water pollution from runoff. The waste will be evacuated to the appropriate and approved disposal routes. Storage of dangerous products, oils and fuels on retention (eg cans and drums on retention). Train staff in spill response procedures.</p>	<p>Number of observed discrepancies. Proportion of personnel trained. Quantity of waste produced and disposed of by subcontractor</p>	Site HSE audit	During operation phase	ATINKOU	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
groundwater and surface waters (ES)								
CONSTRUCTION								
ES2 - Runoff of rainwater and discharge of domestic wastewater from workers' living site	Modification of the soil surface and surface water flow affects the quality of runoff water by soil erosion and possible hydrocarbon entrainment. Wastewater from the living site.	Implementation of good construction practices. Implementation of a Wastewater Management Plan to ensure the proper implementation of the measures described in Chapter 3, Description of the project (hard surface drainage, oil separator, complete sanitary system and water treatment waste). Monitoring the quality of the waste water to ensure compliance with applicable standards.	Monthly inspections.	Monthly inspection report Analysis of water quality	In design phase and during construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
ES3 - Transport on the lagoon (if necessary, to be confirmed in the context of the detailed engineering), risk of oil and fuel leakage.	Impact on the water quality in the canal and the lagoon	<p>Encourage the barge transport subcontractor to inspect the barge prior to its use in the project to ensure there are no oil and fuel leaks.</p> <p>To educate the subcontractor in charge of the barge transport so that it ensures the maintenance and good operating condition of the barge, carries out the inspections, repairs and necessary interventions (possibly to supervise with the selected carrier and to integrate in the clauses of the contract and the E & S monitoring program).</p>	<p>Regular inspections.</p> <p>Number of observed discrepancies.</p>	<p>Inspection Report</p> <p>Audit Report</p>	During the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
ES4- Oil spill risk	Accidental spill of hydrocarbons on site or following a transport barge accident (if transport on lagoon chosen by the project) resulting in groundwater pollution and / or surface water.	<p>Implementation of the measures described in the Management Plan for Hazardous Substances and Spill Response, including:</p> <ul style="list-style-type: none"> • measures described in SO9 to prevent soil pollution; • the measures described in ES3 for maintaining the barge in good working order, including navigation and communication systems; • measures to prevent accidents related to river traffic; and • emergency response measures in the event of a river accident to limit the worsening of the situation, bring the barge back to port if possible and limit water pollution. 	Statistics tracking incidents	Registry of incidents	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
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OPERATIONS

ES6 - Discharge of cooling water in the lagoon.	Impact on quality of surface water.	Implementation of a Wastewater Management Plan to ensure the proper implementation of the measures described in Chapter 3, Project Description, aimed at controlling the parameters of the discharge water in accordance with the applicable standards .	Modeling Results. Analysis results of the draining water	Modeling report. Analysis results of the draining water	In the operational phase.	ATINKOU	ATINKOU	Operating costs.
ES7 - Groundwater consumption by the plant	Impact on the quantity of groundwater by a drawdown of the watertable. Impact on groundwater quality due to saline intrusion when creating a cone of depression and / or lowering the water level of the water table below the level of the lagoon causing the intrusion water from the lagoon in the water table.	As part of the design study of the drilling of the site for its water supply, a more detailed evaluation will be carried out by ERANOVE of the impact of the pumping on the water table, and in particular the cone of drawdown and its effect on the surrounding boreholes. (if present). An analysis of the piezometric level of the groundwater and the quality of the groundwater will be carried out once a quarter to detect any alarming decrease of the water level any potential contamination caused by the project. In the event of an impact on the quantity (lowering of the water table) or quality (eg saline intrusion), the Project will evaluate the possibilities of reducing water consumption and / or alternative sources (p. eg desalinated seawater). If groundwater pollution is identified, authorities and communities should be informed and measures taken to eliminate the source of the impact and manage impacted sites.	Results of groundwater analyses	Report on groundwater analyses	From the design phase of the project. During the entire operation phase.	ATINKOU	ATINKOU	About 10 k € (659570 FCFA) per year for the monitoring of water quality.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
ES8 – Wastewater discharge	Impact on the quality of surface water.	<p>Establishment of a Wastewater Management Plan to ensure the proper implementation of the measures described in Chapter 3, Project Description, to treat all discharged service water and contaminated stormwater to be controlled water discharge parameters continuously and to ensure compliance with applicable standards.</p> <p>The results of the monitoring of the quality of the discharged water will be communicated periodically to the authorities (CIAPOL) and will be made available during follow-up audits.</p> <p>In case of non-compliance of certain parameters additional measures will be taken.</p>	Results of wastewater analysis	Analysis report on wastewater	<p>In design phase</p> <p>During the entire operation phase</p>	ATINKOU	ATINKOU	Provide about 10k € (6.5mFCFA) per year for monitoring the quality of surface water.
ES9 – Waste generation	Contamination of surface water generated by the waste produced (ordinary and household waste, chemical and hydrocarbon waste).	<p>Implementation of the Waste Management Plan according to the hierarchy principle of waste management: reduce, reuse, recycle, recover, final disposal.</p> <p>Establishment of a Wastewater Management Plan to ensure the proper implementation of the measures described in Chapter 3, Project Description, to recover all wastewater (cleaning, service, cooling and rains on contaminated surfaces), to treat them, to pre-use them as far as possible, to check their quality with regard to the norms applicable before their rejection in the canal and to treat them externally if necessary</p>	<p>Quantity (weight, volume, units) of waste produced by category and trend monitoring.</p> <p>Shipping slips and approvals of waste treatment companies.</p> <p>Result of industrial wastewater analyses.</p>	<p>Waste management register.</p> <p>Industrial Wastewater Analysis Report.</p>	In the operations phase	ATINKOU	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
ES10 - Accidental oil spill	Risk of groundwater pollution	Implementation of the measures described in the Hazardous Materials Management Plan and Response to Spill: see SO9.	Results of incident tracking program	Incident registry	Operation phase	ATINKOU	ATINKOU	Operating costs
	Risk of surface water pollution							
SS11 - Exceptional accidental event (eg transport accident, hydrocarbon fuel leakage, fires, explosions, natural disaster etc.).	Risk of groundwater pollution	Implementation of the measures described in Management Plan for Hazardous Substances and Spill Response, including: see SO9. Development and implementation of a Emergency Prevention and Response Plan. On the basis of an identification of all possible emergencies, this plan will define the preventive measures, the intervention and reporting procedures to be followed in case of emergency or natural disaster	Results of incident tracking program results program	Incident registry	Operation phase	ATINKOU	ATINKOU	Operating costs
	Risk of surface water pollution							
ES12 - Consumption of groundwater by the operational town	Impact on the quantity of groundwater by depletion of the aquifer and risk of saline intrusion if the level of the aquifer falls below sea level and creates a cone of depression at the well. creation of a cone depression level well.	See ES7 measures.	See ES7.		Throughout the operation of the living area and operational town	ATINKOU		See ES7.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
ES13 - Discharge of previously treated domestic sewage and runoff from the site into the lagoon.	Impact on quality of surface water.	See ES8 measures.	Results of wastewater analysis	Results of wastewater analysis	When designing the living area Throughout the operation phase of the living area	ATINKOU	ATINKOU	See ES8
terrestrial biodiversity (BT)								
CONSTRUCTION								
BT1	Uncertainties regarding the sensitivity of natural environments and species in the Project area, particularly with regard to the presence (or not) of the West African chimpanzee and certain amphibians	Deepen the knowledge of the Project area, in order to refine critical habitat analysis (as per IFC Performance Standard No. 6) in the area, and develop (where appropriate) an action plan for biodiversity (BAP), consistent with the expected level of impact of the Project, and compatible with the conservation issues of the sensitivities of the natural environment and the requirements of Performance Standard n ° 6	Study findings	Study findings validated as part of the due diligence carried out by the Project in consultation with the donors.	Rapid study of chimpanzee research: February / March 2019. In-depth study on critical habitats: later, based on the results of the rapid survey.	ERANOVE	ERANOVE	Up to 10 million FCFA depending on the level of detail of the studies
BT2 - Clearing of the site of the plant and the management of water discharges, work areas during construction.	Loss of natural natural habitats useful for terrestrial biodiversity (habitat, food). Risk of destruction and collision of small wildlife.	Avoid sensitive areas to avoid impact directly (including bypassing the swamp forest located in the route of rejection towards the lagoon) Limit the clearing area to a minimum with only one access to the site. Prohibit any access of Project personnel to natural areas outside the site, especially areas of swamp forest. Prohibition of any purchase of bushmeat and any hunting or disturbance of flora and fauna by Project personnel.	Daily inspections. Number of observed deviations	Field visit. Audit report	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the plant	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<p>Clearing to be done according to a precise plan of clearing favoring the escape of the fauna (from the inside to the outside).</p> <p>Use a reduced level of illumination whenever possible. Limit lighting upwards to near and above the horizon as far as possible (see CP1).</p> <p>Speed limit of construction machinery and trucks at 30km / h.</p> <p>Revegetation in the clearing area of the water discharge pipe.</p> <p>See other measures AQ1, AQ2, BR2 and BR2 to mitigate the impact on air quality and the sound environment.</p>						
BT3 - Clearing of the line corridor, access roads and track layouts	As above	<p>Choice of power line route to avoid the most sensitive habitats (swamp forest, raffia palm grove).</p> <p>No crossing habitat considered critical for the purposes of the performance standard 6 IFC.</p> <p>Commitment not to establish channels of access or pylons in shoal area (thus limiting the effect of the overhang grip height of the power line, without disruption to the floor).</p> <p>Avoid clearing facilities and access routes at the marsh area (critical habitat).</p>	Daily inspections. Number of deviations.	Field visit. Report audit.	During the construction phase.	EPC	ATINKOU for the plant. State RCI for the position and the line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<p>Minimize the crossing (creation of access path, clearing the corridor) of wetland habitats (shoal area).</p> <p>Minimize clearing and disruption to riparian vegetation and large isolated trees.</p> <p>Prior demarcating of clearing areas.</p> <p>Avoid clearing outside the demarcated areas.</p> <p>Apply a clearing plan from the center building corridor to the outside to facilitate the escape of wildlife.</p>						
BT4 - Construction activities (earthworks, piling, concrete slab, buildings, facilities).	Noise light and air emissions from construction activities, vehicles and associated facilities. Risk of collision with wildlife.	<p>Speed limit on construction machinery and trucks at 30km / h.</p> <p>Use a reduced level of illumination whenever possible. Limit lighting upwards to near and above the horizon as far as possible (see CP1).</p> <p>See other measures AQ1, AQ2, BR2 to mitigate the impact on air quality and the sound environment.</p>	Daily inspections. Number of deviations.	Field visit. Audit report.	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
BT5 - Presence of labor and housing of workers.	Disturbance of wildlife due to noise emissions, human presence and removal of valuable space for biodiversity.	<p>Awareness of the workforce to the preservation of wildlife.</p> <p>Develop environmental best practices within the company.</p>	Number and hours of training.	Training report with attendance list.	During the construction phase.	EPC	ATINKOU for the plant. RCI for substation and line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		Communication of rules on the attitude to be adopted with respect to biodiversity (prohibition to hunt, kill or deliberately harm an animal species present on the site, encourage the escape of fauna encountered before the start of work, prohibition of dispose of waste in the wild, prohibition of exotic species on the site, prohibition of the use of herbicides or selection of the least environmentally harmful herbicides, take preventive measures against accidental ignition of vegetation , reduce the risk of collision, etc.).						

