

0                    ***NON-TECHNICAL SUMMARY OF ENVIRONMENTAL  
AND SOCIAL IMPACT ASSESSMENT OF PROJECT  
CIPREL 5***

0.1                ***INTRODUCTION***

This Non-Technical Summary (NTS) presents the Environmental and Social Impact Assessment (ESIA) report conducted by ENVAL and Environmental Resources Management (ERM) for ERANOVE regarding the project to develop a gas thermal power plant in Taboth in the prefecture Jacqueville in Côte d'Ivoire.

0.2                ***OVERVIEW OF THIS ESIA REPORT***

0.2.1            ***Introducing ERANOVE and CIPREL***

The project will be directed by ERANOVE, Pan African industrial group active in the management of public services and the production of drinking water and electricity in Africa.

ERANOVE already owns and operates a power plant in Côte d'Ivoire through its subsidiary CIPREL. This plant was developed in four stages beginning in 1995 and continuing to reach a present total installed power of 543 MW of gas turbines in combined cycle. All turbines are located on the same site and run on gas (with the possibility to run on oil in the event of gas supply interruption).

0.2.2            ***ERANOVE commitment to sustainable development***

Sustainable development is an intrinsic matter at the heart of the business group ERANOVE: making available essential life services. The group contributes to the achievement of 7 of the 17 sustainable development goals promoted by the United Nations, as detailed in Chapter 3 of this ESIA report.

0.2.3            ***The project CIPREL 5***

As part of the Ivorian government policy concerning access to electricity, ERANOVE plans to develop an extension to the central CIPREL facility called CIPREL 5. This extension will be developed on a new site in Taboth in the prefecture Jacqueville, and will be operated by a new subsidiary, called ATINKOU.

The installed capacity of the new plant will be approximately 390 MW. The production capacity owned by ERANOVE Côte d'Ivoire will increase from 543 MW to around 940 MW.

The evacuation and the transport of energy will be provided by a 400-kV electric line to be built between the plant site as well as future line connecting the central and Azito station Akoupé-Zeudji (construction in progress). The power line Azito-Akoupé Zeudji has a dedicated ESIA and is not within the scope of this project or this ESIA.

#### **0.2.4**      *Presentation of the ESIA*

This ESIA was carried out to assess compliance with the legal requirements of the Côte d'Ivoire and in consideration of the environmental and social performance standards of the IFC.

According to Law No. 96-766 of 3 October 1996 on the Environmental Code in Côte d'Ivoire, and Decree No. 96-894 of 8 November 1996 concerning the rules and procedures for Environmental Impact Studies, the construction of a thermal power plant and its operation requires a preceding Environmental and Social impact Assessment (ESIA).

In addition, ERANOVE is considering financing the project with the support of International Financial Institutions (IFIs). The most commonly applied international standards by these IFIs are the Performance Standards in Environmental Sustainability and Social Matter (2012) of the International Finance Corporation (IFC).

Note that this ESIA was conducted between late October and late December 2018. During this period, given scheduling constraints, some issues underwent a preliminary assessment which will be completed by CIPREL via further studies planned for early 2019.

These complementary studies will focus in particular on the natural environment and biodiversity, groundwater, and issues related to the resettlement and restoration of livelihoods of people affected by the Project (the latter study is underway by the National Bureau of Technical Studies and Development Côte d'Ivoire - BNEDT - independently from this ESIA).

The results of these additional studies will support the development of specific environmental and social management plans in anticipation the construction and operation phases of the project, as described in Chapter 8 of the report ESIA (Environmental and Social Management, ESMP).

#### **0.2.5**      *Presentation of the consulting firm*

The project ESIA was conducted by international sustainability consulting company, Environmental Resources Management (ERM), a world leader in the field of environmental, health, safety, and social risk consulting.

The ESIA was conducted in partnership with ENVAL, an environmental engineering office known in Côte d'Ivoire and accredited by the Ministry for the Environment.

