

# Republic of Togo – Environmental and Social Impact Assessment for the Phase 2 project of Industrial Platform of Adetikope

## Environmental and Social Management Plan



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# Technical data sheet

## Republic of Togo

## Environmental and Social Impact Assessment for the project

## « INDUSTRIAL PLATFORM OF ADETIKOPE »

## Environmental and Social Management plan

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## Lists of abbreviations and acronyms

ANGE	:	National Agency for Environmental Management
BOD	:	Biological Oxygen demand
CNSS	:	National Social Security Fund
ECC	:	Environmental Compliance certificate
EHS	:	Environmental, Health and Safety
EN	:	Endangered
EPA	:	Environmental Protection Agency
ESD	:	Environmental and Social Department
ESMP	:	Environmental and Social Management Plan
ESU	:	Environmental and social unit
GHG	:	Greenhouse gases
HCT	:	Hydrocarbons total
IFC	:	International Finance Corporation
IUCN	:	International Union for Conservation of Nature (IUCN)
IZ	:	Industrial Zone
m <sup>3</sup>	:	Cubic meter
m <sup>3</sup> /h	:	Cubic meter per hour
MERF	:	Ministry of Environment and Forest Resources
mm	:	Millimeter
PAH	:	Polynuclear aromatic hydrocarbons
PIA	:	Industrial Platform of Adetikope
PPE	:	Personal Protective Equipment
PS	:	Performance Standard
RAP	:	Resettlement action plan
RE	:	Regionally Extinct
RMP	:	Risk management plan
WHO	:	World Health Organization
ILO	:	International Labour Organization

# 1. Objectives of the Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) is the program for implementing and monitoring the measures envisaged to eliminate, reduce and possibly compensate for the damaging consequences of the Project on the various environmental and social components. This program will establish the environmental clauses that will be attached to the Environmental Compliance Certificate issued by the Ministry of the Environment, Sustainable Development and Nature Protection. The integration of the planned measures into existing environmental management provisions will reflect the commitment of PIA, the Project promoter, to sustainable development.

Moreover, the ESMP is part of the Environmental and Social Management System (ESMS) framework presenting key elements for developing required management plans.

The findings of the ESIA are used to develop associated documentation, such as the ESMP and Framework ESMS, as shown below:

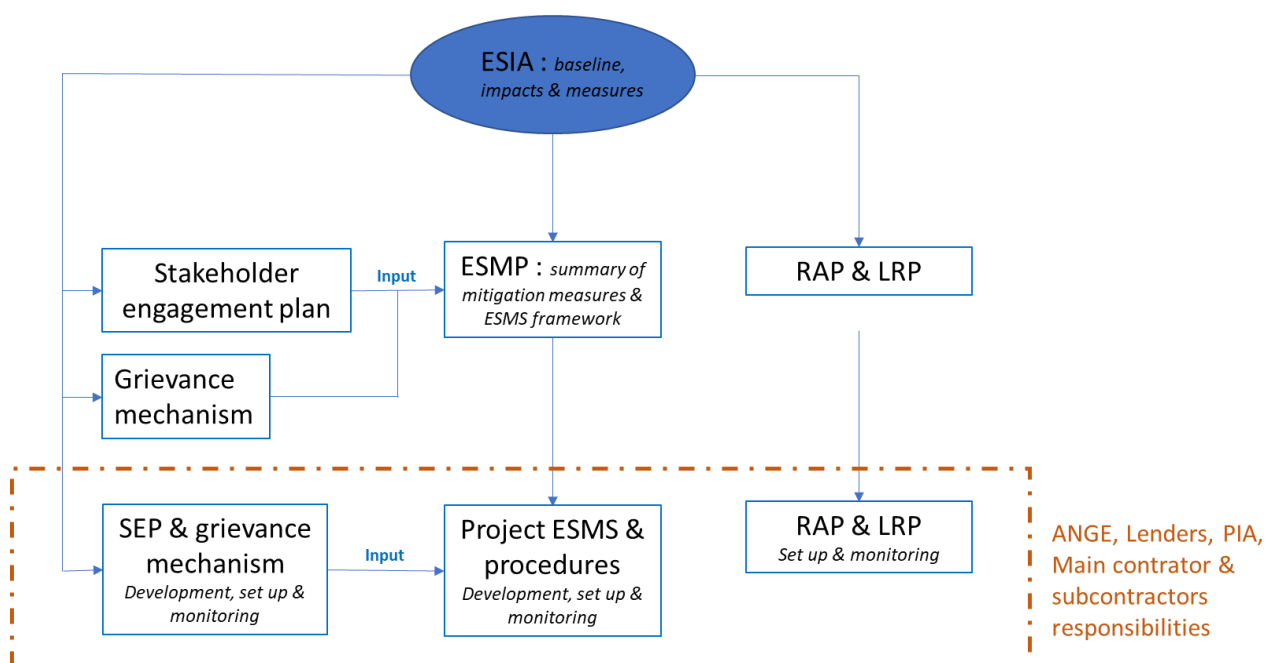


Figure 1 ESMP documents interrelation

## 2. Environmental and social management system framework

### 2.1. PIA ESMS framework

PIA elaborated its own ESMS manual, compliant with the **ARISE ESMS manual** that ARISE applies in all its own operations. ARISE ESMS is a corporate system that applies to ARISE company and all its country-based projects, encompassing PIA Phase 2 project in Togo.

PIA' ESMS chapters are the following:

- **Legislation, standards, and other requirements:** International standards (IFC Performance Standards, Environmental, Health and Safety (EHS) Guidelines, etc.) and togolese legislative requirements to which the Project abides, corporate policies (HSE, human resources, sustainable development, etc)
- **Policy:** ARISE's environment and social policies and procedures concerning environment, labour and working conditions, community health, safety and security.
- **Risks and opportunities:** identification of risks and opportunities as to ensure PIA fits into an environmentally and socially sustainable working culture, using ARISE IIP's ESG policy as a guide. Risks are related to occupational health and safety hazards, contractors management, environmental impacts, etc.
- **Management plans & procedures:** management programs used to mitigate potential environmental and social risks and impacts.
- **Organisational capacity, roles, responsibilities and authorities:** roles and responsibilities, leadership, training program, etc.
- **Information, communication and stakeholder engagement:** risks and impact assessment document, internal and external communication, human resources, grievance mechanism, SEP, etc.
- **Performance evaluation and reporting:** monitoring (intended as measurements) actions that ESMP proposes to implement, qualitative and quantitative performance indicators, internal and external audits and associated reports, site visits.
- **Continuous improvement:** incident management, corrective measures after audits, ESMS manual framework constantly be subject to change in lieu of additional information and/or regulatory commitments.
- **Employee protection and confidentiality policies:** compliance with ILO Convention, UNGC guiding principles on human rights and labour, sexual harassment policy, worker grievance mechanism, whistleblowing procedures and confidentiality on projects.
- **Control of records:** maintain and archive records of ESMS performance and compliance to national, international and other relevant ESG requirements.

An ESMS has been designed to establish a methodological approach to managing environmental and social risks and impacts in a structured way on a continuous basis. This ESMS has to be managed with an appropriate and effective structure both for construction and operation phases of the Project. The intern organization of the ESG team for PIA is presented in **Figure 2** below.

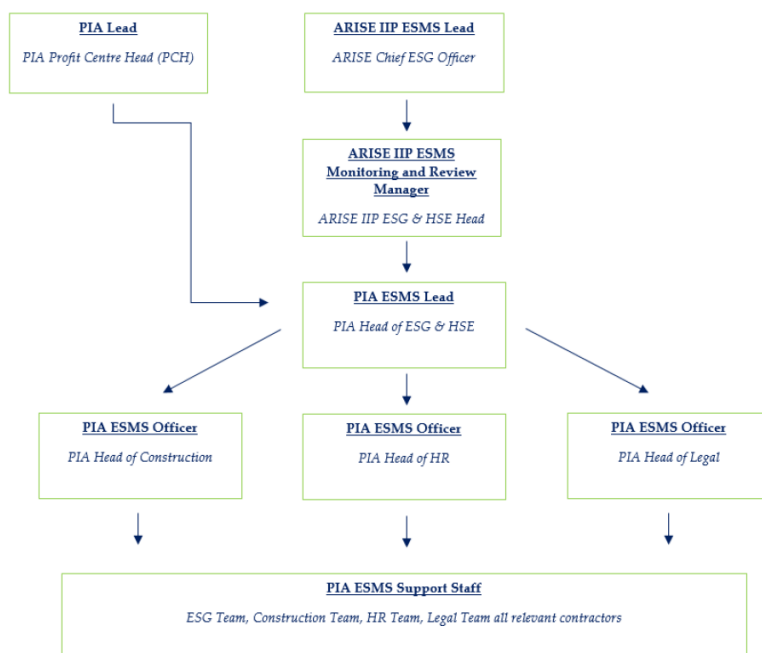


Figure 2 General ESMS Organisational Structure for PIA

More broadly, Figure 3 below presents an overview of the ESMS management scheme with roles and responsibilities between all members including national institutions and local communities.

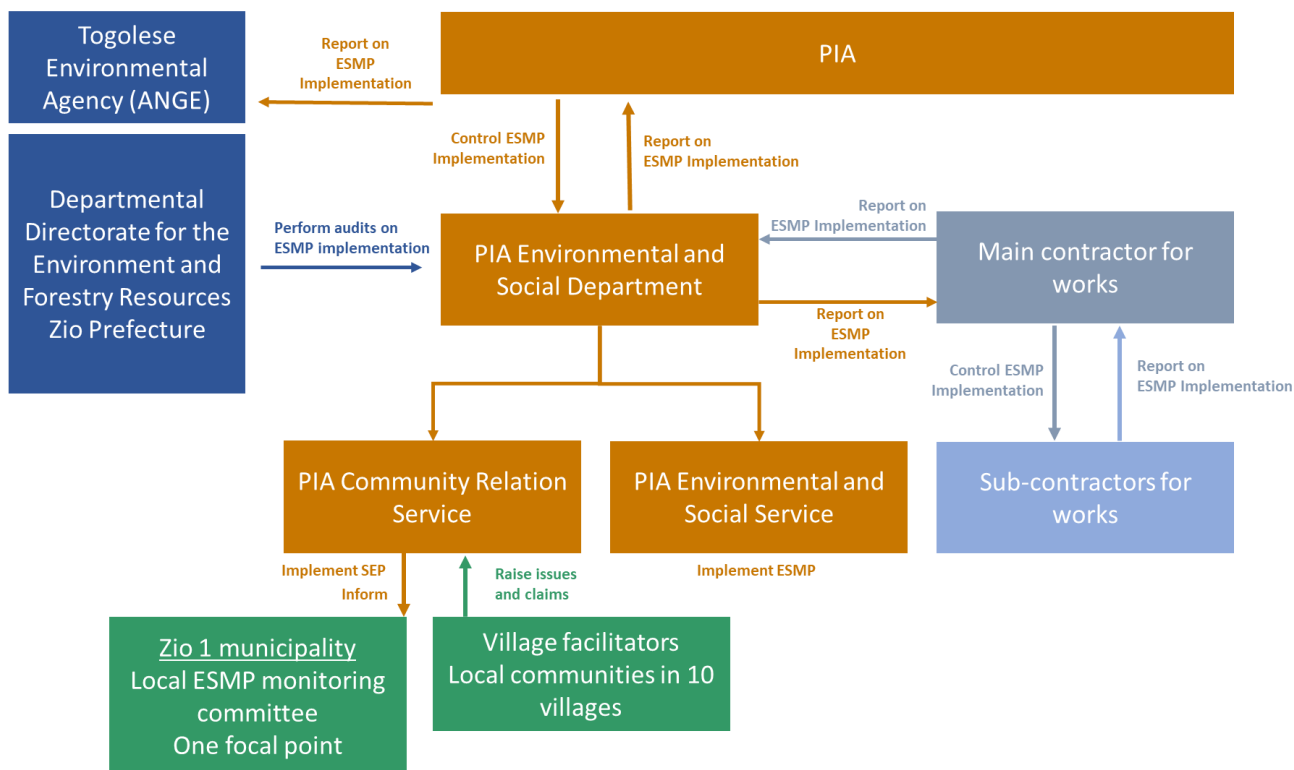


Figure 3: ESMS management scheme

The following sections provide more details on the functioning of this scheme and the role and responsibilities of each actor.

## 2.2. Institutional framework

It brings together all national institutions with direct or indirect competences in environmental decision-making. The following institutions are the most concerned:

- Ministry of the Environment, Sustainable Development and Nature Protection through the National Environment Management Agency (ANGE);
- Zio Prefecture and especially its Departmental Directorate for the Environment and Forestry Resources ;
- Forest Resources Inspectorate (IRF);
- Ministry of Trade, Industry, Private Sector Development and Promotion of Local Consumption;
- Free Zone Administration Company;
- Ministry of Water, Equipment, Rural Equipment and Village Hydraulics;
- Zio Prefecture;
- Tsévié and Zio 1 municipalities;
- Cantons of Kpomé and Dalavé
- Chiefs of the 10 villages surrounding the project
- Representatives of the affected populations in the 2 surrounding cantons.

## 2.3. Actors involved and responsibilities of the various stakeholders

Several actors will work together to ensure the implementation of the ESMP. They are presented below.

### 2.3.1. Role of the promoter

The promoter, in this case PIA, is responsible for the coordination of all environmental and social activities related to the Project throughout its preparation, construction and operation.

PIA ESG and HSE department has been already formed and implementing E&S management on PIA Phase 1 and upcoming Phase 2. Its role is to:

- ensure that the environmental and social aspects defined in this ESMP are integrated into the main contractor tender documents;
- ensure the implementation of the actions of the ESMP that are the responsibility of the promoter;
- conduct the environmental and social monitoring of the main contractor in charge of the works and its subcontractors during the construction phase;
- conduct environmental and social monitoring of the industrial units during operational phase.

This department is made up of an Environmental and Social Director, an HSE Manager and a Social Manager. These persons will have to be adequately competent and qualified.

The promoter will also have to hire a Community Relations Officer (CRO) to embody the Community Relations Service. This person will be attached to PIA ESG and HSE Department and managed under the responsibilities of PIA Head of ESG and HSE.

The scheme below presents the overall structure of the ESG & HSE Department.

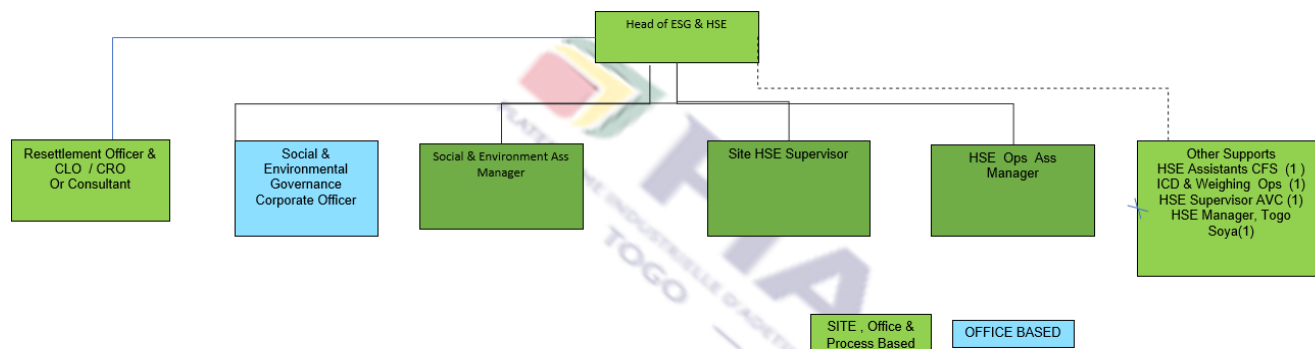


Figure 4 : ESG & HSE Departement structure (PIA, 2022)

Depending on the phase of the Project, the role of the ESG & HSE Department, as far as environmental and social aspects are concerned, will be as follows:

- **Project preparation phase:**
  - obtain all relevant permits
  - include this ESMP in both tender and contractual documentation;
  - ensure the quality of the E&S measures proposed in the works companies' bids and thus guarantee that these issues are considered in the evaluation of the bids. Where appropriate, the department will take part in negotiations with potential works companies to ensure that adequate E&S measures are included in their services;
  - develop management plans and procedures on the basis of this ESMP;
  - ensure the consistency of the specific E&S management plans (ESMP Construction Site) of the contractor(s) in charge of the works;
  - implement of the SEP.
- **Construction phase:**
  - monitoring and coordinating E&S activities and implementation of the management plans and procedures;
  - participate to regular HSE meetings with the representatives of the contractor(s) in charge of the construction work;
  - plan, manage and conduct the contractor's environmental and social audit programs to be performed by the HSE manager;
  - implement the LRP and Supplementary RAP;
  - prepare quarterly monitoring reports for ANGE, based on E&S activity reports received from the contractor(s).
- **Operation phase:**
  - monitoring and coordinating E&S activities, and implementation of management plans and procedures;
  - perform surprise industrial site visits to realise on-the-spot audits;
  - plan, manage and conduct the industrial site E&S audit programs to be performed by the HSE manager.



### 2.3.2. Roles of the main contractor and its subcontractors

The main construction company and its subcontractors will appoint specific HSE managers within their teams, dedicated to monitoring the implementation of environmental and social measures and evaluating the efficiency of these measures. Each contractor will be responsible to recruit qualified personnel to perform environmental and social obligations specified in the contractual agreement. The number of personnel and its competencies must be commensurate with the risks associated with the contractual scope of work.

Contractor's HSE managers will be responsible for the environmental aspects directly linked to construction activities and the social aspects linked to complaints expressed by the population, nuisances suffered, requests for compensation for temporary events taking place during construction activities and relations with traditional local authorities or representatives of the State. The HSE managers will perform the following tasks:

- ensure environmental and social coordination with PIA's ESG & HSE team;
- ensure that all the environmental plans and programs prepared have been submitted PIA's ESG & HSE team;
- ensure construction activities comply with the environmental and social obligations defined in this ESMP and PIA's ESMS;
- verify that E&S obligations are effectively implemented on the sites;
- participate in site monitoring meetings and prepare a monthly E&S monitoring report for the site;
- ensuring relations with the local communities concerned for all social aspects, including improving community health, compliance with recruitment procedures, handling of complaints;
- organize a database for the storage of all E&S documentation generated during the construction of the Project;
- prepare weekly and monthly activity reports presented to the monitoring committee;
- prepare the required documentation prior to the environmental and social audits of the Project.

### 2.3.3. Togolese Environmental Management Agency (ANGE)

The Project construction, operation and decommissioning phases ANGE will monitor compliance with Togolese E&S law and the Environmental Compliance certificate (ECC) conditions. Thus, the environmental monitoring and follow-up reports attesting to the proper implementation of the ESMP and its effectiveness will be approved and validated by the ANGE. ANGE will work in concert with the environmental units of the municipalities and the decentralized authorities of the State which also have competences in environmental matters.

### 2.3.4. Prefectural Directorate of Environment and Forest Resources

The role of this decentralized state service is to control and prevent pollution and nuisances, in particular by informing and raising awareness among the populations concerned about the environmental assessment procedure.

It will monitor the ESMP implementation in collaboration with the ANGE.

### 2.3.5. Local ESMP monitoring committee

In order to facilitate the supervision of the Project by the local authorities and in particular by the mayor of the municipality of Zio, a local ESMP monitoring committees will be set up on the initiative and with the support of the promoter.

This committee will be composed of Mayor or a selected representative, PIA's ESG & HSE team members, HSE managers from contractors working on site, ANGE and Labour representation This committee is dedicated to handle E&s and HSEE matters.

In order to ensure the representation of the interests of women and vulnerable groups, a representative of these 2 categories will also be appointed member of the committee.

The roles of this committee will be to:

- participate in meetings organized by the Community Relations Service (CRS), during which they will be presented with the progress of the Project, the main environmental and social issues identified and the results of the Grievance management mechanism. The frequency of these meetings will vary between monthly and quarterly;
- inform local residents following meetings organized with PIA;
- monitor the execution of the works and report any environmental or social problem to the CRS that would require urgent action;
- monitor the development of social project-induced in-migrations to ensure concerted management of accommodation needs, health services, shops, etc. with the promoter and the companies in charge of the works.

## 3. Preliminary ESMP

### 3.1. Human resources management

The first action of the ESMP will be to adopt and implement human resources policies and procedures appropriate to the Project size and workforce. The main objectives of such policies are presented below.

#### 3.1.1. Objectives

During the construction phase, which is expected to last 12 months, a maximum of 1,500 jobs will be created. During the operational phase, the Project could generate around 5,000 to 7,000 direct jobs, depending on estimates based on the volume of jobs generated in other IZs.

Human resources management, both for PIA and contractors, will therefore be central to the Project and must meet the following objectives:

- Comply with ARISE corporate labour policies listed in § 2.1;
- Ensure that recruitment and employment comply with Togolese regulations and international labor law, especially ILO conventions;
- Meet the employment needs of the local population;
- Include women and vulnerable people;
- Train recruited workers in all the duties and obligations incumbent on them in terms of environmental protection and respect for local populations;
- Provide them with a mechanism for receiving and managing their complaints and claims.

The procedures detailed below apply to the construction and operation phases of the Project.

#### 3.1.2. Local recruitment and content program

The local recruitment program will be based on the following criteria:

- **Priority hiring of persons affected by the Project (PAP)** with equal skills: during the recruitment process, candidates that prove they are PAP of the Project will be given priority access to job openings;
- **Priority recruitment, with equal skills, of workers residing in the 10 villages bordering the project:** in case where the PAP are not applying for the proposed jobs, the recruiter will focus on hiring persons originating from the villages of the study area;
- **A 50% quota of PAP workers or workers residing in the affected villages.** This quota may be subject to revision if it appears that the local population is not qualified for the work required;
- **Quota setting for recruitment among women and vulnerable groups:** it is proposed that a binding quota for the recruitment of women and vulnerable groups, notably disabled persons is set up at 5% of the total recruited employees.

In order to promote local employment, limit the opportunistic influx of workers and the resulting pressure on local infrastructure and public services, PIA and the subcontractors commit to ::

- Prohibit direct on-site recruitment;
- Communicate to the local authorities a list of available positions and the required qualifications prior to the recruitment campaigns;

- Communicate to local authorities, civil society organisations and local populations the recruitment procedure using appropriate media such as: local radio, notice boards, distribution of brochures.

The local procurement policy will include the following elements:

- Priority use of local subcontractors subject to economic, technical and regulatory feasibility;
- The establishment of public and transparent tendering procedures for the use of services, including advertising to local authorities and in local communication channels;
- Local procurement from farmers for food products.

PIA and its contractors commit to respecting national and international regulations, prioritising local employment, particularly of people affected by the project, respecting the local procurement plan, respecting recruitment quotas, and communicating with local authorities about job opportunities. Finally, PIA and the main contractor will stimulate the development of areas dedicated to the sale of goods and services (water, food, catering) in the vicinity of the site in order to promote commercial opportunities for the local population, particularly women.

### 3.1.3. Transparency of the recruitment process

The recruitment of staff should be carried out with the highest degree of transparency in a collective manner and based on well-defined criteria presented previously. In this context it is proposed to implement the following scheme:

- PIA and its contractors will ensure that vacancies are advertised to local authorities and through appropriate communication channels;
- Collection of applications and assessment of skills;
- Pre-selection of applications meeting the qualification criteria;
- Selection of applications from: 1) Women and vulnerable populations; 2) PAPs; 3) People from the area; 4) People from outside the area;
- Selection of workers according to the type of job: For unskilled jobs, by drawing lots in case of numerous applications or by a committee of public authorities and population representatives. The choice of one of the methods or their possible combination will be announced before the selection begins

With regard to local procurement, the criteria established by the selection of subcontractors will include

- The location of the subcontractor;
- Regulatory compliance, particularly in terms of health, safety and the environment;
- The working conditions offered to employees;
- The quality and transparency of recruitment procedures, in relation to the requirements set out above.

### 3.1.4. Workers' training, awareness-raising and code of conduct

Regular **training sessions** of the construction site personnel will be put in place on basic occupational health and safety (OHS) procedures at work including waste and hazardous waste handling and site emergency response plan. The content of training sessions will cover as per IFC standards:

- Knowledge of materials, equipment, and tools;

- Known hazards in the operations and how they are controlled;
- Potential risks to health;
- Precautions to prevent exposure;
- Hygiene requirements;
- Wearing and use of protective equipment and clothing;
- Appropriate response to operation extremes, incidents and accidents.