OPERATIONS

BT6 - Construction and use of an operational town.	<p>Footprint of town causing removal of useful spaces for terrestrial biodiversity (habitat, food).</p> <p>Risk of destruction, collision and disturbance of small wildlife through construction activities</p>	<p>Site selection for the town avoiding any sensitive habitat.</p> <p>Development of the necessary additional studies and obtaining planning and construction permits.</p> <p>If developed on a natural area, conduct an assessment of the impact of this project on biodiversity.</p> <p>See measurements BT1, BT2, BT3.</p>	Number of additional studies completed	Reports from additional studies	In the design phase and the operational phase	ATINKOU	ATINKOU	Up to about 100k € (65mFCFA) for additional studies if needed.
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Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
BT7 -Presence of the infrastructure of the line (pylons and cables)	Risk of collision and electrocution of birds.	<p>In accordance with the EHS guidelines of the World Bank for power lines:</p> <ul style="list-style-type: none"> • maintain a spacing of at least 1.5 m between drivers; • maintain a spacing of at least 1.5 m between conductors earthed elements, and when this is not possible, isolate energized parts and earthed elements. • install signaling devices on guard cables (eg balls, flappers, spirals). <p>Integrate these design measures contract with the EPC</p> <p>Maintain these devices periodically.</p>	<p>Mileage of the line parallel to an existing or planned line on the total length of the line</p> <p>Mileage of line equipped with system of protection / visibility on total length of the line</p> <p>Mileage of line traveled per year</p> <p>Number of bird carcasses collected</p>	<p>Detailed design plans</p> <p>Invoice for the purchase and installation of signaling equipment</p>	During the construction and operation phases	EPC	ATINKOU	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
ecosystem services								
OPERATIONS								
Wastewater discharge from the plant.	food supply service: fish stock reduction after a disturbance ecology of the lagoon due to wastewater discharge from the plant.	<p>Consultations with fishermen in the operational phase to assess their perception of the impact of the plant on their activities.</p> <p>Conducting measurements of the quality and biophysical characteristics of the water near the discharge points and at a distance of 200 m in the lagoon for comparison.</p>	<p>Number of consultations.</p> <p>Results of analysis of canal water.</p>	<p>Number of consultations.</p> <p>Results of analysis of canal water.</p>	In the operational phase.	ATINKOU	ATINKOU	Operating costs.
Consumption of groundwater by the power plant.	Water Supply Service : Reduction of the quantity and quality of groundwater in case of overconsumption of water by the project and / or saline intrusion into the water table.	If there is a known reduction in the availability or quality of groundwater for local populations, additional mitigation or compensation measures are in place	Number of complaints from the people.	Verification from authority DGPPE.	In the operational phase.	ATINKOU	ATINKOU	To confirm if any.

Table 8.2 Social Impact Mitigation and Improvement Plan

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
Local governance, demography, and social dynamics (DG)								
CONSTRUCTION								
GD1 - acquisition of land for the power plant	Loss of legitimacy for local authorities following the acquisition of land by the project.	<p>Compensation for the loss of customary rights (Decree No. 2014-25) in accordance with the law.</p> <p>Incorporate a representative village committee and the Ministry of Construction into the land acquisition and customary rights compensation process, in accordance with the law.</p> <p>Develop and implement a functional Grievance Mechanism, accessible to all and widely communicated throughout the life of the project.</p>	<p>Nature, value, and affected persons from the waiving of customary rights.</p> <p>Number of grievances related to land acquisition.</p>	Complete record of negotiation	Before the start of work	ATINKOU for the plant. RCI for substation and line	ATINKOU for the plant. RCI for substation and line	Waiving customary rights 2000FCFA / m ² (see Decree No. 2014-25).

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
GD2 – Presence of labor and housing of workers.	<p>Changing the traditional family.</p> <p>Increased tensions and possible social conflicts between the workforce of the project housed in the living area and the local communities in the area</p> <p>Loss of legitimacy of local authorities as a result of the population's concerns about the presence of labor and population growth.</p>	<p>Integrate local people into the Stakeholder Engagement Plan by developing a transparent and regular dialogue during the construction and operation phase.</p> <p>Assign the part-time role of Community Liaison Officer to a company employee who will act as a bridge between the Project and the local communities.</p> <p>Develop and implement a functional Grievance Mechanism, accessible to all and widely communicated throughout the life of the project.</p> <p>Development of a Code of Conduct, a Drug Use Policy, rules for the use of the living area and access to external communities, and awareness of the importance of adopting culturally appropriate behaviors interactions with the local community.</p> <p>Avoid hiring at the entrance to the plant. Set up a recruitment and information center at Abidjan and Jacquville and not at Taboth. Communicate clearly and widely on manpower requirements, required qualifications and recruitment procedures.</p>	<p>Quality updating of the Stakeholder Engagement Plan</p> <p>FTE acting as a Community Liaison Officer</p> <p>Code and written policies</p> <p>Number and nature of communications on hiring procedures during the construction phase.</p>	Report on the Code of Conduct	<p>Before the construction of the plant</p> <p>Before the start of construction</p>	<p>ATINKOU for the power plant. RCI for the substation and the line</p> <p>EPC</p>	<p>ATINKOU for the power plant. RCI for the substation and the line</p> <p>ANDE</p>	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
		<p>Development of a Code of Conduct, Usage of Narcotics Policy rule of use of the basic life and access external communities</p> <p>Awareness of workers importance of adopting the culturally appropriate behavior when interacting with the community local.</p> <p>Avoid hiring at the entrance of the plant.</p> <p>Install a recruitment center Information at Abidjan Jacqueville and not at Taboth.</p> <p>Communicate clearly and widely on the need for labor, the qualification requirements and procedures recruitment.</p>	<p>Code and policies written.</p> <p>Number and nature of communications the procedures hiring. In phase construction.</p>	Report of code of conduct.	From the start Works.	EPC	ATINKOU for the Central. State RCI for the post and line	Operating costs.

OPERATIONS

GD3 - Presence of workers and their families.	Inequality, tension and social conflicts possible between workforce of the project housed in the living area, and local communities in the area.	See GD2	See GD2		In the operational phase.	ATINKOU for the plant. RCI for the substation and the line	ATINKOU for the plant. RCI for the substation and the line	See GD2
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Mobility and Transport (MT)

CONSTRUCTION

MT1 - Redevelopment of the runway between the unloading dock	Reduced access to this track and crossing possibilities during the duration of the work	Provide crossing areas to ensure the safe passage of pedestrians.	Number of pedestrian crossings. Length of the pedestrian band.	Field visit report	During the design and redevelopment of the runway.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
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Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
and the power plant, and vehicle traffic		<p>Ensure the respect of vehicle speed limits (30km / h on track for construction vehicles).</p> <p>Maintain the free passage on a pedestrian strip of 1m wide all along the track during its construction.</p> <p>Develop and implement a functional Grievance Mechanism, accessible to all and widely communicated throughout the life of the project.</p>	Number of complaints regarding the loss of mobility.					
MT2 - Presence of vehicles / transport and construction equipment on the public road in the industrial zone of Vridi or N'djem at the exit of the Jacquville bridge if the alternative is chosen	Increase in the density of traffic and degradation of the public road near the Port of Abidjan (including Blvd de Vridi and Petit Bassam) if the point C is chosen as loading dock (see Chapter 3)	<p>Favor platform B (see Chapter 3) for unloading.</p> <p>If platform C is selected, ensure that the total load meets the deck capacity at point 2.</p>	Number of truck loading controls	Truck Load Management registry	Operating phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
MT3 – River Transport	Increase in river traffic and disruption of the passage of boats for the transport of equipment and building materials: imported equipment will cross the Vridi Canal and construction materials and will be transported by barge from the port of Abidjan to Taboth	Respect the rules of navigation in the lagoon, near the port and in the canal.	Number/nature of incidents	Registry of incidents	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
Welfare, health and safety (BS)								
CONSTRUCTION								
BS1 - Construction activities (clearing, earthworks, piling, concrete slab, buildings, facilities).	<p>Risk of accident related to the possible presence of people external to the construction site.</p> <p>Noise emitted by construction activities and equipment present on site.</p> <p>Emissions of particulate matter and combustion fumes from work and vehicular traffic on unpaved surfaces.</p> <p>Changing the landscape and the living environment.</p>	<p>Close construction areas before work begins and control entry to the site.</p> <p>Implement additional measures for repeated complaints about noise and air quality in construction activities.</p> <p>Assign the part-time Community Liaison Officer role to a company employee who will act as a bridge between the project and the local communities and escalate potential traffic and construction related complaints.</p> <p>See measures AQ1, BR1, CP1, CP2.</p>	<p>FTE as Community liaison officer</p> <p>Number of complaints associated with disturbances caused by the work</p> <p>See measures AQ1, BR1, CP1, CP2</p>	Complaint management registry	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
BS2 - Presence of vehicles / transport and construction equipment..	<p>Risk of accident with the users of the track.</p> <p>Emissions of PM10, PM2.5, NOx, NO2 and SO2 and greenhouse gases from diesel powered vehicles and generators.</p> <p>Noise from vehicles and construction machinery on the runway and public roads.</p>	<p>Implement additional measures in case of repeated complaints about noise and air quality of transport activities.</p> <p>Assign the part-time Community Liaison Officer role to a company employee who will act as a bridge between the project and the local communities and escalate potential traffic and construction related complaints.</p>	FTE as Community liaison officer	Complaint management registry	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
BS3 - Presence of the labor force	Workers' interaction with the local population: risk of social unrest and risk of transmission of sexually transmitted diseases	<p>Development of a Code of Conduct, a Narcotic Drugs Use Policy, rules for the use of the life base and access to external communities, and awareness of the importance of adopting culturally appropriate behaviors interactions with the local community.</p> <p>Awareness of workers on STDs, on the prohibition of prostitution of minors. Information on the means of HIV testing.</p>	Number of hours of training, awareness workshops	<p>Training report with attendance list.</p> <p>Field visit report</p>	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs
BS4 - Presence of the labor force	Risk of non-compliance with certain workers' rights, working conditions that do not comply with applicable standards and accidents at work.	<p>Development and implementation of a Hygiene, Health and Safety Management Plan (see Chapter 8) which will detail in particular the different risks at work, procedures and measures to reduce these risks.</p> <p>Development and implementation of a Emergency Prevention and Response Plan (see Chapter 8) which will define in particular the measures to be implemented to ensure the safety of employees in the event of a major accident.</p> <p>Ensure the presence of an infirmary and emergency evacuation service at the project site.</p> <p>Ensure working conditions and workers' rights in accordance with local regulations and IFC's PS2 and ILO standards. Indicate these conditions and rights in the EPC's HR policy and employment contracts and communicate this information to employees.</p> <p>Develop living area and procedures within the living area in accordance with the IFC Standards and Procedures for Housing Workers (2009).</p>	<p>Number and nature of incidents, work accidents</p> <p>Number of hours of training and training workshops on the rights of workers</p> <p>Daily inspections and number of observed discrepancies</p> <p>Number and nature of complaints from employees</p>	<p>Record of incidents</p> <p>Training report with attendance list.</p>	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
BS5 - Exceptional accidental event	Risk of accident, bodily injury, equipment or environmental pollution in the event of an exceptional accidental event of the construction activities (shipping accident, loss of cargo, explosion, fire, fuel leakage, etc.).	See measures SO3, ES4. Ensure the proper management (depollution, containment etc. depending on the nature of the problem) of soils and groundwater possibly contaminated following an exceptional accidental event at the plant.	Number of analyses Number of recorded accidents.	Analysis report Accident registry	In the construction phase	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
OPERATIONS								
BS7 - Noise emissions.	Impact on the well-being and health of the local population related to noise emissions from the power plant in operation (chimneys, boilers, turbines, cooling systems).	See BR4 measures. Provide consultation with rights holders of two houses near the plant to consider: <ul style="list-style-type: none"> An improvement of homes to make them less prone to station noise; A repurchase of ownership and relocation to a site less close to the plant (RAP issue). 	Results of noise measurements at the receivers and equipment. Number of complaints about the sound environment.	Report measures the sound level. Registry nt The sound recording complaints.	In the operational phase.	ATINKOU	ATINKOU	Operating costs.
BS9 - exceptional accidental event.	Risk of accident, personal injury, equipment or environmental pollution in the event of an exceptional accident (explosion, fire, fuel leakage, etc.).	See measures SO6, ES11, ES12. Ensure the good management (depollution, containment etc. depending on the nature of the problem) of soils and groundwater possibly contaminated following an exceptional accidental event related to construction and transport activities.	See SO6, SS11, SS12. Amount of compensation or remediation work.	Analysis report. Trading Report.	In the operational phase.	ATINKOU	ATINKOU	Operating costs.
Access and use of natural resources (AU)								
CONSTRUCTION								
AU1 - Land use of the plant, associated infrastructure (road, dock).	Loss of access to natural resources at the plant site and along the runway	See GD1 measures.	See GD1 measures.		In the construction phase.	ATINKOU for the plant. RCI for the substation and the line	ATINKOU for the plant. RCI for the substation and the line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
AU2 - Land use of the power line	Loss of access to natural resources in the corridor of the power line that will be cleared	See GD1 measures.	See GD1 measures.		During the construction phase.	ATINKOU for the plant. RCI for the substation and the line	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
AU3 - Dust emissions from construction activities.	Reduced vegetation production due to dust accumulation among plants	See AQ1 measures.	Number of Complaints about loss of agricultural production	Register of recorded complaints	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
AU4 - Presence of vehicles and construction machinery on the access road.	Risk of cattle colliding on pasture or crossing along the access trail	See MT1 measures. Limit disposal areas as far as possible along the runway during development. Prohibit the passage of gear and clearing outside the construction area to ensure the maintenance of the grassy area located on both sides of the track. Rehabilitate temporary construction areas along the runway for grass growth after the work Financial compensation for livestock collision leading to serious injury or death of livestock.	Number of complaints regarding access to pasture areas. Number of incidents / accidents with livestock.	Register of recorded complaints	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
AU5 - Presence of labor force and housing of workers	Increased pressure on natural resources for self-consumption and income generation generated by work force and the flow of migrants into the area in search of employment.	Prohibit the collection of forest products (berries, fruits, medicinal plants, etc.) labor project.	Number of training hours / workshops Number of liters of water distributed daily to workers	Training report	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.

