Disclosure Package: sub-project disclosure summary + Annex B & C: ESIA and ESMP for Sub- Projects of GCF co-financed projects with GIZ as Accredited Entity

This disclosure package contains, according to the FAA entered between GIZ and GCF for FP198, and as stated under **Schedule 14 of the Agreement**, "the Sub- Project Disclosure Summary", (with the requirements **A** purpose, nature, and scale of the activities, and the intended beneficiaries **B** duration of proposed activities **C** summary of stakeholder consultations **D** available grievance mechanism) in **Section 1** and in **Section 2)** the associated annexes ESIA and ESMP.

Attached below the disclosure sections are: E&S Study prepared by CEGEDI in 2024 (page 15 on) and a Detailed Process flow of Plastic Recycling

Section 1: Summary of Project Disclosure Package for FP198: CEGEDI – New Plastic Recycling Unit

Sub Project Grant Agreement Title / Name of Project	**CEGEDI - Centre de Gestion des Déchets Industriels**
Implementation Country	Guinea
Location of the project	Maferinya, Forécariah disctrict – Waste storage site Google Reference
Facilities to be used	Installation of a 2400m^2 plastic recycling production unit on an existing 30,000m^2 Maferinya waste storage site. CEGEDI owns the site. Expansion plans include further industrializing the site with treatment facilities for other types of waste in the long term.
Grant Period	Grant period (tentative): June 2025 – Mai 2027 Project implementation period: June 2025 – December 2025
Volume Grant	200,000 EUR (in case of being selected for the CATAL1.5°T Acceleration Program)
Amount of Co-Finance / Own Contribution	98,000 EUR own contribution
Total Budget	298,000 EUR

Project Summary	CEGEDI is a company specialized in the collection, sorting, storage and treatment of industrial waste, such as plastics, scrap metal, used oils, used bottles and metal packaging. CEGEDI also offers consulting services, as well as solutions for the industrial disposal of used oils, including their transformation into clean coal and diesel at their refinery in Tananè. **New plastic recycling site** The CEGEDI project supported by CATAL1.5°T is the first phase of a new activity which aims to valorize plastic waste by **creating a shredding unit that will convert plastic waste into granules, to be sold on both local and international markets**. The shredding unit will have the capacity to process a maximum of 8 tonnes of plastic waste per day through mechanical and thermal processes. The project has a large climate mitigation potential by avoiding the use of virgin plastics from fossil origin in clients' production processes. Plastic Recycling Lines contain washing basins, crushing /shredding machine, agglomerator, drying unit, and packaging unit. Plastic recycling process involves flake production through **mechanical grinding then thermal processing** with: • A boiler in the first stage (likely for the hot washing process). • An extruder in the second stage (for melting and shaping plastic into pellets). • No chemical reactions are involved, meaning the process is purely mechanical and thermal. **Scope** The project timeline includes a 3-month construction period followed by a 3-month installation of the entire production line equipment. In terms of the scope of the activity, a capacity of recycling 8t of plastic a day remains lower than large industrial companies. A benchmark for international companies using mechanical process finds capacities of 68t, 82t and 137t respectively for Veolia, Suez and Indorama Ventures in France and Thailand. Waste plastic recycling is a recovery process that transforms waste plastics into reusable raw material for plastic manufacturers. CEGEDI possess an authorization delivered by the ministry of Environment to collect, transport and store hazardous and non-hazardous waste (Permit number: N°000025/MEDD/CAB/DNPCC/2022). It is important to note that CEGEDI does not collect plastic waste that has been in direct contact with mining or oil products. The type of waste includes plastic fences, studs, bins, LPDE plastic

	bags, plastic bottles, pipes. This drastically reduces the risk that workers and equipment are exposed to harmful substances. CEGEDI's processes are described as follows - Waste collection: trained waste collection officers collect waste from oil and mining company clients' sites or waste sorting sites. - Transportation: Waste is transported to CEGEDI's by truck following institutional and juridic regulations around traceability of waste. Waste tracking slip is filled up by every actor involved in the transport. - Sorting: CEGEDI sorts waste material according to their resin types such as polyethylene, polypropylene, polystyrene, PET, PVC etc. As of now, the plastic sorted was sold to plastic recyclers or other entities involved in waste management. - Storing: Waste is sorted in a way that mitigates its effects on the environment. The project aims at building appropriate storing facilities, including waterproofing the floors to avoid potential soil contamination. - Revalorization: With the new unit CEGEDI will go one step further on the value chain by selling shredded pieces of plastic. **Existing waste site** The plastic recycling unit will be installed on a surface of 2400m^2 on the existing 30,000m^2 Maferinya waste storage site. CEGEDI owns the site and plans to continue to develop it in the long term. The immediate surroundings of the site are an inhabited area with local vegetation. The various types of waste are stored separately, directly on the ground: used tires, scrap metal, used oils, used bottles and metal packaging. **Area of influence** The project site is in Maferinya, the Kindia region, in the prefecture of Forecariah and rural community (RC) of Moribayah. Moribayah is located 34km away from the urban community of Forecariah. The RC has a population of around 22 000 people who mostly live from agriculture, farming or in nearby industries. SODEFA for exemple, one of the country's largest steel and iron manufacturers is located in the district. The region is home to around 123 industrial sites. **Regulatory framework** CEGEDI's activities are governed by regulatory frameworks: • Guinean Transition Charter of September 27, 2021 • Environment Code • Industry Code

	• Labor Code • Mining Code • Water Code • Public Health Code. More specifically, CEGEDI has developed an ESMP and environmental policy to identify, measure and minimize environmental risks in conformity with applicable laws, including L/2019/0034/AN on the environment, environment protection code (law 0030), the 2019 regulations on environmental assessment and environmental quality guidelines. The national Guinean Agency for Environmental Evaluation (AGEE) will conduct monitoring and control visits to the CEGEDI sites to ensure conformity with the ESMP. **Other activities** In parallel to the waste revalorization project, CEGEDI operates a refinery of used oils on another site 155kms away in Tanènè. The plant has been operational since 2022, providing used oil disposal services and converting used oil into diesel and coal. The site treats around 150 000L of oil per month from oil and mining companies. This activity represents 6% of their annual revenue. The site operates in conformity with international standards. The E&S study attached to this disclosure document covers the risk assessment of the site and mitigation measures to be put in place.
Number of employees, organizational structure, and capacity for ESMP/ESMS implementation	CEGEDI has 92 employees, including 80 permanent staff. The CEO and general director have a robust strategic direction team composed of a program manager, administrative & financial officer, human resources manager and a chemicals & logistics manager. Its management supervises all aspects related to strategy implementation and coordination of production activities. The company has conducted a **preliminary environmental and social assessment** of the new production unit. As a result, CEGEDI has a **dedicated staff member, an environmental specialist who reports directly to the CEO, that supervises E&S aspects on its sites**. Along with the other managers, with engineering backgrounds, the CEGEDI team has the capacity to implement ESMS measures. A distribution of the main areas of operation in the company is observed. The company currently has a policy against harassment and discrimination for the promotion of equal opportunities and gender equity, which is promoted by the general management. Likewise, there is compliance with labor standards and safety of workers with.

	Due to the structure of the company, it is observed that the **implementation of the Environmental and Social Management Plan (ESMP) and the Environmental and Social Management System (ESMS) will be carried out by the general management**, which will receive additional training and support during the acceleration program. However, the culture derived from the ESMP and the ESMS will be permeated throughout the organization. Current strategic pillars of the policy include: - Commitment to conducting our business in a way that protects and preserves the environment and reduces our environmental footprint. - Commitment to conducting our business with a goal of zero work-related for our employees, contractors and other stakeholders - Commitment to protecting and maintaining the safety of our employees and the public, by providing resources to improve safety and health in the workplace. - Commitment to comply with applicable legal and regulatory requirements environmental requirements. - Commitment to communicating the Health, Safety and Environment (HSSE) policy to employees, customers, consumers and other stakeholders. - Commitment to periodically updating the Health & Safety at Work to ensure it remains relevant and appropriate to the organization. In addition to the existing ESMP framework, one of the CATAL1.5°T program objectives is to develop a full ESMP with additional indicators and a monitoring strategy. The company has generated annual sales of 629k EUR in 2023.

Table 1: **A**. The purpose, nature, and scale of the activities, and the intended beneficiaries & **B** The duration of proposed activities. This section describes the purpose that the venture would give to the resources, if selected in the CATAL1.5°T Acceleration Program.