For certain type of works (work at height, in confined spaces), **specialty OHS training** will be provided to ensure that workers are able to manage the specific hazards of individual work assignments.

PIA, its contractors and subcontractors will organise regular awareness sessions on environmental and social aspects to ensure the health and safety of workers and good relations with the local population. These awareness sessions will include:

- The promotion of the principle of non-discrimination against women and vulnerable persons such as people with disabilities;
- The prohibition of violent or degrading behaviour, particularly towards women, such as the use of prostitution;
- Risks related to the spread of diseases, including sexually transmitted diseases;
- The prohibition of child labour and forced labour;
- The conduct in case of an accidental archaeological find;
- The prohibition of hunting and eating bushmeat;
- Respect for customary norms and local practices;
- Conduct for healthy relations with the local population;
- Wearing personal protective equipment;
- Presentation of the Grievance management mechanism.

OHS training and environmental and social awareness-raising sessions can be organized in the same timeframe. Sessions can be organized daily, weekly or monthly depending on the subject. They can take the form of daily meetings (start-up talks or safety quarter-hours) covering particularly one environmental and social aspect, or monthly briefings. A session will be organized for each new worker entering his position.

A **code of conduct aligned with ARISE corporate Code of conduct (see § 2.1)** will be prepared by PIA ESG & HSE team reminding the obligations and prohibitions workers must comply with. Each worker will have to sign the code. A clear sanction system must be defined and workers must be informed about the sanctions they expose themselves to if they breach the code.

Additionally, **internal rules** will be written down by the main contractor applying to its workers. These rules will remind workers on their obligations in terms of discipline and health and safety precautions. It will clearly state the sanctions to which workers expose themselves if they breach the rules. Rules will be posted on strategic locations of the work site.

### 3.1.5. Respect for worker's rights

PIA, the main contractor and subcontractors undertake to respect the national rules mentioned in section 2.3.7 of ESIA and the international conventions regulating workers' rights such as the ILO conventions. The general principles include:

- No forced labour ;

- No work for children under 14;
- Prohibition of worst forms of child labour – child under 18 (including hazardous child labour such as work underground, at dangerous heights, confined spaces, with dangerous machinery or tools, in an unhealthy environment exposing to hazardous substances, heat, noise levels or vibrations);
- No discrimination including against women ;
- Respect for freedom of association and protection of the right to organise collective bargaining;
- Equal remuneration.

PIA will carry out regular audits to ensure that the contractor and subcontractors comply with these obligations. Workers will always be recruited on the basis of employment contracts mentioning the rights of each party in accordance with Togolese law, working hours, conditions of dismissal, and affiliation to the Togolese social security system.

### 3.2. Permits and authorizations under Togolese regulations

Most of the Project activities must be subject to a prior approval and administrative information procedure. The promoter must obtain all the necessary operating permits before (i) carrying out the construction works for the development of the Project and (ii) the commissioning of the infrastructures. Some of these permits are provided against a fee to be paid to the ministry delivering it, the amount of which is set by the said ministry according to the characteristics of the request.

The requested operating permits are:

- Before the construction phase:
  - Tree cutting (law n° 2008-009 of June 19, 2008 relating to the forestry code).
- Before the operation phase:
  - wastewater discharges (Law n° 2010-004 of June 14, 2010 on the water code);
  - groundwater withdrawal (Law n° 2010-004 of June 14, 2010 on the water code).

To date, there are no decrees or application orders for the authorizations.

Failing that, the good practices in force in Togo require that the promoters make a written request to the ANGE and the Prefectural Directorate of the Environment for these permits.

### 3.3. Preparation of the HSES specifications

The promoter will include in the tender documentation as well as final contractual agreement the specifications defining environmental and social obligations (HSES specifications) that are imposed by the promoter on the main contractor and also on its subcontractors. These requirements will be incorporated into an annex document called “HSES Specifications”. This document will define the objectives and measures that the companies hired for the construction will have to implement in order to comply with the conclusions / measures of the ESIA and the terms of this ESMP.

These specifications will come directly from the ESMP for construction phase presented in the Section 4.

The contractor (s) will be responsible for ensuring that all its subcontractors comply with the requirements set out here.

### 3.4. Plans and procedures under PIA responsibilities

#### 3.4.1. Introduction

As this Project represents the Phase 2 of the overall PIA development, PIA already elaborated some generic applicable plans and procedures, notably guided by PIA's ESMS and including:

- Waste management plan
- Chance Find Procedure
- Emergency Response Plan
- Grievance management mechanism
- Stakeholder's Engagement Plan (SEP).

The plans and procedures that PIA has yet to develop at different are stated in the following table :

**Table 1 Plans to be developed by PIA during different Project phases**

To be developed during preparation phase	To be developed prior construction phase	To be developed prior to operational phase
<ul style="list-style-type: none"> <li>• Human resources management plan and procedures;</li> <li>• Communication plan;</li> <li>• Supplementary RAP and LRP</li> <li>• Cultural heritage management plan;</li> <li>• Revegetation program;</li> <li>• Dumping site management plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Revegetation procedures;</li> <li>• Community health and safety plan;</li> <li>• Social inclusion plan;</li> <li>• Traffic management plan;</li> <li>• Social influx management plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Water resource management and discharge management plan;</li> <li>• Occupational hygiene, health and safety of PIA workforce;</li> <li>• Maintenance plan for common outdoor areas;</li> <li>• PIA operational guidelines for industries.</li> </ul>

#### 3.4.2. Communication plans

##### 3.4.2.1. Objectives

The effective development of a project depends critically on communication, i.e. the ability of promoters to disseminate clear and transparent information to ensure that stakeholders, and particularly the affected populations, understand the project.

The objective is to maintain a transparent and reliable information channel on the project. This channel will notably allow for the circulation of information concerning the employment opportunities generated by the project.

Late communication complicates the development of a project: the most effective communication channels are not identified and mobilised, the cost of communication is poorly assessed and the populations affected may show incomprehension or even mistrust towards the promoter, the project manager and the subcontractors.

To avoid these difficulties, PIA's communication strategy plan will include two components: a communication plan and a stakeholder engagement plan.



### 3.4.2.2. Communication plan

The communication plan determines the strategy that PIA will put in place to communicate about the project in order to improve the level of awareness and positive perception of the project. This plan includes the necessary means and resources, the internal and external targets of the different communication actions. It will also indicate the communication media to be favoured and the partnerships to be established with the media (local radio stations, press, etc.).

The internal communication plan is not limited to the consideration of stakeholders, but also includes communication with employees, workers, and economic operators operating on the site.

### 3.4.2.3. Stakeholder Engagement plan

The main objective of the Stakeholder Engagement Plan is to facilitate dialogue with stakeholders involved in the project from its preparation to its closure. Stakeholders are individuals and/or groups who are directly and/or indirectly affected by the impacts and performance of the Project. They should be involved in a transparent, effective and regular manner.

The SEP is therefore more focused than the Communication Plan in that it concerns the people and organisations positively and negatively affected by the project. This plan has already been elaborated by the Consultant and is being implemented by SIPI throughout the Project.

This document exhaustively identifies stakeholders, analyses their concerns and expectations and estimates their level of interest, social legitimacy and potential influence in the implementation of the project. The SEP describes the communication and consultation efforts to be made to ensure the engagement of all stakeholders.

This document should be updated regularly as the list of stakeholders, their expectations and interests, etc. may change during the course of the project.

The SEP focuses on the 10 villages located in the vicinity of the project: Hagblévou, Gnatikopé, Vondjogbékopé, Tokpanou, Agbadovinou, Djogblakopé, Afloacondji, Kpom Agomé, Akadjame and Fiogblé.

### 3.4.2.4. Community relations team

In order to facilitate and unify communication with the populations of the affected villages and the local authorities and to create transparent and trust-based relationships, PIA will set up a community relations team whose mission will be to:

- Organise information meetings;
- Mobilise communities during different studies such as RAP, LRP, community needs assessment, monitoring of living conditions of certain categories of the population;
- Collect oral complaints from PAPs, process and resolve complaints filed orally and through the Grievance management mechanism;
- Prepare and manage the different data management tools related to PAPs (list of PAPs, list of vulnerable people, minute and attendance list of consultations...);
- Coordinate communication activities with the different channels mobilised;
- Coordinate the implementation of different activities involving PAPs, including the RAP and LRP;
- Ensure the mobilisation and involvement of local authorities in the different activities when necessary, e.g. definition of community needs, livelihood restoration activities.



### 3.4.2.5. Monitoring indicators

The indicators are :

- Number of Community Relation Service personnel recruited;
- Stakeholder engagement documentation and monitoring tools (stakeholder database, shared agenda, consultation register) created.

### 3.4.2.6. Responsible for implementation and monitoring

SEP has been drafted during ESIA, and PIA is responsible for the realization of the communication plan and the implementation of the SEP through the hiring of the Community relations officer.

### 3.4.2.1. Timeline

The plans will have to be implemented throughout all project phases.

## 3.4.3. Grievance management mechanism

### 3.4.3.1. Objectives

In order to best manage the complaints and grievances of PAPs and ensure peaceful relations with the populations, PIA will put in place a grievance management mechanism. The grievance management mechanism for the implementation of the Project can be referred to by those affected by the Project and will provide a structured means of receiving and resolving any concerns raised by an individual or community who feels that they have been adversely affected by the Project activities. Complaints and queries that have a direct link to the Project (related to the noise environment, air quality, biodiversity, waste, employee behaviour in all phases of construction, information, awareness of Project phases and impacts on communities, communication arising from Project activities, recruitment and employment conditions and any other matter outlined in the ESMP) will be dealt with promptly through a process that is understandable and transparent, culturally appropriate, free of charge and without retaliation.

This Grievance management mechanism has already been detailed by the Consultant in the SEP from June 2022. The following paragraphs summarize the major elements from the associated procedures.

A specific complaint management mechanism will be developed for resettlement issues (in the case of the inventory and survey phase, complaints are more likely to relate to the omission of a farmer, the wrong demarcation of a plot, an unaddressed land dispute, etc.).

The Promoter will give priority to amicable negotiation and conciliation. In the absence of an amicable agreement between the complainants and the Promoter, the complainants will be informed by the Promoter or the consultant of the procedure to follow to express their dissatisfaction and to submit their complaints.

In order to facilitate knowledge and understanding, the mechanism includes a well-established procedure and will be presented to the impacted populations during information meetings. The availability of the mechanism will be regularly publicised in newspapers, on the radio and at information meetings.

### 3.4.3.2. Principles

The main guiding principles of a Grievance management mechanism are :

- A complaints officer should be appointed. This may be the Community Relations Manager. Any complaint registered must, if necessary, be followed by an inspection visit within 7 days. His/her tasks are to analyse, gather all information and make recommendations to the Project Management on how to resolve the complaint. The Management validates the proposal of the Complaints Officer or refers it to a Mediation Committee.
- All complaints, real or fictitious, should be recorded and the investigation of these complaints documented.
- The complaints mechanism is designed to be as accessible as possible to all potential complainants. It is inclusive in principle and for this reason it is not envisaged to design a specific mechanism for vulnerable groups.

#### 3.4.3.3. Grievance/Complaints management and response procedure

The grievances and complaints resolution procedure consists of various steps, which are described in this section (see figure below). Every claim or complaint, whether founded or not, will have to go through the resolution process.

The complaints resolution procedure is based on the following fundamental principles:

- The complaints resolution process should be transparent and culturally appropriate;
- Complaints should be recorded in local languages and their resolution should be communicated to complainants verbally, in writing or both;
- All community members (or groups) should have access to the process (entitled or not, male or female, young or old);
- All complaints and claims, relevant or not, should be recorded according to the complaints resolution procedure;
- Significant complaints should lead to discussions with the complainant and possibly a field visit to better understand the nature of the problem.

The complaints management procedure consists of 9 steps:

- Step 1: Filing the complaint
- Step 2: Registration of the complaint and acknowledgement of receipt
- Step 3: Admissibility assessment and categorisation of the complaint
- Step 4: Simple response for non-admissible or low to moderate importance complaints
- Step 5: Investigation for complaints of high to major importance
- Step 6: Proposal of a solution to the complainant
- Step 7: Resolution and closure of the complaint
- Step 8: Mediation if the complainant refuses the proposed solution
- Step 9: Legal recourse for the complainant

The details and timeframes for each stage are set out in the Project's SEP from June 2022. A diagram shows the different stages in Figure 5.

The target times for resolving a complaint are :

- 14 days for unfounded complaints of low to moderate importance ;
- 24 days for high to major complaints.

If additional time is needed to complete the investigation, the Stakeholder Coordinator will inform the complainant of the reasons for the delay and the timeline will be revised.

If a complaint enters stage 8 or 9 of the process, the timeframes can no longer be guaranteed due to the involvement of the company's management and third parties in the mediation.

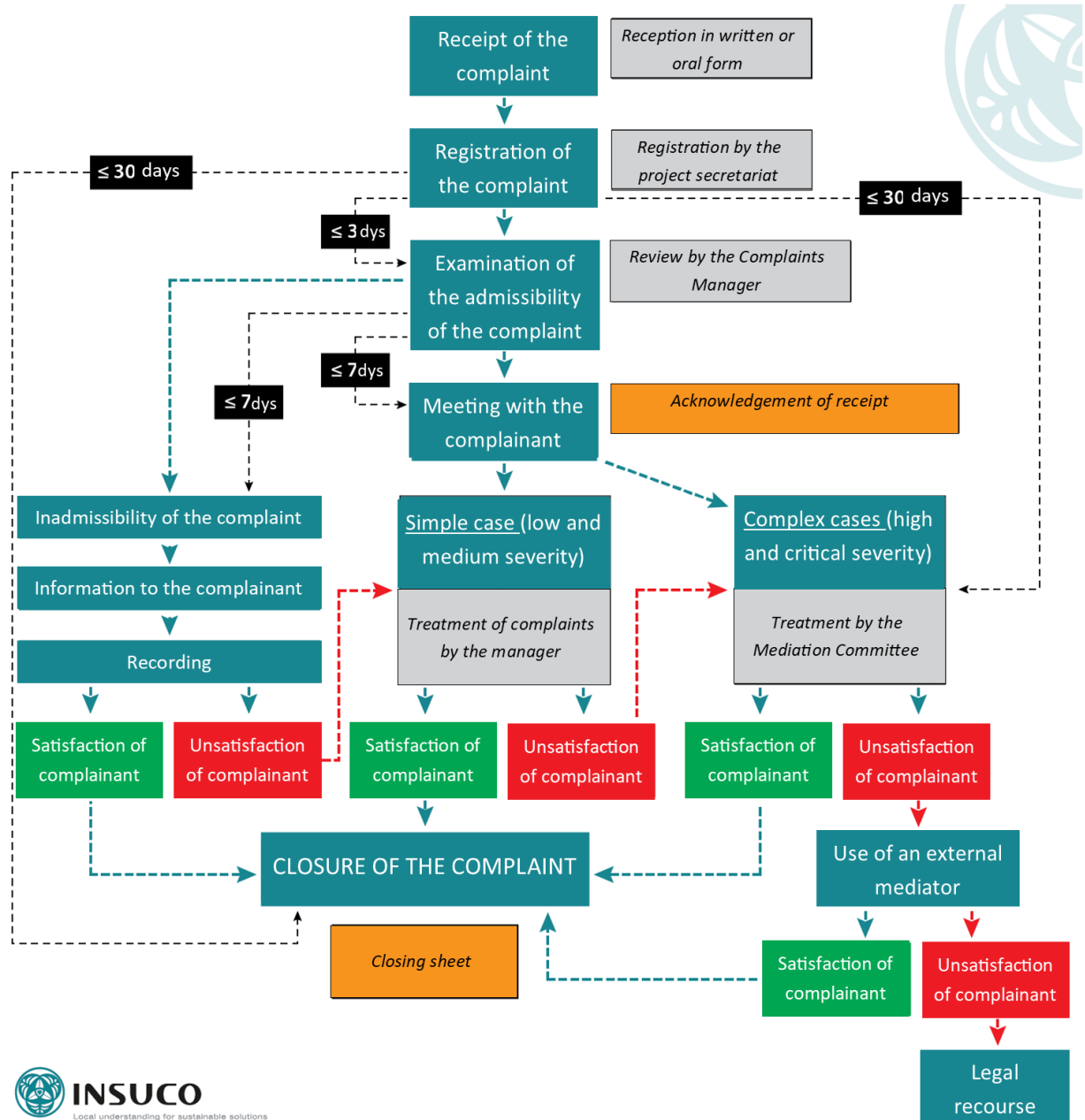


Figure 5 Complaints Mechanism

#### 3.4.3.4. Monitoring indicators

The indicators used to monitor the proper functioning of the Grievance management mechanism are

- Number of complaints received, including single cases
- Number of complaints handled, including simple cases;
- Minimum, average, median and maximum processing time for complaints;

- Number of unsatisfied complainants;
- Number of recourse to an external mediator;
- Number of appeals to the courts.

#### 3.4.3.5. Responsible for implementation and monitoring

This plan will be implemented by PIA in compliance with the SEP elaborated by the Consultant in June 2022.

#### 3.4.3.6. Timeline

These procedures will be implemented prior to the start of the works and be used throughout the other phases.

### 3.4.4. Livelihood Restoration plan and Supplementary Resettlement action plan

The project requires the use of 925 ha of land. Field missions indicate that 200-250 households cultivate land within the project area. The people whose land is impacted reside in 10 villages around the project area. The number of impacted household for the industrial corridor can be estimated in proportion to 70 households and will be specified during the preparation of the RAP.

The land was already acquired and compensated by the government. PIA has made a decision to prepare an IFC compliant Supplementary Resettlement Action Plan and Livelihood Restoration Plan. It will include detailed data to measure the land impact of the project such as the number of plots impacted, their surface area, the nature of the title (formal, customary, informal) and the ownership of additional land.

#### 3.4.4.1. Objectives

The main objective of the Supplementary RAP and LRP is to ensure that those affected are adequately compensated for the loss of assets, structures, or land, which enable them to maintain or improve their standard of living and to address the limitations of the compensations already made by the government.

#### 3.4.4.2. Principles

The Supplementary RAP and LRP should comply with the requirements of IFC Performance Standard 5: "Land acquisition and involuntary resettlement".

The main principles to be applied are as follows:

- **Eligibility:** Eligible persons for RAP and LRP are those physically displaced by the project, i.e. whose residential structure has been displaced by the project, and economically displaced persons, i.e. whose land has been acquired for the project development;
- **Compensation:** In line with IFC performance standards, PAPs will be compensated in kind, subject to the availability of equivalent goods. Financial compensation will be based on market prices and will include replacement costs, lost income, and relocation costs;
- **Livelihood restoration activities:** The service provider in charge of the preparation of the LRP will identify, in consultation with the PAPs, activities to restore the PAPs' livelihoods. These activities will vary from allowing PAPs who still have access to land to continue their activities, to offering those who no longer have access to land alternative activities such as trading, small

business training. The programmes will include individual (e.g. support to business creation) and collective activities (e.g. provision of community equipment for processing agricultural products).

- **Transitional measures:** PAPs will benefit from transitional measures, such as the provision of temporary accommodation, a lump sum allowance or the provision of food until income-generating activities can be set up;
- **Consultation of PAPs:** PAPs will be consulted in the choice of replacement goods, the definition of livelihood restoration activities;
- **Assistance to women and vulnerable people:** vulnerable people will receive special assistance in the form of additional compensation (financial lump sum, or priority access to livelihood restoration activities);
- **Duration:** a specific duration for the RAP/LRP may be predefined, but this may be extended if necessary to ensure that PAPs have at least restored their living standards;
- **Monitoring:** a monitoring committee will be set up, which will include representatives of civil society, relevant technical services, affected populations, women and vulnerable people

#### 3.4.4.3. Monitoring indicators

The indicators used to monitor the successful implementation of the Supplementary RAP/LRP will be:

- The number of people receiving compensation;
- The number of people enrolled in LRP activities;
- Food security, access to health care and health infrastructure;
- The number of service providers recruited for LRP;
- Number of service providers recruited for LRP;
- Share of the planned LRP/PA budget spent;
- A satisfaction survey on the proposed activities and their impact on the living standards of the PAPs.

Other indicators specific to each LRP activity will be proposed by the service providers selected for their implementation.

Consultations on the Supplementary RAP/LRP are being carried out before the start of the work.

#### 3.4.4.4. Responsible for implementation and monitoring

The responsibility for the implementation of the Supplementary RAP and LRP according to IFC standards falls to the Promoter or the contractor depending on their agreements. The monitoring/evaluation is PIA's responsibility.

#### 3.4.4.5. Timeline

Supplementary RAP and LRP will be developed prior to the start of the works on site but implemented during construction phase.

### 3.4.5. Community development plan

#### 3.4.5.1. Principles

As a voluntary contribution to the community development of the villages affected by the Project, the promoter could set up a Community development plan. This plan will be funded from the budget dedicated to corporate social responsibility activities. These activities will respond to the essential needs of the communities such as the construction of social infrastructure (schools, health centres, sports fields), economic infrastructure (construction or repair of markets, roads, initiatives to facilitate access to markets for the sale of agricultural produce, installation of loading areas for smartphones and other small equipment), and sanitary infrastructure (installation of additional drinking fountains).

The financing of these initiatives will be decided after a preliminary study has been carried out to define the needs of the populations in the medium and long term. This study will be based on :

- Consultations with local people;
- Consultations with the technical services of the local authorities to ensure that the initiatives are in line with local development priorities;
- The evolution of the demographic situation, taking into account the influx of workers and the development of the Adétikopé area

This study will produce a community development plan.

It will define :

- The needs of the populations and the detailed procedures for selecting initiatives;
- The financing arrangements (creation of a foundation, partnership with an NGO, etc.);
- The duration of the programme;
- The possible partnerships to be established for its implementation. A tripartite agreement with the chiefdoms, local authorities and PIA could also be foreseen for this purpose.

In order to develop its community development plan organisation, PIA can draw on the following publication: IFC (2015), Establishing foundations to deliver community investment. This key document provides guidance on how to implement community investment in a structured way that is consistent with the company's business.

#### 3.4.5.2. Monitoring indicator

- Completion of required study.

#### 3.4.5.3. Responsible for implementation and monitoring

This plan will be implemented by PIA in compliance with the SEP elaborated by the Consultant in June 2022.

#### 3.4.5.4. Timeline

This procedures will be implemented prior to the start of the works and be used throughout the other phases.

### 3.4.6. Cultural heritage management plan

It is important to note that a Chance Finds Procedure has already developed by PIA will be applied during the construction phase.

#### 3.4.6.1. Objectives

Consultations with local authorities and communities have revealed the presence of numerous cultural heritage sites and objects such as a church and fetishes located in plants and clods. It will therefore be necessary, in accordance with IFC PS8, to develop a heritage management plan.

#### 3.4.6.2. Measures

In order to best manage the relocation of cultural heritage, it is necessary to:

- Designate an anthropologist who will communicate with the owners and households of the sites and objects concerned and ensure that the rites prior to any relocation are respected;
- Define a procedure to be followed for the relocation of heritage that satisfies the families and owners;
- Locate and inventory cultural heritage sites and objects in the development of the Supplementary RAP/LRP;
- Comply with PIA's Chance find procedure.

Although the procedure for relocating cultural heritage objects or sites may be case-specific, the basic principles are as follows

- Identify and locate cultural heritage sites;
- Consult the owners (individuals, families) and traditional authorities and obtain their free, prior and informed consent for the relocation;
- Notify the relevant local authorities;
- Define the necessary rites prior to relocation;
- Define the necessary pre-movement rites;
- Pay for travel costs;
- Follow up on the satisfaction of the process.

No cultural heritage site or object may be relocated or destroyed without prior consultation with and permission from its owner.

#### 3.4.6.3. Monitoring indicators

The relevant indicators are :

- The number of objects or sites identified;
- The number of objects or sites relocated;
- The number of complaints registered related to cultural heritage management.

#### 3.4.6.4. Responsible for implementation and monitoring

The responsible entities are PIA, the service provider for the implementation of the Supplementary RAP/LRP and the competent authorities (especially for the relocation of the church).