OPERATIONS

AU8 – Consumption of groundwater	Impact on groundwater quantity due to over-consumption of water and drawdown of water table. Impact on water quality due to saline intrusion when creating a cone of depression and / or lowering the water level of the water table below the level of the lagoon or the sea causing the intrusion of water from the lagoon, canal or sea into the aquifer.	See SS7 measures	Results of groundwater analysis	Report on groundwater analysis	From the design phase of the project. During the entire operation phase.	ATINKOU	ATINKOU	Approximately € 10k (6,5mFCFA) / year
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Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
AU9 - Land occupation by the operational town	Loss of access to natural resources possibly present on the site of the town (fodder for livestock, small firewood, food and medicinal plants, palm oil, fruit trees, cultivable area, etc.).	Developing the necessary additional studies and obtaining of the urban permits and construction. If necessary (eg if development of the town on a virgin site), take into account the impacts of the town. See measures GD1 and AU1.	Results of the study. See GD1 and AU1.	Report on the study	In the design phase of the operational town	ATINKOU	ATINKOU	Operating costs. Approx. 100,000 €
AU10 - Discharge of cooling water into the lagoon	Disturbance of the lagoon ecological environment at the outlet of the discharge pipe, and impact on the fishery resource	Fishermen operating in the zone of influence of the thermal plume will be identified as part of the Resettlement Action Plan (RAP) developed by the BNEDT or as part of a complementary study if necessary.	Results of the study.	Report on the study	During the development of the Resettlement Action Plan (RAP)	ATINKOU	ATINKOU	Operating costs
Jobs and economic activities (EA)								
CONSTRUCTION								
EA1 - Presence of labor, worker housing and migration.	Generating economic opportunities for local communities, especially small businesses and services (workers and households). Job creation at local and national level. Increase in the supply of building materials and consumer goods needed at the living area	Integration of an "employment and local content" section in the call for tenders for EPCs and calls for tenders in general. Put in place a recruitment policy that promotes local employment. Give preference at the local level for the procurement of goods and services.	Financial criterion and weight of the "local content" section in the selection of the EPC Percentage of locally recruited employees. Amounts of domestic purchases vs. International.	EPC tender	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
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OPERATIONS

EA2 - Presence of workers and their families.	See EA1.	See EA1.	See EA1.		In the operational phase.	ATINKOU	ATINKOU	See EA1.
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Basic infrastructure and services (IS)

CONSTRUCTION

IS1 - Presence of labor and housing of workers.	Migrant flows in the area seeking employment generating additional pressures on basic infrastructure and services, particularly housing, surface water, schools, health posts and sanitation.	Measures to limit the flow of migration seeking employment in the Project area: <ul style="list-style-type: none"> • avoid hiring at the entrance of the plant; • install a recruitment and information center in Abidjan and Jacqueline rather than at the project area; and • communicate clearly about the need for labor, the required qualifications and recruitment procedures. 	Number and nature communication on procedures for recruitment	Audit report	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
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OPERATIONS

Project Component	Description of the impact	Reduction measures	Indicator	Verification Source	Implementation Calendar	Responsible for implementation	Responsible for monitoring	Estimated cost
IS2 - Presence of workers and their families.	About 70 employees and their families will be housed in a living area near the site of the power plant	Ensure the provision of social infrastructure, education and health in the living area, if required.		Field observation	In phase Design for the operational town	ATINKOU	ATINKOU	To be defined by during design phase

Cultural Heritage (PC)

CONSTRUCTION

PC1 - Clearing of the site and work areas during construction	Physical deterioration of tangible heritage sites, deterioration of conditions of access or modification of the environment and the framework of places and associated moral damages for communities.	<p>As part of the RAP, identify the sacred sites present in the Project's right-of-way and proceed with the compensation or relocation of these sites in consultation with the local communities according to a procedure agreed with them.</p> <p>Develop and implement an incidental findings procedure to ensure that unsung or suspected sites are discovered on time and managed appropriately. Identify and assess the sensitivity of sacred sites in the vicinity of the project site.</p> <p>Integrate respect for cultural heritage and the procedures associated with the induction training of workers and visitors.</p>	<p>Inventory cultural sites (number of sites).</p> <p>Number of accidental discoveries.</p> <p>Percentage of employees trained.</p>	<p>Inventory report.</p> <p>Attendance list for training.</p>	During the construction phase.	EPC	ATINKOU for the plant. RCI for the substation and the line	Operating costs.
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Table 8.3 Cumulative Impacts Mitigation and Improvement Plan

Description of the impact	Reduction measures	indicators	Source of verification	Implementation calendar	Responsible for implementation	Responsible for monitoring	estimated cost
Extension of the Central ERANOVE							
Impact on air quality following the additional air emissions (see AQ4 and AQ5)	Where appropriate, development of an ESIA and modeling of the combined impact of current and future emissions on air quality to ensure compliance with applicable standards.	Results of the modelling/ air quality standards	Findings of the modelling	Design phase of the extension	ATINKOU	ATINKOU	Allow about 30 k € on the air quality and noise aspects, in the framework of the realization of the EIES of a new extension (19,6mFCFA).
Impact on air quality following the emissions of additional salt water droplets	If applicable, development of a ESIA and evaluation of the impact of accumulation of salt water droplets on the environment. Installation of better droplet eliminator systems on future installations that can reduce emissions to 0.0005% of the water flow.	Results ESIA.	Report ESIA.				
Impact on sound environment linked To the new facilities noise emissions (see BR4).	Where appropriate, development of an ESIA and modeling of the combined impact of current and future emissions on sound environment to ensure compliance with applicable standards. If necessary, implementing measures to mitigate the noise to ensure compliance of extension project with any applicable standards.	Modelling results / Noise exposure standards.					
Increased groundwater consumption may reduce the	If applicable, as part of the ESIA for eventual expansion, assess the	Results of the ESIA					

Description of the impact	Reduction measures	indicators	Source of verification	Implementation calendar	Responsible for implementation	Responsible for monitoring	estimated cost
quantity and quality of water available (see SS7).	<p>water availability (including the risk of falling groundwater levels and create a cone of depression) and a possible reduction in the amount of available water and saline intrusion.</p> <p>Depending on the outcome of the assessment, consider the possibility of a service water supply from Lake bakre.</p> <p>The eventual extraction of water from the sacred lake will be the subject of prior consultations regarding its sacredness and possible mitigations.</p>						
Increased discharge rates for service and cooling wastewater that may result in degradation of surface water quality (see ES6, ES8).	Implementation of measures similar to those proposed in ES8.	Inclusion in the ESIA.					
Job creation and economic activity (see EA 1 and EA2).	Implementation of measures similar to those proposed in EA 1 and EA2.	Inclusion in the ESIA.					
Grand Abidjan Project							
Impact on the physical environment leading to a deterioration in air quality, sound environment and the living environment and landscape (see QA BR and PC).	<p>Provision of social and environmental data collected as part of the ESIA and follow-up studies.</p> <p>Share with prospective developers and the authorities good environmental practices implementations in the project ERANOVE.</p>	Number and nature of exchanges	Report of the exchange	At each stage of development.	ATINKOU	ATINKOU	Operating costs - Integrated education costs related studies at the Grand Abidjan project.
Impact on the biological environment causing the disappearance of the fauna and existing flora of the area fished (See BT).							

Description of the impact	Reduction measures	indicators	Source of verification	Implementation calendar	Responsible for implementation	Responsible for monitoring	estimated cost
Increased groundwater consumption (see SS7).	Realization by the authorities of Greater Abidjan of a strategic impact study of the project, leading to the definition of measures relating to the protection of public health and the environment within the framework of the project.						
Increased rates of discharge of wastewater into the canal and the lagoon and degradation of the ecology of the lagoon (see SS6, SS8, EC6, EC7).							
Modification of local governance and social dynamics following labor immigration and induced changes in the social composition and demographic structure of the project area (see DG).	Share with the future developers and the competent authorities the good practices and mitigations implemented within the framework of the Project.						
Modification of well-being and health in the project area related to a change of living environment and landscape and an improvement of social and health infrastructures (see BS).	Share with future developers the feedback from engagement with project stakeholders and the functionality of the grievance mechanism.						
Changing the tenure and customary use rights (see OF).	Share with future developers the importance of integrating into the process of land acquisition and compensation of customary rights a village committee representative and recognized by all, to ensure transparency and shared enjoyment of compensation..						
Reduced access to natural resources through the occupation of the industrial area on the ground (see AU).	Share with future developers the importance of the lands of the Project area for access to natural resources and feedback from the development of a Livelihoods Restoration Plan.						

Description of the impact	Reduction measures	indicators	Source of verification	Implementation calendar	Responsible for implementation	Responsible for monitoring	estimated cost
Increased employment and economic activity (see EA)	Share with the future developers the feedback of measures favoring employment and local supply.						
Improving infrastructure and basic services (see SI).	<p>Share with future developers the importance of integrating into the process of land acquisition and compensation of customary rights a village committee representative and recognized by all, to ensure transparency and shared enjoyment of compensation.</p> <p>Communicate on the merits of promoting compensation for loss of customary rights (Decree No. 2014-25) in the form of community infrastructure preferably.</p>						

8.5 **SPECIFIC ENVIRONMENTAL MANAGEMENT PLANS**

The ESMMMP relies on is based on specific environmental management procedures that will be detailed by the contractor, ERANOVE, and then the subsidiary ATINKOU in the implementation phase of the project. These Specific Management Plans (SMP) are defined in the following sections. For environmental, SMP are:

- Biodiversity Management Plan;
- Air Quality Management Plan;
- Noise Management Plan;
- Water Management Plan;
- Electromagnetic Field Management Plan
- Waste Management Plan;
- Transportation Management Plan;
- Hazardous Materials Management Plan;
- Emergency Prevention and Response Plan; and
- Traffic Management Plan.

All these plans will be developed by the EPC and approved ATINKOU or RCI for the construction phase. ATINKOU or RCI will be in charge of developing the plans for the operations phase.

Specific social management plans are discussed in Section 8.6.

8.5.1 ***Biodiversity Management Plan***

Guiding principles

The Biodiversity Management Plan (BMP) will:

- protect natural environments, terrestrial and aquatic flora and fauna;
- limit disturbance of natural habitat resulting from Project activities;
- address the protection of threatened, sensitive and protected species by implementing specific measures to protect the biodiversity, critical habitats and habitats of certain IUCN Red List plant species as critically endangered or endangered; national and international level; and
- develop sustainable management practices for habitat improvement

This plan will be based on impact management approach (in order of decreasing preference) AVOID - REDUCE - OFFSET. It will include, among others:

- refinement of the assessment of sensitive habitats, including critical habitats as defined by IFC Performance Standard No. 6, together with a Biodiversity Action Plan to compensate for this; any impact of the project on critical habitats.

- a description of the natural habitats and the location of the most sensitive habitats identified in the Project ESIA;
- identification of species of conservation interest and the location of their potential presence along the line according to the habitat type;
- a detailed description of the avoidance, mitigation and monitoring measures proposed by the Project;
- section on the risks of collision and electrocution of birds. Species of birdlife of conservation interest and species at greatest risk of electrocution will be identified. The most at-risk sections related to the presence and behaviors of birds will be identified and the measures implemented in the design of the line will be described in detail (eg differences between drivers, design of towers, insulation, visual indicators, etc.). ;
- budget and planning for implementation

Table 8.4 Principles applicable to the Biodiversity Management Plan

Aspect	Management Principles
Avoiding sensitive areas and minimizing the physical footprint of the Project in sensitive and natural habitats.	<ul style="list-style-type: none"> • Mapping of sensitive natural areas near the Project. • Avoidance measures (eg plan for bypassing sensitive areas, location of construction of bridges or culverts, etc.). • Work planning to locate access, storage, and other activities in areas of low ecological value. • Minimize as much as possible the width of the construction corridor and the necessary temporary areas.. • Establishment of a work permit in sensitive areas that provides for; <ul style="list-style-type: none"> ○ the limitation of working areas with signs, barriers or enclosures; ○ a ban on access to pedestrians and vehicles to areas outside the planned construction areas; and ○ bushfire prevention measures.
Management of erosion and impacts on rivers and soils	<ul style="list-style-type: none"> • Integrate the procedures laid down in the water management plan to minimize the impact on surface water, soil and groundwater (measures and good anti-erosion practices, management of hazardous products, effluents and waste etc.) • Limit earthworks in the dry season period • limit work in the river beds.
Develop environmental best practices within the company	<ul style="list-style-type: none"> • Education of workers and local communities on biodiversity and species susceptible to preserve. • Prohibit Project personnel from hunting, killing or deliberately harming any animal species on the site. • Respect of the waste management plan • If herbicides were to be used, the less harmful to the environment would be selected • Communicate and train employees and subcontractors on these good practices, including: production and distribution of brochures explaining the importance of animal welfare and the means to implement and adapt HSE induction.
monitoring works	<ul style="list-style-type: none"> • Supervision of work in sensitive habitats by an ecologist.