Activity / Action	**Purpose**	**Nature and scale of the activity/action**	**Materials used (including raw materials), waste generation, wastewater generation**	**Duration of the activity/action**	**Intended beneficiaries**
1	*Build a plastic recycling production unit in a hangar on the*	*Acquisition of construction materials and equipment to build a hangar where the new recycling line will be installed.*	*Construction materials: concrete and steel*	*Estimated 3 months*	*CEGEDI's Maferinya waste site employees*

	existing Maferinya waste site.	*CEGEDI will cover the labor costs associated with the building stage (own contribution).*			*Indirect: avoided plastic waste in dumpsites, neighboring communities, waste generating clients, plastic manufacturing companies*
2	*Develop a plastic recycling unit to process waste generated in the region and supply plastic manufacturers with recycled pellets*	*Acquisition and installation of the new plastic recycling line that will include washing bins, shredding machines, conveyor belts and transport bins.* *CEGEDI intends to use this machine at its maximum capacity of treating 8t of plastic per day.*	***Materials used:*** *Raw materials will be the collected plastic waste from clients' sites such as mining or oil companies and from 18 Waste Sorting and Treatment Facilities (Zones de Tri et de Traitement des déchets - ZTT) that they have helped set up across the city of Conakry.* *Plastics collected are PET, PP, HPDE and LPDE. CEGEDI already stores 500t on the waste site.* ***Waste generated:** The residue generated by the shredding machines can be collected and reinjected into the recycling process.* *The process has a 95% transformation rate meaning that 1000kg of plastic waste treated produces 950kg of granules. At its full capacity, the shredding machine will have the capacity to transform 8000kg per day.* ***Wastewater generation:** Water used in the plastic washing step will be treated and reused in a closed loop system.*	*Installation of equipment will begin after the construction of the new hangar.* *Estimated 6 months before it is fully operational.*	

Table 2: **C** summary of stakeholder consultations and the planned stakeholder engagement process. Information about the virtual interview phase and delivery of additional information in the screening phase.

Consultation [if applicable, place]	**Date**	**Participants**	**Information and/or further Engagements Planned**
1 Mandate-fit check, online	03/12/2024	*CEGEDI CEO and technical staff* *CKIC* *IPED* *GIZ*	*In depth ESS Due diligence ongoing in parallel to climate trainings ahead of Selection Committee.*
E&S Due Diligence	01/2025-03/2025	*IPED & Gola Capital seed teams*	*Due diligence process included review of existing environmental and social assessment policies, visit of CEGEDI sites and interview with team members. An additional visit is planned in May 2025 by IPED E&S Specialist.*

D. The available grievance mechanism(s) to receive complaints and facilitate the resolution of such from affected and potentially affected communities, groups, and individuals.

- A grievance mechanism (GRM) for CATAL1.5°T is in place, it can be found here: Grievance Redress Mechanism. All grievances and complaints regarding the project, facilities or workplace can be addressed there. Information on the GRM will be shared with all stakeholders of the project. The email as, provided in the GRM for incidents in West Africa is catalistgr@ietp.com.
- CEGEDI is developing a formal registry to record all incidents on the premises via a report form, including the date of the accident, the location of the accident, the type of injury, time lost due to an accident, among others. All accidents are investigated.

Section 2: ESIA and ESMP: CEGEDI – New Plastic Recycling Unit

Tick box ☐ of the PS Categorization by the Sub-Project:

A ☐ B ☐ C ☒ Does not apply ☐	*Performance Standard 1. Environmental and Social Assessment and Management System*
A ☐ B ☒ C ☐ Does not apply ☐	*Performance Standard 2. Labor and working conditions.*
A ☐ B ☒ C ☐ Does not apply ☐	*Performance Standard 3. Resource efficiency and pollution prevention*
A ☐ B ☐ C ☒ Does not apply ☐	*Performance Standard 4. Community Health & Safety*
A ☐ B ☐ C ☐ Does not apply ☒	*Performance Standard 5. Land acquisition and involuntary resettlement*
A ☐ B ☐ C ☒ Does not apply ☐	*Performance Standard 6. Biodiversity conservation and sustainable management of living natural resources*
A ☐ B ☐ C ☐ Does not apply ☒	*Performance Standard 7. Indigenous peoples*
A ☐ B ☐ C ☐ Does not apply ☒	*Performance Standard 8. Cultural heritage*

Table 1: Environmental and social impact analysis (ESIA) and management plan (ESMP) (safeguard measures) of the FP198 – CEGEDI New Plastic Recycling Unit

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
PS1. Environmental and Social Assessment and Management System	Misidentification of environmental and social risks associated with the project deployment on exisitng waste site	Low	CEGEDI conducted a comprehensive E&S assessment of its project and location sites before seeking CATAL1.5°T financing. They are aware of the potential ESG risks associated with the new recycling line and therefore anticipated the risks identification. The full ESMP for the sub-project that will be developed	High	The environmental and social risks and impacts of the venture are identified, evaluated, and managed promptly and effectively through the ESMS. The risks identified and suggestions will be taken into in the	9 months CEO and environmental specialist	N/A

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
			with guidance of the CATAL1.5°T Initiative once the sub- project is chosen into the accelerator program is aligned with the recommendations of the preliminary E&S assessment. CEGEDI's client, aluminium and iron global producer Rio Tinto states that the critical risk management process is fully respected.		design and construction of the hangar.		
	Legal Breach	*Low*	Include in the ESMS compliance with environmental, occupational health and safety legislation and towards the community.	High	Environmental risks and impacts are managed in accordance with Performance Standards 1, 2, 3,4 and 6	Ongoing CEO & Management Team	
PS2. Labor and working conditions.	Possible risk of workplace incidents linked to new industrial machines.	Low	CEGEDI will place emphasis on training sessions on the safe and efficient use of the machines. Each station in the production will have detailed procedures and teams. A dedicated QHSE policy is in place and the team will lead trainings. The employees hired are qualified technicians and will also receive additional training safety in the workplace. During	High	Once the new plastic recycling unit is operational, use of adequate PPE and increased awareness of workplace safety measures should decrease the risk of workplace incidents, and long-term risks of health issues.	Ongoing during recycling line operation periods	Included within project budget
	Inadequate access to high quality PPE (soundproof helmets, safety helmets, gloves, masks)	Medium		High		Ongoing during recycling line operation periods	Included within project budget. CEGEDI includes cost of

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
			the E&S study, CEGEDI measured sound levels, sites layouts, weights of loads carried, to identify risks of workplace incidents. Monthly noise monitoring for all machines or equipment will be undertaken with emphasis on sections where noise levels exceed 85 dB to put in place effective care and maintenance procedures. All teams have adequate PPEs and have a QHSE team in charge of conducting awareness trainings on the importance of systematically and enforcing their use.The CATAL1.5°T program will also support the acquisition of further PPE. The company has a zero-workplace incident goal, supported by a continuously improved HSE policy.				buying PPE in their direct costs.
	Risk that workers will not be able to express their claims due to the lack of adequate grievance mechanisms with procedures, means,	Low	As part of the CATAL1.5°T program, all stakeholders such as clients, employees and communities will have access to the program's grievance mechanism.	High	Complaints from women workers and male workers are addressed in a timely and appropriate manner, reducing the	3 months Directors and QHSE specialist	

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
	responsible parties and a gender focus, to receive, record, investigate, evaluate, resolve and follow up on the complaints and claims they present. workers, in particular, women workers.		In addition, one of the ESMP actions is to strengthen existing complaints mechanism by defining, applying and disseminating procedures to receive, record, investigate, resolve and follow up on complaints; mechanisms to facilitate access and include anonymity as an option and protection of the complainant against possible retaliation. Disseminate and train in the use of the complaint's mechanism.		number of complaints and incidents of sexual exploitation, abuse and harassment (SEAH) over time.		
PS3 Resource Efficiency and Pollution Prevention	High energy consumption as it powers multiple large machines	Medium	The Maferinya administrative building is 100% powered by solar energy, mitigating the risk of high energy consumption off the local grid. The new plant will be connected to the local grid as the solar installations cannot yet alone	Medium	Decreased in CO^2 emissions associated with electricity consumption from national grid	Installation during site set up Ongoing execution during machine	Included within project budget