According to the consultations carried out, these cultural heritage objects and sites, can be relocated provided that the relocation is managed and that the local, traditional and site owners and families concerned are consulted and involved effectively. It will also be necessary to consult with the relevant local authorities on the relocation of the church. Finally, appropriate rites should be performed prior to relocation in agreement with the families, fetish owners and traditional leaders. Thus, the relocation of sites and objects in consultation with the relevant persons and authorities will ensure their protection and compliance with the IFC's performance standards requirements.

#### 3.4.6.5. Timeline

The culture heritage management plan will be elaborated prior to works and will begin be implemented during construction phase.

### 3.4.7. Revegetation program

#### 3.4.7.1. Program content

The physical presence of the Project will result in the loss of vegetation and biodiversity across the area that will be cleared and developed. These impacts will be of moderate importance, considering that the Project site has a limited presence of natural habitats (i.e. open and semi-deciduous dense forests), and is mainly represented by mosaics of crops and fallow interdispersed by trees.

The realisation of the solar park on a large surface (550 ha) will offer the opportunity to partially compensate for the lost vegetation cover and to recover some of the habitats.

Guidelines for the set-up of a revegetation program by PIA are presented below.

#### Measures focused on land revegetation

The revegetation program has to be in line with the following measures in order to develop green spaces that respect the local ecological and biodiversity context:

- **Create**, before the clearing operations, a **plant nursery** for the species and plants which can be used during the revegetation of the solar park as well as work areas the camp site and the development of the PIA green spaces. It would be preferable that the installation of nurseries **begin in the beginning of the year to have operational plants for the rainy season that follows**. Nevertheless, the planning for plant nursery shall be adapted to the works' calendar.
- Select **indigenous and native flowering plants and ornamental trees** to be planted in the nursery. Species to be considered can be the following:
  - the vein (*Pterocarpus erinaceus* Poir.),
  - the ling (*Afzelia africa* Sm.),
  - the Khaya (K. *senegalensis*, K. *grandifoliola*, K. *anthotheca*),
  - the shea tree (*Vitellaria paradoxa* C.F. Gaertn. ssp. *paradoxa*)
  - Use of priority food plants such as: baobab, tamarind, mango, nere (*Parkia biglobosa* (Jacq.) R.Br. ex Benth.), Black tamarind (*Dialium guineense* Willd.), Wild apple (*Irvingia gabonensis* (Aubry-Lecomte ex. O'Rorke) Baill.), Butter tree (*Pentadesma butyracea* Sabine) would also be well indicated.
- Plan to plant sufficient seedlings or to place an order to the nursery for 11 ha of green spaces. The possible plants mortality must be taken in account in the purchase of the number of the necessary seeds /seedlings



- PIA will plant trees as part its commitment to revegetation, PIA has acquired different Hectares of land at Aneho, Game , Kpele, Agbelouve to plant species of trees such as eucalyptus, cashew, *Kaya Senegalese*, *Acacia mangea* and *Gmelina Arboria*.

The budget of this program is included in the PIA Project development (plant purchase and all related equipment, transport).

### **Forestry expert assistance**

In order to set up these measures, **PIA will have to contract a forestry expert/local ONG** whose role will be to support PIA to:

- Identify the main trees, shrub and plants species in the zones of natural vegetation before clearing activities in order to **update the flora census of the Project area**. This will confirm the content of the revegetation program in terms of species and will help to select indigenous and native flowering plants and ornamental trees adapted to the environmental conditions of the area.
- Take care of the **tree felling authorization process** to be conducted with the ANGE / Prefectural Direction of the Environment in application of law n° 2008-009 of June 19, 2008 relating to the forestry code in the Republic of Togo. As no decrees or application orders for the permit submission were published, details on the permit request are not available. It is proposed below forestry expert's good practices to set up to accompany the permit request:
  - Conduct an inventory of the trees that need to be cut in order to fill in the felling request specifying the name / species and the number of stems to be cut, the geographical location and the reason for felling.
  - Propose mitigation measures such as the number of individuals to be replanted as well as the planned monitoring.
  - Assist PIA in submitting the request and answering to any request for clarification.
- Identify one or several appropriate **nurserymen** able to provide the selected seeds and/or seedling and place an order for these ones. As seeds and seedling will be used for the PIA green spaces, but also the revegetation of work area and base camp, seeds and seedling could be native species collected on-site before the land clearing. If no nurseries are available, the **forestry expert could be mandated to set up a nursery for the Project**.

In the case where the forestry expert is mandated to set up a nursery for the Project, he will:

- Provide its **knowledge and know-how to take care of the nursery**, develop the seedlings / seeds and ensure an effective transplanting. The plants produced for these species will be transplanted during the rainy season (early in June) in previously identified areas and then regularly watered during the following dry season. The number of seeds/ seedlings should be determined in taken into account the plants survival rate. It is recommended to plant seedlings of about 40 cm.
- Install a **rational irrigation system** (with ducts filled with water and humus, for example) for the nursery plant, supervise the **planting process** and **monitor plant growth to detect anomalies and take corrective actions**.

The cost for this support should take into account:

- Recruitment, mobilization and support of a forestry expert / ONG: two months during preparation phase and then one week per month during construction phase and the first year and half of operation
- Set-up of revegetation management team
- Maintenance and protection over 1 year

The overall budget for the set up, development and monitoring over 3 years is around 18,600,000 FCFA.

### **Measures for the solar park**

The construction of the solar park will involve the removal of vegetation and habitat on a large area. Once the construction of the solar plant completed, several measures shall be implemented to compensate the impacts:

- Implement a revegetation of the cleared surfaces. This should be done with native vegetation instead of gravel, concrete, or turf grass. The development of floral and herbaceous species will be favoured by the shade offered by the panels themselves.
- Recruit a forestry expert to support the revegetalisation program.
- Selection of indigenous and native flowering plants and ornamental trees to be adopted for the revegetation. Specific plant species shall be chosen to host bees, butterflies and other pollinators underneath and around solar panels. Native plants will also help reduce the dust lifted from the ground by the wind (which may deposit on the panels, thus requiring more frequent cleaning), reduce stormwater runoff, increasing infiltration and avoiding soil erosion.

Implement solutions of “agrivoltaic systems” thus integrating solar power production and crops.

#### **3.4.7.2. Monitoring indicators**

The monitoring indicators are:

- number of seeds / seedlings planted versus the total number to be transplanted,
- number of dead seedlings.

#### **3.4.7.3. Responsible for implementation and monitoring**

This plan falls under PIA’s responsibility to elaborate, implement and monitor.

#### **3.4.7.4. Timeline**

This plan applies to the whole Project but shall be launched during the preparation phase.

### **3.4.8. Dumping site management plan**

#### **3.4.8.1. Principles**

PIA will establish an external dumping site to store green waste produced during land clearance. This dumping site will be located within a 102,1 ha land owned by the State, and situated approximately 3 km north of the Project. The government has authorized PIA to use a 2 ha site within the boundaries of this land for the specified purpose.

Public consultations will have to be conducted to inform the populations of the green waste disposal project.

A site visit will be required by a team with social and environmental prior to disposal. Inspection, and, if needed a survey, of the provisionally determined low sensitivity areas will be carried out and consultation with local community will be organized at least 2 months prior to disposal. This inspection will have to confirm the presence of social and environmental components that can be affected by vegetation disposal. The final 2ha site will have to meet the following criteria:

- 150m from temporary flows or wetland;

- 25m from tracks;
- 100m from buildings;
- 25m from plantation or crop area;
- 50m from land border;
- Absence of sacred sites;
- Absence of conflict on land tenure;
- No use of harvest or hunting of the area;

Compensation to potential land users (if any identified) in line with the IFC Performance Standard 5.

#### **3.4.8.1. Monitoring indicators**

The monitoring indicators are :

- number of complaints on land clearing and disposal of vegetation on the dumping site;
- number of relocation of sacred sites.

#### **3.4.8.2. Responsible for implementation and monitoring**

This plan falls under PIA's responsibility.

#### **3.4.8.3. Timeline**

This plan applies to the preparation phase and construction phase and shall be launched during the preparation phase.

## 4. Construction phase

The various plan proposed in the construction phase aim at gathering and presenting for each topic the mitigation measures, the responsibilities for their implementation and the monitoring requirements.

PIA's plans and procedures that cover both Project construction and operational phases described in Section 3.4.1 are also relevant for this period but the focus of this section is on the plans and procedures under contractors' and PIA's responsibility during construction phase.

### 4.1. Construction ESMP

Construction ESMP (CESMP) will be prepared by the main contractor(s) as soon as the contract is signed and validated by the promoter and will fully meet the requirements set out in the tender HSES specifications, PIA ESMS and this ESMP.

The CESMP will be applied for all main contractor's activities and work areas.

The main contractor(s) will propose the E&S organisation that will enable to develop, implement and monitor CESMP procedures and HSES specifications and fulfil compliance commitments and the related reporting for all the period of the construction phase, as developed in section 7. The CESMP is a live document and will have to be regularly revised in order to adapt or improve the procedures and technical measures to improve their efficiency (audit, site visit, etc) and address any changes (management of change).

The following general structure should be applied to each CESMP procedure:

- Scope of procedure: outline the purpose of the procedure.
- Regulation and planification framework: identify all applicable laws and regulation, objectives, performance indicators and related documents that should be considered.
- Procedure details: outlines the mitigation measures proposed by the procedure, with appropriate details enabling to properly ensure its implementation and monitoring.
- Implementation framework: define all responsibilities for its implementation, monitoring and review.

CESMP procedures will be supplemented by specific action plans if necessary, the final list of which will be detailed in the tender documents and a list of which is presented here below based on the conclusions of the ESIA and on the progress of the Project. The following procedures will be included in the CESMP or developed separately by the main contractor(s) for the construction phase:

- Revegetation procedure and invasive species management procedure
- Air emission and noise monitoring procedure
- Erosion and soil quality management procedure
- Waste management plan/ procedure
- Hazardous product management procedure
- Water resource and discharges management procedure
- Occupational Hygiene, Health and Safety Plan
- Traffic and road safety management plan

- Community health and safety management procedure, including Security personnel management
- Grievance mechanism,
- Recruitment and human resources management, including workers awareness

## 4.2. Provisions for organisation of work area and base camp for the main contractor

All works must be subject to a prior approval and administrative information procedure. Before starting the work, the main contractor must obtain all the necessary operating permits to carry out the work area / base camp for the Project. The required permits are:

- Before the construction phase:
  - land clearing (law n° 2008-009 of June 19, 2008 relating to the forestry code),
- Before the operation phase:
  - wastewater discharges (Law n ° 2010-004 of June 14, 2010 on the water code).

Design measures and procedures must be implemented to limit their human and natural environmental impacts. It is recommended to locate engine washing areas, hazardous products storage area and waste storage area away from local borehole and flood-risk area in order to limit the risk of accidental contamination.

## 4.3. Revegetation procedure and Invasive Species Management procedure

### 4.3.1. Objectives

The main contractor will have to develop a **biodiversity management procedures** that will include the following measures and propose additional measures if deemed necessary.

Guidelines for the set-up of a biodiversity management procedures are presented below.

### 4.3.2. Measures to preserve biodiversity

Although plant biodiversity is relatively low on the site, the activities that will lead to the destruction of the flora will have to be supervised to avoid unnecessary destruction and to restore the natural environment on the site and in its immediate surroundings as much as possible.

The activities that will lead to the destruction of the flora will have to be planned between November and March (outside the rainy season) to reduce the risk of erosion and avoid the main period of bird reproduction.

As the *Khaya senegalensis* is recorded as vulnerable in the global IUCN red list, **keep it safe** during the clearing operation (by avoiding cutting it).

#### Additional measures to protect the biodiversity

Regarding workers and spontaneous migration, in addition to measures regarding spontaneous migration detailed in section 4.12 of ESIA , following measures shall be applied by the contractor :

- Formally prohibit hunting for all employees from in the Project area, as well as use of traps within the base camp and works area.

- Formally prohibit the consumption of bushmeat within the base camp and works area; a regular supply of animal protein will compensate the bushmeat and will be provided in the canteens / butcher / commissary of the base camp. Provide training to workers concerning the natural environment awareness, with specific instructions on what can be done and what must be avoided to protect the natural environment

#### 4.3.3. Invasive species management

Under this Project, all excavated soil is planned to be fully reused for landscaping and not removed offsite. No soil and filling material is planned to be brought to the site either apart from construction materials. Vegetation however will be cut and disposed at an offsite pre-selected dumping area. Thus, the spread of seeds and seedlings of terrestrial invasive species from the study area can be expected. Other invasive species could be accidentally introduced by improperly cleaned construction equipment from other areas. In order to limit this risk, it is required for the contractors to:

- Develop and implement Invasive Species management procedure.
- Avoid the movement of soil and material from one region to another. Chose, if necessary, a supply quarry near the site to limit this risk of bringing invasive species.
- Clean the engine (interior and exterior) to ensure the absence of invasive plants.
- Revegetation of works rights-of-way using only species naturally present in Togo (indigenous) without invasive character.

#### 4.3.4. Monitoring indicators

The monitoring indicators for the biodiversity management plan are:

- number of non-compliance observed, registered and treated,
- number of complaints about workers' hunting activities and accidental degradation of vegetation outside the right-of-way,
- number of invasive species cluster observed.

#### 4.3.5. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

#### 4.3.6. Timeline

This plan applies to the whole Project and shall be launched during the construction phase.

### 4.4. Air emissions and noise monitoring procedure

#### 4.4.1. Objectives

The physical presence of the construction site will result in a disruption of air quality and noise environment. The objective of this plan is therefore to propose measures that will allow avoiding or reducing these nuisances.

The main contractor will have to implement **air emissions and noise management procedures** that comply with the measures presented in this ESMP, based on the impact assessment realized in the ESIA report. This plan will include at a minimum the following measures and propose additional

measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

#### 4.4.2. Measures for air quality conservation

The measures for air quality conservation to be implemented by the contractors are:

- **Limit the vehicles speed** to 30 km/h in all inhabited areas, and, if possible, pave road sections experiencing highest traffic load,
- **Humidification**, when necessary, of unpaved village roads crossed by trucks and the excavated land stored on the construction site in case of severe drought and high winds,
- **Covering trucks** transporting pulverulent materials (fine materials or soils),
- **Use of good quality equipment and vehicles**, preferably new, and **regular inspection and maintenance** of work engine and machinery (exhausts),
- **Dust monitoring**. Visual dust inspection of the site (Project area, work site and base camp), to gauge the effectiveness of dust mitigation measures, will occur at least 400m from construction works on a daily basis during the dry season.

#### 4.4.3. Noise measures

The measures for noise are:

- **Limit construction works to daytime hours where reasonable and feasible**. Engines shall not be started and on-site activities shall not be undertaken outside of the daytime construction hours. Noise generating works can be undertaken at staging areas where works are not adjacent to residential receivers. **Interministerial Order No. 1723 / MUHCV / MATDCL OF 12/21/2017** laying down rules for the progress of the construction site requires, in the article 4, that it is forbidden to work on the site on Saturdays and Sundays, and noisy activities can only take place between 7 am - 12 noon and 3 p.m. - 6 p.m. on weekdays. No noisy activities will take place on weekends.
- **Using equipment that has been well maintained** so that noise emissions are minimised,
- **Villagers are to be notified a minimum of 2 weeks prior to the commencement of construction works through PIA's ESG & HSE team**. The notification would detail proposed construction works, permitted hours of work and potential noise impacts,
- **Transportation vehicles should maintain appropriate travelling speeds** along the roads and should avoid the running of engines for long periods of time when in a stationary position at the Project site,
- **Noise monitoring** to confirm the actual construction noise levels at representative sensitive receiver locations (along the site boundary and close to residential areas) should be undertaken. This noise measurements must be recorded before and during noise generating activities. The difference between two measurements should not exceed 3dB.

#### 4.4.4. Monitoring indicators

The monitoring indicators are:

- number of complaints about noise and dust emissions;
- number of non-compliance observed, registered and treated;
- results of noise measurements.



#### 4.4.5. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

#### 4.4.6. Timeline

This procedure applies to the whole construction phase duration.

### 4.5. Erosion and soil quality management procedure

#### 4.5.1. Objectives

The objective of this management procedure is to limit the impacts of activities such as earthworks, extraction, clearing, filling, intermediate storage of materials, and the installation of infrastructure that can directly affect the soil (soil quality, erosion) but also the natural environment in an indirectly manner (i.e. water quality). This plan aims to limit the risk of soil contamination and promote soil stability.

The main contractor will have to develop an **erosion and soil management procedure** that will include at a minimum the following measures and propose additional measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

#### 4.5.2. Measures to maintain soil stability

For the measures related to soil contamination, those defined in case of spillage in the section 4.7.5 related the water resources also applied for for maintaining environmental soil quality. Regarding soil stability, following measures should be set up by contractors:

- **Stripped soil management.** The soil storage area that will not be remobilised for 6 months will be covered with a thin topsoil to promote the development of herbaceous vegetation. The other temporary storage zones will be protected on their slopes by a synthetic cover. Deposits should not exceed 6 meters in height, their slope 1.5H / 1V and be equipped with a mid-height riser (3 meters).
- **Main excavation work shall be conducted during low precipitation periods**, as much as possible. If necessary, a stormwater collection system, suitably sized by the main contractor can be proposed. These systems could be similar to infiltration drains created along the tracks through which the water will transit by gravity and emerge into the existing drainage lines of the site. A filtration system (silt fence as straw filters for example) allowing the reduction of the sediment content in the water will be set up regularly in the drains.
- **Implementation of silt fence** to retain the soil on disturbed land until the activities disturbing the land are sufficiently completed to allow revegetation and permanent soil stabilization to begin. A reasonable rule-of-thumb for the proper amount of silt fence is—30 meters of silt fence per 1,000m<sup>2</sup> of disturbed area (EPA stormwater best management practice). The silt fence shall be placed on slope contours or at the bottom edge of the soil piles to maximize ponding efficiency. Heavy porous filter fabric like geotextile with steel posts shall be privileged.
- **Optimization of cut and fill.** The design expects a neutral cut / fill balance thus preventing soil erosion off site. This optimization also limits costs as well as many environmental impacts such as energy consumption, material consumption from outside, GHG emissions, truck traffic, dust emissions and noise pollution.



- **Progressive soil rehabilitation** to avoid large erosion phenomena, especially during rainy season. The initial slopes will be reestablished to allow drainage of rainwater to the appropriate areas and prevent soil erosion. Overly compacted soils will be scarified. Revegetation and soil stabilization shall be considered, including for the work area and base camps.

### 4.5.3. Monitoring Indicators

The monitoring indicators are:

- volume of cut and fill all along the Project;
- number of environmental accidents (i.e. spills, collapse of soil piles);
- number of complaints about soil degradation and erosion phenomena,
- number of non-compliance observed, registered and treated.

### 4.5.4. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

### 4.5.5. Timeline

This plan applies to the whole construction phase duration.

## 4.6. Waste management plan

### 4.6.1. Objectives

During construction, the waste generated will include:

- mainly construction waste (plaster, concrete, bricks, wood, drywall, fences, roofing materials, cement blocks, metal or plastic scrap, etc., including excess excavated soil etc.),
- domestic waste from work area and base camp,
- hazardous waste (waste generated by the use of petroleum products, chemicals, e.g. acids, alkalis, toxic substances and other laboratory materials, contaminated glass, etc.) from construction machinery and building materials.

The objectives of the plan are:

- to minimize the generation of waste through sustainable use of raw materials;
- to segregate and treat waste in order to limit the impact on the environment;
- to sensitize and train staff in good waste management practices;
- through the implementation of this plan, to eliminate the risks of pollution of the biophysical environment and indirect impacts on the human environment (health, nuisances).

The main contractor will have to develop a **waste management plan** that comply with the **decree 2011-003 setting the management methods for plastic bags and packaging** and the Environmental, Health and Safety (EHS) Guidelines, IFC, 2007. This plan will include at a minimum the following measures and propose additional measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

Employees will receive special training on good waste management practices. This training will be provided when the employees take up their posts (see section 3.1.4).

## 4.6.2. Measures for waste management

### 4.6.2.1. Collection

A source separation system will be proposed to separate the waste generated and store it under appropriate conditions. The organization of collection will include the following points:

- signage of skips for each type of waste and storage points. The identification of the skips will be ensured in particular by means of pictograms or logos easily identifiable by all: wood and green waste, paper and cardboard, putrescible waste, inert waste, medical waste, sludge, motor oil, used chemicals, contaminated or non-contaminated metal waste;
- decentralized collection areas in the immediate vicinity of each work area. The waste stored here will be collected regularly and the storage bins cleaned;
- development of storage areas on an impermeable and closed surface to prevent the waste from flying away waste and equipped with retention bin. Special arrangements for the storage of hazardous waste must be provided for. The question of the compatibility of the storage of hazardous products must be taken into consideration when arranging the collection bins and canisters

The collection of waste from the storage areas should be carried out by specialized companies approved for these activities.

### 4.6.2.2. Treatment and disposal

After acting on waste minimisation at source, the treatment strategy should be based on the principles of reuse, recovery and recycling before choosing as a last resort to send waste to disposal or landfill. In all cases, no waste should be left on site, dumped into the environment or burnt.

Depending on the waste, the choice of treatment will be as follows:

- putrescible waste: composting;
- green waste: composted or left at the disposal of the local communities (the modalities will be defined beforehand by the construction company, validated by ARISE in consultation with the local communities);
- waste glass, paper, cardboard, plastic and metal products not polluted by dangerous products: recycling by approved companies;
- inert waste (rubble, stones, earth, etc.): recovery in the form of quarry fill or reintroduced into a new concrete production process;
- waste oil waste: acceptable recycling (refinery) or disposal (fuel for industry such as cement works, foundries);
- chemical waste and paint residues and associated drums: reuse on site, returned to the supplier or to appropriate waste treatment facilities;
- waste electrical or electronic equipment: batteries, vehicle batteries, oil filters, light bulbs and lamps. The identification of a treatment channel, promoting recycling, will be carried out;
- pneumatic waste: recycling channel;
- sludge from settling ponds (presence of hydrocarbons): collection by a specialized company and treated as hazardous waste (recovery will have to be studied);

- sludge from septic tanks: collected by an approved transporter;
- medical waste: disposal in an approved center (incinerator).

At the end of the works phase, all waste storage area of work area and base camp will be emptied, cleaned and rehabilitated.

In case PIA establishes a partnership with local companies as Nosito or Whyte Way (or other) to recycle plastic waste, the main contractor will have to be included in the partnership agreement.

#### 4.6.2.3. Waste transportation

Waste transportation must comply with Togo legislation and will use a waste tracking for each transport operation. If no model is specified by local law, a model based on best practices will be adopted. This waste tracking must present at least the following information:

- name and identification number of the material (s);
- physical state (ie solid, liquid, gas or a combination of one or more states);
- quantity (eg kilograms or liters, number of containers);
- date of dispatch, date of transport and date of receipt;
- registration of the sender, receiver and transporter.

The waste trackings are applicable to the transport of both hazardous and non-hazardous waste.

The transport of waste to the disposal site will be carried out by a company specializing in these activities.

#### 4.6.2.4. Hazardous waste or products

The measures are the following :

- Elaborate a complete list of hazardous waste produced, stored and collected as well as quantities. Conduct regular audits of waste segregation and collection practices.
- Keep manifests or other records that document the amount of waste generated and its destination
- Verify, via annual audits to be carried out by third party auditors, that all contractors handling, treating and disposing of hazardous waste are licensed by the relevant regulatory agency and follow good international industry practices
- Ensure compliance with applicable local and international regulations among which any national commitment under the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their disposal (<http://www.basel.int/>) and Rotterdam Convention on the prior Inform Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (<http://www.pic.int/>)
- Conduct regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored. Monitoring activities shall include
  - Inspection of vessels for leaks, drips or other indications of loss
  - Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors
  - Verification of locks, emergency valves, and other safety devices for easy operation
  - Checking the operability of emergency systems (if any)

- Documenting any changes to the storage facility, and any significant changes in the quantity of materials in storage
- Document the findings.
- Prepare and implement spill response and emergency plans to address their accidental release
- Avoid underground storage tanks
- All waste containers designated for off-site shipment should be secured and labeled with the contents and associated hazards, be properly loaded on the transport vehicles before leaving the site, and be accompanied by a shipping paper (i.e., manifest) that describes the load and its associated hazards
- Hazardous waste (including chemical products and hydrocarbons) will be stored in dedicated, secure areas. These areas will be sealed and equipped with retention basins to prevent any risk of leakage to the environment. Fixed facilities containing liquid pollutants will also be placed inside retention basins (e.g. electricity generators, compressors, etc.).
- No waste or hazardous product storage facility will be located in an area subject to flooding or near a drinking water source.
- In case of production of hazardous waste, **an application must be submitted to the ANGE** (usual national good practices).