#### **0.2.6 Institutional and regulatory framework in Côte d'Ivoire**

The main authorities involved in the evaluation of this ESIA will be:

- the National Environment Agency (ANDE) whose mission is the implementation of the impact assessment procedure; and
- Center Ivorian Antipollution (CIAPOL) whose mission is to evaluate, monitor, and control pollution and nuisances, among others, of industrial projects.

In fulfilling its mandate, ANDE will involve other authorities for the assessment of the ESIA, including:

- the various ministries involved in matters concerning land use, social and economic development, and environmental conservation; and
- the Ministry of Petroleum and Energy, and its supervised organizations:
  - the National Authority for Electricity Sector Regulation of Côte d'Ivoire (ANARE);
  - CI-Energy, the Crown corporation of Energy of Côte d'Ivoire; and
  - the Ivorian Electricity Company (CIE), a private company responsible for the distribution and marketing of electricity in Côte d'Ivoire.

From a legislative perspective, the main environmental laws applicable to the project and in force in Côte d'Ivoire are:

- the 2014-390 law of 20 June 2014 on the orientation of sustainable development which sets the basic objectives and principles of sustainable development;
- Law No. 96-766 of 3 October 1996 pertaining to the Environment Code, which establishes environmental protection principles at a national level as well as the foundations of environmental policy, based on the preservation of natural resources, protection of environment and sustainable economic development;
- Decree No. 98-43 of 28 January 1998 on installations classified for environmental protection whose provisions apply to factories, warehouses and industrial activities which can present dangers or disadvantages for the protection of the environment. It defines the terms of licensing, inspection and sanction of facilities; and

- Decree No. 96-894 (1996) and its implementing order 00972 / MEEF of 14 November 2007 defining the rules for the preparation of Environmental Impact Studies and Social Assessment (ESIA), their treatment by ANDE, and the ministerial approval process of projects subject to an ESIA.

Côte d'Ivoire has also signed and / or ratified many bilateral (regional and international) conventions, protocols, and agreements, many of which relate to the fight against global warming and preserving the environment, including the Paris Convention on Climate 2015, the Framework Convention of the United Nations on Climate Change (UNFCCC) in 1992, and the 1989 Basel Convention on the control of transboundary movements of hazardous wastes and their disposal.

### 0.2.7 *Standards of international financiers*

Eranove plans to seek funding from International Financial Institutions (IFIs) for this project.

The most widely-used international standards by IFIs are the IFC environmental and social performance standards. IFC is a subsidiary of the World Bank Group dedicated to supporting the growth of the private sector in developing countries. The IFC sustainable development framework updated on 1 January 2012 is widely regarded as one of the most comprehensive environmental and social management standards.

**Table 0.1** *IFC environmental and social performance standards (2012)*

No.	title	Scope
1	Systems to assess and manage social and environmental matters.	Defines the requirements to ensure proper environment and health management, policy implementation and accountability, including through an environmental and social impact study for which IFC PS 1 defines requirements.
2	Labor and working conditions.	Requirements to ensure fair labor management relations and safe and healthy working conditions.
3	Prevention and reducing pollution.	Defines the requirements to ensure the prevention and reduction of pollution at an appropriate level.
4	Health and community safety.	Defines the requirements to ensure that the adverse effects on the host community are controlled and managed.
5	Acquisition of land and resettlement.	Defines the requirements to reduce the adverse social and economic impacts of forced displacement, land acquisition or restrictions on the use of land.

No.	title	Scope
6	Biodiversity Conservation and Sustainable Resource Management natural.	Defines the requirements to ensure that the project's impacts on nature, ecosystems, habitats and biodiversity are managed appropriately.
7	Indigenous Peoples.	Defines the requirements for the protection of indigenous persons; deemed not applicable to the project, since there should be no indigenous persons in the project area as defined by IFC PS 7.
8	Cultural Heritage.	Defines the requirements to protect the cultural heritage of the adverse effects of the project activities, to support its preservation, and promote the equitable sharing of benefits arising from the use of cultural heritage.