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
			power the recycling unit equipment. The medium-long term objective is to power the recycling site with solar energy. In addition, the company will monitor its energy consumption and plan annual energy audits.			operating times	
	Water consumption and treatment for the plastic washing process.	Medium	The shredding machine will consume around 1 metric ton of water per hour. However, this water will be reused in the plastic waste washing process thanks to the wastewater recycling system.	High	The wastewater recycling system will increase water usage efficiency	Ongoing execution during machine operating times	Included within project budget
	Existing waste storing site floor not impermeabilized represents a risk of leaching polluants into the soil	High	Construction plans include the respect of the main ESG risks identified, including avoiding pollutants leaching via a impermeabilized floors and improving storing area.	High	Storing waste ahead of treatment doesn't generate pollution to soils and water.	3 months Directors and production site manager	Included within project budget
PS4. Community Health & Safety	Waste generated from non-recyclable plastics.	Medium	*All waste stored on the Maferinya waste site belong to CEGEDI. Venture has the ambition to recycle an increasing number of plastic types, including PVC.* Venture can resell non-recyclable plastics, send them to landfill or treat them depending on client's demands. These waste management	High	All waste will be managed, either recycled or resold	Ongoing	N/A

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
			strategies avoid the risk of harming neighbourhooring communities.				
PS4. Community Health & Safety	*Leaks or spills of hazardous materials, fires. Effects on the health or physical integrity of persons or material property.*	*Medium*	*Develop a hazardous materials management plan, including worker training and documentation of procedures, as well as emergency care. CEGEDI already has procedures in place aligned with clients' requirements as well as identified in its E&S assessment.*	*High*	*Community health is ensured, and environmental emergencies are prevented*	*Ongoing Operations*	Included within project budget
PS 5 Land Acquisition and Involuntary Resettlement	*No risk*						
PS 6 Biodiversity Conservation and Sustainable Management of	*Risk of disturbing local and natural ecosystems surrounding existing waste site.*	*Low*	*There's limited wildlife and flora in the surrounding areas of the site. Particular attention to pollution prevention as outlined in PS3 is the most effective mitigation measure. Avoiding*	*Medium*	*CEGEDI avoids, reduces or eliminates negative impacts on biodiversity and natural resources.*	*Ongoing Director of operations & environmental specialist*	Included within project budget

Performance standard (PS 1-8)	Risks of negative impact and type of risk	Risk Level pre mitigation (low, medium, high)	Risk mitigation measure	Effectiveness of the mitigation measures (low, medium, high)	Expected results of mitigation	Execution Period and Responsibility	Budget allocated for mitigation measures
Living Natural Resources	*Risk of deterioration of the structure or mechanical parameter of the soil following repeated movement of heavy transportation vehicles.*	*Low*	*contamination of water, soil and air prevents the living natural resources in the region. Construction of the new hangar will be limited to 2400m2 on the existing site. No additional natural habitats will be harmed or changes in landscapes.*	*Medim*			Included within project budget
PS 7 Indigenous Peoples	*No risk*						
PS 8 Cultural Heritage	*No risk*						

Important: As part of the CATAL1.5°T ESMF, **the following complementary activities are carried out to implement measures to mitigate the adverse environmental and social effects of the accepted subprojects, in accordance with PS1**:

1. If accepted into the CATAL1.5°T accelerator program, the ventures receive support in the development of business plans and **environmental and social management plans (ESMP)**. Environmental and Social Due Diligence will provide the necessary guidance to identify what type of management plans are required in accordance with the **GCF's Interim Social and Environmental Safeguards** and guide companies in establishing and monitoring management plans.
2. The companies selected in the Acceleration program will benefit from a reimbursable subsidy of up to 200 thousand euros. The use of reimbursable grants will be governed by a grant agreement signed with each climate venture and the Executing Entity which will include environmental and social clauses on:
    1. Compliance with environmental and social requirements on excluded activities.
    2. Establishment of reasonable conditions of employment, protection of the workforce, establishment of a safe and healthy working environment.
    3. Non-violations of human rights.
    4. Zero tolerance for gender-based violence and sexual exploitation, abuse, and harassment.
    5. Compliance with additional environmental and social conditions included in the environmental and social management plans.

3. In addition, the Acceleration Program will offer **mentoring on environmental, social and gender issues**.
4. All progress reports by the sub-project to the CATAL1.5°T Initiative will include **environmental and social reports**. Environmental and social reporting requirements will be defined in the business plans.
5. In preparation for graduation from the Acceleration Program, supported companies will receive **assistance in the preparation of long-term environmental and social management plans**.

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CEGEDI
Gestion des Dechets
Pour une Economie Verte

CEPE
Evaluation - Stratégies - Valorisation
CABINET D'ETUDES ET DE PRESTATION EN ENVIRONNEME

January 2024

PLAN DE GESTION ENVIRONNEMENTALE ET SOCIALE DE LA DECHETERIE DE MORIBAYA ET DE L'UNITE INDUSTRIELLE DE GESTION DES HUILES USAGEES A TANÈNÈ DU CENTRE DE GESTION DES DECHETS INDUSTRIELS ET DOMESTIQUES

N.I.E.S

Etude réalisé by Cabinet d'Etude et Prestation en Environnement, located in Kaloum, Almamya, immeuble Kaloum. www.cepe-guinee.com/email: cepe.guineaconsulting@gmail.com Tel : 620 77 46 87 40/ 655 28 28 66 07 64 27

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ACRONYMS AND ABBREVIATIONS

AGEE: Agence Guinéenne d'Evaluation Environnementale

(Guinean Environmental Assessment Agency) ANSP: Agence

Nationale de Salubrité Publique (National Public Health

Agency)

CEGEDI: Industrial Waste Management Center

CEPE: Cabinet d'Etudes et de Prestation en Environnement (environmental consulting firm)

CNGCUE: Centre National de Gestion des Catastrophes et des Urgences CR:

Commune Rurale (rural community)

DGPC: French Civil Protection Agency
DNACV: Direction Nationale de l'Assainissement et du Cadre de Vie DNFF: Direction Nationale des Forêts et de la Faune (National Forestry and Wildlife Department)
DNPNCC: Direction Nationale des Pollutions, Nuisances et Changements Climatiques (National Department of Pollution, Nuisance and Climate Change)

PPE: Personal Protective Equipment

FECAN: Fonds de l'Environnement et du Capital Naturel
(Environment and Natural Capital Fund) HSSE: Hygiène Santé Sécurité Environnement (Health, Safety and Environment)

STI: Sexually transmitted infection

MATD: Ministère de l'Administration du Territoire et de la Décentralisation

(Ministry of Territorial Administration and Decentralization) MEDD: Ministère de

l'Environnement et du Développement Durable (Ministry of the Environment and

Sustainable Development)

NIES: Environmental and Social Impact

OGPNRF: Office Guinéen des Parcs Nationaux et de Réserves de Faune
(Guinean Office for National Parks and Wildlife Reserves) OGUIB: Office Guinéen du Bois (Guinean Timber Office)
PAFN: Plan d'Action Forestier National

(National Forest Action Plan) PDL: Plan de Développement Local (Local Development Plan)

PGES: Plan de Gestion Environnementale et Sociale (Environmental and Social Management Plan) PNAE: Plan National d'Action pour l'Environnement (National Environmental Action Plan) PNDS: Plan National de Développement Sanitaire (National Health Development Plan) PNG: Politique Nationale Genre (National Gender Policy)

POI: Plan d'Opération Interne (Internal Operations Plan)

SME: Small and Medium Enterprise

SNGCUE: Service Nationale de Gestion des Catastrophes et des Urgences Environnementales (National Disaster and Environmental Emergency Management Service)

SST: Santé Sécurité au Travail (Occupational Health and Safety)

LIST OF TABLES

SUMMARY

This edition of the Environmental and Social Management Plan (ESMP) for the Centre de Gestion des Déchets Industriels (CEGEDI) must comply with Ordinance 045/PRG/87 and 022/PRG/89, Law L/2019/0034/AN on the Environmental Code, and Order A/2023/1595/MEDD/CAB/SGG on the administrative procedure for environmental assessment. Its validation will enable us to obtain environmental authorization for a renewable one-year period.

The aim of this ESMP is to describe all the measures that will be taken to ensure CEGEDI's compliance with national and international environmental and social legal requirements.