#### 4.6.2.5. Special case of contaminated land

In case where land is identified as potentially polluted (pollution initially present or following an accidental spill), it must be analyzed in order to characterize the pollution and its level (if unknown) in order to select the most appropriate treatment process to the elimination of the contaminated soil.

If necessary, samples will be collected by qualified personnel applying good sampling practices. To assess soil or groundwater contamination, the following analyzes must at least be carried out by an accredited laboratory:

- HCT;
- PAH;
- Metals (As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, Zn).

A report including soil and groundwater quality results will be sent to the ANGE. This report will highlight the polluted areas with regard to Togo regulations and international standards (such as applicable standards for the project presented in the ESIA). This report will conclude on the impacts of the Project on the natural environment.

In the event of proven pollution, a soil remediation plan must be developed by a specialized company. The rehabilitation strategy depends on the concentration of pollutants found, the availability of rehabilitation techniques in the country as well as the regulations.

Waste from the rehabilitation works will be sent to appropriate disposal facilities.

#### 4.6.2.6. Vegetation Dumping site

For green waste, before disposal to the dumping site:

- Evaluate the socioeconomic and commercial value of wood for local communities;
- Provision to the local population of wood that can be used as timber or firewood in a usable / transportable form by the population;

- Compost production with small size crushed vegetation (branch and leaf). Composting can be used during site rehabilitation;
- Waste burning will be avoided. Green waste that cannot be valued, provisioned or composted will be disposed at the dumping site for natural degradation.

PIA's management of vegetation will also include biomass project which will make it possible to convert vegetation into energy and fertilizer through composting.

#### 4.6.3. Monitoring indicators

The monitoring indicators are:

- volume of waste produced by category;
- number of waste tracking ;
- number of complaints about waste management (i.e. burnt waste or dumped waste);
- number of non-compliance observed, registered and treated.

#### 4.6.4. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

#### 4.6.5. Timeline

This plan applies to the whole construction phase duration.

### 4.7. Hazardous products and spills management procedure

The construction work will involve the handling of chemicals (hydrocarbons, paints, solvents) corresponding to hazardous materials.

The main contractor will have to develop a **Hazardous products and spills management procedure** that comply the Environmental, Health and Safety (EHS) Guidelines, IFC, 2007 and will include at a minimum the following measures and propose additional measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

#### 4.7.1. Objectives

Management procedures for hazardous products will be put in place to detail the measures planned to minimize the risks of pollution of the biophysical environment and the health risks of the use of hazardous and polluting products. This plan also covers the conduct to adopt in case of emergency (spillage, fire, etc.).

Employees will receive special training on these practices. This training will be provided when the employees take up their posts (see section 3.1.4).

#### 4.7.2. Measures

The plan will be applicable during the construction phase to all Project activities involving the handling, storage and use of products classified as hazardous.

The information to be presented in such a plan will cover the following aspects regarding the overall management of the products:

- procedure for registering and monitoring any product of a hazardous nature, including in particular the listing of a safety data sheet for each product;
- procedure for identifying alternative, less hazardous products, for example limiting the choice of pesticides used to those authorised by World and health organization (WHO). Limit the use of equipment containing PCBs in accordance with the Stockholm Convention on Persistent Organic Pollutants ratified by Togo;
- prevention and emergency procedures in case of spills;
- conditions for the final treatment of residues or recycling.

More specifically, storage conditions should be studied to:

- **Use of contained and impermeable areas for chemicals and dangerous products storage.** Storage on dedicated secure platforms: waterproof concrete slab surrounded by a low wall ensuring the retention of a volume at least equal to 110% of the largest container located on the platform (maximum of 10,000 l to be authorized for gasoline or diesel). The platform must be covered, and its evacuation equipped with an oil separator. Selected place shall way from any boreholes and wells and stagnant water area (incl. temporary).
- **Appropriate storage for dangerous products.** Label and store chemicals in appropriate areas and ensure compatibility of storage. Toxicity information and product safety data sheets will be available to workers on the site and from the ESU.
- **Identification of appropriate place for engine refuelling, maintenance and washing.** The maintenance and washing of engine and equipment will be limited to areas defined for this use, it will be covered with a roof and equipped with a concrete slab and a peripheral drainage evacuating runoff (rainwater or washing water) through an oil separator (hydrocarbon water) and/or sedimentation basins (sediment water). Selected place shall way from any boreholes and wells and stagnant water area (incl. temporary). Strict procedures will be defined for filling the tanks of the machines (type of equipment, dedicated areas).

Each storage site will be equipped with a recovery pit, sorbent kits and fire extinguishers. Standardized signs will warn of the presence of toxic products.

The storage of hazardous products will be regularly inspected to detect any leaks or damage to containers.

### 4.7.3. Emergency response plan

All types of emergencies that could occur during the construction phase have to be identified by the main contractor so that he can develop an appropriate site emergency response plan and that define intervention measures to limit the pollution or damages. This plan shall cover at least these 2 items:

- **Spillage.** An anti-pollution instruction will be set up to define the intervention procedures in case of occurring of an accidental spill. This instruction will include a description of the planned organization for an intervention and key persons involved. Specific training relating to the emergency response will be given to all employees involved in the procedure. They will be sensitized on the pollution control equipment to be deployed in contaminated areas: pollution control kits, sand, data sheet, etc.

Spilled products will be recovered in the best conditions and stored in sealed containers before being disposed of in accordance with the waste management plan.

- **Fire.** Instruction in case of fire should be developed, especially for the sensitive locations such as the storage zone in the work area and the base camp. Sufficient fire defenses adapted to the area covered will be implemented. Specific training on the use of extinguisher should be provided to certain employees, but all employees shall be trained on the conduct to adopt in case of fire.

The administrations and services at the local and regional level to be notified in case of accident will be identified and informed on the emergency plan implemented.

#### 4.7.4. Monitoring indicators

The monitoring indicators are:

- monitoring of the hazardous products and MSDS registration,
- number of environmental or safety accident,
- number of training on emergency procedure,
- number of non-compliance observed, registered and treated.

#### 4.7.5. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

#### 4.7.6. Timeline

This plan applies to the whole construction phase duration.

### 4.8. Water resources and discharges management procedure

#### 4.8.1. Objectives

The objective is to maintain the water resource, both in terms of quality and quantity, in particular by complying with the liquid discharge standards in force in the Republic of Togo and international standards (IFC and World Health Organization) to protect the groundwater quality in the Project area. This objective also makes it possible to limit the impacts on environmental elements sensitive to discharges, such as biodiversity and the surrounding human populations (health, agricultural and economic activities).

The fight against water pollution is part of the law n° 2010-004 of June 14, 2010 on the water code. Water pollution should therefore be considered systematically to avoid any adverse impact on other environments.

Note that the implementation of the waste management plan and hazardous product and spills management procedures previously presented will help to preserve the quality of the water resource.

The main contractor will have to develop a water resource management and discharge management procedures that comply with:

- decree n° 2012 -258 / PR of October 17, 2012 defining the national standards and the control procedures for the potability of water intended for human consumption ;
- interministerial order n°010/MER/MS/MERF fixing the norms or standards for the discharge of wastewater into the natural environment;



- the measures presented in this ESMP, based on the impact assessment realized in the ESIA report.

This plan will include at a minimum the following measures and propose additional measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

#### 4.8.2. Measures for water quality

A conventional sewerage network with wastewater treatment will be set up in all the work areas such as the base camp, storage area and the administrative area of the main contractor and subcontractor. As far as possible, releases by infiltration into the ground will be preferred to surface releases.

The recommendation is to set up a conventional sanitation network with wastewater treatment with installation of conventional septic tanks (sanitary infrastructures) for workers' camp and, because of the large surface of the site and depending on the location of the work area/base camp, installation of systems like dry latrine in the work area might be considered.

All area used for washing and maintenance of engines or equipment should be equipped with wastewater treatment systems. The main contractor must specify the treatment measures for water from washing concrete mixers or concrete plants, including the description of the treatment units (location, design of facilities, capacity, type of treatment, quality control at the outlet of the plant) and the expected results in terms of the quality of the discharge into the environment. A readjustment of the pH before discharge will probably be necessary.

Main contractor will propose in its management plan the location of all the discharges point, especially those to be monitored as wastewater discharges after treatment (sanitation), water discharges after oil separators (hydrocarbon storage area, maintains machinery, etc.).

The procedure should take as references the values of the Togo regulations (interministerial order n°010/MER/MS/MERF fixing the norms for the discharge of wastewater into the natural environment) In particular, and at a minimum, the following bacteriological and physico-chemical indicators will be monitored quarterly during the construction phase:

- Sanitation: total coliforms, BOD5, COD, Total nitrogen, total phosphorus, pH, suspended solids;
- Hydrocarbon separators: total hydrocarbons or oil and grease;
- Sedimentation basin including discharge from the concrete plant: pH and suspended solids. The sedimentation basins are rehabilitated at the end of the construction phase.

The contractor will also specify the stormwater treatment measures including the description of the treatment units (location, design of the facilities, capacity, type of treatment, quality control at the outlet of the unit) and the expected results in terms of quality of discharge into the environment.

Specific measures for the use of septic tank are the following:

- Use vacuum trucks or tugs for removal of fecal sludge instead of manual methods and use of appropriate collection vehicles (vacuum tanker trucks);
- Consider provision of systematic, regular collection of fecal sludge and septic waste;
- Facilitate discharge of fecal sludge and septage at storage and treatment facilities so that untreated septage is not discharged to the environment.
- Periodic inspections and control of the septic tank integrity to ensure zero leakages
- Control agreement of the Attiegou-Kelegouga site to accept septic tank effluent in accordance with national standards



### 4.8.3. Measures for water resources

The management of water resources also aims to maintain the groundwater quantity at an acceptable level allowing the continuity of uses for the inhabitants.

A tank will be regularly filled out for works' needs (car washing, concrete preparation, etc.). This tank should be linked to a rainwater collection system to minimize the extraction from the local aquifer.

### 4.8.4. Monitoring indicators

The monitoring indicators are:

- results of the discharge points monitoring from the septic tanks
- PIA's monitoring of discharge points from the CETP;
- number of non-compliance observed, registered and treated;
- water consumption and origin of water;
- number of complaints about water supply.

### 4.8.5. Responsible for implementation and monitoring

The measures will be implemented and monitored by the main contractor and its subcontractors with regular reporting to PIA and ANGE.

Measures associated with CETP monitoring fall under PIA's responsibility.

### 4.8.6. Timeline

This plan applies to the whole construction phase duration.

## 4.9. Occupational health and safety plan

### 4.9.1. Objectives

The Occupational health and safety plan will aim at deploying a set of activities that avoid or minimize risks to the health and safety of workers on the construction site and will ensure that workers employed on the construction site operate in healthy and safe conditions, thus reducing the risk of diseases, epidemics and accidents.

This plan will comply with Law No. 2006-010 of December 13, 2006 on the labor code, International labour law (ILO), IFC Performance Standards (PS 2) and the General Environmental, Health and Safety Guidelines, common to the World Bank and the IFC.

It must also meet ARISE's Minimum OHS Standards for Construction Contracts.

### 4.9.2. Measures related to work environment

Measures to reduce the impact on the various environmental components (soil, air and water) that indirectly impact on the health and safety of workers have already been developed in the above described management plans and procedures which are listed below:

- water resources and discharge management procedure;
- air emissions and noise monitoring procedure;

- waste management plan;
- hazardous products and spills management procedures.

### 4.9.3. Measures for the health and safety at work

The main contractor will have to develop an **Occupational health and safety management plan** in compliance with previously stated regulations and best practices. This plan will comply with ARISE ESMS manual requirements:

- **Resources** are in place to implement the requirements of the OHS management system;
- Contractor personnel receive the **required training** for the safe performance of the assigned tasks;
- Systems are in place for **routine auditing and inspection** to ensure the compliance with the applicable national and international requirements and conformity with ARISE ESMS requirements;
- Systems are in place for **reporting and investigations** of environmental events, near-misses, accidents, incidents and potential hazards within an agreed and legally required timeframe;
- **Progress updates** are provided to PIA on an agreed basis on the OHS performance;
- All **records** and other relevant **documentation** are kept showing compliance/conformity to Project requirements for the duration of the Contract.

In addition, this plan will include at a minimum the following measures for each category. The contractor will be able to propose additional measures if deemed necessary. The contractor will explain how he intends to implement these measures and through which material means.

**Table 2 : Minimal content of the Occupational hygiene, health and safety management plan**

Category	Minimal measures to develop
<b>HSE organisation</b>	<ul style="list-style-type: none"> <li>- Recruit an HSE coordinator in charge of monitoring the proper implementation of HSE management plans</li> <li>- Perform a job hazard analysis (JHA) covering physical, chemical and biological hazards for each type of job planned on the construction site and detail associated prevention measures</li> <li>- Identify jobs or tasks requiring specific permits</li> </ul>
<b>Worker's rights</b>	<ul style="list-style-type: none"> <li>- Respect the Labour Code of Togo</li> <li>- Respect the 8 fundamental ILO conventions to which Togo is a signatory and ensure: <ul style="list-style-type: none"> <li>o No forced labour</li> <li>o No work for children under 14 (12 for light work)</li> <li>o Prohibition of worst forms of child labour – child under 18 (including hazardous child labour such as work underground, at dangerous heights, confined spaces, with dangerous machinery or tools, in an unhealthy environment exposing to hazardous substances, heat, noise levels or vibrations)</li> <li>o No discrimination including against women</li> <li>o Respect for freedom of association and protection of the right to organise collective bargaining</li> <li>o Equal remuneration</li> </ul> </li> <li>- Respect the various regulations on health and safety at work, in particular Decree No. 70-164 of October 2, 1970 establishing general health and safety measures applicable to workers in establishments of all kinds</li> </ul>
<b>Safety of workers</b>	<ul style="list-style-type: none"> <li>- Make adequate PPEs (adapted to the job hazard analysis results and the workstation) available to workers and ensure that they are worn</li> <li>- Control PPE expiration date and ensure replacement of expired PPE</li> <li>- Ensure sufficient air supply and lighting in all working environments</li> <li>- Ensure adequate work environment temperature in all working environments and provide ventilation system in hot spaces</li> </ul>
<b>Hygiene of workers</b>	<ul style="list-style-type: none"> <li>- Provide decent, safe and sufficient locker rooms and sanitary facilities (toilets, showers and washbasins) for the number of persons expected to work in the facility (including separate facilities for females). Toilet facilities should also be provided with adequate supplies of hot and cold running water, soap, and hand drying devices</li> <li>- Provide enough potable drinking water to all workers: Each worker should receive 3L of drinking water per day for consumption (WHO recommendation).</li> <li>- Provide clean eating areas</li> <li>- Where workers may be exposed to substances poisonous by ingestion and skin contamination may occur, facilities for showering and changing into and out of street and work clothes should be provided</li> </ul>

Category	Minimal measures to develop
<b>Safety of workplace</b>	<ul style="list-style-type: none"> <li>- Ensure safe access to all workplaces including emergency access and exits</li> <li>- Display on site pictograms adapted to the OHS risks and PPE wearing obligations</li> <li>- Install hand, knee and foot railings on stairs, fixed ladders, platforms, etc. on any area requiring it</li> <li>- Define clear loading/unloading areas, parking and material storage areas</li> <li>- Segregate passaways for pedestrians and vehicles</li> <li>- Install fire fighting systems with adequate equipment and signal them</li> <li>- Control expiration date of fire fighting equipments (fire extinguishers) and replace expired items</li> <li>- Identify fire-fighting responsibilities and conduct emergency drills</li> <li>- Ensure integrity of workplace structures</li> <li>- Signal hazardous areas and label hazardous equipment, communicate to workers on hazard codes</li> <li>- Install emergency response equipment for all types of emergencies identified in the Site emergency response plan</li> </ul>
<b>Health of workers</b>	<ul style="list-style-type: none"> <li>- Conduct medical check-up for new workers</li> <li>- Detail and implement a plan to prevent and control epidemics and parasitic diseases including: <ul style="list-style-type: none"> <li>o prevention of COVID-19 epidemic</li> <li>o prevention and control of STDs and HIV/Aids (including free availability of condoms to site personnel and awareness-raising)</li> <li>o prevention of other communicable diseases with epidemic potential</li> </ul> </li> <li>- Set up a dispensary to provide basic medical services to workers and to manage emergency interventions in case of accidents. The medical team composition will be adapted to the number of workers and will be placed under the responsibility of a qualified nurse;</li> <li>- Set up an emergency and first aid management system with the placement of first aid kits (including defibrillators) in each site area</li> <li>- Identify and train qualified personnel to be first aiders</li> <li>- Identify reference hospitals for medical evacuation of seriously wounded persons</li> <li>- Provide sufficient health services to workforce to prevent any additional pressure on local health and sanitation infrastructure</li> </ul>
<b>Workers' behavior</b>	<ul style="list-style-type: none"> <li>- Write a Code of conduct applying to all workers on site (including subcontractors) and make its signature compulsory at the recruitment of each worker</li> <li>- Write an internal regulation and post it on strategic locations</li> <li>- Implement an awareness-raising and training program for workers covering: <ul style="list-style-type: none"> <li>o risks specific to the worksite and the wearing of PPEs;</li> <li>o road safety issues for truck drivers;</li> <li>o prevention and control of epidemics and parasitic diseases;</li> </ul> </li> </ul>

Category	Minimal measures to develop
	<ul style="list-style-type: none"> <li>○ awareness-raising and communication for a change in behavior on the worksite (for STDs and HIV);</li> <li>○ and all other aspects listed in § 3.1.4.</li> </ul>
<b>Workers' grievance management</b>	- Detail the grievance management procedure that will be set up to receive and treat workers' claim that might arise from their rights or working conditions. This procedure will have to be connected to PIA complaint management procedure and especially allow workers to raise claims directly to PIA if they are not satisfied with how the main contractor handled its claim.

The table below presents an example of PPE that must be proposed to workers depending on the hazard they are exposed to.

Table 3 : IFC recommended PPE

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation	Safety glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords	Plastic helmets with top and side impact protection
Hearing protection	Noise, ultra-sound	Hearing protections (ear plugs or ear muffs)
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids	Safety shoes and boots for protection against moving and falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures	Gloves made of rubber or synthetic materials (Noeprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration	Insulating clothing, body suits, aprons, etc. of appropriate materials.

(Source: Environmental, Health and Safety (EHS) Guidelines, IFC, 2007)

#### 4.9.4. Monitoring indicators

Monitoring indicators related to the soil, water and air components are presented in the environmental management plan for the construction and operation phases. They are therefore not listed in detail in the table below.

The other indicators are as follows:

- number of JHA conducted;

- presence and effective wearing of protective equipment (PPE) on the construction site;
- number of accidents that have occurred and type of accidents (lack of adequate equipment, flammable substances, road, welding work, etc.);
- number of sick workers and type of illnesses;
- number of awareness sessions on the risks associated with the presence of the worksite;
- number of workers who signed the Code of conduct;
- number of claims lodged by workers on their working conditions or rights.

#### 4.9.5. Responsibilities for implementation and monitoring

Responsibility for the implementation of this plan lies with the main contractor. ARISE will be responsible for supervising and monitoring the proper implementation of the plan.

#### 4.9.6. Timeline

This plan applies to the whole duration of the construction phase.

### 4.10. Traffic and road safety plan

The traffic of heavy vehicles carrying raw materials and equipment, in addition to vehicles transporting workers and other personnel during the construction phase is likely to lead to an increase in traffic accidents, particularly in the vicinity of residential areas and high-traffic areas (markets, schools, places of worship).

#### 4.10.1. Objectives

Road traffic is the first cause of accidents during the construction phase of projects. It should therefore be regulated both inside and outside the site in order to limit accidents and health risks to both Project workers and residents.

#### 4.10.2. Measures for the main contractor

The main contractor will have to develop a **Traffic and road safety plan** that will comply with the measures listed below and propose additional measures if deemed necessary. The contractor will explain how he will implement these measures and through which material means.

The plan will cover the following thematic:

##### Control of drivers' capacities and vehicle suitability

- check the driving license and conduct a proficiency test of all drivers at the time of hiring;
- train drivers of light vehicles and trucks in basic road safety and risk awareness;
- give specific permits to the drivers of construction site machinery and heavy vehicles;
- present traffic regulations to drivers and the sanction system in case of non-compliance;
- conduct unannounced speed checks, control drivers regularly and penalize driving for excessive speed or drunkenness;
- check trucks, their general condition, load and stowage;

- ensure that the transport of hazardous materials complies with local regulations and international specifications;
- prohibit traffic at night unless an exemption is issued by PIA HSE manager.

#### **Traffic plan on construction site**

- develop a **traffic plan applying on the construction site** presenting which roads will be opened on site, their directions (two-ways, one-ways), the associated traffic regulations measures (speed limits, access permits, etc.) and materials to be installed (traffic signs, lights, bumps, speed humps, road signs, etc.) depending on the type of road;
- protect the work areas from road traffic (barriers, road signs, etc.);
- clearly delimitate pedestrian pathways segregated from the roads and create pedestrian-only areas within the works areas and their surroundings.

#### **Traffic plan outside of construction site**

- develop a **traffic plan applying outside the construction site** presenting which public roads will be used by the vehicles, at what period of the year and expected time of the day and for what duration. This plan will detail:
  - The public roads that will be used, specifying the time of year and the time of day;
  - **Limit the vehicles speed** to 30 km/h in all inhabited areas, and, if possible, pave road sections experiencing highest traffic load;
  - Safety measures (lighting, signs) for accident-prone segments;
  - Delimiting and securing pedestrian zones;
  - Prohibition of heavy vehicle traffic outside working hours;
  - Restriction of delivery and collection times (waste, materials) to times of limited use..

In addition, PIA will organise a monitoring of the quality of the N34 road and contribute to the repair of damaged roads in the vicinity of the site, in collaboration with the economic operators operating in the area.

In the event of the need to obstruct the public highway and in particular the N34, the project manager will contact the local authorities (Prefect and mayors) and the competent administrations to discuss the most appropriate alternative routes and obtain the validation of these authorities.

Any development on the public highway for the needs of the Project (installation of temporary traffic lights, traffic signs or road signs, speed bumps, etc.) or in order to improve road safety, including changes in traffic direction or diversions, must be communicated in advance to the same authorities and approved by them.

### **4.10.3. Monitoring indicators**

The monitoring indicators are:

- number of driver proficiency tests conducted;
- number of road accidents caused by a Project vehicle;
- number of claims lodged by communities on road safety and traffic.

#### 4.10.4. Responsibilities for implementation and monitoring

During the entire construction phase, the traffic and road safety plan will be implemented by the project manager, in collaboration with the other economic operators in the area (Diamond Cement, Société Nationale des Phosphates du Togo).

Monitoring will be carried out by PIA and ANGE

#### 4.10.5. Timeline

This plan applies to the whole duration of the construction phase.

### 4.11. Community health and safety plan

#### 4.11.1. Objectives

The objective of the population health and safety plan is to mitigate the effects of the project construction on the health and safety of the population. The main impacts on the population are related to road accidents and the deterioration of living conditions due to the influx of workers.

#### 4.11.2. Measures

In addition to the health and safety management plan, which ensures the safety and health of staff and workers on the project, a health and safety plan will be put in place in the villages near the project.

##### **Awareness of road safety and project vehicle traffic:**

In addition to the road safety and traffic plan mentioned in Section 4.10, the contractor will put in place the following awareness measures for the population:

- Inform the population of the start of the work two weeks beforehand;
- Adequate signage of the construction site, the base, the construction site parking area and the power plant, visible by day and night;
- Definition of an emergency procedure in the event of an accident involving a vehicle operating on the project, which includes transporting the casualty and providing care;
- Collaboration with the population to improve signage and adapt traffic rules in inhabited or highly frequented areas.

In addition, PIA will organise information sessions for the population on the safety rules to be respected by pedestrians and drivers and on the developed areas.