In addition, the following IFC environmental, health and safety guidelines (EHS) are applicable in terms of management of current and projected impacts of the project:

- EHS environmental, health, and safety guidelines (World Bank Group, April 2007); and
- EHS guidelines for thermal power plants (World Bank Group, December 2008).

### 0.3 *PROJECT PRESENTATION*

#### 0.3.1 *Project overview and location*

The Project site is located near the village of Taboth in Jacqueline Prefecture, about 800 m south of the Ebrié lagoon, about 30 km west of Abidjan, as shown in the following figure. It is located 1 km southeast of the village of Taboth, in the municipality of the same name, about 12 km east of Jacqueline.

The land of about 30 hectares allocated for the project is located in a rural area, currently occupied by agricultural plantations comprised of coconut trees and bordered by forest plots. The site is located about 800m south of the Ebrié lagoon. The residential areas closest to the project activities are located approximately 700 m from the northwestern boundary of the property.

#### 0.3.2 *Strategy of impact avoidance in site selection*

The project has been developed with the aim of avoiding impacts, notably by the choice of site alternatives for the power plant and the layout of the power line and the water discharge pipe in the lagoon:

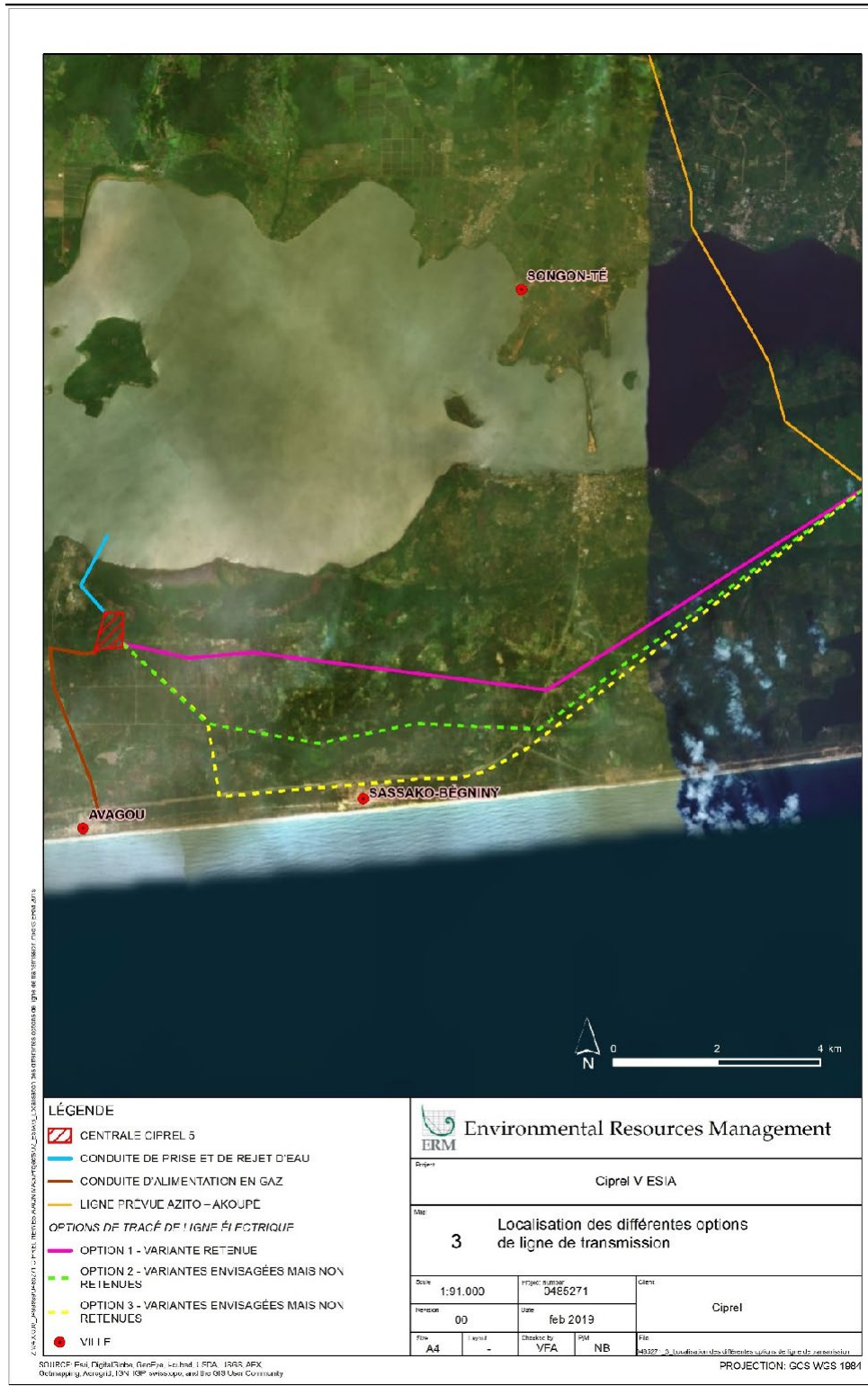
- The plant site consisting of cultivated or fallow agricultural plots, acquired via legal transactions in agreement with representatives of local stakeholders;
- Organization of power lines to minimize involuntary resettlement (on this aspect, an action plan for the resettlement and restoration of livelihoods is being finalized);
- Avoidance of the most sensitive natural environments:
  - Circumventing or optimizing the route;
  - Commitment to not clear dense forest;
  - Commitment to not implement power line pylons or access roads in lowland habitats;
  - If avoidance or circumvention is inevitable, an environmental and social management plan, including verification procedures of the sensitivity of habitats and of the implementation of specific mitigation measures.
  - See also discussion of impacts on biodiversity (pages 12 and 15 of the non-technical summary and detailed sections of impact assessment report).