CEGEDI is a Guinean company registered under number RCCM/GC-KAL/069.530B/2016, managed on a day-to-day basis by a Managing Director with 63 permanent employees. Its head office is in the Nongo district. For waste management and recovery, it has set up an industrial unit in the Bangouya sector 1 industrial zone, in the rural commune of Tanènè, Dubréka prefecture. It has also set up a waste treatment, recycling and recovery center for industrial and domestic waste in the Simèbougni sector, in the rural commune of Moribaya, Forécariah prefecture.

To achieve this, CEGEDI must manage industrial and domestic waste in compliance with standards and regulations. In terms of Health, Safety and Environment (HSE) in the workplace, CEGEDI is committed to :

- conduct its HSE activities in the workplace in such a way as to protect and preserve the environment and reduce its environmental footprint;
- conduct its business with a goal of zero work-related injury and illness for its employees, subcontractors and other stakeholders;
- protect and maintain the safety of the public in general and employees in particular, by implementing the necessary means to improve Occupational Health and Safety (OHS);
- comply with current legal and regulatory requirements applicable to the environment;

- ➢ document and communicate the Health, Safety and Environment (HSSE) policy to employees, customers, consumers and other stakeholders;
- ➢ produce periodic OHS reports and ensure that they remain relevant and appropriate to the company.

CEGEDI's operations generate various types of waste, which will be managed in accordance with the contents of this ESMP. These operations involve collection, transport, storage, sorting, recycling, reclamation or disposal.

As the Tanènè area is industrial, cumulative impacts are observable. From this, we can deduce that atmospheric emissions into environment occur at the level of the various industrial units. At CEGEDI, these atmospheric emissions are made up of vapors, exhaust gases, combustion gases and fumes from the 350 KVA emergency generators, boilers, machine rooms and rolling stock.

Used oils resulting from the plant's operations will be collected by CEGEDI itself, a service provider authorized by the Ministry for the Environment to recover them.

The Tanènè waste processing plant and the Moribaya landfill should be paved with cement slabs to eliminate any potential dust emissions generated by moving vehicles, and to prevent any possible infiltration.

Operations at CEGEDI's facilities may have an impact on receiving environments (air, water and soil), as well as on public health. Dust emissions, fumes (CO, CO_2, NO_X) and odours from waste may affect air quality. Water resources could be contaminated by leachates from hazardous waste and chemicals used in the recovery process. Drainage of runoff water into unprotected areas, leading to contamination of water resources.

watercourses and groundwater. As far as the soil is concerned, changes to its physico-chemical structure are due to the accidental spillage of used oils (containing heavy metals) and other hazardous waste. The soil could also be contaminated by the uncontrolled burial of certain hazardous wastes. All these impacts are likely affect public health directly or indirectly.

To preserve air quality, we recommend the use of new machinery and regular maintenance. Ensure waste conditioning throughout the recovery chain. Water quality could be preserved by avoiding contact with waste or chemicals (make soil sites impermeable). For the soil, we need to provide absorbent kits in the event of a spill, and ensure an ecological burial system for non-recyclable waste.

These impacts can be mitigated by monitoring the implementation of the contents of this ESMP.

INTRODUCTION

CEGEDI Sarl is planning to manage industrial and domestic waste through its waste collection centers. To follow up on this project, studies have been carried out to identify the issues at stake and to complete the regulatory files required.

In this context, CEPE was commissioned by the promoter to draw up the ESMP in accordance with order A/2023/1595/MEDD/CAB/SGG. This ESMP is part of CEGEDI's industrial and domestic waste management activities.

The purpose of this ESMP is to describe all the measures that will be taken to ensure compliance with national and international environmental and social legal requirements.
As this document is part of an ESMP, its completion is a prerequisite for acceptance of the project. It is structured as follows:

- SUMMARY;
- the introduction ;
- background and justification ;
- methodology ;
- project description and components ;
- project location ;
- adapting to climate change;
- political, legal and institutional framework ;
- impact identification ;
- health, safety and environmental ;
- impact mitigation and enhancement measures ;
- the prevention and emergency response plan ;
- the environmental monitoring and follow-up program ;
- the capacity-building, information and communication plan ;
- ESMP implementation schedule and conclusion.

BACKGROUND AND RATIONALE

Waste, whether domestic or industrial, is a real source of pollution in the Republic of Guinea. Waste management is generally dominated by public-private partnerships, which contribute to hygiene and sanitation of urban centers. Despite these efforts, the way in which waste is managed contributes to climate change and atmospheric pollution, which directly or indirectly affects the ecosystem.

With the exception of Conakry, public collection of household and similar waste is virtually non-existent. 80% of households dispose of their garbage in the open. This proportion rises to 53.6% in urban areas, and 9.8% of households benefit from or use a public garbage can (Japan International Cooperation Agency and Japan Environment Sanitation Center, 2022).

The current waste management situation in Guinea is generally characterized by dumping in uncontrolled dumps, uncontrolled incineration, uncontrolled burial... This waste management practice leads to consequences such as: contamination of ground and surface water by leachates contained in mining, industrial and domestic waste; waste incineration emits greenhouse gases and polymers that harm public health and climate stability; soil contamination by uncontrolled burial.

However, most of the waste produced can be recovered and turned into real raw materials or finished products using less polluting technologies. This state of mind is leading the new authorities to take a greater interest in this issue. To contribute to this, CEGEDI is seizing the opportunities on the market by commissioning a waste processing unit (used oils) in Tanènè and a waste collection center in Moribayah, with the aim of protecting the environment from the damage caused by poor waste management.

This waste management activity is fully in line with Guinea's strategies and policies. It contributes to the promotion of industry, employment, sanitation and the preservation of the environment through the valorization/transformation of industrial and domestic waste as often as possible.

OBJECTIVES

This ESMP has been drawn up as part of CEGEDI's activities in managing industrial, electronic and domestic waste collected for recovery and/or disposal. Its general objective is to describe all the measures that will be taken to ensure compliance with national and international environmental and social legal requirements.

Specifically, it involves :

- ➢ frame the management of activities to prevent, minimize, mitigate or compensate for environmental and social impacts, as well as to enhance positive impacts ;
- ➢ define the framework for monitoring and supervision and the institutional arrangements to be made during operation ;
- ➢ ensure that the project's environmental and social commitments are respected.

These objectives will help to address environmental and social concerns, thereby contributing to the sustainable socio-economic development of the project area.

METHODOLOGY

The methodology used is based on a systematic approach punctuated by the participation of all the stakeholders and partners concerned by the project. With the support of the administrative and local authorities, the study was carried out in a participatory manner, based on consultations with the various stakeholders, in order contribute to a broad dissemination of information on the project.

Discussions and documentary research were carried out to promote a common understanding of the issues, benefits and concerns related to the operation of the industrial waste oil processing unit and the waste recovery unit.

Meet the developer

The ESMP was drawn up in close collaboration with the promoter and his local representatives in the project areas (Moribayah and Tanènè). Meetings were held before, during and after the field surveys. These meetings enabled us to gather additional information from the people and structures involved in the project. They also provided access to technical project documents.

Collection and analysis of data

Documentary data collection

The documentary research consisted firstly in identifying the documents related to this project, followed by critical analysis of their content. These the Terms of Reference (ToR), the promoter's business plan, technical documents for the facilities and the waste management and transformation process. To these should be added the Environmental Code, the Labor Code, the Public Health Code, and the Local Development Plans for the rural communes of Tanènè and Moribaya.

Field data collection

Several tools used to collect data in the , :

- ➢ the interview , their administration made it possible to collect data from the players involved in the project;
- ➢ sound level meter to determine the sound intensity of the project sites;
- ➢ hygro brand PH meter (P^H) for determining the acidity and basicity of liquid effluents;
- ➢ hygro thermometer for determining temperature and humidity;
- ➢ the ion test strip for the determination of primary and secondary contaminants;
- ➢ Garmin GPS, which was used to record the geographical coordinates of the sites.

All these tools were used to collect and analyze content, and to sample and analyze certain physicochemical parameters.

Interviews were the preferred method for gathering data from stakeholders. The main stakeholders were: CEGEDI's technical department and HSSE team, the municipal and sub-prefectural authorities of Tanènè and Moribaya, and the communities living near the sites.

In practice, individual and group (focus group) interviews were conducted using an interview outline. At the start of each interview, the objectives of the study were explained to the participants. This ensured their informed consent to take part in the survey. On the other hand, environmental monitoring activities were carried out on water, soil and air quality.