Aspect	Principle Management
Rehabilitation of temporary areas work	<ul style="list-style-type: none"> • Rehabilitation of temporary construction areas; storage and reuse of soils for revegetation of disturbed areas.
Monitor and manage the impacts	<ul style="list-style-type: none"> • Monitoring of mortality of birds along the line, at minimum on risk areas identified. • Adapt and / or update procedures as necessary. • Resources and responsibilities for the implementation of the necessary procedures and changes based on monitoring results.

Additional studies provided by ERANOVE to refine the analysis of the sensitivity of habitats

At the time of finalizing this report (February 2019), ERANOVE is preparing the launch of a rapid study to identify the presence or absence of chimpanzees in the Project area of influence, notably by looking for direct signs (visual contact Cree) or indirect (excrement, footprints, food debris ...) presence of chimpanzees in swamp forests located in the northern part of the study area, and the shallows to the east of the Project site.

This study will be led by an Ivorian expert in primate studies, experienced in the study of *Pan troglodytes verus* in swamp forest habitats of Côte d'Ivoire.

The terms of reference of this study are as follows (*source: ERANOVE*)

Box 8.5

Terms of reference for the rapid biodiversity study planned by ERANOVE in February / March 2019

Specific objectives :

- 1- Determine nest density and abundance of the West African chimpanzee (*Pan troglodytes verus*) in the area where the future thermal power station will be located.
- 2- Determine the distribution of the West African chimpanzee in the zone of implantation of the future power station.
- 3- Know the diversity and conservation status of medium and large mammals in the area where the future thermal power station will be located.
- 4- Propose mitigation or wildlife management measures in the area where the future thermal power station will be located.

Methodology of work

Given the size of the study area and the limited time frame for this study, three methods of data collection will be used: reconnaissance surveys, camera trapping and animal counting and their indices. presence on linear transects.

Reconnaissance surveys: It is a matter of walking in the study area following predetermined routes that may however deviate from the defined axis using, if necessary, a path of least resistance. This method has the advantage of allowing the team to move faster in the study area and thus cover more space for a short period of time, while having minimal impact on the environment. In particular, the inventory team will walk along the existing runway in the study area by counting all direct observations and animal presence indices.

Camera trapping: The camera traps that will be used are passive infrared systems, Model Trophy Camera HD brown model 119676 of the brand Bushnell. A total of 10 camera traps will be installed for 5-6 days. The minimum distance between two traps will be approximately 300m. The orientation of the camera will then be chosen according to the indices indicating the presence or passage of animals. We will mainly target regularly used paths, feeding or watering sites.

Counting chimpanzee nests, other animal indices, and other observations on linear transects:

A systematic device will be used for the positioning of linear transects in the study area. In this study, a transect will be a 500m virtual line that will be scanned for animals (chimpanzees, monkeys and other mammals) and their presence indices (nests, droppings, fingerprints, vocalizations, etc.).

For chimpanzee nests, any observations will be followed by measuring the perpendicular distance from the nest to the transect line using a decameter and a compass. The reliability of nest counting on linear transects for animal density estimates is based on useful application conditions for both the data collection phase and the analysis phase.

Analysis and statistical processing of data:

Nest Density and Chimpanzee Abundance: To estimate chimpanzee nest densities, analyzes will be done using the Distance 7.2 program (Buckland et al., 2001). Nest density will be converted to chimpanzee density then in abundance of individuals of this great monkey by using conversion factors including rates of degradation and nest production of the Tai National Park; Kouakou et al. 2009).

Distribution of West African chimpanzee: The geographical coordinates of chimpanzee occurrence indices (droppings, nests, footprints, food scraps, vocalizations and others) and the geographical positions where individuals will be observed will be taken into account to achieve the distribution maps of the chimpanzee in the area where the future thermal power station will be located

Mammalian Wildlife Diversity: Photographic and recce trapping data will be used to determine the species richness and relative abundance of species in the study area. The species richness is the number of species photographed at least once during the entire period of activity of the photographic traps.

The relative abundance (ratio of the number of individuals of a species to all individuals photographed on the study site) will be calculated according to the following formula: $Ar = (n_i / N) \times 100$ With Ar: Relative Abundance ; n: number of individuals of species i and N: total number of individuals identified.

Following this study, ERANOVE will be able to:

- Update critical habitats of the analysis based on the results of the study;
- Consider additional studies, if such studies seem necessary in view of the rapid study - note that additional studies may involve other species than Pan troglodytes verus, including amphibians potentially present in the area;
- Launch the implementation of a Biodiversity Action Plan to offset the impacts of the Project on sensitive natural environments, in line with the requirements of IFC Performance Standard No. 6. This would include (see box below):
- An impact avoidance plan;

- A plan for monitoring the natural habitats and species concerned, so that the impacts can be monitored over time, and provide for additional corrective measures, if necessary;
- A compensation plan for non avoided impacts, to generate a "Net gain" (positive impact) in terms of preserving natural habitats and species concerned by the impact, if required by the implementation of measures to support the preservation of these habitats and species outside the area the influence of the Project.

Box 8.6

Content of the Biodiversity Action Plan to be carried out if the presence of species triggering the denomination "critical habitats" is confirmed

A Biodiversity Action Plan (BAP) is required for projects located in critical habitats and is recommended for high risk projects located in natural habitats. The BAP describes (i) all actions and the strategy of the Project intended to achieve a net gain (or avoid any net loss); ii) an approach demonstrating how the hierarchy of mitigation measures will be followed; and iii) the roles and responsibilities of internal staff and external partners. BAPs are "living" documents that must include a review schedule, be updated as new information emerges, the project progresses, and the context of biodiversity conservation evolves in the future.

time. [...] A BAP is different from a biodiversity management plan in that it is an operational document developed largely for the attention of site managers and subcontractors; while almost always the BAP will include actions concerning off-site areas (eg clearing areas, additional actions) and involve external partners (eg partners responsible for the implementation of the actions, the review, or counselors). [...]

source: Extract from the IFC Guidance Note on IFC PS 6 (methodological note on Performance Standard 6), November 15, 2018, downloaded from <https://www.ifc.org> February 20, 2019, translated by ERM.

8.5.2

The Air Quality Management Plan

The air quality management plan will cover:

- The management of dust induced by construction work; and
- managing air emissions and greenhouse gas (GHG) emissions from the plant.

The air quality management plan will include in particular:

- identifying sensitive receptors and areas where the air quality is to be particularly monitored and controlled;
- the definition of objectives for control of air emissions by the various project activities;
- defining measures and procedures for:

- limiting air emissions by the various project activities; and
- limiting the impact of these emissions on the air quality at the receivers;
- the definition of a procedure for monitoring emissions and air quality monitoring; and
- the definition of responsibilities and resources for the implementation of these procedures.

The plan will also address emissions of greenhouse gases (GHGs) in the operational phase by promoting energy efficiency. It will come with a carbon footprint of direct emissions (Scope 1) and indirect (Scope 2) emissions according to project components and activities and define a GHG emissions reduction plan.

The air quality management plan will be developed according to the principles listed in Table 8.7.

Board 8.7 *Principles applicable to the air quality management plan*

Aspect	Principle Management
Monitor and manage air emissions from the plant.	<ul style="list-style-type: none"> • • monitor emission levels and the quality of ambient air at the chimneys and receptor zones; • adapt and / or update procedures, as required; • as part of the project, ensuring the purchase and replacement of equipment and gear conform to the standard Tier II USEPA for NOx emissions; • define the resources and responsibilities for the implementation of these procedures and the necessary changes based on monitoring results; and • implement a complaints mechanism for stakeholders to file complaints about the quality of the air and allowing the project to identify problem areas and to seek a solution.

Aspect	Principle Management
Reducing air emissions and dust.	<ul style="list-style-type: none"> • reduce dust generated when necessary by the construction of the access road and the plant site; • sprinkling of water, possibly with stabilizing additive as required; • reduce dust emissions by using the proper equipment when necessary; • limiting truck speeds at sensitive areas to prevent excessive emissions in these areas; and • ensure that all equipment, vehicles and equipment are maintained in good condition.
Reducing greenhouse gas emissions.	<ul style="list-style-type: none"> • development of an inventory of direct greenhouse gas emissions by the power plant (Scope 1, see Box 8.1) • Always implement a substitution principle and improve energy efficiency; • properly manage waste and avoid incineration; and • Conduct awareness training and define best practices to limit energy consumption and cooling of buildings by Project employees at all levels of activity (driving behavior, cooling needs of personal homes and living spaces). living together, etc.).

8.5.3

Noise Management Plan

The purpose of the noise management plan is to integrate noise management in IFMP that is part of the IFC's EHS regulations and guidelines. It concerns:

- the noise generated by all project construction activities, particularly to the nearest receptor locations (eg at the loading dock and the access road); and
- by plant equipment during operation.

People living close to the project, especially the residents of Taboth may undergo an increase in noise levels which must be managed.

The noise management plan will be developed based on the results of the ESIA and will include the following, in particular:

- identification of project activities and places in which noise-related impacts are anticipated;
- an identification of sensitive receivers and where the sound is to be particularly controlled;

- the definition of standards of noise exposure and the conditions of their updating;
- defining measures and procedures, in order of preference: reduce noise emissions, lower noise levels at receptors, receptors relocation if necessary;
- defining a noise monitoring procedure at the receivers; and
- the definition of responsibilities and resources for the implementation of these procedures.

The noise management plan will be developed according to the principles contained in Table 8.8.

Board 8.8 *Principles applicable to noise monitoring plan*

Aspect	Principle Management
Integrating environmental aspects into decision-making procedures and procurement.	<ul style="list-style-type: none"> • develop a procurement process which includes requirements on the environment in bidding to prioritize the purchase of equipment and vehicles with the lowest levels of noise emissions; • require in tendering the facilities of the plant meet the noise limits defined in the ESIA; and • require in tenders that all mobile and fixed equipment generates less than 85 dBA at one meter away. All equipment generating over 85 dBA at one meter must be enclosed.
Noise Management.	<ul style="list-style-type: none"> • maintain equipment in good working condition; • set up a complaint handling mechanism to collect any noise complaints; • consider the noise structures built at the plant or receptors (formwork, wall, curtain tree) the magnitude of which will depend on the noise level and receiver sensitivity; and • consider moving receptors located in areas where noise levels are higher than the standards.

Aspect	Principle Management
Monitor and manage the impacts.	<ul style="list-style-type: none"> • Monitoring the noise at the points of transmission and at the receptor level areas; • adapt and / or update the procedures and mitigation, as required; • define the resources and responsibilities for the implementation of these procedures and the necessary changes based on monitoring results; and • identify and track noise-related complaints from the Through the project the complaints management mechanism, monitor levels if necessary and seek solutions.

8.5.4 *Water Management Plan*

Guiding principles

The purpose of this management plan is to integrate in the ESMMP the conservation of soil and water resources that are part of the IFC's EHS regulations and standards, and inherent in the development of the project

The plan will cover:

- water consumption by the project; and
- the protection of soil, surface water and groundwater.

The water management plan will include:

- provisions for monitoring and reducing water consumption to be implemented for each phase of the project;
- the definition of measures to minimize the impact of water drainage from the site of the surfaces;
- provisions for drainage of rainwater from the project areas during the operation phase;
- identification of wastewater discharges, their nature and the means of treatment or disposal implemented;
- defining discharge standards different wastewater and monitoring program of the quality of discharged water;
- spill prevention and response plans for spills to minimize potential impacts on soil and water in case of oil spill including; and
- the results of monitoring the quality of discharged water.

The water management plan will be developed according to the principles listed in Table 8.9.