### **0.3.3**      *Project Components*

The power plant will be capable of operating in open cycle and combined cycle. In open cycle, only the gas turbine (TAG) produces energy. In combined cycle, the turbine exhaust gas is recovered and sent to the heat recovery boiler to operate the steam turbine (TAV), thereby increasing the energy production per unit of fuel. For an installed capacity of 390 MW, combined cycle allows a 31% reduction in greenhouse gas emissions (CO<sub>2</sub> equivalent units) per megawatt hour produced, saving gas emissions greenhouse of 490 122 tons / year of CO<sub>2</sub>e.

The TAG will work around the third quarter of 2020. The plant will operate in combined cycle from the second quarter 2021.

Figure 0.1 Location of the project



### 0.3.4 *Associated facilities*

#### *Transport-related project activities*

Construction of the project will involve transportation of construction materials and plant equipment. The transportation of materials will be by barge from the port of Abidjan to a dock built on the island Bakré and then by road to the project site, or by road from the port of Abidjan via the Jacquville bridge.

#### *Loading dock*

A loading dock located northwest of Vridi channel on the island Bakré, previously developed by China Harbor Engineering Company (CHEC) will be used for unloading of materials and equipment. Extension work and redevelopment of the dock will be needed.

**Figure 0.2** *Existing CHEC unloading dock near the Project site*



#### *Access road*

The project will construct access roads from the dock to the plant site to allow for the transportation of heavy equipment. Road sections and lengths will be determined before the start of the construction phase.

#### *Workers' Housing*

The workers will be housed in hostels close to the construction site or transported from Abidjan.

#### *Operational town (residence area)*

The project will employ about 75 people in the operating phase. ERANOVE could build an operational town (residence area) for 70 households on an area of approximately 3-4 ha. The location of this living area is not defined at this stage. If it were to be outside the project site, ERANOVE will carry out the additional studies required by applicable standards and seek authorization from the appropriate regulatory bodies as required.