Processing and analysis of data

The data collected in the field were subjected to the following processing method:

- the data collected from the interviews were subjected to content , with a view to detecting in depth the manifest content of the messages ;
- the physicochemical data collected were analyzed to compare results obtained with the standards and regulations in force in the Republic of Guinea.

PRESENTATION OF THE ENGINEERING FIRM AND DEVELOPER

Presentation of Cabinet d'Etude et de Prestation en Environnement (CEPE)

CEPE Sarl is a Guinean law firm operating in the environmental field. Its mission is to develop local expertise, transfer the necessary skills and less polluting technologies. Backed by its expertise and experience, CEPE helps companies in need to carry out their projects, taking particular account of environmental and social factors in the management of mining, airport and marine environments, civil engineering works and waste management.

In the field of cooperation or for the sake of customer satisfaction, CEPE maintains relations with certain international offices, notably Royal Haskoning of Belgium, Antea Group of Belgium, RSK Europe, Al Control of Rotterdam, R&C lab. of Italy.

Presentation of the promoter: Centre de Gestion des Déchets Industriels (CEGEDI)

Created in 2016, CEGEDI (Centre de Gestion des Déchets Industriels) aims to provide an ecologically responsible waste management service. In addition, it is evolving as a consulting support to companies to raise awareness and train in sorting, as well as composting for better organic waste management.

CEGEDI also has public/private partnerships with the Ministry of the Environment, the Ministry of Energy and Hydraulics, the Agence Nationale de l'Assainissement et de la Salubrité Publique (ANASP) and the Ministry of Agriculture (Direction Nationale de l'Agriculture).

Specifically, CEGEDI is responsible for :

- collect and transport all types of waste nationwide;

- sorting and storage (at the Moribayah and Tanènè waste disposal sites);
- treat and recycle industrial waste locally or export it to specialized, certified partner companies for disposal;
- raise awareness and train employees and communities in upstream sorting ;
- compost organic waste.

DESCRIPTION AND COMPONENTS OF THE PROJECT

project objective

The aim of this project is to collect, transport, recycle or dispose of industrial and domestic waste through CEGEDI's industrial facilities in the rural communes of Tanènè and Moribayah.

It will also contribute to waste management in compliance with current standards and regulations, to the preservation of the environment and public health, and to laying the foundations for sustainable socio-economic development in the project's host and catchment area.

project description

This project involves the construction an industrial waste recovery unit in the rural commune of Moribaya (Forécariah prefecture) and an industrial waste oil processing unit in Tanènè (Dubréka prefecture).

Main project activities

The main activities of this project are: the collection, transport, sorting, storagerecovery and/or disposal of industrial and domestic waste.

Collection

Waste collection is carried out by a dedicated team, equipped PPE and work materials appropriate to the type of waste. Collection operatives are trained and instructed in the use of PPE and the handling of waste, so that they can carry out their work with fewer risks.

Transport

Waste management, particularly transport, is one of CEGEDI's main concerns. To ensure proper traceability and waste management, the waste tracking slip is the main working tool. This document must be completed by all intermediaries and players involved in the waste recovery or disposal process. It contains all the information from the point of collection through to total or partial recovery or destruction.

This transport takes into account the regulatory, institutional and legal framework for industrial waste (ordinary and hazardous) and domestic waste.

Sorting

Sorting enables waste to be collected separately according to category. The sorting team at the CEGEDI site is trained and informed about the challenges of their work. They are equipped with the tools they need to sort waste (cleaning gangs, nose covers, boots, goggles, helmets, peelers, rato, wheelbarrow, etc.).

Storage

After the sorting stage, a specific area is defined for the storage of waste that can neither be recycled nor recovered. These wastes are stored in such a way as to be able to control their effects on the environment. They are either hazardous waste, non-hazardous waste or inert waste.

Valuation

Recovery covers the recovery, reuse, regeneration and recycling materials extracted from waste. The new materials generated, which are secondary raw materials or recycled raw materials, depend on the waste produced and the possibilities for recovery.

Elimination

If the waste cannot be recycled, CEGEDI Sarl will dispose of it. The disposal technique depends on the type of waste. It generally consists of incinerating waste without energy recovery, i.e.

to store or bury waste in accordance with environmental requirements.

project components

This project concerns the operation of a waste collection center (located in the Simèbougni sector, Maléah district, Moribayah rural municipality, Forécariah prefecture) and an industrial waste oil recovery unit (in the Bangouya 1 sector, Tanènè rural municipality, Dubréka prefecture).

Components the Tanènè industrial waste oil recovery unit

Infrastructure

- one (1) 30 m² hard fence;
- one (1) hangar housing the industrial complex;
- one (1) accommodation for the security ;
- one (1) canteen ;
- two (2) toilets ;
- one (1) staff accommodation building;
- one (1) equipment storage warehouse;
- one (1) spare parts warehouse;
- three (3) waste oil tankseach with a capacity of 120 m^3 ;
- a 30 m^2 storage area for coal extracted from used oil residues.

Main equipment

- three (3) waste oil heating tanks with a capacity of three thousand liters (3000 L) each;
- four (4) heating furnaces ;
- two (2) generators;

- one (1) tank for receiving finished products;
- one (1) water retention basin with a capacity of 120 m^3 to supply the plant's cooling system;
- four (4) tankers containing stocks used oil:
- empty drums and cans used to transport and store used oils;
- one (1) container truck with a capacity 13 tonnes ($45m^3$);
- one (1) 08-ton truck;
- one (1) truck crane ;
- Two (2) .

Mechanism managing used oils

Collection

Used oils are collected according to their production sources, compositions and quantities. They are collected in labeled drums, which are then collected by tanker trucks.

Transport

The transport of used oils by tanker complies with the regulatory framework. In addition, CEGEDI is authorized collect, transport and store hazardous and non-hazardous waste, registration **no. 000025/MEDD/CAB/DNPCC/2022.**

For the transportation of waste, CEGEDI has the following logistical resources at its disposal:

- one (1) container truck with a capacity 13 tonnes ($45m^3$);
- trucks ;
- one (1) truck crane ;
- two pick-ups.

Storage

Transported used oils are stored in four (4) tanks and 3 basins. Excess quantities are also stored in metal drums.

Conversion process for used oils

The used oil transformation process involves three fundamental stages.

- **First stage**

The used oil collected from the various industrial units undergoes decantation, followed by filtration to separate the used oil (liquid) from the solid particles consisting engine debris, sand, gravel other suspended matter. The filtered oil is then stored in four (4) tankers.

- **Second stage**

After this first stage, a quantity of filtered used oil is poured into three heating tanks, each with a capacity of 3,000 liters, at a temperature varying between 300°c and 400°c, corresponding to the boiling point of the used oil.

- **Third stage**

Used oil is heated to a temperature of 400°c from a heating furnace, which in turn is fuelled by coal obtained from used oil residues. This oil undergoes fractional distillation, which a volatile liquid at this temperature. The resulting liquid is passed through a cooling system into a tank. Once cooled, this liquid can be used as fuel, and residues at the bottom of the heating tank can be transformed into ecological heating coal.

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Image 22: Oil recovery unit at Tanènè

Image 23: Used oil processing line

Image 24: The cooling system at the Tanènè waste oil recovery plant

Image 26: CEGEDI consultants and technical services at the Tanènè site

Components of the Simèbougni landfill site Moribaya

CEGEDI's waste collection center is located in the Simèbougni sector, in the rural commune of Moribaya, Forécariah prefecture, Kindia region. The aim of this semi-modern landfill is to treat, recycle, recover and/or dispose of (where possible) industrial (ordinary and hazardous), electronic and domestic waste, in order to protect the environment and public health.

Infrastructure

The main infrastructures built on this site are :

- one (1) thirty-thousand-square-meter (30,000 m²) hard fence;
- one (1) administrative block ;
- one (1) borehole water supply;
- two (2) toilets ;
- three (3) annexes.

These infrastructures are complemented by others to improve the industrial performance of waste processing.

Main equipment

- one (1) 13-ton container truck;
- one (1) 08-ton truck;
- one (1) truck crane ;
- two .

In addition to this equipment, a number of waste processing units are planned:

- one (1) shredding (tires, plastic, glass);
- one (1) battery dismantling unit;
- one (1) incinerator;
- one (1) motorcycle pump;
- one (1) spitter ;

- one (1) generator.

Identifying and categorizing waste

Several categories of waste are stored on the Moribaya site.