Table 8.9 *Principles applicable to the Water Management Plan*

Aspect	Principle Management
Reduction of water consumption.	<ul style="list-style-type: none"> • monitoring water consumption and identification of abnormally high consumption episodes to detect possible leaks and identify corrective measures; and • monitoring of groundwater level sinks.
Managing stormwater.	<ul style="list-style-type: none"> • designing water runoff management systems to limit erosion, runoff and discharge the storm water and be able to settle the suspended solids; and • provide where necessary the separation of oil and water treatment systems (eg. filter plant and non-plant blankets including mulches and stone aggregates, the limiting slopes, control structures runoff, sedimentation tanks of the first storm water, an oil / water separator, etc.).
Sanitation system.	<ul style="list-style-type: none"> • develop a project of the wastewater sanitation system; • foresee the installation of a separator of water / oil connected to a water processing unit during operation; and • monitoring the quality of water discharged to ensure compliance with applicable standards.
Management of hazardous products, effluents and waste in order to prevent the infiltration of pollutants into surface water and groundwater.	<ul style="list-style-type: none"> • implement a substitution principle: replace hazardous products with an equivalent product less dangerous to the extent possible; • integrating measures in terms of management of hazardous substances and response to spills; • storage and handling of the products: use of detention with recovery of drips and spills for storage and unloading of dangerous goods and for refueling activities, cleaning and maintenance; • ensure liquid fuel tanks have the proper maintenance; • avoid installing buried tank for the storage of hydrocarbons or other avoid the installation of buried tanks for the storage of hydrocarbons or other dangerous products. In case of installation of underground tanks, provide for periodic maintenance and their removal in case of leaks; • Storage of hazardous materials will be designed and constructed to provide adequate containment and protection of leaks to prevent any impact on the environment. Each tank will be located on the containment with adequate methods of leak detection; • Hazardous product networks (supply lines, connecting pipes) will be regularly inspected by qualified employees and an inspection report will be prepared; and • Employees will be trained in good practices for storing and handling products and maintenance to prevent risks associated with hazardous products.

Managing impacts associated with the discharge in the lagoon

The modeling studies carried out by the Project to date show a very limited impact of cooling water discharge in lagoon. This rejection does not appear to have a significant impact on the lagoon ecosystem or fishing resources. Nevertheless, the project will ensure the proper monitoring of project impacts in the lagoon, including through consultation with local fishermen as part of the Project's stakeholder engagement plan, and propose mitigation measures for the project. the impact of the rejection and accompaniment of the affected people in the event of a negative impact on fishing in the lagoon environment.

Managing impacts associated with pumping groundwater

At the time of writing this report (February 2019), ERANOVE is preparing drilling and well testing to assess the capacity of the underlying aquifer (Continental Terminal system) to supply the project of water of sufficient quality, in sufficient quantity.

Well testing will include an analysis of aquifer productivity as well as groundwater quality (salinity etc.).

ERANOVE will use the results of these well tests to refine the assessment of the Project's potential impacts on groundwater resources, taking into account the following parameters:

- Groundwater drawdown effects to be anticipated due to abstraction of groundwater;
- Risk of saline intrusion due to the presence of the ocean south of the Project area;
- Potential impacts of pumping on water availability and quality to riparian users of the site, including domestic wells and boreholes. This assessment will be supported by a comprehensive inventory of groundwater uses in the area of influence of the pumping station

8.5.5 *EMF Management Plan*

The Electromagnetic Field (EMF) Management Plan will aim to manage the exposure of the public to EMF. To do so, it will establish the maximum exposure standards in agreement with the latest recommendations of international bodies (eg ICNIRP). Mitigation measures to ensure compliance with this standard will be defined.

Mapping identifying habitat areas in the immediate vicinity of the line will be established. The exposure of these populations will be monitored periodically. If necessary, households will be displaced in accordance with the principles set out in the IFC's Resettlement and Livelihoods Recovery Plan and PS 5.

An information program for the affected communities will be implemented to raise awareness of the health risks of EMF exposure and to inform them about the prohibition to build within the line corridor.

8.5.6 *Waste Management Plan*

Waste management will comply with waste regulations, IFC standards, and good waste management practices.

Good waste management is an operational process, to be implemented and continuously improved on the basis of feedback. This continuous improvement will not be limited to the evaluation of waste treatment and disposal channels, but will also focus on the use of technical solutions for waste reduction at the source

Table 8.10 *Principles applicable for waste management plan*

Aspect	Principle Management
Inventory management.	<ul style="list-style-type: none"> • the waste management system will be updated to identify the consumer products, to guarantee the traceability of the waste stored and disposed of and identify waste and overconsumption; • an inventory of all waste generated, removed and disposed will be required (type and volume); and • in the operating phase, the project will establish targets for reducing the amount of waste generated from one year to the next, according to a periodic review of inventories.

Aspect	Principle Management
Management and segregation of waste.	<ul style="list-style-type: none"> • waste will be managed and stored according to their type and their risk classification in accordance with hygiene and safety regulations and management plan for hazardous substances and prevention of spills; • for each component of the project, a central waste accumulation area (CWAA) will be used for storing waste. Compatible waste will be stored together; • areas of CWAA used to store hazardous waste will be covered and the ground will be sealed. Liquid waste storage units and dangerous will be equipped with retention systems; • the CWAA will be closed and only authorized personnel have the right to access the site; and • the CWAA be well maintained, clean, waste separated by type and risk classification, to limit the risk of pollution, fire and explosion, and the proliferation of vermin.
Final disposal of waste	<ul style="list-style-type: none"> • Recyclable waste will be collected regularly for recycling by recycling companies as appropriate. The waste collection contracts concluded with these companies will be confirmed after verification of the acceptability of their practices in terms of environmental management, hygiene and safety; • If there are no recycling companies at the local or regional level, the Project will seek national or international companies or develop waste recycling, recovery, treatment or disposal facilities in accordance with best practices. Of the industry ; • all hazardous and non-combustible wastes will be adequately treated in the country or exported abroad for treatment and final disposal. The export of waste for disposal outside the borders will meet the demands of the Basel Convention on the Control of Transboundary Movement of Wastes and Hazardous Substances; • potentially infectious waste will be placed in dedicated labeled containers for disposal to a specialized center for incineration in a dedicated incinerator; and • no waste will be burned in the open air.
Transportation of waste from the site.	<ul style="list-style-type: none"> • when the waste is sent off-site, suitable transport vehicles will be used (if necessary using a service provider) to comply with the rules to ensure that the loads are safe, properly labeled and traceable; and • the transport vehicles used will be equipped with devices to react in the event of an accidental spill.
cumulative impact.	<ul style="list-style-type: none"> • monitoring of waste management to ensure saturation of the facility; and • the waste management plan will describe possible alternatives to the local installation, in order to anticipate any saturation.

8.5.7 *Transportation Management Plan*

This section describes the principles for the development of a road and river transport management process, particularly associated with the following project phases:

Construction :

- transportation of construction materials and construction machinery;
- personnel transport ; and
- on-site routing of locally procured products and materials in the periphery of the project area.

Operations:

- Delivery of technical supplies, chemicals, spare parts, equipment / tools used in the facilities work to the project area;
- fuel ;
- maintenance equipment; and
- personal transport.

Table 8.11 Principles applicable to Transportation Management Plan

Aspect	Principle Management
State of public roads used by project vehicles..	<ul style="list-style-type: none"> • the regulations applicable to the transport of personnel or goods will be reviewed to form a basis for regulatory compliance of transport, in particular in terms of maximum permissible axle load according to the type of routes used; • project-specific road preservation measures will be applied, including: <ul style="list-style-type: none"> • compliance with statutory thresholds for maximum permissible axle loads; • respect of the speed limits of the Project on roads and tracks; • transport of construction machinery using platform trailers; • of drivers to conduct respectful of the state of roads and highways; and • It may be necessary to improve certain sections of roads or tracks, in consultation with the public authorities.

Aspect	Principle Management
Air emissions associated with cars and traffic trucks.	<ul style="list-style-type: none"> project vehicles will comply with the Ivorian regulations.
Traffic construction equipment.	<ul style="list-style-type: none"> security measures will be implemented to ensure the safety of users, in particular: <ul style="list-style-type: none"> signaling heavy vehicles traveling on public roads (use of flashing signs and signs); Supervision of large volume loads by escort vehicles (opening and closing the convoy); limitation of weight and volume of loads to ensure stability on the road; and Coordination with local authorities to agree on routes to be used and when, safety measures to be applied and intervention and coordination measures to be implemented in the event of an incident. ATINKOU and its subcontractors will ensure, as far as possible, that the loadings of the vehicles are optimized, if necessary, by dividing them between different operators in order to limit the number of vehicles to be mobilized.
River transport	<p>Measures and procedures will be established to ensure the safe transportation of equipment and gear by boat between the port and the unloading dock, including:</p> <ul style="list-style-type: none"> communicate with port authorities to define the navigation plans, communication measures, security and response procedures in case of accident. conduct an inspection of the barge before being used in the project in order to ensure no leakage of oil and fuel; and conduct regular inspections and required maintenance.
Waste transportation.	<p>The waste, whether hazardous or not, will be transported in accordance with the waste management procedures, taking into account the regulations and good practices for packaging, labeling and transport of waste.</p>
Parking on public roads.	<p>The vehicles, including trucks, parked on public roads or in populated areas, must be parked safely and do not obstruct the public highway.</p>
Training.	<ul style="list-style-type: none"> a driver training will be provided to employees and contracted equipment operators and vehicles to ensure compliance with traffic laws and to ensure the safety of personnel and third parties; verification that only personnel who received training in road safety and reaches the required level of competence, are entitled to drive gear and project vehicles; and Furthermore, all drivers will receive (at a minimum): <ul style="list-style-type: none"> specific training in their type of vehicle; and a safety training to ensure the safety of users outside of the road (eg pedestrians, farmers taking the road to move their agricultural equipment, shepherds crossing the road with their animals).

Aspect	Principle Management
Procedures in case of an accident.	In the event of a traffic accident involving one of the project vehicles, the person in charge of supervising the activity will inform the emergency services as soon as possible. Outside the public highway, the emergency services of the project will be mobilized while on public roads, it will be public emergency services. Details of the incident or accident will be recorded in an accident report

8.5.8 *Hazardous substance management and response plan for spills*

Accidental phenomena may lead to various environmental impacts such as uncontrolled spills of hydrocarbons, chemicals or other hazardous wastes, particularly in the case of:

- leak or crack of the tank or heavy fuel container;
- leak from a collection network;
- accident on treatment facilities, during the operating phase, resulting in a spill of hydrocarbons, sludge or possibly contaminated water into the natural environment; and
- traffic accident involving damage to a tank of diesel or heavy fuel oil.

An industrial site like this also poses a fire risk. A spill emergency plan and a fire emergency plan will be applied. These plans will organize a systematic, rapid and effective response to any type of emergency, fire, accident or discharge of water polluted by oil, or any other dangerous substance, to reduce / treat any potential damage to the natural environment and property. materials.

The emergency plan in the event of a spill must provide for the immediate containment of any spill and rapid clean-up of any deteriorated area.

This plan will define the roles and responsibilities of employees and contractors as part of the response to an accidental spill or fire. The location of intervention equipment and the contact details of duly trained employees must be clearly displayed.

A spill or fire emergency plan will include training and awareness, and will specify requirements for ongoing staff training and the organization of periodic exercises, as well as requirements for the frequency of checks and activities. maintenance of intervention resources.

These procedures will be subject to periodic audits and reviews to remain relevant and operational throughout the life of the project

8.5.9 *Risk and Hazard Management Plan*

The potential risks relating to the construction, operation and dismantling of the CIPREL V power plant can be divided into two distinct categories:

- occupational hazards; and
- industrial risks.

These two categories are defined in the sections below. The principles to follow for developing an emergency measures plan are also presented.

8.5.9.1 *Occupational Hazards*

The objective of the occupational risk assessment is to improve safety and working conditions and is used to plan preventive actions.

Occupational risks are at the origin of occupational diseases and accidents at work (AT)

- An occupational disease is defined as a manifestation or a condition which is the consequence of a more or less prolonged exposure to a risk and which can lead to injuries or even death of the worker.
- A work accident is a sudden event which can cause bodily harm or even death of a worker.

The starting point of the occupational risk prevention approach is the assessment of these risks. This assessment consists of identifying the risks, then prioritizing them and planning the appropriate prevention actions for each of the risks identified. This prioritization is a function of the frequency of occurrence and the severity of the damage caused.

The approach is structured as follows:

- carry out an inventory of work units (positions, trades or workplace);
- identify the risks per work unit: make an inventory of the properties intrinsic to the equipment, substances, work methods, etc. which could cause damage to the health of employees;
- Classify the risks: note the risks according to their level of severity and frequency in order to prioritize them and prioritize preventive actions;

- propose preventive actions: these actions must make it possible to reduce the risk (by influencing the severity and frequency of the risks identified).

Risk identification is based on feedback from experience (accidents and occupational diseases occurring within the sector of activity concerned), regulations (labor code and related texts) and visits to similar sites.

The different activities of the plant construction and operation project as well as the risks to which personnel may be exposed are identified in Table 8.12. This is a preliminary identification which should be refined and completed before the start of activities. In addition, it is an iterative process intended to be renewed and updated, in particular during the operating phase.