*DESCRIPTION OF ENVIRONMENTAL AND SOCIAL ENVIRONS AND A SUMMARY OF PROJECT SENSITIVITIES AND IMPACTS*

Table 0.1 summarizes the main impacts identified and the sensitivities of the environmental and social components and the residual impact of the project. When several activities and types of impacts affect the same environmental or social component, the residual impact reported below is the highest or a weighting of the residual impacts identified in the ESIA.

The impact assessment is presented in detail in Chapter 7, Impact Assessment. The more complex impacts and associated mitigation measures are summarized below, including impacts on air quality and the noise environment.

The set of mitigation measures for each type of social and environmental impact is discussed in full in the relevant technical chapters.

**Table 0.1**      *Principal potential impacts identified*

Potential impacts	Project activities which may have potentially significant impact	Receivers	Receptor sensitivity and impact identified	Residual impact severity
Air emissions	Emissions from vehicles / machinery related to construction activities.	local people including those in the immediate vicinity of the site around the project implementation site (village Taboth).	Quality of acceptable air in the Project area of influence, few people in the immediate vicinity of the project or in the emission dispersion zone, as predicted by modeling study	Negligible
	Air emissions from the operation of the power plant.			Negligible
	Emissions of salt water droplets from the cooling tower.	agricultural or natural vegetation and infrastructure present adjacent to the project site.	<p>The draw for forced cooling system results in the emission of droplets of salty water. The emission of droplets is limited to 0.0005% of the water flow through the use of drift eliminators, or at 0.1 m<sup>3</sup> / h.</p> <p>The scope of the impact is local because the effects are fast. No sensitive vegetation, infrastructure and farmland near and downstream of the prevailing winds.</p>	minor
Greenhouse gas	Emissions from vehicles / machinery related to construction activities (personnel and cargo transportation).	local populations and global warming.	Equatorial tropical climate subject to change due to climate change. Greenhouse gas emissions primarily during the operating phase. Combined cycle power plant to reduce over 30% of GHG emissions per unit of energy produced.	Negligible
	Emissions from the operation of the power plant extension.			
Noise and vibration	Emissions from vehicles / machinery related to construction activities.	Rural sound environment, the nearest receptors located about 350 m from the northwestern boundary of the site.	<p>Average sensitivity, human receptors sensitive to noise and accustomedness to a quiet rural soundscape.</p> <p>In the operational phase, modeling of noise levels from the plant indicates compliance with applicable standards, apart from slightly exceeding the nighttime Ivoirian regulatory limit. The project will evaluate the sound levels in the launch phase of the plant and will take further steps (see below).</p>	Negligible
	Emissions from the operation of the extension of the power plant.			minor