##### **Information and awareness campaigns:**

PIA will organise information and awareness-raising campaigns concerning :

- Road safety;
- Risks of epidemiological spread, particularly of sexually transmitted diseases;
- The difference and probable diversity of cultures of the newcomers;
- Safety rules around the site;
- Environmental protection;
- Conduct and procedures to be followed in the event of criminal episodes;
- Basic hygiene and health rules can be organised in schools.



### Site security:

The contractor will put in place a range of measures to secure the site and restrict access:

- Construction of a wall and/or fences;
- Deployment of a surveillance system with guards;
- Setting up of control points for access to the site.

Security forces engaged on the project will be required to comply with the IFC requirements set out in the Good Practice Handbook - Use of Security Forces: Assessing and Managing the Risks and Impacts. The site security arrangements require:

- Prior completion of a security risk assessment;
- Deployment proportionate to the outcome of the security risk assessment;
- Management structure and responsibilities;
- Frequent and emergency operating procedures, incident response procedures;
- Equipment appropriate to the risks;
- Selection of companies and employees excluding candidates involved in abuses or excessive use of force;
- Training of personnel in the use of force and relations with the population;
- A mechanism for reporting and investigating incidents.

### 4.11.3. Monitoring indicators

The monitoring indicators are:

- Number of awareness campaigns conducted ;
- Number of complaints filed related to the health and safety of the population;
- Number of incidents and accidents reported.

### 4.11.4. Responsibilities for implementation and monitoring

Responsibilities are shared between the main contractor and the project manager.

The main contractor will be responsible for raising awareness of road safety in relation to the road safety and traffic plan and for ensuring the safety of the site.

In addition, PIA will organise information and awareness sessions for the population on road safety rules, health and safety of the population, the environment, etc..

### 4.11.5. Timeline

This plan applies to the whole duration of the construction phase.

## 4.12. Social inclusion plan

Women and vulnerable people are, due to their limited economic and social capital or discriminatory customary rules, less able to seize economic opportunities.

### 4.12.1. Objectives

In this context, the objective of the social inclusion plan is to propose measures to limit the negative impacts of the project on women and vulnerable people, and to propose bonus measures so that these people can benefit from the economic opportunities created by the project and the economic dynamism of the Adétikopé area, particularly in terms of employment.

### 4.12.2. Measures

Various social inclusion measures will have to be taken. They concern both women and vulnerable groups.

#### Respect for laws and international standards :

- main contractor responsibility
  - respect togolese national legal framework and international standards concerning gender equality and the fight against violence made to women;
  - respect Togo's national legal framework and international standards concerning PWDs and the prohibition of child labour;
  - conduct regular controls to ensure no children under 14 are employed on the construction site.

Mitigation measures implemented by PIA :

- Ensure the inclusion of women and vulnerable people in the ESMP monitoring committee;
- Ensure the participation of women and vulnerable people in consultations and briefings, including on recruitment and community development activities. Targeted focus groups may be organised for this purpose;
- Organise regular consultations with women and vulnerable people to monitor their socio-economic situation.

Mitigation measures implemented by the contractor/subcontractors:

- **Recruitment strategy:** application of a 5% quota for the recruitment of women and people with disabilities;
- **Social inclusion in the workplace:**
  - Establishment of dedicated and equipped infrastructure for women and vulnerable people in the workplace (toilets, access facilities, etc.);
  - Implementation of awareness-raising campaigns for workers on gender equality and the prohibition of harassment and violence against women;
  - Establishment of a code of conduct providing for disciplinary sanctions on any discrimination or violence that might be directed at women or people with disabilities;
  - Establishment of a Grievance management mechanism and action plan to deal with cases of violence against women.

Subsidy measures put in place by PIA :

- Define recruitment quotas for women and people with disabilities (currently set at 5%);
- Encourage the establishment of a zone for the sale of services and everyday consumer goods so that women can benefit from the presence of workers near the construction site.

### 4.12.3. Monitoring indicators

The monitoring indicators are:

- Number of specific consultations organised (focus group) ;
- Number of women and vulnerable persons recruited;
- Number of complaints recorded concerning cases of harassment and violence against women and vulnerable persons, outside and in the workplace.

### 4.12.4. Responsibilities for implementation

During the construction phase the responsibility for implementing the social inclusion plan will be shared as described above.

### 4.12.5. Timeline

The social inclusion plan should be prepared before the start of construction in order to be operational from the start of recruitment. This plan applies to the whole duration of the construction phase.

## 4.13. Social influx management plan

The development of the PIA project and the Adetikopé area will result in an influx of workers which will have economic and social consequences for the villages surrounding the site, such as:

- disruption in the lifestyle of host populations;
- price inflation of properties and services;
- social conflicts between workers and host populations;
- development of delinquency and banditry;
- Increased pressure on health, waste management and water services.

### 4.13.1. Objectives

The Social Influx Management Plan will serve 3 purposes: limiting influxes as much as possible, monitoring them to ensure the limitation measures are effective, and acting to provide compensation measures in case the influxes become uncontrollable. Its implementation along with the Local employment program (cf. § 3.1.2) will also ensure the optimal allocation of jobs to local communities.

### 4.13.2. Measures

Several measures can be deployed to limit social influxes, monitor them and take corrective action if they become problematic.

#### Limiting influxes

- Do not recruit workers on site;
- Provide local authorities with a list of available positions and required qualifications in advance of recruitment campaigns - responsibility of the promoter;
- Communicate to local authorities, civil society organisations and local populations the recruitment procedure using appropriate media such as: local radio, notice board, distribution of brochures - responsibility of the promoter.

### **Monitoring influxes**

The monitoring will require PIA to perform regular interviews with a set of local stakeholders in order to get information on several indicators:

- **Living conditions of the workers:** PIA will organise a follow-up of the living conditions of the newly settled workers. Regular meetings with the chiefs of the affected villages and a census of the localities will make it possible to measure the influx of workers in the area. The village chiefs will have to report any deterioration in living conditions, particularly with regard to waste management;
- **Access to health infrastructure:** monitoring of health care satisfaction among local populations, users and health post managers;
- **Access food:** measurement of availability of food every two months with village chiefs;
- **Monitoring of satisfaction indicators regarding access to water** in the villages near the site. These indicators will be calculated through satisfaction surveys of the villagers as well as through interviews with the relevant technical services;
- **Follow-up of complaints** recorded in the Grievance management mechanism resulting from the influx of workers, particularly in relation to cases of violence and nuisance.

### **Acting in case of large influxes**

In the event of deterioration of one or several of these indicators (steep increase in new settlements, overloading of district health centres, high inflation rates), PIA will implement:

- A Construction of additional water points (such as drinking fountains) in the affected villages, in collaboration with the local authorities' technical services;
- Material support for the Adétikopé health centre.

This program will be linked to the voluntary community development contribution plan proposed in § 3.1 to support the development of the communities surrounding the Project site.

### **4.13.3. Monitoring indicators**

The monitoring indicators are:

- population health monitoring report from district health centres;
- number of new residents reported in the villages;
- number of complaints about social influxes;
- number of public infrastructures built due to social influxes.

### **4.13.4. Responsibilities for implementation and monitoring**

The implementation of the social influx management plan will be carried out by PIA in collaboration with the main contractor, and monitoring will be carried out by PIA and the ANGE.

### **4.13.5. Timeline**

This plan applies to the whole construction phase duration.

## 5. Operational phase

During operational phase, PIA will need to implement new management plans concerning the functioning of the industrial zone. Most of the plans developed by PIA during preparation and construction phases will be applicable for the operational phase, such as Communication plan, Grievance management mechanism, Revegetation program, Social influx procedures, etc.

### 5.1. PIA's ESMP

In operation phase, PIA will:

- Monitor its common infrastructures so that air and noise emissions, discharges, consumption along with HSE requirements comply with applicable regulations and IFC best practices through a:
  - Water resource management and discharge management plan ;
  - Traffic and road safety plan;
  - Waste management plan ;
  - Occupation hygiene, health and safety plan;
  - Maintenance plan for common infrastructures: electrical substations, outdoor areas ;
  - Site emergency response plan.
- Implement a human resources management plan including a local recruitment program and a social inclusion plan.

The content of these plans is briefly described below. PIA will develop these procedures for the operation of its utilities and facilities.

#### 5.1.1. Water resource management and discharge management plan

The main focus of this plan will be on the following points.

##### **Stormwater and Wastewater management**

- All outfall location that discharges runoff into the central drain / subdrains must be equipped with grates or nets to arrest the debris and other solid. These grates and nets shall be regularly inspected to verify their condition;
- Implement regular audits on quality of pre-treatment for each industrial activity before its wastewater is sent to the CETP. This quality control will be in line with the Design Inlet Threshold for the CETP;
- Develop an operation plan to be implemented in case the quality control results in an exceedance of the Design Inlet Threshold;
- Monitoring of quality and quantity of effluent discharges in the environment. Discharges must comply with the procedure presented in 5.1.8;
- Establish routine maintenance program for CETP (inventory, cleaning, inspection, etc);
- Training of operational staff including safety training program for workers, safe handling and personal hygiene practices to minimize exposure to pathogens and vectors;
- In all areas where rainwater is likely to be loaded with pollutants (i.e. refuelling and vehicle washing areas; chemical and waste storage), closed drainage systems are to be installed and

connected to the CETP for further treatment. Polluting and large scale industry will be required to carry out analysis of stormwater discharges at their outlets connected into the PIA common drainage network. The characteristics of stormwater effluents will have to comply with the discharge standards applicable to the project;

- Identify an optimal location for CETP maximising the distance with sensitive receptors (housing) to reduce the risk of odors and noise related nuisances.
- Since the solar farm will be located in a zone presenting risks of flooding, the drainage system will be adequately designed by taking into account stormwater in rainy season and during large flooding as well.

Once the CETP processes are defined and the Risk Assessment Study is conducted, a dedicated E&S management procedure must be developed and implemented based on the results of the ESIA.

#### **Water resources management regarding PIA functioning:**

- As an immediate measure, a new pumping test should be conducted. During this pumping test, Maastrichtian aquifer piezometric level needs to be monitored and at least one well of the Continental Terminal and one well of the Eocene/Paleocene aquifers nearby needs to be monitored as well. It will help assessing if the aquifers are connected which is a major uncertainty of the impact study;
- For on-site monitoring, due to the lack of data and the uncertainties, it is necessary to have a full-cycle (1 year) of piezometric monitoring in the Maastrichtian aquifer, Continental Terminal nearby the site boundaries and the “Eocene-Paleocene” wells north of the project. After this full year of monitoring, the strategy can be revised by choosing the most representative wells of the multi-layered aquifer functioning and monitor them at least once every trimester to follow the impacts and the aquifer’s health;
- set up measures to limit, avoid or reduce water usage and increase water recycle and reuse including the use of additional technically feasible water conservation measures within the promoter’s operations, the use of alternative water supplies or water consumption offsets to reduce total demand for water resources to within the available supply;
- In a context of the water resource become scarcer, additional efforts to recycle water should be implemented by PIA by designing and implementing a system to recycle the treated water of the CETP and allow to reuse it instead of discharge it to the environment;
- water consumption monitoring for the entire PIA (PIA infrastructures and industrials units);
- Prefer dry cleaning of the PV modules instead of cleaning them using water;
- If groundwater abstraction is inconsistent and groundwater availability is declining a hydrogeological study is to be undertaken to investigate local structure of the Maastrichtian aquifer and its connectivity.

#### **Water resources management regarding community uses:**

- regularly assess the efficiency of groundwater supply systems in the 10 villages of the study area through interviews with the head of villages;
- Regular monitoring of water flow and quality in the villages through pumping tests;
- in case of observed impacts, install new wells should the water flow reduce or stop on existing ones.
- **Monthly quality monitoring** of treated effluents used for watering plants to ensure compliance with discharge criteria (see **Erreur ! Source du renvoi introuvable.**) and to avoid indirect pollution of superficial aquifers used for drinking by the community.

- **Monthly groundwater monitoring** (including in the areas of underground or above ground tanks for wastewater storage) to ensure groundwater quality does not deteriorate compared to baseline status.

#### **Compensation measures :**

- **Carry out water stewardship/water neutrality studies** adopting internationally recognized standards (such as Alliance for Water Stewardship (AWS) standard ) to identify, evaluate and quantify compensation measures (which may include increasing availability of water to the population, increasing water infiltration on the watershed scale, adapting the reuse rate of PIA users).

#### **Monitoring Indicators:**

The monitoring indicators are:

- Compliance for discharges from CETP and septic tanks (most restrictive threshold between local value / international standards)
- Compliance for discharges from retention basin outlet (most restrictive threshold between local value / international standards)
- Number of complaints on the subject of access to water

#### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders if necessary.

#### **Timeline**

This plan is to be implemented during the operation phase.

### **5.1.2. Traffic management plan**

Like the construction phase, the operation phase will require that a strong attention is paid to traffic and road safety due to the high risks that it represents for PIA workers, clients and local communities. The plan will rest on several actions detailed below.

#### **Control of drivers' capacities and vehicle suitability**

In operation phase, the vehicle fleet will be shared between PIA, who will use vehicles for its daily operations, and the industries. PIA will be responsible to maintain the good condition of its fleet of vehicle and the competencies of its pool of drivers, with the following actions to be implemented:

- conduct a proficiency (including eyes) test of all drivers at the time of hiring;
- train drivers of light vehicles and trucks in basic road safety and risk awareness;
- give specific permits to the drivers of construction site machinery and heavy vehicles;
- check trucks, their general condition, load and stowage;
- ensure that the transport of hazardous materials complies with local regulations and international specifications;
- implement unannounced speed and alcohol checks;
- introduce of a scale of penalties for violations of the traffic and road safety plan;
- prohibit traffic at night unless an exemption is issued by PIA HSE manager.



### **Traffic regulation and management on PIA premises**

- **Carry out a traffic study** to properly evaluate the volume of traffic induced by the industrial zone and consequently assess the impacts on the road infrastructure, air and noise emissions and identify potential improvements required for the transportation system (traffic signals, intersections, safety for all users).
- develop a traffic plan for the site which indicates open roads, their direction, and includes signage, associated traffic rules and signage (speed limits), the provision of areas requiring special access or equipment, and the installation of necessary equipment such as speed bumps, lighting;
- Use of road sign signage.;
- The traffic plan must contain the following elements to limit GHG emissions from the contractors and industries vehicles:
  - **Limit the vehicles speed** to 30 km/h in all inhabited areas,
  - **Humidification**, when necessary, of unpaved village roads crossed by trucks in case of severe drought and high winds,
  - **Covering trucks** transporting pulverulent materials (fine materials or soils),
  - Use of good quality equipment and vehicles, preferably new, and regular inspection and maintenance of work engine and equipment (exhausts),
  - **Dust monitoring** undertaken on the site boundary and villages crossed by the main roads used by the contractor's vehicles and machinery.

### **Traffic regulation and management outside PIA premises**

An off-site traffic plan will be developed which will include:

- The public roads that will be used, specifying the time of year and the time of day;
- Applicable rules and restrictions near residential or highly frequented areas (30 km/h speed limit, working hours);
- Safety measures (lighting, signs and/or the deployment of road security assistants) for accident-prone segments;
- Restriction of delivery and collection times (waste, materials) to times of limited use;
- The organisation of informative campaigns in the villages located in the immediate vicinity of the site concerning road safety measures.

Rules and restrictions mentioned here above will be applicable to PIA fleet and will be included in operational guidelines for industries.

In addition, PIA will organise monitoring of the quality of the N34 road and contribute to the repair of damaged roads in the vicinity of the site.

### **Monitoring Indicators**

The monitoring indicators are :

- Number of awareness-raising sessions organized ;
- Number of complaint on health and safety issues.

### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders.



## **Timeline**

This plan is to be implemented during the operation phase.

### **5.1.3. Waste management plan**

PIA has developed a Waste Management Plan to facilitate the effective management of wastes generated at the IZ. PIA has also developed a Project and Operation Waste Management Procedure that guides project contractors, workers activities and Operational facilities to reduce and manage waste in all forms to prevent health related problems and any damage to the environment.

#### **Some additional measures must however be taken to ensure proper waste management:**

Clear waste management procedures have to be established, implemented and communicated, both for PIA and its workers and the future industrials:

- Monitor the capacity of the vendors to manage the amount of waste produced and, if needed, identify further partnerships with local vendors for waste management to ensure all waste streams are correctly collected, handled, treated and disposed of.
- Implement best practices for the composting of biodegradable domestic waste to avoid the risk of attracting animals
- For hazardous waste:
  - In case of production of hazardous waste, an application must be submitted to the ANGE (usual national good practices).
  - Store in dedicated, secure areas. These areas will be sealed and equipped with retention basins to prevent any risk of leakage to the environment.
  - No waste or hazardous product storage facility will be located in an area subject to flooding or near a drinking water source.
  - Elaborate a complete list of hazardous waste produced, stored and collected as well as quantities. Conduct regular audits of waste segregation and collection practices.
  - Keep manifests or other records that document the amount of waste generated and its destination
  - Verify, via annual audits to be carried out by third party auditors, that all contractors handling, treating and disposing of hazardous waste are licensed by the relevant regulatory agency and follow good international industry practices
  - Ensure compliance with applicable local and international regulations among which any national commitment under the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their disposal (<http://www.basel.int/>) and Rotterdam Convention on the prior Inform Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (<http://www.pic.int/>)
  - Conduct regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored. Monitoring activities shall include
    - Inspection of vessels for leaks, drips or other indications of loss
    - Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors

- Verification of locks, emergency valves, and other safety devices for easy operation
- Checking the operability of emergency systems (if any)
- Documenting any changes to the storage facility, and any significant changes in the quantity of materials in storage
- Document the findings.
- Prepare and implement spill response and emergency plans to address their accidental release
- Avoid underground storage tanks
- All waste containers designated for off-site shipment should be secured and labeled with the contents and associated hazards, be properly loaded on the transport vehicles before leaving the site, and be accompanied by a shipping paper (i.e., manifest) that describes the load and its associated hazards
- Establish a pre-acceptance procedure with the landfill operator in Aképé. PIA must present certain elements to the operator, including:
  - A description of the origin of the waste concerned;
  - Volumes and types of waste;
  - The results of the analysis of the waste concerned (analysis report).
- Verify, via annual audits to be carried out by third party auditors, that all contractors handling, treating and disposing of waste follow good international industry practices and have the capacities needed to handle, treat and dispose of the waste they are entitled to collect at PIA site.
- Develop and implement contractual specifications for future industrials including obligations for the proper collection, storage and disposal of waste in accordance with PIA Waste Management Plan.
- Find appropriate waste disposal / recycling channel with Togolese companies, including local ones;
- Ensure the effectiveness of the selective sorting and fence the waste storage to avoid animal intrusion and pest development;
- Regular control and visits of the waste collection storage of industrial;
- Application of the World Bank Group Environmental, Health, and Safety Guidelines for the waste management facilities.

**Regarding the sludges produced by the wastewater treatment plant (CETP):**

- Dedicated measures will have to be defined through a dedicated Risk Assessment Study for sludge management from CETP and these measures will have to be included in the waste management plan;
- Respect WHO and US EPA (see section 2.5.6 of ESIA) recommendations on pathogen limits for reuse of sludges, notably concerning the monitoring of the sewage sludge quality after the filter press;
- If sludge is composted, the dry matter content should be between 40 and 45%. This corresponds to a water percentage, called "moisture ratio", of 55-60%. Composting is most efficient when the C:N ratio is in the range of 25 to 35:1. The appropriate bulking agent for the project may be green waste, leaves and scrub and pruning waste from the initial clearing of

land for the project but also from the maintenance of green areas during the operation of the platform;

- Place the windrows under cover to protect them from rainwater, especially during rainy season, which can disturb the moisture content of the compost and prevent it from reaching its optimum level. In addition, it will probably be necessary to water the compost in the dry season to maintain an adequate moisture level;
- Set up a composting platform, located in non-flooded areas with a slope of less than 2%, use of impermeable liner, equipped with provided drain run-off from the drying area;
- Regarding the planned use of the compost, the process will have to respect recommendations of Part 503 of the US EPA regulation on temperature and time parameters for composting of biosolids;
- Control the C:N ratio (to be over 25) and ensure a correct aeration of the windrows (mechanical turning of windrows) to avoid emission of odours;
- Monitoring the quality of sludge with sampling, moisture content of the compost should be between 55 and 60%.

#### **Measures for the impact on waste management infrastructure:**

- Carry out a Waste Management Infrastructure Analysis to assess the actual and global capacity of the existing regional/national waste management infrastructure to manage, on the long term, the amount of waste produced by PIA operations (including hazardous and non hazardous waste).
- Investigate the technical and financial feasibility to build an additional waste management facility (or extend an existing one) specifically intended to the disposal of PIA operations waste

#### **Compensation measures:**

- Implement the possibility for neighbouring communities to have access to PIA waste management infrastructure (collection and disposal)

#### **Monitoring Indicators**

The monitoring indicators are :

- Number of complaints on waste issues;
- Existence of a register of low-hazardous waste: quantity, recovery or treatment ;
- Existence of a register of hazardous waste: Quantity, storage in a sealed area, evidence of the handling of hazardous waste;
- Percentage of produced waste properly stored;
- Percentage of produced waste properly disposed.

#### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders.

#### **Timeline**

This plan is to be implemented during the operation phase.

#### 5.1.4. Occupational hygiene, health and safety plan

PIA workforce will have to be offered a working environment and working conditions respectful of the international best practices and Togo laws. In particular, the following measures are expected to apply to the workforce:

- Management of the workforce and working conditions in accordance with Togo's national regulations (Labor Code), IFC HSES guidelines and the ILO conventions ratified by Togo;
- Realization of job hazard assessment (JHA) and provision of personal protective equipment (PPE) available to workers and control that they are worn;
- Code of conduct, internal regulations and training of workers on the environmental and social aspects;
- Recruitment of one or several HSE coordinator in charge of monitoring the proper application of the plans;
- Provision of facilities that ensure safety and hygiene is maintained at all time on PIA premises, in addition to already planned police, fire fighting and health. Such facilities are: safe access along with fire precautions and safety exits, hazardous area signage, labeling of hazardous equipment, first-aid equipment positioned in strategic location of the site, sanitary facilities (lavatories, showers) in sufficient amount for all workers (including separate facilities for females), locker rooms, clean eating areas, sufficient potable water supply, sufficient air supply and lighting, adequate work environment temperature, emergency response equipment, integrity of workplace structures, etc.

##### **Monitoring Indicators**

The monitoring indicators are :

- Number of complaint on health of safety issues from workers;
- Number of workers equipped with appropriate PPE;
- Percentage of workers with appropriate accreditation (specially for electrical activities).

##### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders.

##### **Timeline**

This plan is to be implemented during the operation phase.

#### 5.1.5. Human resources management plan

In the operation phase, PIA will need to have clear policies and procedures for human resources management. In particular, the local recruitment programme and the social inclusion plan developed by the contractors during the construction phase, should be continued.

##### **Local recruitment program**

- Establishment of recruitment offices or connecting the project's economic operators with local recruitment offices if these are already in place, with priority given to people affected by the project with equal skills;
- Setting up a transparent procedure for the management and communication of tenders with local subcontractors via the commune and local communication media (radio, newspapers, notice board;

- Priority recruitment of people affected by the project with equal skills. During the recruitment process, people will have to show documents proving that they are affected by the project;
- Priority recruitment, with equal skills, of workers residing in the 10 villages affected by the project;
- Priority will be given to the recruitment of women and other vulnerable populations with equal skills.

### **Social inclusion plan**

- Compliance with Togolese legislation and international standards on gender equality and violence against women;
- Compliance with Togolese legislation and international standards concerning the rights of people with disabilities and the prohibition of child labour;
- Ensuring the participation of women and vulnerable people in consultations and briefings, including recruitment and community development activities;
- Access to dedicated infrastructure (e.g. women's toilets and changing rooms) or adapted infrastructure (staircases with access ramps, etc.);
- Establishment of awareness campaigns for workers on gender equality and the prohibition of harassment and violence against women;
- The provision of street lighting in selected areas to improve safety;
- The organisation of regular consultations with women and vulnerable people to monitor their socio-economic situation;
- The implementation of an employment management plan that promotes female employment, provides for the recruitment of women and ensures equal pay;
- Ensuring strict control to avoid the employment of children under 14 years of age and ensuring that the tasks entrusted to children over 14 years of age do not endanger their physical integrity and health;
- The establishment of a community monitoring system for the protection of children;
- Establishment of a Grievance management mechanism and action plan to deal with cases of violence against women.