Table 8.12 *Inventories of project activities and related potential occupational hazards*

phases	activities	post or personnel exposed	occupational hazards
construction phase (construction and demolition)	Earthworks (manual or mechanical)	Personnel performing work, machine operator or personnel on site	<ul style="list-style-type: none"> - Risks associated with the use of earth-moving equipment - Risks associated with the use of hand tools - Risks related to manual handling - Risks related to repeated motions - Risks related to falls on same level - Noise hazards - work-related risks in hot weather
	routing equipment to the site by trucks and cranes	Drivers or personnel on site	<ul style="list-style-type: none"> - road risk - Risks associated with the use of handling equipment - Risks falling objects - work-related risks in hot weather
	Unloading equipment	Personnel performing work	<ul style="list-style-type: none"> - Risks related to the use of machines - Risks related to mechanical handling - Risks related to manual handling and repetitive movements - Risks falling objects - work-related risks in hot weather
	Welding	Personnel performing work	<ul style="list-style-type: none"> - Risks related to repeated motions - burns

phases	activities	post or personnel exposed	occupational hazards
	Installation of equipment (mechanical or manual)	Personnel performing work or machine operator	<ul style="list-style-type: none"> - Risks related to the use of machines - Risks related to mechanical handling - Risks related to manual handling and repetitive movements - Risks related to falls: height, walk-in - Noise hazards - electrical hazard
Operation phase	Operation installations	Staff working at the plant operation	<ul style="list-style-type: none"> - Risks related to falls on one level - screen on workplace hazards - electrical hazard
	Maintenance of facilities	Staff performing plant maintenance	<ul style="list-style-type: none"> - Noise hazards - electrical hazard - Risks related to falls: height, walk-in
	Monitoring systems	Staff performing plant maintenance	<ul style="list-style-type: none"> - Noise hazards - electrical hazard - Risks related to falls: height, walk-in
	Administrative work	Administrative staff	<ul style="list-style-type: none"> - Risks related to falls on one level - screen on workplace hazards
	Other related activities (cleaning, supplies, maintenance etc.)	Personal subcontractor	<ul style="list-style-type: none"> - Risks related to falls on one level - Risks related to mechanical handling - Risks related to manual handling and repetitive movements

8.5.9.2 Industrial Risks

The steps of a hazard study are:

- identification of potential hazards generated by the facilities or activity on the site;
- preliminary risk analysis including an identification of potential dangers, an accidentology review and an assessment of residual risks on the basis of the risk prevention means that will be implemented;
- detailed analysis of residual risks for the events selected; and
- conclusion on the criticality of the risks.

Definition of a major technological risk: It is an event such as an emission of toxic substance, a fire or an explosion, of a major nature. It is linked to a loss of control of an industrial facility. It involves a serious, immediate or delayed danger for humans, inside or outside the establishment, and / or for the environment, and involving one or more dangerous substances.

This definition clearly distinguishes between danger and risk. Danger is a situation that has some intrinsic potential to cause harm to people and property. In industry, the danger can be linked to products, processes and equipment.

The risk corresponds to the possible manifestation of the danger, an accidental event being characterized by the severity of the effects and the probability of occurrence.

The nature of the technological risks present on an electricity production site is very diverse. Risks can generally be grouped into several categories:

- fire ;
- explosion ;
- accidental release of harmful products;
- escalation from minor incidents to major accidents; et
- accidents of external origin (vandalism, etc.).

To these technological risks, we must add all natural risks (thunderstorm, earthquake, etc.) that may have an impact within the site.

The hazard study also makes it possible to assess, among all the dangers identified on the site, those which are significant, that is to say those which have a high probability of occurrence and / or those which may give rise to serious accidents, for humans, the environment and facilities.

The risk analysis will consist of identifying and then evaluating the main potential risks of a major accident that may occur within the Project. The identification will be done in a methodical and systematic way by analyzing the dangers and risks specific to the products handled, to the planned installations and to the chosen process, and to the environment as Potential "target" or as a potential attacker. It will also draw on accidentology information from several official sources. Then, prevention / protection measures aimed at reducing the risk will be proposed, so that they can be incorporated into the final design of the plant.

8.5.10 *Emergency Prevention and Response Plan*

The emergency prevention and response plan will define the response and communication procedures to be followed in the event of an emergency or natural disaster. It will highlight the intervention process on the site as well as the related emergencies and construction and operating activities (road accident, explosion, fire, medical emergencies, etc.). It is designed to reduce employee exposure to risk and injury and limit the potential impact on the environment and the community in an emergency.

The plan will include for the construction and operation phases, among others:

- an identification of all possible emergency situations such as fires or explosions, medical emergencies, transportation of hazardous materials, climatic phenomena, natural disasters, social and political tensions, etc. ;
- response procedures, reporting protocols to limit the severity of these events, if applicable, including evacuation categories, plan and contacts;
- the means, facilities and procedures to reduce the severity of these events if any, this includes logistics and evacuation plans;
- training programs for project staff and members of local communities;
- roles and responsibilities in an emergency; and
- a monitoring and audit program to ensure that all Project employees are prepared for emergencies and to ensure proper maintenance of emergency equipment and backup tools (eg kits medical, evacuation signs, etc).

This plan will also deal with community emergency preparedness and will be disclosed in a culturally appropriate manner to all communities in the area of global social influence of the project.

8.6 SPECIFIC SOCIAL MANAGEMENT PLANS

The specific social management plans proposed by the project are as follows:

- Livelihood restoration plan ;
- working conditions and information management plan;
- Local hiring and procurement plan;
- Stakeholder Engagement Plan ;
- Grievance Management Mechanism ;
- Health and Safety Management Plan ;
- Cultural Heritage Management Plan.

The EPC will be in charge of developing the following plans for the construction phase:

- Management plan for working conditions and for information;
- Local hiring and procurement plan
- Health and Safety Management Plan .

ATINKOU and the RCI will be in charge of their approval. In addition, ATINKOU and the RCI will develop the following plans during the construction phase: (i) Stakeholder engagement plan and (ii) grievance management mechanism. These plans will be implemented in coordination with the EPC.

ATINKOU and RCI will develop all of the plans listed below for the operational phase.

8.6.1 *Livelihood Restoration and Resettlement Plans*

The acquisition of land for the transformer substation and the line will result in the loss of the right of customary use of the land inside the developed land. Crops will be destroyed during the construction of the access roads and the clearing of the line corridor. Finally, some dwellings located inside the line corridor are likely to be moved.

The Project is therefore likely to generate an economic and physical displacement of local populations in the form of:

- Physical destruction of residents' homes (physical displacement), community structure, and
- transformation of land originally used for livelihood (economic displacement) by local communities such as agricultural land and pasture for hunting and gathering of forest products;
- impacts on fishing resources related to the impacts (considered insignificant) of the cooling water discharge in the lagoon

Risks related to physical and / or economic displacement are mainly:

- homelessness due to loss of shelter;
- impoverishment due to the loss of workplaces, productive lands or assets and / or other sources of income;
- reduced food security due to loss of access or increased pressure on forest products;
- social dislocation due to loss of cultural identity and changes in family structure, social networks and traditional governance;
- and
- social tensions and increased rates of crime, illness and death in affected areas and housing.

In this context, in accordance with IFC PS 5 on Land Acquisition and Involuntary Resettlement, a Land Acquisition and Livelihood Restoration Framework (LALRF) and Resettlement Action Plan (RAP) are under development to ensure the resettlement of households and the restoration of the livelihoods of displaced households. BNET was commissioned by ERANOVE to develop and implement LALRF and RAP for the Project..

The objectives of the LALRF and RAP will be :

- avoid, and where this is impossible, minimize displacement by examining other project designs;
- avoid forced evictions;
- preferably provide compensation in the form of community infrastructure, if not financial, for the waiving of customary rights;
- provide financial compensation for the loss of crops that take into account their economic value and transaction costs;
- Anticipate and avoid, and where this is not possible, minimize the adverse social and economic impacts of land acquisition or land tenure by (i) offsetting the loss of replacement cost assets and (ii) ensuring that resettlement activities are implemented with adequate disclosure, consultation and informed participation of those affected;
- improve, or restore, the livelihoods and living standards of displaced persons; and
- improve the living conditions of physically displaced persons by providing adequate housing with a guarantee of retention in the resettlement sites

The LALRF will establish the Project's framework and approach to planning and managing land rehabilitation, resettlement and livelihood restoration for Project-affected people. It will include the following:

- institutional and legal framework including stakeholders, legislation, land tenure systems and international standards of social management and land acquisition processes;
- description of the principles and approach of the Project in accordance with the requirements of national legislation and international standards;
- a stakeholder engagement plan for the disclosure of information

related to land acquisition and resettlement, the establishment of village compensation and resettlement management committees and information on procedures compensation and grievance management mechanisms;

- assessment of the impacts of displacement, including the different types of assets that will be affected, the different types of ownership of these assets and the benefits they offer to their owners or users;
- Policies and rules that the Project proposes to follow to determine eligibility for compensation (including who is eligible and for which assets) and rights to compensation, including applicable compensation categories such as compensation in kind or in cash, support programs such as training, skills enhancement, community development or social investment initiatives, transition benefits, or rights to asset recovery before land rehabilitation;
- the rules to be adopted regarding the restoration of the livelihoods of fishermen possibly impacted by the discharge of cooling water in the lagoon;
- the support programs that will be developed under the Project to restore or improve the livelihoods of those affected;
- the grievance management system that will be used in the Project to capture and resolve complaints from land acquisition affected persons; and
- the monitoring and evaluation plans that will be implemented to ensure the effectiveness of resettlement, compensation and livelihood restoration.

The LALRF will be established taking due account of the mitigation measures proposed in the ESIA of the Project which consist, inter alia, of:

- direct possibly displaced persons to accommodation areas offering economic opportunities identical to those acquired by the Project;
- develop collective compensation that will benefit all households (hosts and displaced persons) such as community infrastructure (school, sanitation, wells, mosques, etc.);
- take into account the relationships of dependence between families and the descendants of the community of physically displaced households, in particular concerning the choice of resettlement sites;
- develop preferential hiring procedures for displaced persons within the framework of the Project, as described in the Local Development Plan;
- develop economic restoration programs and projects encouraging income-generating activities for the benefit of displaced persons;
- adapt a stakeholder engagement plan to encourage frequent disclosure of information and consultations with affected

communities and displaced persons in order to reduce social tensions throughout the duration of the Project;

- involve local government and traditional authorities in the implementation processes of the resettlement action plan; and
- rehabilitate for grazing all the temporary construction areas initially used as such by the population.

The LALRF will serve as the basis for the development of a Resettlement Action Plan (RAP) developed specifically for areas where displacement is anticipated. It will guide the process of acquiring individual land. The RAP will be more detailed and practical and will be developed during the land acquisition process throughout the construction phase of the Project.

The RAP will include :

- a detailed presentation of the basic conditions of the households to be moved (economically or physically), based on a detailed socio-economic census of each household;
- the results of the consultations: the comments of the stakeholders regarding the displacement in question;
- a detailed assessment of the impacts on the loss of housing and access to land for the displaced persons and for the host communities: a full account of the populations affected and the number of households, land areas, structures and assets planted that will be affected.
- the final eligibility criteria: the stages of the procedure aimed at establishing the deadline, as well as the specific rights negotiated with the people affected. As far as possible, the rights will be maintained in a comparable manner in the acquisition processes in order to preserve a fair and transparent practice of the Project;
- alternative asset designs: such as alternative structure designs, resettlement site plans, and infrastructure design;
- implementation timeframes;
- organizational structure and implementation arrangements: description of the roles and responsibilities of the various internal and external stakeholders for all components of the Plan. In particular, the composition of the PARC Implementation Team within the Project; and
- the budget for implementing the Plan, including staffing, construction and other program inputs.

The RAP will include a resettlement monitoring program and assessment of successful resettlement, livelihood restoration, and levels of community-wide assistance. This program will include a range of tracking indicators and reporting frequencies. In addition, an audit will be conducted by a third party to assess the RAP implementation performance with respect to the original objectives and their requirements. Follow-up results may lead to changes to the Plan

8.6.2

Management plan for working conditions and worker information

The plan for managing working conditions and informing workers will detail the measures put in place to ensure working conditions in accordance with local regulations and international standards (IFC performance standards, labor standards of the International Labor Organization - ILO).

The objectives of this plan are to ensure :

- fair treatment of workers by the project;
- the fight against discrimination in employment ;
- protecting workers and avoiding the use of forced and child labor; and
- healthy and safe working and housing conditions for expatriate workers.

For this, this plan will include the following elements:

- references to HR policies and procedures in terms of working conditions and worker information;
- a description of the working conditions and terms of employment;
- a commitment by the project to respect the right of workers to associate and bargain collectively;
- quality and management standards for expatriate workers' accommodation in accordance with IFC Performance Standard 2;
- a procedure for resolving conflicts and complaints for workers;
- a plan for disseminating information to staff on their rights; and
- a commitment against forced and child labor and the means implemented to control the application of this commitment by the supply chain.