impacts potential	Project activities potentially impact significant	Receivers	Receptor sensitivity and impact identified	Residual impact severity
	Vibrations generated by the project during the construction and operation .	social receptors.	Speed limit for construction of heavy vehicles along the access paths (30km/h) to reduce vibration in the structures along track. Not close enough riverside dwellings of the plant site to be affected by vibration on the construction site. No significant vibration during operation.	Negligible
Use of water resources and the potential for pollution of groundwater or surface water	Construction and operational activities of the power plant, groundwater consumption and management of servicing and cooling of wastewater	Physical media and flora/fauna	Strong dilution capacity of the lagoon and low sensitivity of the lagoon's biodiversity. Specific management plans for wastewater management, hazardous substance management and spill response will be implemented.	Negligible and minor
			Pumping cooling water into lagoon, no impact on this abundant resource. Pumping of service water into the aquifer subject to sufficient resources (to be found in the light of geotechnical / hydrological studies) - if the resource is insufficient, alternatives will be sought.	Negligible
Degradation of soil	Construction and operation of the power plant.	Ground.	Sandy soil, level ground. No sensible use of land on the proposed site of the plant. Agriculture (including coconut) in the extended area. Low sensitivity.	Negligible
Natural surroundings and biodiversity	Clearing and site clearing of the power plant site and the water discharge lines, areas of work and the power line during construction.	Fauna and flora.	Avoidance approach to avoid direct impacts on natural habitats and terrestrial biodiversity. Some habitats present on or near the line are likely to be considered Critical Habitats as they relate to IFC PS 6, including swamp forests and lowlands (to be confirmed in view of results of further studies being conducted by ERANOVE).  The direct impact of the Project on these habitats has been avoided by the choice of plant location, the layout of the water discharge pipelines, and a line layout that avoids critical habitat areas. The chosen route of the line minimizes as much as possible the crossing of lowlands. In addition, the project will limit the clearing area to the maximum, avoid sensitive areas of forest and lowlands, particularly with regard to the installation of pylons and access roads, and proceed with the revegetation of impacted areas when will be possible.  In addition to this avoidance approach, CIPREL is committed to deepen the analysis of the sensitivity of natural environments through complementary studies, which will include, among other things, marshland and lowland habitats and confirmation / characterization of the presence of the West African chimpanzee <i>Pan troglodytes verus</i> , whose presence in these forests is considered possible, but is not proven. These additional studies will be conducted with a view to complying with the requirements of IFC PS 6 with the aim of refining a Biodiversity Action Plan (BAP) consistent with applicable standards and the scope of the project.	Minor to Moderate

impacts potential	Project activities potentially impact significant	Receivers	Receptor sensitivity and impact identified	Residual impact severity
	Discharges of wastewater and cooling water originating from the operation of the power plant.	Ecology of the lagoon.	High dilution capacity of the lagoon (demonstrated by modeling the thermal plume demonstrating compliance with applicable discharge standards), brackish water not used for human consumption, not a particularly sensitive lagoon environment.	minor
Cultural heirtage	Clearing and site clearing and working areas during construction.	Cultural heritage (incidental finding).	Presence of sacred sites and heritage identified in the corridor of the power line directly or indirectly affected by the presence of the Project. The project will manage the impacts on these sites as part of the Resettlement Action Plan (RAP) in consultation with affected communities.	minor
Local governance	Loss of legitimacy of local authorities as a result of population concerns generated by the acquisition of land by the project.	local populations.	The Project will ensure a transparent dialogue and include the entire population through its various representatives in the consultations on land acquisition and the purge of customary rights.	minor
Mobility and Transportat ion	Increased traffic along the site access roads.	local people	Transportation of equipment during the construction phase will be mainly by truck via access roads through several villages in the area, increasing the risk of road accidents involving members of local communities. The project will adopt car traffic rules to reduce the risks and nuisances related to road traffic. Speed of heavy vehicles limited to 30km / h on track.	moderate
Access to natural resources	Loss of access to natural resources on the plant site and along the power line.	local populations.	The sites of the plant and the power line are used for agricultural or natural resources collection activities. Local communities will lose access to these limited sites. The project will offset this loss of access via the RAP.	Negligible to Minor
Jobs and economic activities	Jobs generated by the project.	local populations.	No direct impact expected from the project on the main livelihood activities of the population (agriculture, fisheries). Creating about 2000 jobs at the peak of the construction phase and about 75 during operation. The project will ensure prioritize local employment through the use of local businesses.	major positive

impacts potential	Project activities potentially impact significant	Receivers	Receptor sensitivity and impact identified	Residual impact severity
Infrastructure use and basic services	Migrant flow in the area looking for generating employment additional pressures on infrastructure and services including habitat, surface water, schools, health posts and sanitation.	local populations.	Limited infrastructure and basic services: no asphalt roads, one health post and school, lack of drinking water. The increase in local population potentially induced by the presence of workers could result in the saturation of the limited social infrastructure and services currently available.	Negligible

## 0.5 MEASURES FOR IMPACT AVOIDANCE, REDUCTION, COMPENSATION, AND ACTION ITEMS

ERANOVE identified and is committed to implement various social and environmental measures designed to mitigate the negative impacts of and to maximize the benefits of the project by applying the following sequence for the selection of measures (in order of decreasing preference): Avoid impacts, reduce impacts, compensate for impacts.