Waste management mechanism

As waste falls into different categories, it follows the same management process: collection, transportation, storage, sorting, recovery or disposal.

Collection

In practice, the waste collected and transported to the site is sorted by a dedicated team (equipped with PPE). If, after sorting, any recycling is required, the waste is sent to various partners who can recycle it more effectively. If it's plastic, it's entrusted to a company that recycles plastic waste, and the same applies to scrap metal, cans and so on.

Transport

The transportation of the various types of waste collected from CEGEDI's partners complies with current environmental regulations. In addition, CEGEDI is licensed to collect, transport and store hazardous and non-hazardous waste, registration **no. 000025/MEDD/CAB/DNPCC/2022.**

For the transportation of waste, CEGEDI has the following logistical resources at its disposal:

- one (1) container truck with a capacity 13 tonnes (45m^3);
- trucks ;
- one (1) truck crane ;
- two pick-ups.

Storage

The waste collected, transported and sorted is stored on the site of the waste collection center (whose floor is not waterproofed).

Waste-to-energy processes: the case of used tires

Scrap tires are made up of rubber, textile fibers, steel and additives and offer high recycling potential. The recovery method depends on the value of the products obtained, as well as on raw material prices and their availability and accessibility.

In material recycling, used tires are shredded and granulated. Granulation separates the textile and steel fractions from the rubber, producing rubber granules and powders with the desired shape, surface and particle distribution. The functional process of the machinery essentially comprises four steps:

1. pre-shredding of tires to produce tire shreds or chips (approx. 50x50mm);
2. granulation on flat die press by the granulator mill;
3. iron separation and classification of different rubber fractions;
4. granule cleaning.

Rubber granules and powders can be used in sports fields, floor coverings, rubber mats, anti-noise materials, asphalt for road construction, for landscape gardeners as an oil binding agent.

PROJECT LOCATION

This project is located in two areas: the Commune Rurale (CR) of Tanènè and that of Moribayah, all in the Kindia region.

Delimitation of the zone

The Kindia region is the extended study area, while the rural communes of Tanènè and Moribayah are the restricted project zones.

The ESMP development team used five (5) fundamental criteria to determine these zones.

- Size and geographical location.
- The administrative situation of the two prefectures hosting the project.
- Project objectives.
- The technology used.

Description of the project area

Extended area: Kindia region

Geographical location

The Kindia administrative region covers a total area of 28,873 km^2 with a population density of 54 inhabitants per km^2. It stretches from the south-western coastal plains to the high plateaus to the north-east, bordering the Fouta Djallon counter-forces. It is bordered to the east by the Mamou region, to the west by the Conakry region and the Atlantic Ocean, to the north-east by the Boké and Labé regions and to the south by the Republic of Sierra Leone.

Due to its geographical position, the Kindia region is the transition zone between Conakry and the continental hinterland.

Demographic situation

The population of the Kindia administrative region grew significantly between 1996 and 2011. It is estimated 1,667,695 inhabitants in 2016, with a density of 54 inhabitants per km^2.

Administrative organization

Essentially located in the natural region of lower Guinea, the Kindia administrative region comprises 5 prefectures: Coyah, Dubréka, Forécariah, Kindia and Télimélé.

Its administrative organization is based on deconcentration, with prefectures and 40 sub-prefectures, and decentralization, with 5 urban communes, 40 rural communes, 516 districts, 88 neighborhoods and 2,424 sectors.

Socio-economic aspects

Almost the entire regional population (94%) lives in rural areas and earns its income agriculture. There are 123 industrial units in the region, notably in the prefectures of Coyah, Dubréka, Forécariah and Kindia.

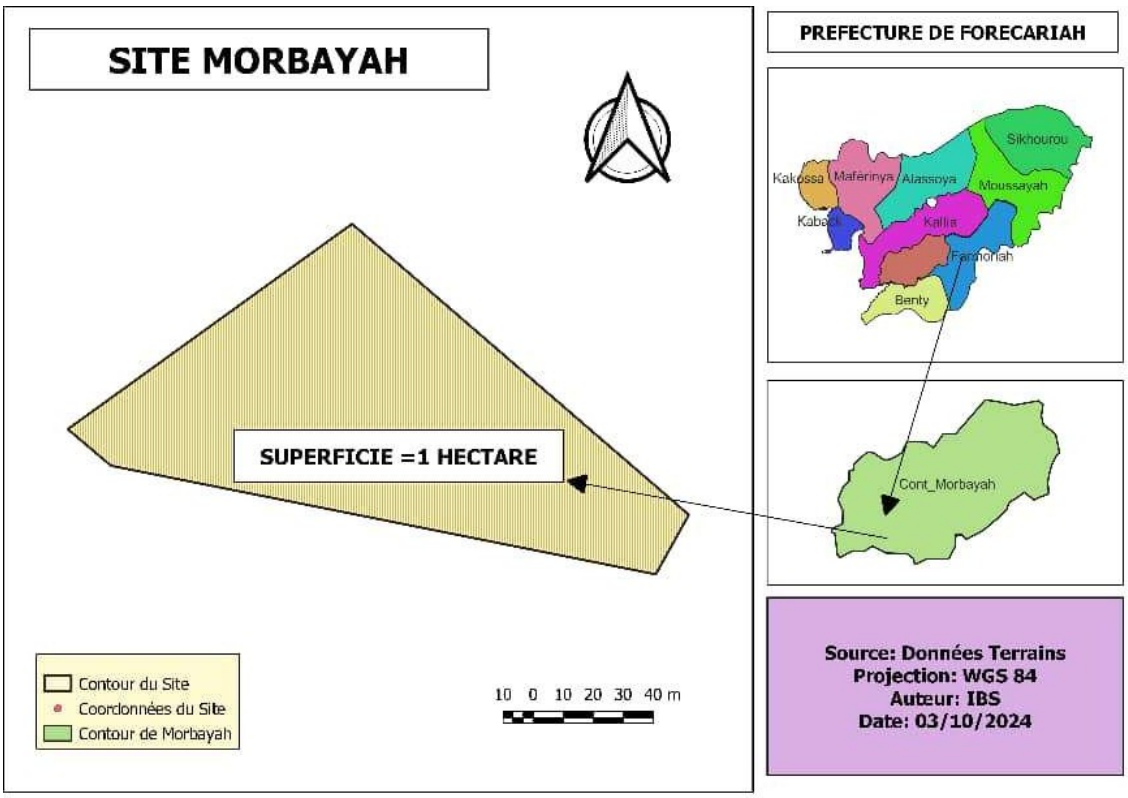
The Kindia region has significant hydro-agricultural potential, with abundant rainfall. With the existence of two (2) agronomic research centers and an agricultural extension center; the existence of major hydro-agricultural development projects; the presence of a dense hydrographic network, numerous classified and natural forests...

Restricted area of the Moribaya waste collection centre: rural commune of Moribayah

Geographical location

The rural commune of Moribayah lies between longitudes 13°15' and 14°12' West and latitudes 10°17' and 12°47' West. It is 34 km from the urban commune of Forécariah and covers an area of 500 km^2. It is bordered to the east and north by the rural commune of Wankifon (Prefecture of

Coyah), to the west by the rural commune of Kakossa, and to the south by the rural commune of Mafèrinyah.



Presentation biophysics

Relief

The relief is essentially made up of plains, plateaus and lowlands, criss-crossed by a hydrographic network.

Climate

The climate is subtropical, with two alternating seasons of equal length. The hottest months are March and April, and the coldest are November and December.

Temperature

Temperatures range from 26°C to 36°C. The hottest periods are between March and May, when temperatures can reach 37°C. The average annual temperature is 26°C.

Rainfall

Average rainfall is 2,500mm, spread over around 150 rainy days. Average relative humidity varies from 93% (wet season) to 51% (dry season).

Wind

The prevailing winds are the monsoon (hot and humid) blowing from the west and south-west, and the harmattan (hot and dry during the day, cool and dry at night) blowing from the north-east and east.

Vegetation

The vegetation is generally open forest and gallery forest, with occasional wooded, shrubby and grassy savannah. There is also gallery forest and mangrove. Characteristic trees in the area mangrove, kantinyi, acassia, kiriyomboe (golden wood), woly (timber), lengué, guava (côbè), néré, mango, dwarf palm, avocado, lemon, coconut, simmè cashew etc.