The plan will specify in which aspects it is applicable to subcontractors and the project management company and the means implemented to ensure the vertical integration of these aspects, in particular through the imposition of contractual conditions and " periodic audits.

In particular, the project guarantees good working conditions for the employees of its subcontracting companies, by including in the terms and conditions the standards to be respected and providing for retaliatory measures in the event of non-compliance with commitments.

8.6.3 *Local hiring and procurement plan*

ATINKOU adheres to the principle of corporate social responsibility and intends to contribute to local sustainable development through its activities in particular.

The objectives of this plan are as follows to optimize the positive social impacts of the project by implementing a local procurement policy, a preferential hiring procedure for local communities and a preference for the use of local businesses. The hiring policy of EPC and ATINKOU, with equal jurisdiction, will promote local and national employment and supply. Monitoring indicators will be developed for this purpose.

To avoid the influx of people looking for work in Taboth, staff will be hired from the cities of Abidjan and Jacqueline, and there will be no hiring at the door. The project will communicate widely on this point as well as on the qualifications required and the hiring process, especially with local communities and at national level.

8.6.4 *Stakeholder Engagement Plan*

A Stakeholder Engagement Plan (SEP) was developed as part of the project. The SEP describes in particular the consultations and the results of the consultations held within the framework of the project ESIA. It makes it possible to structure the communication and consultation activities carried out and to plan the consultations to be carried out within the framework of the project. Its objective is to ensure a continuous and transparent dialogue with the project stakeholders during its different development phases.

In agreement with the IFs PS, the stakeholders (PP) are any person, group of people or organization with an interest in the project. The PPs are typically the administration, elected officials, civil society, businesses as well as members of the community likely to be affected by the project or who have an interest in the project.

The SEP presents the approach followed by the project in order to implement a robust program of dialogue with all these different groups of parties

stakeholders, in accordance with applicable standards (legislation, IFC PS, and other relevant international standards).

The main objectives of engagement with stakeholders are:

- promote and maintain an open and respectful dialogue between the stakeholders and the project;
- identify the stakeholders, their interests, concerns and influences in relation to the project activities;
- provide stakeholders with information on the development of the project and the studies relating to it in accordance with their interests and needs, ability to access information and according to the potential impacts of the project;
- give stakeholders the opportunity to communicate their opinions and fears through consultations and other means of communication;
- prevent conflicts and develop a relationship of trust with the various stakeholders;
- ensure project compliance, in terms of engagement with stakeholders, with national legislation and IFC PSs; and
- facilitate the recording and resolution of grievances vis-à-vis the project.

The SEP was developed so that this participation:

- is free from manipulation, interference, coercion and intimidation, but also free from participation fees;
- takes place before decisions are made so that the opinions expressed can be taken into account;
- is conducted on the basis of accessible, understandable, relevant and timely information;
- is undertaken in a culturally appropriate manner;
- includes all those interested or affected by the project; and
- is cooperative and include explicit mechanisms for receiving, documenting and responding to comments received.

The SEP is a living document which will be developed gradually; updates will be published as the project evolves.

8.6.5 *Grievance Management and Resolution Mechanism*

The establishment of a grievance management mechanism is good international practice and a requirement of the IFC to ensure that the grievances of the population are taken into account by the projects. The objectives of the complaint management mechanism are to ensure :

- easy and free access for the population to the complaints mechanism;
- prompt consideration of complaints and the search for mutually acceptable solutions;
- the project's awareness of its impacts on the surrounding communities; et
- adapt adequate mitigation measures to avoid recurring complaints and escalating conflicts.

The complaints management procedure includes the procedures and means implemented to:

- ensure the recording and follow-up of complaints;
- implement an analysis of each complaint and seek a resolution within short deadlines;
- monitor the progress of complaints, in particular according to their type, location and frequency in order to adapt the mitigation measures if necessary;
- to communicate the grievances of the population internally in order to participate in raising employee awareness of the impacts and means implemented to mitigate them.

This mechanism notably includes information on the means provided to the population to lodge their grievances and on the procedures and deadlines for their monitoring and resolution. The mechanism must in particular be communicated to the population on a regular basis in order to ensure its functionality.

8.6.6 *Hygiene, health, and safety management plan*

The HSS management plan will include the procedures, infrastructure and resources implemented to ensure the hygiene, health and safety of workers and the local population during the construction and operation phase. To do this, the plan will be developed in two separate parts, one for workers, another for local communities.

This plan will be adapted to existing policy, HSS system and procedures. The project will manage hygiene, health & safety in construction and operations through a project-specific management system. This system will be used by sub-contractors or any team working on the project.

The Health and Safety management system ensures, among other things:

- injury prevention;
- a safe work environment;
- reduction of insurance costs;
- minimization of incidents that could cause any delay to the project;
- increased productivity and employee morale; and
- protecting the reputation of the project.

The component of the HSS management plan for workers will include the following elements:

- an assessment of the various Health and Safety risks to which workers are exposed according to the type of activity, the location of the project and the types of work carried out;
- procedures to ensure the health and safety of personnel, including the personal protective equipment (PPE) and medical kits provided;
- an occupational health and safety training and awareness program;
- an HSS training program before entering construction areas or performing certain tasks;
- an employee medical surveillance program;
- roles and responsibilities for the implementation and monitoring of HSS procedures;
- an action and response plan in the event of an accident which takes account of the remoteness of the site, logistical means and the services and specializations of available hospital infrastructure; and
- an incident follow-up program with a view to taking corrective actions if necessary

The plan will detail in particular the various Detailed Operational Procedures (POD) existing or to be developed in order to control the risks inherent in the tasks and activities of the project (eg risk analysis before work, prevention of fatigue, work at height, use of construction, equipment inspections, prevention of overexposure to the sun, etc.)

The component of the HSS management plan for local communities will be developed in consideration of the possible impacts of the project on the exposure of communities to risks:

- accidents related to construction activities;
- exposure to communicable diseases from workers;
- accidents related to the crossing of the access road by pedestrians, livestock or vehicles; and
- accidents, explosions or fires at the plant.

The HSS management plan will include an analysis of these various risks and detail the risk mitigation and management measures planned for each of these risks.

In the construction phase, after investigation and analysis of the accident, the EPC will bear the costs associated with human accidents involving vehicles for which it is responsible under this project, ATINKOU for the power station, the State of RCI for the substation and the line will take over during the operating phase.

The project will strengthen the program already in place by ATINKOU for monitoring the number and severity of accidents and the preventive, corrective and compensatory measures implemented.

The project also undertakes to promote the prevention of communicable diseases concerning HIV / AIDS and malaria prevention, in particular by applying the following measures:

- encourage voluntary screening tests for expatriate workers;
- raising awareness of communicable diseases will be a component of HSEC induction; and
- thematic days will be organized to raise workers' awareness

8.6.7 *Cultural heritage management plan*

The Cultural Heritage Management Plan will be developed with the objective of protecting sites and objects of international or local cultural importance in accordance with the IFC PSs and national regulations.

The Plan will include in particular :

- a georeferenced inventory and a cartography of the cultural heritage sites identified during the ESIA and completed within the framework of studies for the implementation of the LALRF and the RAP;
- a summary of the description of the cultural sites and objects identified in and near the Project construction areas, accompanied by an assessment of their importance and an assessment of areas with archaeological potential;
- a summary of the evaluation of the potential direct (eg construction works) and indirect (eg noise pollution for site users) impacts of the Project on cultural heritage;
- the procedures and measures implemented to ensure the protection or preservation of sites and objects of cultural importance, including:
 - the measures and means implemented for the cultural heritage previously identified;
 - additional measures to confirm the absence of any heritage sites from local communities before the start of works;
 - a procedure for managing any incidental discoveries, in particular the obligation not to move potential archaeological sites without the consent of the government or local authorities; et
 - a consultation procedure with the communities and the competent authorities; et
- the roles and responsibilities for the implementation of this plan.

8.7

CLOSURE, DISMANTLING AND REHABILITATION OF SITE AFTER OPERATIONS

As explained in Chapter 3, Project Description, the plant is designed for a minimum lifespan of 25 years. Beyond this, the plant can be kept in operation following maintenance and replacement of equipment as required. The new power plant will be the subject of a new concession agreement, the term of which should be between 2040 and 2045. It will be able to operate beyond this date, either within the framework of a concession renewal, or at title of a retrocession to the state.

The project site is located in an area dedicated to industrial development (see Section 3.1.5), during the years the project is in operation until dismantling, the initial state on the project site is subject to change important. It is therefore not possible to determine at this stage the nature and extent of the impacts of the dismantling phase. These impacts and the associated mitigation measures will therefore be assessed as far downstream by the company in charge of operations so as to formulate a decommissioning plan in accordance with Ivorian regulations and international IFC standards.

If the plant is to be dismantled, a detailed closure and restoration plan will be developed prior to closure. The dismantling activities will include securing the site, cleaning the equipment, dismantling the equipment and structures, as well as cleaning up the site surface, in accordance with

applicable regulatory requirements, international standards and the concession agreement with the state.

This section describes the measures and means to ensure the implementation of this ESMMP. ATINKOU, the State of RCI and the EPC are responsible for the proper implementation of the ESMMP, to do this they must ensure:

- have among their staff sufficient human resources and the qualifications required for the proper implementation of the ESMMP ;
- assign adequate levels of responsibility and power to the direct supervisors and employees responsible for the proper implementation of the ESMMP ;
- to implement a comprehensive and robust periodic monitoring program to assess the proper implementation of the ESMMP ;
- adapt the measures or procedures to correct any discrepancies noted;
- to report the results of internal audits and environmental and social reporting (EPC to ERANOVE or to the RCI) ; and
- to communicate annually the results of the environmental and social monitoring of the project to the donors in the form of an environmental and social monitoring report (ERANOVE or RCI)

The following different elements, essential to this good implementation, are described in the sections below:

- roles and responsibilities for the correct implementation and monitoring of the ESMMP ;
- the training and awareness programs required to ensure that the employees and subcontractors of the project are aware of their role, duty and responsibilities according to their respective activities and functions;
- the deadlines to be respected in order to guarantee a gradual approach to the implementation of the ESMMP ;
- monitoring and follow-up of the implementation and results of the ESMMP ; and
- internal and external communications aimed at ensuring the transparency necessary for the implementation of the ESMMP.

8.8.1 Roles and Responsibilities

This section describes the organization of social and environmental management to apply the ESMMP.

8.8.1.1 Definition of roles and responsibilities

The development and deployment of the project's ESMMP is the direct responsibility of the ATINKOU team for the project in the construction phase and in the operational phase, for the power plant, the RCI State for the line and the substation.

ERANOVE is ultimately responsible for the proper implementation and the environmental and social performance of the project, for the plant, the RCI State for the line and the substation.

The environmental and social management of the project will be the responsibility of a ATINKOU QHSE manager in charge of the project during the construction and operation phase.

During the detailed engineering and construction study phase, the engineering, procurement, and construction organization (EPC) will determine HSE resources working in parallel with the project team, and which will support, at their level, the deployment of the ESMMP . The EPC will be directly responsible for implementing its management measures and plans.

8.8.2 Training and awareness program

The training and awareness programs aim to support the implementation of the ESMMP by disseminating information, raising awareness and building the skills of all those who share the responsibility of supporting the project by achieving high standards in terms of environment, health and safety.

8.8.2.1 Training of personnel

The training of project employees and contractors in environmental management, industrial and workstation security and social awareness is an important element on which the project's ability to meet the objectives of the ESMMP depends.

Induction of workers and retraining

All newly hired workers, contractors and visitors will receive an environment, community, health and safety induction. This induction will integrate the key aspects of the ESMMP (eg waste management, code of conduct, respect for local communities, grievance management system, etc.).

Annual hygiene, safety, environment and community training will be provided to all employees, contractors and the project consultant. The contractors and consultants working within the framework of the project

must respect all of the project's policies and procedures concerning health, safety, the environment and the community.

ESMMP Training

For each phase of the project (design, construction, operation), an adapted training session will be offered to the employees in charge of project management (e.g. site manager, health and safety manager, team leaders, etc.

The objectives are :

- make employees aware of the importance of good environmental, health and safety, and social management;
- explain the steps to follow in implementing actions and the role of employees; and
- present emergency situations and the procedures to be followed if necessary

Planned training for the management plans

Most area-specific management plans described in Section 8.5 and Section 8.6 include a section on training project staff to ensure that plans and procedures are known, implemented and followed by all.

Other subjects could be defined according to the skills of the personnel at different work stations and at different hierarchical levels. Only certain training must be delivered to each employee of the project. Training must be allocated according to the areas of activity, specialization and responsibilities, type of work performed, exposure to risks, etc., of the employee.

The QHSE manager must ensure that all the training and awareness programs required by the ESMMP as well as the associated operational procedures are effectively implemented and that project staff participate. A register listing all available training and staff participation, planning and frequency requirements should be established. All participants in the training will be entered in the training register.