### **Indicators**

The monitoring indicators are :

- Percentage of workers at PIA either PAP or coming from 10 villages of study area;
- Percentage of workers at industries either PAP or coming from 10 villages of study area;
- Number of complaints related to local recruitment.

### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE.

### **Timeline**

This plan is to be implemented during the operation phase.

## 5.1.6. Maintenance plan for common outdoor areas

### Electrical substations

- Routine maintenance checks will be undertaken regarding electric substations and emergency generators, especially for the equipment using SF6 gas that must be checked properly and periodically in accordance with the specification and operation manuals;
- As there is no available alternative to ban SF6, the judicious use of SF6 with careful closed-loop handling and full recycling upon equipment retirement must be privileged;
- Application of the Environmental, health and safety guidelines, general EHS guidelines (IFC) relating to the atmospheric emissions of fixed sources;
- Acoustically isolate the electrical substation.

### Green spaces

- Set up of green hedges for PIA instead of concrete blocks or any other material that could prevent small animals to pass. If not possible, plan some gaps between the ground and the bottom of the wall. Note that green hedges will be better for the PIA landscaping integration than a wall;
- Use of pesticides shall be prohibited. Mechanical method for green spaces maintenance shall be privileged;
- Investigate the possibility to implement agrovoltatics (or agrophotovoltaics) strategies such as using the ground beneath the solar panels to graze animals or grow crops.
- Open green spaces maintenance operations will begin after planting. Planting beds will be kept free of weed, grass and other undesired vegetation growth. In general, maintenance of all spaces under the PIA responsibilities has to be managed appropriately.

### Indicators

The monitoring indicators are :

- Percentage of equipment checked in appropriate deadline;
- Compliance for noise emissions (most restrictive threshold between local value / international standards);
- Compliance for air emissions (most restrictive threshold between local value / international standards);
- Number of prohibited products for the maintenance of green spaces.

### Responsible for implementation and monitoring

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders.

### Timeline

This plan is to be implemented during the operation phase.

## 5.1.7. Site emergency response plan

PIA will have to develop an emergency plan in case of accidental spillage or other kind of accident on site as:

- small incidents such as minor spillages or individual incidents resulting in minor harm;

- large incidents such as major spillages or failure of control equipment that could result in offsite impacts or severe injuries or even fatalities;
- Design and integrate in the conceptual scheme of the CETP an emergency retention basin to collect untreated wastewater in case of accidental situations in the CETP;
- fires or explosions; or
- release of toxic gases or substances.

All the measures detailed in section 7.2 of the Project ESIA have to be included and developed in the emergency plan whose content is outlined in section 7.2.2.2.2 of the document. Measures from additional hazard studies (if any) should also be included.

This site emergency response plan must be developed in collaboration with the other industrials and communicated to neighboring communities and appropriate stakeholders.

The services of the ANPC (National agency for civil protection) should be solicited and put through with the fire station on site. A dedicated communication has to be established between the ANPC and PIA.

PIA will also have to organize with all stakeholders several emergency drills once a year. Third parties such as local authorities, local communities, the police and fire fighting services of Zio Prefecture or Zio 1 municipality shall be involved.

### **Indicators**

The monitoring indicators are :

- Number of emergency drills performed with all PIA stakeholders;
- Number of environmental or safety accident.

### **Responsible for implementation and monitoring**

This plan will be implemented by PIA. Monitoring will be carried out by PIA, ANGE and by lenders.

### **Timeline**

This plan is to be implemented during the operation phase.

## **5.1.8. Monitoring procedures**

The PIA E&S department shall conduct regular monitoring on the PIA infrastructures but also on the industrial plants. The monitoring could be on documentation basis provided by the industries management or on punctual measurements and samplings performed by the PIA E&S department.

Monitoring will include:

- monitor industrial operators' compliance with ARISE ESMS manual, PIA Operational Guidelines, IFC standards and national requirements on atmospheric emissions, noise levels, water discharges, waste management;
- monitor PIA common infrastructures' compliance with the PIA Operational Guidelines, IFC standards and national requirements (the most restrictive) on water discharges, waste management (waste tracking and register), product consumption (water, energy).

More specifically, the monitoring of wastewater quality prior to entering CETP to be carried out monthly to comply with the CETP monitoring parameters (Table 4). The monitoring of wastewater at the inlet and outlet of the CETP to the environment shall be carried out by a 3<sup>rd</sup> party laboratory with all necessary equipment and automation support allowing real-time monitoring. Treated effluent discharges from CETP into the environment will have to meet the most stringent values among national and international (IFC) guidelines (interministerial order



n°010/MER/MS/MERF fixing the norms or standards for the discharge of wastewater into the natural environment and 2007 IFC guidelines on water and sanitation), as listed in Table 4:

Table 4 CETP monitoring parameters

N°	Parameter	Most stringent value – applicable to project
1	pH	6 – 9
2	Temperature (°C)	> or = 35
3	Color	/
4	Odor	/
5	Floating material (> 1cm)	0
6	Settling matter (mg/l)	< 0.5 or after 2 hours of settling
7	Suspended solids (mg/l)	50
8	BOD( (mg/l)	30
9	COD(mg/l)	125
10	THC (mg/l)	5
11	Iron + Aluminium (mg/l)	< or = 5
12	Arsenic (mg/l)	< or = 0.1
13	Cadmium (mg/l)	< or = 0.2
14	Total chromium (mg/l)	< or = 2
15	VI Chromium (mg/l)	< or = 0.2
16	Manganese (mg/l)	< or = 1
17	Mercury (mg/l)	< or = 0.05
18	Nickel (mg/l)	< or = 0.5
19	Lead (mg/l)	< or = 0.5
20	Copper (mg/l)	< or = 0.5
21	Tin (mg/l)	< or = 2
22	Zinc (mg/l)	< or = 2
23	Cyanide (mg/l)	< or = 0.1
24	Sulphides (mg/l)	< or = 1
25	Sulphites (mg/l)	< or = 1
26	Sulphates (mg/l)	< or = 1000
27	Chlorides(mg/l)	< or = 1200
28	Fluorides (mg/l)	< or = 15
29	Phosphorus (mg/l)	< or = 10
30	NO3-N (mg/l)	< or =20
31	NO2-N (mg/l)	< or = 2
32	Oils (animal + plant) (mg/l)	< or = 30
33	Mineral oils (mg/l)	< or = 5
34	Phenols (mg/l)	< or = 0.3
35	Aromatic solvents (mg/l)	< or = 0.2
36	Nitrogenous solvents (mg/l)	< or = 0.1
37	Chlorinated solvents (mg/l)	< or = 1



N°	Parameter	Most stringent value – applicable to project
38	Surfactants (mg/l)	< or = 2
39	faecal coliforms/ 100 ml	< or = 2000
40	faecal streptococci (MNP/100 ml)	< or = 1000
41	Salmonella/100 ml	0
42	Clostridium/100 ml	0
43	Conductivity	< or = 2500 $\mu$ S/cm
44	Total Nitrogen (mg/l)	10
45	Total residual chlorine (mg/l)	0.2

- maintenance checks for hazardous machines and facilities (once in every quarter or as given in supplier's specifications);
- **Monthly soil monitoring** to ensure that treated effluents using for watering plants it is not accumulating contaminants (mainly Heavy metals, total hydrocarbon);
- **Monitor atmospheric emissions** of fixed sources for common infrastructure and CETP to ensure they comply with General EHS Guidelines: environmental (IFC, 2007) for air emissions and ambient air quality;
- **Implement a monitoring and grievance mechanism for odors** produced by the CETP or any other common infrastructure managed by PIA;
- **Carry out a CETP noise emissions assessment** to evaluate the noise emissions of the CETP and identify the measures that may be integrated at the design stage to effectively reduce noise emissions (choice of low-emissions equipments, design of noise screens, ...);
- Weekly piezometric monitoring in a representative set of structures in the communities around PIA Phase 1 and PIA Phase 2 ;
- Monthly groundwater quality monitoring on all horizons, particularly in the areas of belowground and aboveground wastewater storage tanks;
- Monitoring of villagers' complaints about the lack of water resources ;
- **Implement a surface water quality monitoring program** to be carried out at the CETP discharge point and at the inlet of Togo Lake (corresponding to ESIA baseline point PESU-04). monitoring of all indicators as described in section 7.

## 5.2. Solar plant management procedures

### 5.2.1. Principles

All measures presented in previous plans and procedures are to be applied for the solar plant as well:

- Water resource management and discharge management plan;
- traffic management plan;
- waste management plan;
- Occupational hygiene, health and safety of workforce procedures;

- Human resources management plan;
- Site emergency response plan;
- Monitoring procedures.

In that sense, the solar plan constructor will have to elaborate a Solar management plan including all relevant measures from the plans and procedures listed above.

A special attention will be required towards the specific measures for the solar plant:

- Since the solar farm will be located in a zone presenting risks of flooding, the drainage system will be adequately designed by taking into account stormwater in rainy season and during large flooding as well.
- Investigate the possibility to implement agrovoltatics (or agrophotovoltaics) strategies such as using the ground beneath the solar panels to graze animals or grow crops.

### 5.2.2. Monitoring indicators

See relevant indicators from paragraphs 5.1.1 to 5.1.7.

### 5.2.3. Responsible for implementation and monitoring

Solar plant contractor will elaborate and implement the plan. PIA and ANGE will be responsible for monitoring.

## 6. ESMP summary table

The table below presents, for each impact of the Project, the proposed mitigation measures, the associated management plan, the implementation planning, the responsible for implementation and monitoring as well as the budget responsibility.

## 6.1. Preparation phase

Table 5 ESMP summary for preparation phase

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Preparation phase						
Change in use land on dumping site	<b>Dumping site</b> - Inspection, and biological and social inventory will be carried out and consultation with local community will be organized at least 2 months prior to disposal	Dumping site management plan	Main contractor	Main contractor & subc.	PIA ANGE	Under main contractor contract
115 physical displacement of PAPs	- Establishment of a Supplementary RAP for Phase 2 and dumping site (if needed) - Compensation according to IFC performance standards, preferably in kind - Resettlement arrangements that will maintain social linkage	Supplementary Resettlement Action Plan  Grievance management mechanism	PIA	PIA	PIA, ANGE, Local authorities	Budget to be determined after RAP study completion
Economic displacement of 200 to 250 PAPs Loss of economic activity (agriculture, livestock) Food insecurity	- Respect of right-of-way boundaries; - Full compensation to PAPs for land, crops and structures in accordance with IFC performance standards; - Implementation of a Livelihood Restoration Plan in line with IFC performance standards, including transitional measures; - Recruitment that will favour equally qualified PAPs and ensure gender balance	Livelihood Restoration Plan  Grievance management mechanism	PIA	PIA,	PIA ANGE, Local autohorities	Budget to be determined after RAP study completion

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Preparation phase						
Women and vulnerable people excluded from compensation payments; Appropriation of compensation by men in the household; Women and vulnerable people excluded from consultations	<ul style="list-style-type: none"><li>- Identification and payment of compensation to women owners and users of impacted land;</li><li>- The definition of criteria adapted to the local context to determine the vulnerability of PAPs;</li><li>- Establishment of transitional and priority measures for vulnerable PAPs to restore their livelihoods;</li><li>- Planting of species mainly used by women for gathering on a site around the power plant, to be discussed with the communities</li><li>- Payment of compensation in instalments;</li><li>- Ensure women's participation and consultation in decision-making;</li><li>- Inclusion of women and vulnerable PAPs in LRP monitoring committees.</li></ul>	Livelihood Restoration Plan Stakeholder engagement plan  Grievance management mechanism	PIA	PIA	PIA, ANGE, local authorities	Budget to be determined after RAP study completion
Relocation of a church and numerous individual and community fetishes	<ul style="list-style-type: none"><li>-Payment of compensation to the church pastor</li><li>- Identification and location of fetishes;</li><li>- Consultations with the owners of the fetishes, local chiefs ;</li><li>- Performing appropriate rites;</li><li>- Carrying out and paying for relocation.</li></ul>	Cultural heritage management plan  Grievance management mechanism	PIA	PIA	Ministry of Culture and Tourism, Local authorities	Budget to be determined after RAP study completion

## 6.2. Contruction phase

Table 6 ESMP summary for construction phase

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Smoke and greenhouse gas emissions from construction machineries, compressors and electricity generators and green waste burning	Waste reuse, composting and recycling. Burning waste is strictly forbidden	Waste management plan	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
	Use of good quality equipment and vehicles / regular inspection and maintenance	Air and noise emission monitoring procedure	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Dust emissions earthmoving operations, storage of excavated materials and products, material crushing units and the concrete plant. During dry period this impact is more important.	Limit the vehicles speed in inhabited area (30 km/h)	Traffic and road safety plan	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
	-Humidification of roads / soil stored when necessary. -Covering trucks transporting pulverulent materials -Dust monitoring	Air and noise emission monitoring procedure	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Earthworks, concrete and asphalts fabrication, construction activities & traffic will be the main source of noise.	-Limit construction works to daytime hours where reasonable and feasible, as the national regulation asks -Using equipment that has been well maintained -Construct physical noise barriers around main the main source of noise -Transportation vehicles should maintain appropriate travelling speeds -Noise monitoring on a quaterly basis	Air and noise emission monitoring procedure	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Wastewater discharges/waste leachate to the unconfined superficial groundwater (through the ground) and to surface water): mainly suspended solids, organic matter and bacteria. Discharges causing a deterioration in the quality of the natural environment (lack of oxygen, turbidity). Use of septic tanks	-Implementation of wastewater treatment systems. -Water quality discharges monitoring program from worksite areas -In case of set up of a discharge of wastewater in the environment, an application must be submitted to the ANGE (usual national good practices) - Use vacuum trucks or tugs for removal of fecal sludge instead of manual methods and use of appropriate collection vehicles - Facilitate discharge of fecal sludge and septage at storage and treatment facilities so that untreated septage is not discharged to the environment - Periodic inspections and control of the septic tank integrity to ensure zero leakages	Water resources and discharges management procedure	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Impact both on the environment but also on public health with the risk of epidemic development. Impact on surface water is limited without sensitive aquatic ecosystem	Implementation of collection, monitoring and waste treatment plan	Waste management plan	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Release into groundwater from washing water of engines and equipments - including asphalt plant and concrete mixer (lack of oxygen, turbidity, chemical pollution) Impact on surface water is limited without sensitive aquatic ecosystem	- Use of contained and impermeable areas for chemicals and dangerous products storage -Appropriate storage for dangerous products -Identification of appropriate place for engine refuelling, maintenance and washing	Hazardous products and spills management procedure	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Potential risk of leaks and accidental spillage of hazardous products (hydrocarbons, chemicals, hazardous waste, etc.) on the ground: contamination of groundwater by infiltration. Significant risk to human health in the event of consumption of polluted water; acute toxicity to aquatic life	Develop an emergency plan in case of accidental spillage.	Hazardous products and spills management procedure	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Heavy rainfall on poorly cohesive materials increased water turbidity following runoff on bare soil. Weak slopes limiting these impacts	-Stripped soil management. -Main excavation work shall be conducted during low precipitation periods.	Erosion and soil management plan	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Concrete production, vehicles washing, tracks humidification and domestic use, etc will consume water, around 13 860 m³ for the overall works activities.	Water supply with bottle and tank with rainwater collection (linked to a rainwater collection system)	Water resources and discharges management procedure	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Land clearing, earthworks and soil sealing can disturb the initial hydraulic patterns Impact limited because of the main	See above measures regarding water quality.	Water resources and discharges management procedure	Main contractor	Main contractor & subc.	Contractors	Under main contractor contract



Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
scheme of hydraulic patterns will be maintained.  Impacts on soil quality and groundwater of unconfined aquifer (indirect impact)					PIA, ANGE & Consultants inspections	
Large volumes of non-reusable excavation products will be stored permanently, which could lead to landslides causing erosion and sedimentation. Temporary soil disturbance on work area and base camp	--Stripped soil management. -Main excavation work shall be conducted during low precipitation periods. -Optimization of cut and fill. -Implementation of silt fence. -Progressive soil rehabilitation. -Revegetation and soil stabilization -Choice of appropriate location for base camp to minimise topographical alterations and soil excavation -Rehabilitation of affected areas at the end of construction works.	Erosion and soil management procedure	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Visual degradation in case of poor management of the site perimeter / work base / base camp perimeters	Implementation of collection, monitoring and waste treatment plan.	Waste management plan	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Production of domestic waste, green waste (950ha to be cleared), inert waste and dangerous waste from work area and base camp.	Identify recognized Togolese companies in order to regularly collect and treat recyclable and specific waste (hazardous) for both construction and operation phase. Local partnership to be considered.	Waste management plan	PIA	PIA	PIA, ANGE & Consultants	Under PIA E&S team
Inert waste from the demolition of existing infrastructures on site. No	Implementation of collection, monitoring and waste treatment plan	Waste management plan	Main contractor	Main contractor & subc.	Contractors	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
contaminated land or special waste is expected.					PIA, ANGE & Consultants inspections	
Possible impacts come from poor waste management, especially for domestic and hazardous waste, and the burning of green waste	In case of production of hazardous waste, an application must be submitted to the ANGE (usual national good practices)	Waste management plan	Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
The overall Project area is used for agricultural activities and is essentially made up of 57,6% of low crops and 41,8% of fallow land Area impacted by the Project are highly affected by human activities and present no major ecologic sensitive issues.	-Implement before the clearing operations a plant nursery. -Selection indigenous and native flowering plants and ornamental trees. -Recruit a forestry expert to support the revegetalisation program and the PIA green spaces. -Submit a request for tree cutting o the Prefectural Direction of the Environment prior to the start of the work	Provision for location of the main contractor work area	PIA Forestry expert	PIA Forestry expert	PIA, ANGE & Consultants  Prefectural dir. Of the Env.	PIA
Destruction of habitat by removal of vegetation leading in destruction of flora and injuries/death for animals; Soil erosion due to removal of vegetation; Water pollution due to proximity of the storage area and discharges points with sensitive areas	<u>Soil</u> - Preferentially locate work areas and base camp on flat areas to reduce topographical alterations. - Ensure rehabilitation of all affected area at the end of the works. <u>Water.</u> Preferentially locate engine washing areas, hazardous products storage area and waste storage area away from local boreholes and flood-risk area in order to limit the risk of accidental contamination. <u>Vegetation</u> - Minimise bush clearing areas by maximising usage of existing cleared areas. - Create a plant nursery for the species and plants which		Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
	can be used during for revegetation of the site (solar park, green spaces, etc.)	Revegetation procedure and invasive species management procedure				
Loss of agricultural land	-Limit clearing activities and clearly mark the rights-of-way. -Avoid the movement of soil and material from one region to another.		Main contractor	Main contractor & subc.	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract
Clearing activities on site: loss of 150 species recorded, including 4 species on the list of priority alimentary species of Togo. There is also 1 species considered as “as “vulnerable” on the IUCN list : <i>Khaya senegalensis</i> , also known as “caïlcédrat”	-Clean the engine to ensure the absence of invasive plants -Revegetation of works rights-of-way using only species naturally present in Togo		Main contractor	Main contractor & subc.	Contractors, PIA, ANGE & Consultants	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Modification of habitat and death of species with reduced mobility or which cannot move for behavioural or developmental reasons during land clearing operations. No species with high ecologic values was observed. None is included in the IUCN red list or are protected by the national regulation.	-Carry out clearing activities outside the rainy season if possible -Keep the <i>Khaya senegalensis</i> safe during the clearing operation (by avoiding cutting it)		Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Additional significant anthropic pressure can be observed on bushmeat or on useful wood species as energy sources and building materials and the need for farmland (new land to be cleared). Impact limited for bushmeat due to their limited presence.	-Formally prohibit hunting for all employees. -Formally prohibit the consumption of bushmeat.	Code of conduct for workers Training of workers	Main contractor	Main contractor & subc.	PIA, ANGE & Consultants	Under main contractor contract
Creation of direct and indirect jobs Use of local subcontractors Boosting the economy of the Adétikopé area	- The inclusion of clauses for the recruitment of local workers and subcontractors in tenders; - Priority recruitment program for local workers affected by the project, with equal skills; - Transparency of tender procedures (management and communication via the commune and local media (radio, newspapers, notice board); - Priority recruitment of subcontractors based in the Adétikopé region if economically and technically reasonable; - The implementation of an employment management plan that promotes female employment, provides for the recruitment of women and ensures equal pay;	Human resources management  Social inclusion plan	PIA, Main contractor	PIA, Main contractor.	Contractors, PIA & Consultants	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
	- Stakeholder engagement plan and Grievance management mechanism;					
Exposure of construction site workers to accidents and diseases caused by various factors (HSE risks)	-Manage the workforce and ensure working conditions in accordance with Togo’s national regulations (Labor Code) and the ILO conventions ratified by Togo; -Make personal protective equipment (PPE) available to workers and ensure that they are worn; -Set up and implement an Occupational Health and Safety Plan; -Set up and implement a Waste Management Plan and a Hazardous Products Management procedures; -Set up and implement a Traffic and Road Safety Plan; -Recruit one or several HSE coordinator in charge of monitoring the proper application of the plans;	Occupational Health and Safety Plan	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
	-Include clauses on HSE requirements in the Tender Documents for the works with obligations applying to contractors and their subcontractors; -Implement the Stakeholder Engagement Plan (SEP) and the Grievance management mechanism with a dedicated mechanism for construction workers	Environmental and social specifications for the main contractor and its subcontractor  Stakeholder engagement plan	PIA	PIA	Contractors  PIA, ANGE & Consultants inspections	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Exposure of local community members to accidents and diseases caused by the presence of the construction site: - Road accidents - Accidents due to site trespassing - Use of excessive force by site security personnel  - Exposure to unhealthy environment due to hygiene practices on the construction site	-Set up and implement an Occupational Health and Safety Plan -Set up and implement a Traffic and Road Safety Plan that considers local communities -Deploy a 24/7 guard system for the various work zones; -Implement site access controls (badges with identification) with one or more vehicle checkpoints -Set up and implement a Security personnel management procedure to reduce risks stemming from guards'behaviors	Occupational Health and Safety Plan  Traffic and Road Safety Plan  Community Health and Safety Plan	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
The appearance of social tensions following the recruitment of staff from outside the area or the use of external service providers; Acts of vandalism and degradation	- Training programmes for PAPs under the LRP for jobs related to the construction phase; - Inclusion of clauses for the recruitment of local workers and subcontractors in tenders for contracts related to the construction phase; - Establishment of a priority recruitment programme for local and project-affected workers with equal skills; - Establishment of a transparent procedure for the management and communication of tenders with local subcontractors via the municipality and local communication media (radio, newspapers, notice board); - Priority use of subcontractors based in the Adétikopé region if economically and technically reasonable.	Communication plan Social inclusion plan	PIA and main contractor	PIA and main contractor	Contractors, PIA, ANGE	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Pressure on social infrastructure Proliferation of diseases, including STDs Increase in solid and liquid waste, deterioration of sanitary conditions Increased insecurity (alcohol consumption, assaults)	<ul style="list-style-type: none"><li>- Prohibition of direct on-site recruitment;</li><li>- Transparent recruitment campaigns to reduce opportunistic migration.</li><li>- Establishment, with the municipality of Adétikopé, of an information programme on the jobs available, the recruitment process and the priority given to local workers;</li><li>- Monitoring the number and conditions of installation of new arrivals in the villages in collaboration with the host village chiefs;</li><li>- Sensitisation of staff and new arrivals to local customs and practices</li><li>- Monitoring the prices of basic products (palm oil, sugar, rice, petrol, etc.) to detect possible inflation;</li><li>- Development of a programme for the collection and treatment of solid domestic waste, as far as possible, which will be linked to the management of waste resulting from the activity on the industrial estate.</li><li>- Implementation of a community development plan to meet the infrastructure needs of the population, particularly social infrastructure;</li><li>- Monitoring of satisfaction indicators regarding access to ecosystem services and public health services.</li></ul>	Social Influx Management Plan Social inclusion plan Communication plan Community health and safety plan	PIA	PIA	PIA, ANGE	PIA
Limited benefits for women and vulnerable populations from the opportunities created by the project Increased insecurity Discrimination in employment Harassment and violence on and off site Incitement to prostitution	<ul style="list-style-type: none"><li>- Ensure the inclusion of women and vulnerable people in the ESMP monitoring committee;</li><li>- Ensure the participation of women and vulnerable people in consultations and briefings, including on recruitment and community development activities. Targeted focus groups may be organised for this purpose;</li><li>- Organise regular consultations with women and vulnerable people to monitor their socio-economic situation</li></ul>	Social inclusion plan  Community health and safety plan  Stakeholder engagement plan	PIA, Main contractor	Main contractor and subcontractors	Contractors PIA, ANGE & Consultants inspections	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
	<ul style="list-style-type: none"><li>- Recruitment strategy: application of a 5% quota for the recruitment of women and people with disabilities;</li><li>- Social inclusion in the workplace:</li><li>- Establishment of dedicated and equipped infrastructure for women and vulnerable people in the workplace (toilets, access facilities, etc.);</li><li>- Implementation of awareness-raising campaigns for workers on gender equality and the prohibition of harassment and violence against women;</li><li>- Establishment of a code of conduct providing for disciplinary sanctions on any discrimination or violence that might be directed at women or people with disabilities;</li><li>- Establishment of a Grievance management mechanism and action plan to deal with cases of violence against women</li><li>- Encourage the establishment of a zone for the sale of services and everyday consumer goods so that women can benefit from the presence of workers near the construction site.</li><li>- Organisation of information campaigns in the villages in the immediate vicinity of the site concerning hygiene, health, epidemiological measures, environmental protection and cultural differences with the new arrivals.</li></ul>					



Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
Nuisances caused by air emissions and noise affecting the populations living in the vicinity of the construction site, particularly those in the villages closest to the construction site	-Locate working zones (workshops) far from houses and villages -Avoid noisy work during off-duty hours -Limit the speed of trucks to 30 km/h in all populated areas -Use good quality vehicles, preferably new, with engines in good condition -Work with equipment that meets the required standards in terms of noise emissions	Air and noise emission management procedure	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Water consumption for works, mainly for washing vehicles and construction equipment and for human consumption	Water supply with bottle and tank with rainwater collection (linked to a rainwater collection system)	Water resources and discharges management procedure	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections	Under main contractor contract
Development of a procedure for the management of accidental finds	- Development of a procedure for managing chance finds	Cultural heritage management plan (see preparation phase)	Main contractor	Main contractor & subc.	PIA, Ministry of Culture and Tourism	Under main contractor contract
Accidents with heavy vehicles Increased traffic Traffic slowdowns	- Implementation of a road traffic management plan - Information campaigns in the villages	Traffic and road safety plan Community health and safety plan	Main contractor	Main contractor & subc.	PIA, ANGE, local authorities	Under main contractor contract
Decrease in access to water due to construction use and influx of workers	- Monitoring of water access satisfaction - Construction of additional drinking fountains if required	Water resource and discharges management procedure	Main contractor	Main contractor & subc.	Contractors, PIA, ANGE, local authorities	Under main contractor contract
Raising of dust Sanitary facilities that cause odour nuisance Vibrations, noise	- Move equipment (generators, concrete mixers, etc.) away from residential areas; - Avoid operation of equipment and vehicles outside working hours; - Avoid operating equipment and vehicles outside working hours;	Occupational Health and Safety Plan  Traffic and Road Safety Plan	Main contractor	Main contractor & subc.	Contractors  PIA, ANGE & Consultants inspections,	Under main contractor contract

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Development	Implementation	Monitoring	
Construction phase						
	<ul style="list-style-type: none"><li>- Limit truck traffic to 30 km/h in residential areas</li><li>- Use of recent low-emission equipment;</li><li>- Watering of the work area, vehicle and machine traffic lanes when crossing residential areas to reduce dust;</li><li>- Use of equipment that meets noise standards.</li></ul>	Community Health and Safety Plan			Local authorities	

## 6.3. Operation phase

Table 7 ESMP summary for operation phase

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Greenhouse gas emissions from traffic and site operations (mostly powered by the solar park)	-Routine maintenance checks -Careful closed-loop handling and full SF6 recycling upon equipment retirement -Application of the IFC guidelines relating to the atmospheric emissions of fixed sources	Maintenance plan for common outdoor areas	PIA	PIA	PIA ANGE Lenders	PIA
Specific emissions from the future industrial unit	-Assess the impacts resulting from their discharges in a dedicated ESIA -Application of the World Bank Group Environmental, Health, and Safety Guidelines for the industry sector	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	Industries
Future industrial unit can cause noise emissions.	-Assess the impacts resulting from their noise emission in a dedicated ESIA -Application of the World Bank Group Environmental, Health, and Safety Guidelines for the industry sector	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	Industries
Noise from traffic	Speed limit in line with the roads classification.	Traffic management plan	PIA	PIA Industries	PIA ANGE Lenders	PIA
Noise from PIA common utilities	Acoustically isolate the electrical substation.	Maintenance plan for common common outdoor areas	PIA	PIA	PIA ANGE Lenders	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Stormwater from areas that can be lixiviated (roof and parking areas, areas with oily process operation, waste storage areas), producing contaminated water.	-All water gathered from roof and parking areas or areas with oily process operations have to pass through an oily water separator - Where rainwater is likely to be loaded with pollutants, closed drainage systems are to be installed and connected to the CETP. - Polluting and large scale industry will carry out analysis of stormwater discharges at their outlets connected into the PIA common drainage network	Water resources management and discharges management plan	PIA	PIA	PIA ANGE Lenders	PIA
It is expected that 5300 m³ per day of treated effluent will be produced. Initial effluents will have various quality level depending on their source (industrial or domestic).	-Implementation of preliminary treatment at industrial plot level -Monitoring of all liquids effluents discharges in the environment	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	Industries
	- Monthly soil monitoring to ensure that treated effluents used for watering plants it is not accumulating contaminants -Establish complete routine maintenance program for CETP (inventory, cleaning, inspection, etc); -Training of operation staff including safety training program for workers, safe handling and personal hygiene practices to minimize exposure to pathogens and vectors.	Water resources management and discharges management plan	PIA	PIA	PIA ANGE Lenders	PIA
Accidental events could lead to an accidental spillage of hazardous products or a release of untreated wastewater	Development of an emergency plan in case of accidental spillage	Site emergency response plan	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries
	Design and integrate in the conceptual scheme of the CETP an emergency retention basin to collect	Additionnal studies	PIA	PIA	PIA ANGE Lenders	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
	untreated wastewater in case of accidental situations in the CETP.					
Water demand is 6000 m³ per day Maastrichtian aquifer capacity and potential concurrency with the other uses are unknown	-Investigate the geology of the multi-layered aquifer via a well reaching the Maastrichtian aquifer -Perform a pumping test in the Maastrichtian aquifer while monitoring wells in Paleocene and Continental Terminal aquifers	Additionnal studies	PIA	PIA	PIA ANGE Lenders	PIA
Drilling of boreholes to feed the supply network	-Obtain an application for groundwater withdrawal from ANGE or prefectural department of environment -Assess and manage drilling activities in terms of E&S issues	Additionnal studies	PIA	PIA	PIA ANGE Lenders	PIA
Water consumption (6000 m3 per day, 5300 with reuse)	-Water consumption monitoring for the entire PIA - Monthly groundwater quality monitoring on all horizons -Increase treated water recycling/groundwater extraction ratio -Prefer dry cleaning of the PV modules instead of cleaning them using water.	Water resources management and discharges management plan	PIA	PIA Industries	PIA ANGE Lenders	PIA
Overflow, water logging or soil erosion resulting from drains clogging or mismanagement of the drainage network	-Monitor any malfunctions of the stormwater drainage system that may result in soil erosion, overflow or other physical effect. -Implement a maintenance plan aimed at assuring the proper functioning of the runoff drainage system, including cleaning of any critical point that may get clogged (in particular after intense rainfall events) -Each outfall location that discharges runoff into the central drain / subdrains must be equipped with grates or nets to arrest the debris. Grates and nets must be kept clean	Water resources management and discharges management plan	PIA	PIA Industries	PIA ANGE Lenders	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Impacts on soil quality in case of disturbance in the management of several infrastructures / activities (runoff from waste storage, stagnant water in the retention basin, discharges from the wastewater treatment plant)	-Develop and implement design concept to reduce runoff volume (with focus on the solar park area), as vegetation swale or permeable paving	Additional studies	PIA	PIA	PIA ANGE Lenders	PIA
	See above and below measures regarding water quality	-	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries
Liquid discharges from the future industrial unit	-Assess the impacts resulting from their discharges in a dedicated Risk Assessment Study on sludge production -All industrial premises, prior to discharge of wastewater to the common conveyance system, have to undertake preliminary treatment. Pretreated effluents need to meet CETP inlet threshold values. -Implement a quality control of pre-treated effluents -Develop an operation plan to be implemented in case the quality control results in an exceedance of the Design Inlet Threshold. - Implement a surface water quality monitoring program to be carried out at the CETP discharge point and at the inlet of Togo Lake (corresponding to ESIA baseline point PESU-04)	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	Industries
Environmental degradation in case of use of chemical products	Use of pesticides shall be prohibited. -Use grazing or mechanical methods rather than chemicals to retard re-growth of vegetation both in the IZ green areas and the solar park	Maintenance plan for common outdoor areas	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Large change in land uses and landscape lead in significant visual impact however limited by the existing wall and in the absence of touristic area	- Open green spaces maintenance operations - Revegetation of the surface underneath and around solar panels by planting or sowing native floral species compatible with the solar power plant	Maintenance plan for common outdoor areas	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries
Large lighting during the night will be observed in places initially lightly lighted	Appropriate lightening system design and management at nighttime	Contractual specifications for the future industrials	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries
No estimation of produced waste volume Possible impacts if inappropriately managed	Contractual specifications for future industrial for the collection, storage and disposal of waste	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	Industries
Specific waste to be managed, including those from the wastewater treatment plant	-Waste management plan for for the collection, storage and disposal of waste for PIA infrastructures -Application of the World Bank Group Environmental, Health, and Safety Guidelines for the industry sector, especially the one for waste management facilities and the one for Water and sanitation -Local partnership to be considered, as with Whyte Way and Nosito for plastic recycling -Establish a pre-acceptance procedure with the landfill operator in Aképé.  -Sludge from wasterwater treatment plant: -Place the windrows under cover to protect them from rainwater -Set up a composting platform, located in non-flooded areas with a slope of less than 2%, use of	Waste management plan	PIA	PIA	PIA ANGE Lenders	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
	impermeable liner, equipped with provided drain run-off from the drying area - Respect recommendations of Part 503 of the US EPA regulation on temperature and time parameters for composting of biosolids -Control the C:N ratio and ensure a correct aeration of the windrows to avoid emission of odours -Monitoring the quality of sludge with sampling, moisture content of the compost should be between 55 and 60%. - Carry out a Waste Management Infrastructure Analysis - Investigate the technical and financial feasibility to build an additional waste management facility					
Risk of soil contamination by sludge reuse	-Respect WHO and US EPA (see section 2.5.6) recommendations on pathogen limits for reuse of sludges	Additionnal studies	PIA	PIA	PIA ANGE Lenders	PIA
-Injuries and death of animals that are attracted by organic waste -Development of pests attracted by accessible organic waste	Ensure an effectiveness selective sorting & fence the waste storage area	Waste management plan	PIA	PIA	PIA ANGE Lenders	PIA
Flooding and contamination of habitats downstream the area in case of disturbance in the management of several infrastructures / activities (runoff from waste storage, stagnant water in the retention basin, discharges from the wastewater treatment plant or industrial unit)	See above measures regarding water quality	-	PIA	PIA Industries	PIA ANGE Lenders	PIA Industries



Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Creation of 5,000 to 7,000 direct and indirect jobs by the Project	<ul style="list-style-type: none"><li>- Implementation of information campaign involving local authorities on procurement opportunities among local farmers and service providers;</li><li>- Development in the LRP, if relevant, of training enabling PAPs to improve the quality of their agricultural production in order to favour their inclusion in the supply chains of operators operating within the project;</li><li>- Partnership with local training centres for training and recruitment of trainees;</li><li>- Creation of recruitment offices or linking of project economic operators with local recruitment offices if these are already in place, with priority given to people affected by the project with equal skills;</li><li>- Inclusion of local recruitment clauses in the PIA operational guidelines;</li><li>- Establishment of a Grievance management mechanism and stakeholder engagement plan.</li></ul>	<p>Human resources management plan</p> <p>Communication plan</p> <p>Stakeholder engagement plan</p>	PIA	PIA industries	PIA, ANGE	PIA industries

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
The appearance of social tensions following the recruitment of staff from outside the area or the use of external service providers; Acts of vandalism and damage.	<ul style="list-style-type: none"><li>- Establishment of recruitment offices or the connection of the project's economic operators with local recruitment offices if these are already in place, with priority given to people affected by the project with equal skills;</li><li>- Setting up a transparent procedure for the management and communication of tenders with local subcontractors via the commune and local communication media (radio, newspapers, notice board);</li><li>- Partnership with local training centres for training and recruitment of trainees;</li><li>- Implementation of training programmes for PAPs in the framework of the LRP for trades related to the operation phase;</li><li>- Inclusion of local recruitment clauses in PIA's operational guidelines;</li><li>- Investigate the possibility to implement agrovoltatics (or agrophotovoltaics) strategies</li><li>- Priority use of subcontractors based in the Adétikopé region if economically and technically reasonable;</li><li>- Establishment of a Grievance management mechanism and stakeholder engagement plan</li></ul>	Human resources management plan  Communication plan  Stakeholder engagement plan	PIA	PIA Industries	PIA, ANGE	PIA Industries
Discrimination in employment Harassment on and off site Increase in gender-based violence or violence against vulnerable people.	<ul style="list-style-type: none"><li>- Compliance with the standards set by ILO conventions and national legislation concerning discrimination against women and people with disabilities;</li><li>- Positive discrimination measures favouring the employment of women and disabled people;</li><li>- Dedicated infrastructure (e.g. women's toilets and changing rooms) or adapted infrastructure (stairs with ramps, etc.);</li></ul>	Human resources management plan Stakeholder engagement plan Occupational health and safety Plan	PIA	PIA Industries	PIA, ANGE	PIA Industries

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
	<ul style="list-style-type: none"><li>- Provision of adapted PPE for women;</li><li>- Street lighting in selected areas to improve safety;</li><li>- Regular consultations with women and vulnerable people to monitor their socio-economic situation;</li><li>- Establishment of an employment management plan that promotes female employment, provides for the recruitment of women and equal pay;</li><li>- Awareness campaigns on gender equality and the principle of non-discrimination;</li><li>- Strict control to avoid the employment of children under 14 years of age and to ensure that the tasks entrusted to children over 14 years of age do not jeopardise their physical integrity and health;</li><li>- Establishment of a community watch for the protection of children;</li><li>- Mechanism for managing complaints and grievances accessible to workers to monitor the number of cases of harassment or deviant behaviour against women or vulnerable persons;</li><li>- Inclusion of representatives of women and vulnerable people such as people with disabilities in the monitoring committee of the environmental and social management plan.</li></ul>					

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Production of solid and liquid waste which, if poorly managed, can degrade the living environment of local residents; Visual impact on the landscape of the presence of the industrial platform	<ul style="list-style-type: none"><li>- Implimentation of PIA Waste management plan</li><li>- Development and implementation of a wastewater management and effluent management plan</li><li>- If a significant number of local residents complain about the visual impact of the project, the feasibility of creating a screen of vegetation high enough to reduce the visibility of sensitive areas should be studied</li></ul>	Waste management plan Site emergency response plan	PIA Industries	Industries	PIA, NGE	PIA Industries
Industrial accidents Odour nuisance Increased traffic, road damage	<ul style="list-style-type: none"><li>- Implementation of a traffic management plan;</li><li>- Monitoring and regular maintenance of road quality;</li><li>- Development of specific segments for pedestrians and motorcyclists on accident-prone stretches or in the vicinity of infrastructures or places of residence;</li><li>- Development of an industrial risk prevention and management plan;</li><li>- Development of an information campaign for the villages concerned on the behaviour to adopt</li><li>- Use of road sign signage</li><li>- Carry out a traffic study</li></ul>	Traffic management plan  Communication plan	PIA	PIA Industries	PIA, ANGE	PIA Industries
		Water resource management and discharge management plan	PIA	PIA Industries	PIA, ANGE	PIA Industries
Reduction in access to water for local communities	<ul style="list-style-type: none"><li>- Regular monitoring of satisfaction with access and quality of water at sources used by villagers</li><li>- Regular monitoring of water flow and quality in the villages through pumping tests;</li><li>- If necessary, construction of additional drinking fountains</li></ul>					

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Noise generated by heavy machinery Emissions of gases and particles from PIA operators	<ul style="list-style-type: none"><li>- Avoid operation of vehicles outside working hours;</li><li>- Limit trucks to 30 km/h in residential areas;</li><li>- Use of recent low emission vehicles;</li><li>- Use of equipment that meets noise standards;</li><li>- Include air quality and noise pollution clauses in PIA's operational guidelines;</li><li>- Monitoring of operators' compliance with PIA operational guidelines.</li></ul>	Traffic management plan Operational guidelines PIA	PIA	PIA Industries	PIA, ANGE	PIA Industries
Exposure of workers to accidents and diseases caused by various factors (HSE risks)	<ul style="list-style-type: none"><li>-Include clauses on Occupational health and safety of workers in the PIA operating guidelines</li><li>-Monitor industrial operators' compliance with the PIA operating guidelines</li><li>-Make PPE available for workers and ensure their effective wearing</li><li>-Set up and implement an Occupational Health and Safety Plan</li><li>- implement PIA Waste Management plan Plan</li><li>-Set up and implement a Traffic management plan</li><li>-Recruit an HSE coordinator in charge of monitoring the correct application of the plans</li><li>-Manage the workforce and ensure working conditions in accordance with Togo’s national regulations and the ILO conventions ratified by Togo</li></ul>	Occupational health and safety Plan	PIA	PIA Industries	PIA ANGE Lenders	PIA

Description of the potential impact	Mitigation measure	Management plan and procedure	Responsibilities			Budget
			Plan development	Implementation	Monitoring	
Operation phase						
Exposure of local community members to accidents and diseases caused by various factors	-Develop an site emergency response plan in case of accidental spillage or other kind of accident on site -Continue awareness-raising campaign on road safety in the 10 villages surrounding the Project site	Site emergency response plan Traffic management plan	PIA	PIA	PIA ANGE Lenders	PIA
	- Realize environmental impact assessment (EIA) for future industries whose process requires it -Realize hazard assessment studies for future industries whose process requires it (involving storage silos or process with combustible or explosives)	Contractual specifications for the future industrials	PIA	Industries	PIA ANGE Lenders	PIA

## 7. Monitoring and review procedure

The promoter will be in charge of **developing and communicating to the main contractor and future industrials** its procedures related to the monitoring, review and auditing of the E&S management system. The purpose of this system is to evaluate the effectiveness of the E&S procedures and update the management system if necessary. This system meets the national regulation and the IFC (PS1) requirements.

### 7.1. ESMS monitoring and review

The ESMP sets out PIA procedures for managing, mitigating and monitoring environmental and social impacts, both for construction and operation phases. Monitoring will be carried out in order to determine whether environmental and social outcomes are being achieved.

Monitoring indicators to be followed for the ESMP in construction phase are provided in each plan described in the section 4.

The monitoring plan presenting the performance indicators, monitoring frequency, means and responsibilities, is presented in section 7.6.

### 7.2. ESMS auditing

Audits and site visits will be carried out to determine the level of compliance with the ESMS and evaluate the effectiveness of the ESMS on field. The procedure will define:

- Timing,
- Scope,
- Audit criteria,
- Reporting of audit findings,
- Process for implementing corrective actions.

→ **Based on the results of these different audits undertaken during the year (report from the promotor but also from external parties), the promoter may propose modifications / improvements to the ESMS in consultation with the concerned stakeholders. These modifications may concern integration of unanticipated impacts and / or procedures simplification and / or monitoring indicators modification on badly assessed issues (over/under-estimated) in this ESIA. These modifications to the ESMS must be validated by PIA E&S department, the togolese authorities and the lenders involved.**

#### 7.2.1. Site visit

The site visit represents the first audit level to ensure that the environmental and social requirements of the tendering documents are implemented by the main contractor and its subcontractors on sites. PIA, the main contractor and its subcontractors will set up teams trained in the environmental and social aspects of construction sites to regularly inspect all work areas, to identify any non-compliance (NC), and to initiate the procedure to correct the situation (see next section).

The site visit frequency and associated report is proposed as follow:

- Construction phase: visits on monthly basis.

- The main contractor will produce a “contractor monthly monitoring report” submitted to PIA E&S department.
- PIA E&S department will send an “environmental monitoring report” to ARISE on a quarterly basis.
- Operation phase: the PIA E&S department will regularly perform unappointed visit in the PIA infrastructures but also in the industrial units.

### 7.2.2. Internal audit

The promoter will plan internal environmental and social audits covering all activities of the ESMP, LRP and RAP:

- during the construction, internal environmental and social audits are expected to be conducted on semi-annual basis.
- during operation phase, internal environmental and social audits will be performed on annual basis.

The internal audit, the second audit level, will be conducted by the PIA E&S department who **will produce an internal environmental and social audits report** to PIA management and ANGE.

### 7.2.3. External audit

The external audits (third audit level) are expected to be conducted by ANGE but also lenders, as following:

- **ANGE** external audit in compliance with the decree n°2017-040 of 23 March 2017 (art. 54): as part of its control and monitoring of the ESMP, LRP and RAP, the ANGE may be required to carry out audits. The frequency is determined within the framework of the requirements relating to the issuance of the certificate of environmental conformity. In any case, the promoter sends periodic reports on the execution of the ESMP, LRP and the RAP to the ANGE. The reporting period is also determined within the framework of the requirements relating to the issuance of the environmental conformity certificate.
- **Lenders** external audit: this audit is performed by an E&S **consultant appointed by the promoter** before the start of works. He will ensure annual or semi-annual audits, provide his expert opinion on the organization implemented and its effectiveness, the technical and financial resources mobilized, assess the progress of the various action plans and their compliance with the implementation schedule and make recommendations on the obstacle observed. The proposed frequency of these audits is:
  - Construction phase: semi-annual audit.
  - Operation phase: annual audit the first 5 years of commissioning.

## 7.3. ESMS monitoring and evaluation by ARISE

In addition to the monitoring and auditing program presented above, ARISE will conduct an audit program of PIA compliance with its corporate ESMS based on:

- Quarterly internal audits
- Bi-annual external audits

These audits can be coupled with PIA own auditing procedure.



## 7.4. Non-compliance management procedure

A non-compliance management procedure aims at detecting the events that do not meet the health, safety, environmental and social objectives assigned to the Project in the frame of its ESMS, in order to prioritize adverse events so that adequate corrective actions are taken in a scaled and timely manner.

This procedure is an important element of the communication and contractual process between the parties involved, especially during construction phase where numerous actors can intervene in the same time and location. It should be established under common agreement between the main contractor and the promoter. It must be part of the contractual agreement, especially if the promoter wishes to uphold payments of the main contractor in case of major non-compliance.

The main step of the procedure is for the main contractor to systematically identify its non-compliances and rate their level of severity. Non-compliances can be identified during routine site visit, unannounced controls and also during PIA HSE manager site visits, internal and external audits.

Typically, events are granted a level of severity associated to communication and handling procedures. The scale below is proposed indicatively and will be adapted to ARISE and PIA ESMS.

- **Level 1:** non-compliant situation which does not meet the original requirements but which does not constitute an immediate threat to an identified significant resource. Usually addressed in the normal way during site visits and routine meetings via non-compliance sheets.
- **Level 2:** non-compliant situation which has not yet produced clearly identified damage or an irreversible impact on a sensitive or important resource, or on the safety and health of workers, the personnel of the company in charge of the works and the population, but which requires prompt corrective action and site-specific attention to avoid these effects.

These non-compliances must be communicated by the main contractor to the PIA HSE manager on the same day the situation was noted and corrective measures must be implemented as quickly as possible.

- **Level 3:** critical non-compliant situation in which damage is observed to a sensitive resource that is specifically protected, or where imminent damage can be expected to the health and/or safety of workers, company personnel and population.

These non-compliances must be communicated by the main contractor to the PIA HSE manager on the same day the situation was noted and corrective measures must be implemented as quickly as possible.