This vegetation is undergoing accelerated degradation as a result of combined effects of man (agriculture, livestock farming, carbonization)irregular rainfall and, above all, urbanization. These factors are currently leading to soil impoverishment, reduced productivity, limited land and wildlife resources, and bush fires are among the concerns of the local population.

Fauna

Wildlife resources very limited. Common species include hinds, agoutis, monkeys, rabbits, guinea fowl, vipers, monitor lizards and birds. Species such as lions, elephants, panthers, chimpanzees, buffaloes and many others are endangered due to the actions of local populations.

Flore

Giant cheese trees, nérés, léngués, Iroko, Mangrove, Palm, Coconut, Foote and many other local and exotic species here.

Hydrology

Several streams meander between the villages. These streams fertilize the lowlands and provide water for the local population. Traditional line fishing is sometimes practiced in the marigot de dan.

Soil

According to the Atlas info géographique de la Guinée maritime, CR terroirs contain two types of soil, divided between lowland and highland areas. The lowlands are made up of lowlands and plains running from northeast to south, with sandy-clay soils dominating.

In the past, these soils were home to humid or semi-humid forests, which contributed to significant organic enrichment through biomass decomposition. Today, due to the disappearance of these forests, they have become poor and generally suffer from intense leaching. The high-altitude zones are located in the north-western and south-western parts. Here, dry soils are found on cuirass or agglomerate cuirass, sometimes hardened. These outcropping or subcropping cuirasses, resting on unweathered sandstone with virtually no productive potential, but rich in bauxite (aluminum oxide), are nevertheless loose soils of colluvial origin. On the slopes, we find scree soils of armourstone favorable to the development of ligneous plants.

Socio demographic aspects

Population

The population of the rural commune of Moribayah is estimated at over 22,119, including (11,502) women. Its active population is estimated at 14,377, with a density of (33) inhabitants per Km^2. This population is growing rapidly due to urbanization and, above all, the expansion of the Maléah, Filigbé and Garayah districts.

A demographic and socio-economic analysis of the CR shows that the population is growing at an increasing rate. This phenomenon could be explained by the high birth rate and the installation of industrial and agro-pastoral units in the area.

CR territory

Occupancy

The main activities of the Moribayah population are agropastoral (farming, fishing, livestock rearing, small-scale commerce, crafts, market gardening and salt production). Some inhabitants also work in the industrial sector, notably at SODEFA and Mosma.

In the districts of Moribayah center, Filigbé, Garayah and Maléah, many people exploit gravel quarries, and practice a number of small trades: carpentry, masonry, mechanics and welding, as well as transporting and marketing local and manufactured products; raising poultry, cattle, goats and sheep; handicrafts; exploiting natural resources: wood, charcoal, sand and pharmacopoeia; education (private schools) and cultural events (folklore, soccer, dances); hunting and artisanal fishing.

An analysis of socio-economic life in Moribayah revealed that the population of the CR is essentially agropastoral. The main economic activities agriculture, fishing, livestock breeding and handicrafts.

Traditions and religions

The population of the Moribayah Rural Commune is mainly made up of Soussous, Malinkés, Peulhs, foresters, etc. Moribayah is also home to expatriates working for the government, companies, projects/programs and NGOs.
The dominant language is Soussou.

The religion practiced by the population of the Moribayah Rural Commune is Islam (98%).

Socio- Administrative organizations

Administrative organization

The administrative organization of Moribayah RC is governed by the type of decentralization and deconcentration in force in the Republic of Guinea.

The Moribayah RC has two (2) districts, although there are other densely populated sectors that could qualify for district status namely Garayah, Filigbé, Moribayah1, Moribayah2, Dinnah and Maleah, for a total of 12 sectors. It has a deconcentrated and decentralized administration and is endowed legal personality and financial autonomy. It is made up of an executive body represented by the mayor of the CR and the vice-president, and a deliberative body made up of all the councillors known as the communal council.

The deconcentrated administration is headed by a sub-prefect and his deputy, alongside which coexist the deconcentrated technical services of the State. The CR functions through a communal council, which is the deliberative body, made up of nine (9) members, including one woman.

How the commune works

The Commune Council holds (4) ordinary sessions per year and extraordinary sessions as often as possible. The Commune's financial resources are based on various taxes and fees. These resources are used for: the running of the executive office; investment (construction, equipment and renovation of certain basic community infrastructures); the CR often benefits from the support of local residents, subsidies and donations from projects, supporting NGOs and the State.

Development issues are discussed at communal sessions. Development projects are carried out using the municipality's own funds, loans or grants.

Social organizations

The CR social universe includes :

- the town council ;

- town council working committees ;
- District Council (DC) ;
- Council of Elders (CS);
- the islamic league ;
- social affairs ;
- youth delegation.

In terms of civil society organization, there are local management structures for the gender protection system, local child protection committees, etc. In addition, there are several types of farmers' organizations; groups and organizations initiated or supported by development partners and institutions (SPD, STD, Programs, NGOs and Projects); local tontine initiative organizations, service providers, income-generating activities (dyeing, saponification and other associations, etc.).

Socio-economic organization

As far as economic activities are concerned, the Moribayah population is mainly involved in farming, fishing and livestock breeding. The main crops rice, maize, cassava, fonio, potatoes, groundnuts and market garden produce. Fruit growing remains dominated by grafted mango and palm plantations. Millet, sorghum, sesame, ginger, lemon and guava other crops considered secondary in the commune, due to the small area under cultivation. Cattle, goats, sheep and poultry are also raised.

Basic social services

Education

Enormous efforts are being made by the community in terms of school infrastructure. In all district and sector capitals, there is at least one public or private school, with or without an APEAE. Some school infrastructures, even though covered with sheet metal, are for the most part of solid construction. In addition, grassroots and community-based are experiencing difficulties in managing resources (finances, premises, equipment, pupils and teachers, etc.).

Alongside these community-funded projects, there are single-classroom schools (in the Kankan and Soumaîlaya sectors) and other school infrastructures built by external partners. Taken together, these achievements still fall short of meeting the community's educational needs, and the shortage of teaching staff is exacerbating the situation. This situation should undoubtedly attract the attention of external stakeholders in terms of support for the construction, renovation and extension of school infrastructures on the one , and the strengthening of the maintenance and management capacities of the APEAEs of the said schools on the other.

The CR has four elementary school, two of which have six classrooms (E.P de Moribayah center and EP de Maléah). In sectors far from the district capital, there are so-called community schools with only one classroom. Sectors such as Dinah, Filigbé etc., although populated by school-age children, have no schools. The school success rate for the 2020-2021 session is 83%, i.e. 79 pupils admitted to grade 7. Moribayah RC has one secondary school.

Health

Medical coverage in the RC is still far from satisfactory. In relation to the population, the Maleah district and the greater Kankan sector lack health posts, even though they are located at a distance of more than 5 km each from the CR health post. This gives the advantage to merchants of out-of-date products, counter-measures, etc. Also, the lack material and equipment (for minor surgery, ambulance, beds and refrigerator, etc.) in the only existing health post.

Awareness-raising for the prevention of Sexually Transmitted Infections (STIs), malaria, the AIDS virus and vaccination against Ebola and COVID-19 is carried out regularly by community health workers and Community Relays (ReCo) set up by local authorities.

The RC has a single health post in the Moribayah center and a health post under construction in the Maleah district. Immunization of children aged 0-11 months

and from 12 to 59 months. In line with the health map, the center's health post is up and running and working to the satisfaction of population.

Traditional medicine

Traditional healers, although not involved in intra-sanitary activities, use the health center for certain illnesses and help raise awareness of sexually-transmitted diseases, COVID-19. Traditional medicine is an integral part of the culture; most illnesses are treated by traditional medicine before resorting to modern medicine. In the CR, traditional practitioners exist and work to the satisfaction of the population.

Community infrastructure and facilities

To date, the rural commune of Moribayah does not have an office for the Mairie, but a room has been made available to the new authorities by a son of the soil, pending construction of the CR headquarters. There is an administrative block in a state of disrepair for sub-prefecture office. It should also be noted that the defense and security forces, and civil servants in general, have no premises of their own. The CR lacks infrastructure accommodate missionaries. Electricity is available at the Moribayah center and in the districts and sectors along the Coyah-Forecariah national highway. The track linking the CR to the national road is also being resurfaced. There are secondary tracks linking the sectors to the districts.