Safety and Security induction

The EPC and then ATINKOU or the State of RCI, as the case may be, will develop a catalog of Health & Safety themes which will be communicated to workers through safety moments. Although some retraining will be compulsory for everyone, others will be specific to certain trades.

The catalog of themes could be as follows (non-exhaustive list):

- working license ;
- entry into confined space;
- Work at Height ;
- Work with heat;
- respiratory protection;
- noise protection;
- incident management ;
- accident investigation and analysis;

- safety orientation for vehicle drivers; and
- first aid / first aid.

8.8.3 *Deadlines for implementation*

The timeframe for implementing the measures described in the ESMMP will depend on the timeframe for the activities or the impacts they imply.

The mitigation and improvement measures detailed in Table 8.1 and Table 8.2 and Table 8.3 are accompanied by an implementation schedule. These measures must be implemented during the phases of the project as specified in the tables.

The specific management plans described in Section 8.5 and Section 8.6 should be developed as soon as possible to ensure that they can be implemented before the start of the activities they involve (e.g. noise management plan for the Start of the construction). If necessary, preliminary management plans with limited scope can be developed to address specific activities that have not yet been covered by the specific management plans or operational procedures described above.

8.8.4 *Environmental and social surveillance and monitoring*

8.8.4.1 *Internal monitoring*

Monitoring and follow-up of the social and environmental impacts of the project are essential aspects of an effective social and environmental management system. They indicate to the project whether the potential impacts have been well foreseen and whether the proposed reduction and improvement measures are correctly implemented, and whether they are sufficient or not. The monitoring results and reports make it possible to refine the measures and support the management decision concerning the required modifications to the management system and the organization allowing continuous improvement of the environmental, social and security performance of the project. The need to modify the measures put in place will be based on quantitative social and environmental thresholds or qualitative criteria as defined in the Environmental and Social Monitoring Plan.

Internal monitoring of the environmental, social and security performance of the project will be done via an Environmental and Social Monitoring Plan, the details of which are detailed below and the implementation of performance indicators that are regularly updated.

The impacts to be monitored and the methodologies used (e.g. sampling tools, frequency and location) are detailed in the Environmental and Social Monitoring Plan. This plan is based on the initial state data of Chapter 6 as well as on the evaluation of the impacts described in Chapter 7 in order to assess whether the real impacts of the project actually correspond to the impacts assessed after implementation of the mitigation.

ATINKOU or the State of RCI, as the case may be, will be responsible for carrying out the required surveillance with the help of the EPC which will have to satisfy some of the surveillance obligations, in particular concerning construction and the operational impacts for which it will be directly responsible. . Depending on the monitoring needs and the complexity of the impacts, specialized consultants working on behalf of the project may be hired to carry out part of the monitoring work. ERANOVE or the State of RCI, as the case may be, remains the last responsible for the social and environmental performance of the project and its monitoring.

Monitoring will take place during all phases of the project in order to demonstrate the project's compliance with national regulations, international funding standards and directives applicable to this project, project permits and commitments, including without limitation at the ESIA of the project.

As indicated in section 8.4, Impact mitigation and improvement plan, adequate monitoring indicators have been developed to support the project monitoring effort. Monitoring will take place during all phases of the project.

The Environmental and Social Monitoring Plan will include provisions on the development of an efficient system for collecting and managing social and environmental data making it possible to collect, classify and record data and documents required on a continuous or regular basis. the project and necessary to carry out monitoring and establish the social and environmental reports of the project.

Reports on the social and environmental performance of the project will be based on the monitoring results.

In addition, CIAPOL will monitor the environmental performance of the project as part of its mandate.

The Environmental and Social Monitoring Plan takes into account the aspects on which the potential impacts of the project were moderate to major before the application of mitigation measures. The objective is to assess the effectiveness of certain environmental measures and possibly identify impacts whose severity differs from that expected.

An Environmental Monitoring Plan will therefore be implemented with a view to regular monitoring.

Table 8.13 Environmental and Social Monitoring Plan

Aspect	Type monitoring	Method/indicators for monitoring	Frequency	Timeframe
Air emission and Air quality	Monitoring of air emissions	<p>NO2 emissions monitoring using passive samplers or diffusion tubes deployed on 5 monitoring stations. These sites are located at sensitive receptors in the same locations as the sites selected for the ESIA measurement campaign to ensure the comparability of the results.</p> <p>NO2 concentrations will be measured over a 12-month period, the diffusion tubes are recovered and replaced after 4 weeks of exposure.</p> <p>Continuous monitoring of the quality of exhaust gases at the GCC chimney</p>	<p>The campaign will take place once a year for the first three years of operation and then every 5 years.</p> <p>Continuous monitoring for exhaust gases</p>	<p>Follow-up campaign during operations in "normal" operating mode from the time of commissioning. New follow-up campaign in the event of a significant change in the way the plant operates over the long term (eg consumption of DDO, closing of the combined cycle)</p>
Effluent quality	Effluent sampling and laboratory analysis (water domestic, service, cooling, condensate, etc.)	<p>The quality and flow of water from each source of discharge will be continuously monitored and must comply with applicable local and international standards.</p> <p>In the event of a suspected abnormal release, the releases will be stored and evacuated for treatment or reinjected into the treatment plant for dilution and treatment. Specific analyzes carried out in the event of non-compliance.</p> <p>In the event of systematic non-compliance, additional means of treatment or evacuation will be put in place.</p> <p>The results of analyzes carried out after treatment will be recorded and measures taken in the event of excessive values being noted.</p>	Continuously	From the start of the operating phase

Aspect	Type monitoring	Method/indicators for monitoring	Frequency	Timeframe
Quality of ground water	Semi-annual sampling via the piezometer. Monthly analysis of groundwater quality	A groundwater quality analysis will be performed once every quarter to detect any potential contamination caused by the project. The salinity of the groundwater will be monitored, in the event of proven saline intrusion, the project will assess the possibilities of reducing water consumption. The analysis results will be recorded and corrective measures taken in the event of non-compliance. If pollution of the water table is identified, the authorities and communities must be informed.	Sampling and analysis every quarter	From the start of the operating phase
Consumption of water	Monitoring water consumption to identify an excess	Control and analysis of the reports of the HSE Manager concerning water consumption in order to detect any anomaly	Monthly checks	From the beginning of the operation phase
Sound environment	Monitoring of noise emissions in the receiving environment	Noise emission measurements : <ul style="list-style-type: none"> • On the edge of the sit • At the level of the closest sensitive receptor (see the stations used in the chapter on the baseline environment) and • In the event that the applicable standards are exceeded, corrective measures will be implemented (e.g. installation of noise reduction infrastructure, resettlement) 	Tous les 6 mois.	Dès le début de la phase d'exploitation.

Environmental monitoring will be carried out by a specialized external service provider or internally by plant technicians (measurements of air quality at the end of chimneys, for example). Roles and responsibilities will be clarified along with monitoring and surveillance methods.

Performance indicators

The project team will continuously measure the environmental, social and security performance of the project. To do this, Performance Indicators will be developed and accompanied by achievement targets. These indicators will be limited in number, regularly updated and communicated periodically to all project employees.

The purpose of the Performance Indicators is to inform the project team about environmental, social and security progress and deficiencies vis-à-vis the objectives set. If necessary, corrective measures may be decided. Table 8.14 lists some examples of monitoring indicators applicable to the project.

Table 8.14 *Examples of performance indicators applicable to the project*

Activity	Performance indicator	Frequency
environmental		
Water consumption	Project water consumption (m ³ / year)	Annual
consumption fuel	L across all fuels per year time facility operation	Annual
Air quality	Average of NO2 air quality on sampling points provided	Annual during measurement campaigns.
	Average quality exhaust chimneys	monthly

Activity	Performance indicator	Frequency
soundscape	Average recorded sound level on points planned measures	Annual
environmental incidents	Number and type of accident (eg oil spill, etc.)	Annual
Waste	Tons of waste per year per category	Annual
	Percentage of waste recycled or valued field or industry	Annual
Social		
Management of complaints	Number of complaints	Quarterly, Annual
	Percentage of resolving grievances	Quarterly, Annual
	Repeated complaints Numbers recorded	Quarterly, Annual
jobs	Percentage of national employment vs. total	Annual
	Percentage share of the contract local businesses	Annual
formations	Number of training hours delivered Project to employees	Annual
	Hours of training / awareness delivered in local communities	Annual
Health security		
Work accident	Frequency rate - Accident with stop	monthly, Quarterly, Yearly
	Frequency rate - Recordable Case	monthly, Quarterly, Yearly
	Number of first aid following a work accident	Quarterly, Yearly
	Number of following medical treatments accident or occupational disease	Quarterly, Yearly
Transport	Frequency of transport accidents year per km	Quarterly, Yearly
Property damage	Number of material damage	Quarterly, Yearly
HSE monitoring	Percentage of accident investigations conducted	Quarterly, Yearly
	Number of audits and inspections HSE made	Quarterly, Yearly
	Number of HSE start meetings conducted	Quarterly, Yearly

8.8.4.2 *Independent audit*

In order to guarantee that the social and environmental performance of the project is checked by an independent third party, regular independent audits will be carried out. During the initial phase of the project, before the financial close, the lenders will appoint a consultant who will examine the environmental and social compliance of the project. In terms of social and environmental compliance, this consultant will examine the following documents:

- the ESIA;
- Environmental and Social Management Plan and specific management plans;

- Stakeholder Engagement Plan; and
- environmental, social and security procedures and systems in place or planned.

Compliance of the project will be reviewed with respect to the regulations, requirements and guidelines of the International Funding Institutions, other international organizations.

At the start of the construction phase of the project, an independent consultant will be appointed by the project in order to carry out annual audits (up to the first years of the operational phase, then every two years in the event of proven compliance) of social performance and environmental aspects of the project throughout its duration. The project manager is responsible for the way the project deals with audit recommendations and can decide to entrust the daily monitoring to his QHSE manager.

8.8.4.3 *Management of modifications*

During the implementation of the project, modifications may be required in order to cope with unforeseen conditions or situations. When changes to project processes, design or activities are required, a change management process will be triggered. This process will address social and environmental issues in the context of major project modifications. The results of this process may require including modifications or annexes in the ESIA studies of the project or in the social and environmental management plans and in the procedures put in place.

The modification management process will be implemented as follows::

1. Identification of the element / situation requiring modifications.
2. Preparation of a Change Request Document which:
 - underlines the nature of the situation requiring modification;
 - highlights the impacts of the change (eg cost, schedule, security, operability); and
 - identifies potential environmental, social, economic or health concerns.
3. Examination of the Modification Request Document to verify that it is compatible with environmental studies, the ESMMP or existing procedures by and, as the case may be:
 - the task manager regarding minor modifications;
 - the project promoter, the project director and the QHSE manager

concerning major modifications; and

- the ANDE, the CIAPOL and / or the donors (as the case may be) concerning significant modifications.
4. Documentation of the approval or rejection of the change request.
 5. Request and receive the approvals required to make the change under Guinean law.
 6. If deemed necessary, update or include annexes to the project ESIA or in the ESMMP and in the procedures put in place.
 7. Implementation of the approved modification, including communication to the parties concerned on the nature, scope and planning of the modification, including the measures that have been taken to mitigate the potential social and environmental impacts.
 8. Summary of project modifications and status to be included in the annual reports submitted to the environmental ministry.

8.8.5 *Communication of environmental and social performance*

Internal monitoring allows for internal disclosure and sharing of information and ensures that employees and contractors respect the project and its social and environmental objectives, including the measures required by everyone to achieve them.

The external social and environmental reports and the transparency of the project aim to maintain the confidence of the stakeholders in the project. They allow to be in contact with the stakeholders and to prove the social and environmental performance of the project. Finally, they allow stakeholders to commit to or question the project concerning social and environmental issues supporting the objective of continuous improvement of the project.

The project will establish internal and external reporting mechanisms on the social and environmental performance of the project and, more particularly, on the implementation of the ESMMP and monitoring results.

These mechanisms and reports will be as follows:

- a monthly or quarterly internal QHSE newsletter on the project's environmental, social and security activities and performance
- accompanied by information on performance indicators and complaints from communities and resolution actions;
- the publication of the ESIA and its possible updates on the project website;
- publication on the central office website of the Stakeholder Engagement Plan and annual updates as the project progresses;

- E&S external audit reports to project donors;
- other reports external to the authorities, local communities or other project stakeholders, as appropriate or as required; and
- timely reporting in emergencies and crises, including, but not limited to, occupational accidents and illnesses, spills, fires and other possible incidents

During construction, subcontractors will be required to provide the project manager with a quarterly report including current monitoring results (and a historical summary), information on environmental problems encountered, the effectiveness of solutions implemented and social and environmental mitigation measures for which it is responsible. These quarterly reports will be a source of information for project reports.