In particular, the avoidance approach has resulted in the selection of linear infrastructure sites and plots to avoid the most sensitive natural environments, while limiting the land use impact on local population and the need for resettlement.

All mitigation measures specified in the ESIA are grouped in a Plan of Environmental and Social Management Plan (ESMP) for project implementation.

The ESMP lists all mitigation measures, procedures and environmental and social plans to be implemented by the project and provides a framework for monitoring or even auditing project compliance with standards and good practices.

The ESMP is organized by theme and defines a clear indication of actions to be undertaken for each development phase (design, construction, operation). It also includes commitments to carry out further studies to refine the mitigation and monitoring plans as well as the prevention mechanisms that serve to ensure that the impacts are not greater than expected.

The ESMP will be updated as the project progresses, accounting for the results of additional studies that CIPREL expects to undertake as part of the ESIA.

If studies on biodiversity confirm the presence of species triggers the name "critical habitats" (as defined in IFC PS 6), then a Biodiversity Action Plan (BAP) will be developed and implemented in accordance with the requirements of the performance standard, including:

- A plan to avoid impacts;
- A plan to monitor natural habitats and the species concerned to be able to monitor the impacts over time and provide additional corrective measures, if necessary;
- A compensation plan for unavoidable impacts, to generate a "net gain" (positive impact) in terms of preserving natural habitats and species concerned by the impact, if necessary, by putting in place measures to support the preservation of these habitats and species outside the Project area of influence.

Surveillance and monitoring of environmental and social impacts of the project are an essential aspect of an effective environmental and social management system.

## 0.6 ENGAGEMENT OF STAKEHOLDERS

National regulations and international good practice in environmental and social studies and management require developers to identify and engage with stakeholders through proactive and timely consultation and project presentation and of its impacts. The ESIA consultation program was designed to inform stakeholders of development plans and give them the opportunity to express views on the project and the impacts that should be considered in the ESIA.

The consultations conducted as part of the development of the ESIA took place over the period from November to December 2018. The consultation mission was conducted by ENVAL, an Ivorian research company, in collaboration with ERM, the international consulting firm responsible for the development of the ESIA. The mission was occasionally accompanied by a representative of ERANOVE.

*Table 0.2 Consultations realized as part of the ESIA*

step ESIA	Type of consultation	Part (s) involved (s) encountered (s)	Place and date
Initial state	Meeting	<b>Community Taboth</b>	November 27, 2018
Initial state	Meeting	<b>Community Avagou</b>	November 27, 2018
Initial state	Meeting	<b>Community Abreby</b>	November 28, 2018
Initial state	Meeting	<b>Community Ndjem</b>	November 28, 2018
Initial state	Meeting	<b>Community Sassako Benigni</b>	November 29, 2018
Initial state	Meeting	<b>Community Adoukro</b>	November 30, 2018

The key issues and expectations expressed were:

- the project's economic benefits especially in terms of local employment;
- investments in social and health infrastructure;
- transparency regarding access to land and compensation for the purging of customary rights; and
- environmental compliance of the project.

The consultations carried out to date as part of the ESIA development were preliminary and their goal was primarily to frame the completion of the ESIA and Stakeholder Engagement Plan (PEPP) to collect information on stakeholders and incorporate their comments and concerns. These consultations helped to answer stakeholders' questions about the nature of

the project and the details of its design. Information collected and stakeholder concerns incorporated into ESIA.

The project will continue dialogue with stakeholders throughout the lifetime of the project, during the different phases of design, construction and operation.

All engagement activities held to date, the summary of the topics discussed, and the strategy for future commitments are detailed in the Stakeholder Engagement Plan (PEPP) for the project, published simultaneously with this ESIA report, and updated on the ERANOVE website at regular intervals or according to the developments of the project.