In the event that a corrective measure requires more time for its implementation or if the risk is imminent, PIA HSE manager may request a suspension of the work concerned until the observed situation becomes compliant again.

A level-3 non-compliance can lead to a suspension of the main contractor payment until the resolution of the non-compliance.

This identification process will be followed by these procedures:

- a mechanism for stopping work if the situation is considered worrying;
- monitoring of the requested corrective measures implementation and ensuring their effectiveness;
- an opportunity to initiate an incident investigation in order to determine the root causes of the incident and to assess whether changes in specifications, requirements or methods are justified to prevent the recurrence of such a situation in the future.

## **7.5. Data management**

An environmental and social data management system covering all measures and action plans and the ESMP must be put in place by the promoter in order to centralize all the Project E&S documentation resulting from audits and site monitoring.

## 7.6. Environmental and social monitoring plan

### 7.6.1. Preparation phase

**Table 8 Monitoring plan for preparation phase**

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Environmental and social management system	Policies & procedures	<ul style="list-style-type: none"> <li>* presence of E&amp;S team with adequate skills</li> <li>* 100% of HSES policies exist, are developed and known</li> <li>* 100% of procedures exist, are implemented and known</li> <li>* 0 non compliance observed or non compliance processed within time limits, including causes analysis and corrective measures (with international standards or Togolese regulation)</li> <li>* 0 environmental or safety accident registered</li> <li>* 0 complaints or complaints processed within time limits</li> </ul>	All Project-long: * biannual during construction * annual during the 5 first operational years	<ul style="list-style-type: none"> <li>* Monthly Environmental and Social Report (preparation)</li> <li>* Biannual Environmental and Social Report (construction)</li> <li>* Annual Environmental and Social Report (operation)</li> <li>* Documentation provided on-demand</li> <li>* Audit reports from E&amp;S lenders' advisor</li> </ul>	PIA	Lenders
Environmental and social management system	Local ESMP monitoring committee set-up	<ul style="list-style-type: none"> <li>* ESMP Committee set-up at Agoe-Nyive 6 municipality level</li> <li>* 1 women nominated in each committee</li> <li>* 1 person representing vulnerable groups nominated in each committee</li> </ul>	Ad hoc	* Monthly Environmental and Social Report	PIA	PIA ANGE Lenders
Permits & authorizations	All necessary permits for Project	* 100% of necessary permits are obtained: clearing, water supply & drilling, wastewater discharges and waste	Quarterly basis	* Presence of authorization documents	PIA	PIA ANGE / Prefectoral department of environment Lenders

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Permits & authorizations	All necessary permits for work areas	* 100% of necessary permits are obtained: clearing, wastewater discharges and waste	Quarterly basis	* Presence of authorization documents	Main contractor	PIA ANGE / Prefectoral department of environment Lenders
Additional studies under PIA responsibility	Hydrogeologic study, including boreholes	* required study completed	Ad hoc	* Final report available * Proposed measures integrated in the E&S management plans of PIA and / or the main contractor	PIA	Lenders
	Design of an emergency system for the CSPT in case of accident	* required study completed	Ad hoc	* Final report available * Proposed measures integrated in the E&S management plans of PIA and / or the main contractor	PIA	Lenders
	Design studies for sludge management	* required study completed	Ad hoc	* Final report available * Proposed measures integrated in the E&S management plans of PIA and / or the main contractor	PIA	Lenders
Human resources management	Recruitment quota setting	* 100% of clauses on local recruitment, local sub-contracting priority and transfer of skills with local companies in the Tender Documents for the works	Ad hoc	Call for tender documents and E&S specifications for main contractor	PIA	Lenders

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Stakeholder engagement plan	Deployment of the plan: recruitment, tools and procedures	<ul style="list-style-type: none"> <li>* 100% of Community Relation Service personnel recruited (3 persons)</li> <li>* 100% of Stakeholder engagement documentary structure and monitoring tools (stakeholder database, shared agenda, consultation register) created</li> <li>% 100% of grievance management mechanism created (complaint register, grievance documents, procedures, etc.)</li> </ul>	Monthly	* Monthly Environmental and Social Report	PIA	Lenders
	Grievance management mechanism	<ul style="list-style-type: none"> <li>*100% of complaints received are handled;</li> <li>*100% of maximum processing time is respected for minimum, average, median complaints;</li> <li>*0 unsatisfied complainants.</li> </ul>	Monthly	* Monthly Environmental and Social Report	PIA	PIA Lenders
Livelihood Restoration Plan and Resettlement Action plan	Study and implementation	<ul style="list-style-type: none"> <li>* required study completed (LRP &amp; Supplementary RAP)</li> <li>* 100% of Projet-affected persons compensated</li> <li>* partners for livelihood restoration recruited</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Monthly Environmental and Social Report</li> <li>* Supplementary RAP completion audit report</li> </ul>	PIA	PIA ANGE Lenders
Community development plan	Strategy definition	* required study completed	Ad hoc	* Final report available	PIA	PIA Lenders
Cultural heritage management plan	Identification and relocation of artefacts or sacred sites	<ul style="list-style-type: none"> <li>*100% of objects or sites identified;</li> <li>*100% of identified objects or sites relocated;</li> <li>*0 complaint registered related to cultural heritage management</li> </ul>	When object or site discovery	* Monthly Environmental and Social Report	PIA	PIA Lenders
Revegetation program	Invasive species	* 0 dead seedlings	Monthly	* Monthly Environmental and Social Report	PIA	PIA Lenders

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Dumping site management plan	Localisation and use of site	* 0 complaint on land clearing and disposal of vegetation on the dumping site; * 100% of identified sacred sites are avoided or relocated.	After site visit	* Monthly Environmental and Social Report	PIA	PIA Lenders

## 7.6.2. Contruction phase

Table 9 Monitoring plan for construction phase

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Air and noise emission management plan	Dust	* 0 non compliance with the procedure or non compliance properly registered and processed * 0 complaints or complaints processed within time limits	Daily basis for observation Mensual	* Direct observation / visual inspection * Complaints register	Main contractor	PIA ANGE
	Noise	* 0 non compliance with the procedure or non compliance properly registered and processed * 0 complaints or complaints processed within time limits * Recorded values in accordance with Togolese regulations and / international standards (WHO, IFC)	Quarterly basis	* Direct observation / visual inspection * Complaints register	Main contractor	PIA ANGE

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Biodiversity management plan	Habitat and vegetation Invasive species	<ul style="list-style-type: none"> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> <li>* no degradation of vegetation beyond the right-of-way</li> <li>* Kapok still preserved</li> <li>* 100% of invasive species clusters managed in line with the requirements</li> <li>* 0 complaints or complaints processed within time limits</li> </ul>	Continuously for observations Audit frequency	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Direct observation / visual inspection</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
	Fauna	<ul style="list-style-type: none"> <li>* no protected species hunted by workers</li> </ul>	Continuously for observations Audit frequency	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Direct observation / visual inspection</li> </ul>	Main contractor	PIA ANGE
	Revegetation program	<ul style="list-style-type: none"> <li>* 100% of the selected seeds/seedlings of the species to be planted collected</li> <li>* 100% complete regeneration</li> <li>* 100% of areas to be revegetated/planted reached</li> <li>* 100% of dead plants replaced</li> </ul>	Mensual	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Forestry - initial vegetation census for all areas (PIA, work area &amp; base camp)</li> <li>* Forestry monitoring report</li> </ul>	Forestry	PIA ANGE
Erosion and soil management plan	Soil erosion, soil storage	<ul style="list-style-type: none"> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> <li>* 0 complaints or complaints processed within time limits</li> <li>* 100% of temporary affected soil rehabilitated (work area and base camp)</li> <li>* Ratio cut / fill = 0</li> </ul>	Mensual	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Direct observation / visual inspection</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Waste management plan	Waste production, storage and disposal	<ul style="list-style-type: none"> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> <li>* 0 complaints or complaints processed within time limits</li> <li>* Existence of a register of low-hazardous waste: quantity, recovery or treatment</li> <li>* Existence of a register of hazardous waste: Quantity, storage in a sealed area, evidence of the handling of hazardous waste</li> <li>* 100% of produced waste properly stored</li> <li>* 100% of produced waste properly disposed</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Waste tracking</li> <li>* Direct observation / visual inspection</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
Hazardous products and spills management plan	Hazardous products	<ul style="list-style-type: none"> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> <li>* 100% products listed are available onsite and conversely</li> <li>* No product prohibited by WHO or by national regulation</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Products registering and monitoring list</li> <li>* MSDS list</li> </ul>	Main contractor	PIA ANGE
	Emergency plan	<ul style="list-style-type: none"> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> <li>* 100% of spills were dealt with during the day.</li> <li>* 100% of employees trained in firefighting means</li> <li>* Existence of an intervention register (volumes spilled or other accident and actions implemented)</li> </ul>	Mensual	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Accident report</li> <li>* Training list participation</li> </ul>	Main contractor	PIA ANGE



Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Water resources and discharges management plan	Discharges	<ul style="list-style-type: none"> <li>* 100% of wastewater is treated (on plan)</li> <li>* 100% of site maintenance and hydrocarbon storage areas equipped with sealed areas and a hydrocarbon separator</li> <li>* 100% sedimentation ponds approved for the recovery of wash water rich in concrete</li> <li>* 100% compliance for discharges (most restrictive threshold between local value / international standards)</li> <li>* 0 non compliance with the procedure or non compliance properly registered and processed</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Discharges monitoring report</li> </ul>	Main contractor	PIA ANGE
	Water resources	<ul style="list-style-type: none"> <li>* no conflict related to water consumption</li> <li>* 0 complaints or complaints processed within time limits</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Audit / site visit report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
Human resources management	Local employment	<ul style="list-style-type: none"> <li>* 50% of workers recruited on construction site either PAP or coming from 4 villages of study area</li> <li>* 0 complaint related to local recruitment</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Contractor monthly monitoring report</li> <li>* Audit / site visit report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
Stakeholder engagement plan	Implementation	<ul style="list-style-type: none"> <li>* 100% of engagement activities planned in construction phase in SEP achieved</li> <li>* 100% of complaint processed within time limits</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Monthly report on stakeholder engagement activities and complaint management</li> </ul>	PIA	PIA Lenders
Cultural heritage management	Archeological artefacts	<ul style="list-style-type: none"> <li>* 100% of workers aware about the chance-find procedure</li> <li>* 100% of the archaeological artefacts found have been preserved</li> <li>* 0 complaint related to management of cultural heritage</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Contractor monthly monitoring report</li> <li>* Audit / site visit report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE Ministry of Culture, Tourism and Recreation

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Occupational Hygiene, Health and Safety Plan	Protection of workers' health and safety	<ul style="list-style-type: none"> <li>* 100% of workers equipped with adequate PPE</li> <li>* 100% of job hazard analysis (JHA) completed</li> <li>* 100% of workers benefited from HSE awareness-raising sessions</li> <li>* 100% of workers signed Code of conduct</li> <li>* internal regulation posted on site</li> <li>* 0 accident on the worksite</li> <li>* 0 worker sick on site</li> <li>* 0 complaint lodged by workers on their working conditions or rights</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Contractor monthly monitoring report</li> <li>* Audit / site visit report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
Traffic and road safety plan	Protection of workers' health and safety	<ul style="list-style-type: none"> <li>* 100% of drivers submitted to proficiency test</li> <li>* 100% of planned traffic regulations applied on public road</li> <li>* 100% of planned traffic regulations applied on construction site road</li> <li>* 0 accident caused by a Project vehicle</li> <li>* 0 complaint on traffic and road safety issues</li> </ul>	Monthly	<ul style="list-style-type: none"> <li>* Contractor monthly monitoring report</li> <li>* Audit / site visit report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE
Community health and safety plan	Awareness-raising program	<ul style="list-style-type: none"> <li>* 100% of awareness-raising sessions organized</li> <li>* 0 complaint on health of safety issues</li> </ul>	Biannual	<ul style="list-style-type: none"> <li>* Biannual Environmental and Social Report</li> <li>* Complaints register</li> </ul>	PIA	PIA Lenders
Social influx management plan	Influx monitoring	<ul style="list-style-type: none"> <li>* 100% of indicators for influx monitoring defined and validated</li> <li>* 100% of local stakeholders agreed to provide regular data on social influxes</li> <li>* 0 complaint on social influxes</li> </ul>	Biannual	<ul style="list-style-type: none"> <li>* Biannual Environmental and Social Report</li> <li>* Complaints register</li> </ul>	PIA	PIA Lenders
Social inclusion plan	Recruitment	<ul style="list-style-type: none"> <li>* 5% of recruited workers are women or PWDs</li> <li>* 0 complaint on social inclusion issues</li> </ul>	Biannual	<ul style="list-style-type: none"> <li>* Contractor monthly monitoring report</li> <li>* Complaints register</li> </ul>	Main contractor	PIA ANGE

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Community development plan	Implementation	* 100% of planned fund disbursed	Biannual	* Biannual Environmental and Social Report * Final report available	PIA	PIA Lenders

### 7.6.3. Operation phase

Table 10 Monitoring plan for operation phase

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Water resource management and discharge plan	Wastewater treatment discharges	* 100% compliance for discharges from CETP and septic tanks (most restrictive threshold between local value / international standards) * 100% compliance for discharges from retention basin outlet (most restrictive threshold between local value / international standards) * 0 complaints or complaints processed within time limits	Monthly	* Utility reporting (CETP and septic tanks) * Complaints register	PIA	PIA Lenders
Traffic and road safety plan	Awareness-raising program	* 100% of awareness-raising sessions organized * 0 complaint on health of safety issues	Annual	* Annual Environmental and Social Report * Complaints register	PIA	PIA Lenders

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Waste management plan	Waste production	<ul style="list-style-type: none"> <li>* 0 complaints or complaints processed within time limits</li> <li>* Existence of a register of low-hazardous waste: quantity, recovery or treatment</li> <li>* Existence of a register of hazardous waste: Quantity, storage in a sealed area, evidence of the handling of hazardous waste</li> <li>* 100% of produced waste properly stored</li> <li>* 100% of produced waste properly disposed</li> </ul>	Annual	<ul style="list-style-type: none"> <li>* Annual Environmental and Social Report</li> <li>* Complaints register</li> <li>* <b>Utility reporting</b></li> </ul>	PIA	PIA Lenders
Occupational health and safety plan for PIA workers	Workers safety	<ul style="list-style-type: none"> <li>* 0 complaint on health of safety issues from workers</li> <li>* 100% of workers equipped with appropriate PPE</li> <li>* 100% of workers with appropriate accreditation (specially for electrical activities)</li> </ul>	Annual	<ul style="list-style-type: none"> <li>* Annual Environmental and Social Report</li> <li>* Complaints register</li> <li>* Workers field</li> </ul>	PIA	PIA Lenders
Maintenance plan for common infrastructures	Hazardous machines and facilities	<ul style="list-style-type: none"> <li>* 100% of equipment checked in appropriate deadline</li> <li>* 100% compliance for noise emissions (most restrictive threshold between local value / international standards)</li> <li>* 100% compliance for air emissions (most restrictive threshold between local value / international standards)</li> </ul>	every quarter or as given in supplier's specifications	<ul style="list-style-type: none"> <li>* Annual Environmental and Social Report</li> <li>* Utility reporting (electrical substations)</li> </ul>	PIA	PIA Lenders
	Green spaces	<ul style="list-style-type: none"> <li>* No prohibited products for the maintenance of green spaces</li> </ul>	Annual	<ul style="list-style-type: none"> <li>* Annual Environmental and Social Report</li> </ul>	PIA	PIA Lenders
Emergency management plan	Emergency drills	<ul style="list-style-type: none"> <li>* 100% of emergency drills performed with all PIA stakeholders</li> <li>* 0 environmental or safety accident</li> </ul>	Annual	<ul style="list-style-type: none"> <li>* Annual Environmental and Social Report</li> </ul>	PIA	PIA Lenders

Measures or programs	Item	Performance objectives, obligations of means and / or results	Monitoring frequency	Monitoring means	Set up responsibility	Monitoring responsibility
Monitoring procedures	Industrial operator	* 100% of indicators required by PIA provided	Annual	* Annual Environmental and Social Report	Industrial	PIA Lenders
	All PIA utilities & facilities, including industrial units	* 100% of indicators required filled	Annual	* Annual Environmental and Social Report	PIA	PIA Lenders
Human resources management	Recruitment quota setting	*50% of workers at PIA either PAP or coming from 4 villages of study area *50% of workers at industries either PAP or coming from 4 villages of study area * 0 complaint related to local recruitment	Annual	* Annual Environmental and Social Report	PIA Industries	PIA Lenders
Solar plant management plan	Design an operation of the solar plant	All relevant measures presented in the ESMP for operation phase are to be applied for the solar plan so indicators would be the same as above	Annual	PIA & ANGE site visits and audits	Solar Plant contractor	PIA and ANGE

## 8. Modalities and cost of implementing the ESMP

### 8.1. Timeline

The timeline for the implementation of the Environmental and Social Management Plan is presented in the following table.

**Table 11 Timeline**

	PREPARATION			CONSTRUCTION												OPERATION																							
				YEAR 1												YEAR 2												YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11	YEAR 12	YEAR 13	[...]
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12															
Environmental and social management system																																							
Human resources management																																							
Permits and authorization																																							
Additional studies																																							
Communication strategy plan & SEP																																							
Grievance management mechanism																																							
Supplementary Resettlement Action Plan																																							
Community development plan																																							
Cultural heritage management plan																																							
Revegetation program																																							
Dumping site management plan																																							
Revegetation procedure and Invasive Species Management procedure																																							
Air emissions and noise management procedure																																							
Erosion and soil quality management procedure																																							
Waste management plan																																							
Hazardous products and spills management procedure																																							
Water resource management and discharge management procedure																																							
Occupational Health and Safety Plan																																							
Traffic and road safety plan																																							
Community health and safety plan																																							
Social inclusion plan																																							
Social influx management plan																																							
ESMP & procedures																																							
ESMS monitoring and review																																							
Internal audits (Arise)																																							
External audits																																							

## 8.2. Estimated budget for the implementation of the ESMP

The overall estimated budget for the ESMP and ESMS framework represents 805'722'500 CFA (1'228'316 EUR). It is divided as follow:

**Table 12 Estimated ESMP budget**

Phase	Estimated budget FCFA	Estimated budget EURO
Preparation phase	242 500 000 CFA	369 689 EUR
Construction phase	221 600 000 CFA	337 827 EUR
Operation phase	85 100 000 CFA	129 734 EUR
E&S monitoring and follow-up	180 000 000 CFA	274 408 EUR
Provision (10%)	73 247 500 CFA	111 665 EUR
<b>TOTAL</b>	<b>805 722 500 CFA</b>	<b>1 228 316 EUR</b>

The detailed budget table is presented in the table below.

**Table 13 Detailed estimated ESMP budget**

Measures or programs	Item	Responsible	Implementation	Budget (FCFA)	Budget (EUR)
<b>Preliminary plans for preparation phase</b>					
Environmental and social management system	Environmental and Social Department set up and team recruitment (1 person)	PIA	PIA	6 800 000 CFA	10 367 EUR
Additional studies	Hydrogeologic study	PIA	PIA	PIA Budget	PIA Budget
	Design of an emergency system for the CSPT in case of accident	PIA	PIA	6 700 000 FCFA	10 214 EUR
	Design studies for sludge management	PIA	PIA Consultants	13 200 000 FCFA	20 123 EUR
Revegetation program	PIA green spaces	PIA	Forestry expert	PIA Budget	PIA Budget
	Forestry expert recruitment	PIA	PIA	18 600 000 CFA	28 356 EUR
Stakeholder engagement plan	Community Relation Service set up and team recruitment (3 persons)	PIA	PIA	13 200 000 CFA	20 123 EUR
	Allowance to implement SEP (travels, per diems, food and water during meetings, etc.)	PIA	PIA	9 000 000 CFA	13 720 EUR
Resettlement Action Plan	RAP implementation	PIA	PIA	Budget to be determined after RAP study completion	Budget to be determined after RAP study completion



Measures or programs	Item	Responsible	Implementation	Budget (FCFA)	Budget (EUR)
<b>Preliminary plans for preparation phase</b>					
Cultural Heritage Management Plan	Full plan implementation	PIA	PIA	Budget to be determined after RAP study completion	Budget to be determined after RAP study completion
Community development plan	Full multi-annual budget	PIA	PIA	175 000 000 CFA	266 786 EUR
<b>SUB-TOTAL</b>				<b>242 500 000 CFA</b>	<b>369 689 EUR</b>
<b>ESMP for construction phase</b>					
Environmental and social management system	Environmental and Social Department set up and team recruitment (4 persons)	PIA	PIA	20 400 000 CFA	31 100 EUR
	Local ESMP monitoring committee meetings	PIA	PIA	4 800 000 CFA	7 318 EUR
Permits and authorization	Permits obtention	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Stakeholder engagement plan	Community Relation Service set up and team recruitment (3 persons)	PIA	PIA	26 400 000 CFA	40 247 EUR
	Allowance to implement SEP (travels, per diems, food and water during meetings, etc.)	PIA	PIA	18 000 000 CFA	27 441 EUR
Human resources management	Local recruitment program	PIA	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
	Workers' awareness-raising and code of conduct	PIA	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Biodiversity management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Air emissions and noise management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Erosion and soil quality management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Waste management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor

Measures or programs	Item	Responsible	Implementation	Budget (FCFA)	Budget (EUR)
<b>Preliminary plans for preparation phase</b>					
Hazardous products and spills management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Water resource management and discharge management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Cultural heritage management plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Occupational Hygiene, Health and Safety Plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Traffic and road safety plan	Full plan implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
Community health and safety plan	Contractor measures implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
	Awareness-raising program on road safety, hygiene and HIV/Aids in 10 villages	PIA	Main contractor & subc.	57 000 000 CFA	86 896 EUR
Social influx management plan	Contractor measures implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
	Influx monitoring in 10 villages	PIA	PIA	5 000 000 CFA	7 622 EUR
	Support to water infrastructures in 10 villages	PIA	PIA	70 000 000 CFA	106 714 EUR
	Support to Dalave & Kpomé health centres	PIA	PIA	20 000 000 CFA	30 490 EUR
Social inclusion plan	Contractor measures implementation	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
<b>SUB-TOTAL</b>				<b>221 600 000 CFA</b>	<b>337 827 EUR</b>
<b>ESMP for operation phase</b>					
Environmental and social management system	Environmental and Social Department set up and team recruitment (2 persons)	PIA	PIA	72 000 000 CFA	109 763 EUR
Community health and safety plan	Awareness-raising program on road safety in 10 villages	PIA	PIA Industries	16 375 000 CFA	24 964 EUR
<b>SUB-TOTAL</b>				<b>85 100 000 CFA</b>	<b>129 734 EUR</b>

Measures or programs	Item	Responsible	Implementation	Budget (FCFA)	Budget (EUR)
<b>Preliminary plans for preparation phase</b>					
<b>E&amp;S monitoring and follow-up</b>					
ESMS monitoring and review	Indicator monitoring (construction)	Main contractor	Main contractor & subc.	Budget to be proposed by Main contractor	Budget to be proposed by Main contractor
	Indicator monitoring (operation)	PIA	PIA Industries	Included in the budget of the E&S PIA team	Included in the budget of the E&S PIA team
E&S Audits	Internal audits (construction)	PIA	Main contractor & subc.	Included in the budget of the E&S PIA team	Included in the budget of the E&S PIA team
	Internal audits (operation)	PIA	PIA Industries	Included in the budget of the E&S PIA team	Included in the budget of the E&S PIA team
	External audit conducted by an E&S consultant appointed by PIA (semi-annual in construction)	PIA	E&S consultant	120 000 000 CFA	182 939 EUR
	External audit conducted by an E&S consultant appointed by PIA (annual in operation)	PIA	E&S consultant	60 000 000 CFA	91 469 EUR
<b>SUB-TOTAL</b>				<b>180 000 000 CFA</b>	<b>274 408 EUR</b>
<b>TOTAL</b>				<b>732 475 000 CFA</b>	<b>1 116 651 EUR</b>
<b>10% PROVISION</b>				<b>73 247 500 CFA</b>	<b>111 665 EUR</b>
<b>GRAND TOTAL</b>				<b>805 722 500 CFA</b>	<b>1 228 316 EUR</b>