Despite these difficulties, the opening of tracks (production zones) and the need to build housing for STD executives are worthy of note. For the moment, the CR has no residence for the sub-prefect, no bus station, no premises for the secretary general, no multifunctional platform, no health center, etc.

A large mosque is under construction in Moribayah, and there are mosque relays in the districts and sectors. There is no cultural center in the center.

of Moribayah and youth hostels in the districts and some large areas, there are no soccer pitches or churches in the CR.

Security

The Moribayah commune has a police station and a gendarmerie providing security residents and their property. At present, only the housing department has suitable premises provided by a local resident, but the number of officers remains insufficient.

Rural trails

The Moribayah RC as a whole faces difficulties linked to the poor condition of its road network. The insufficient opening of tracks in some places and the construction of crossing structures (small bridges and scuppers) are major problems for the CR. The track linking the Moribayah RC to the national road, although open, is in an advanced state of reprofiling.

Main socio- economic activities

Trade

The CR has a permanent market and small kiosks in the central district and in the sectors along the national highway. It should be noted that all these kiosks and market administration office are operational.

Products marketed include foodstuffs (rice, cassava, maize, peanuts, potatoes; mokè); manufactured goods, more specifically staples (maggi, canned tomatoes, vegetable oil, etc.) and imported and/or exported products (rice, oil, sugar, shoes, finery, clothing, cosmetics, etc.).

The marketing circuit for these different products involves a number of different players: from producers to warehouse collectors, from warehouse collectors to wholesalers, from wholesalers to semi-wholesalers, from semi-wholesalers to retailers and finally from retailers to consumers.

To improve revenue mobilization, it is necessary to identify all sources of income, increase kiosks by building blocks of stores, kiosks and sheds for the market, install multifunctional platforms and a cold room for preserving market produce. It is also important to encourage industrial and agricultural units to update the documents for the establishment of their units, which are signed the Moribayah RC authorities.

Transport

There is a transporters' union and a bus station that is neither equipped nor functional. Despite the influx transport vehicles and motorcycle cabs, the Commune does not effectively collect taxes linked to these sources of revenue. Making Moribayah-Mafèrinyah-Forécariah and Moribayah-Coyah-Conakry roads fluid would improve transactions.

Forestry

The creation of a Ministry of the Environment and Sustainable Development by the State, signifies a clear desire to initiate and support a policy of sound management of flora and fauna. Its existence also has a significant impact on human life and the environment.

Despite the efforts made, climatic disruptions are causing a shift in the agricultural calendar, which is usually not respected by producers. In addition to this irregular rainfall, presence of port sites, over-exploitation of forests and poor soil management have also led to low crop yields.

In fact, population growth and poor land management are the main factors behind the advanced degradation of plant cover. This degradation has led to the disappearance of certain plant and animal species.

However, the relics of forest galleries can be seen in some places, especially in areas that have remained inaccessible (mangroves). Forest degradation factors are linked to the demographic explosion, abusive logging for industrial purposes

commercial and construction activities, poor agro-pastoral practices and other economic activities (carbonization, brick-making, etc.).

Nowadays, the commune is forming secondary vegetation in places, which is constantly being exploited. A third of this vegetation is occupied by private individuals (poultry farm operators, a few industrial units and individual operators who came after opening of the commune). There are also areas of mangrove that have not been exploited due to traditional regulations. Fortunately, there are a few forests (in the Kankan and Dinah sectors).

Environment

Protecting the environment from pollution and degradation is a development priority for the government, through the MEDD. Today, efforts are being made by development partners, the State and certain people of good will to protect the environment. But despite these efforts, the environment is still under threat.

However, as part of its development policy, the Commune is planning reforestation programs. To carry out this program, the local population is calling for the installation of a forest nursery and garbage transit system, the construction of public and family latrines, and the implementation of a garbage management and collection system in all districts and sectors. will not only combat pollution, but also the contagious diseases that are ravaging the population.

Agriculture

Agriculture is the community's main activity, encompassing (80%) of the population. Agricultural products are the main foodstuffs, although only 65% of the land is farmed, with a relatively low exploitation rate. Exports are virtually non-existent, but it is essential to note a high dependency on imports, particularly for rice, vegetable oil and other basic necessities (PDL de la CR Moribayah, 2022 - 2026).

As the communities' main activity, farming is based on food crops (rice, maize, cassava, potatoes, millet, groundnuts) and vegetables (okra, eggplant, chili pepper, tomato), as well as perennial crops (pineapple, loukhouré, etc.). The means of production used include: hoe, cutter, axe, walangui, etc. After the portion reserved consumption, most of these products are marketed in order to overcome certain financial difficulties.

It should also be pointed out that the Commune has no material resources or equipment for agricultural development other than a few sprayers, hoes and ploughs. There are many plains and lowlands in the districts and sectors that have not been developed due to insufficient support (financial, material, etc.).

Breeding

Alongside agriculture, livestock is also raised for a variety of purposes. Livestock farming is both extensive and semi-intensive. Most farmers in the districts and sectors raise local poultry, goats, sheep, etc. All these animals are left to roam for long periods of the year.

The commune has great potential in livestock farming, as evidenced by the growth of poultry farms in the Moribayah area, but the development of this sector is hampered by a lack of veterinary inputs, monitoring, management, etc.

Livestock rearing is generally traditional and poses serious problems (feeding, treatment and control of animals). In addition to these problems, livestock farmers have to contend frequent cattle theft, seasonal outbreaks of certain epidemic diseases, low incomes...

Hydrography

The Moribaya RC has boreholes and wells, some which have been improved. A water supply was built by a local . These installations

although exploitable, serves as a base for supplying water to the central district. To date, there are 18 improved wells and 11 boreholes distributed between districts and sectors. These water points are managed and maintained by water point management committees. Despite the existence of these water infrastructures, the need for water felt enormously throughout Commune's sectors and districts.

The Commune is supplied with drinking water via boreholes, improved wells, traditional wells and undeveloped spring heads, as well as surface water and rainwater. Despite the depth of the wells in some places, there is water in the wells and boreholes, except in places due to the presence of underground rocks. Some wells are seasonal.

Fishing

Fishing is the second most important economic activity after agriculture. There are both individual fishermen and groups of fishermen. It is the traditional activity of people living along the inlets, and is hampered by the rudimentary nature of fishing. There are undeveloped landing stages that can be used by fishermen, fishing groups and the general population.

Opening up the Commune to the sea for shipping (Moribayah to the RCs of Kaback-Kakossa and the capital Conakry, etc.) is a vital need for the local population. It creates wealth and helps mobilize resources.

Communication

The tracks between sectors and districts are difficult to use due to their degraded condition and require the construction of crossing structures. The Maleah- Moribayah center crossroads rural track is 5km long; between Garaya- and Soumaïlaya crossroads is 3km; from Moribayah center to Dinah is 3.5km with an unprofiled crossing.

As regards telephony, there are cell phone networks (Areeba, Orange) and areas of lost networks.

As for radio, broadcasts from the Forécariah rural radio station, local radio stations (Kania zikr and Sabou, Espace Fm, Djoma fm etc.), national television, private television stations, the Internet and Canal + are all received.

The rural commune of Moribayah is navigable in all seasons. Development of the landing stage in the Dinah sector would create wealth for the local population by opening up a fishing zone. It would also enable navigation between Moribayah and the major agricultural, fishing and commercial production centers (Kaback, Kakossa, Conakry, etc.).

Crafts

These are activities practiced by both men and women, generating income for the local population. There are carpenters, bricklayers, welders, scrap metal workers and other trades such as sculptors (mortar and dugout makers), blacksmiths and so on.

The type of craftsmanship is manual and traditional, and the products manufactured are :

- Blacksmiths (hoes, cutters, knives, seals, rifles, basins, etc.);
- Carpenters (chairs, wardrobes, beds, table benches...);
- For welders (doors and gates, etc.).

These handcrafted products also help local people in their various activities (farming, fishing, housework, etc.).

Social organization

Social organizations in the locality operate on an informal basis. To remedy this, youth associations and thirteen (13) women's groups are being sensitized and trained in the process of formalizing their organizations. In addition to these social organizations, the local council's working committees are also dysfunctional.

Land

The land tenure system is relatively complex. Customary law prevails throughout the community. Registration by administration with formal deeds is less common.

One aspect of local land law is worth mentioning. This is the right of each person in the community to enjoy and cultivate an annual or biennial crop area on the plains and lowlands.

Beneficiaries are not guaranteed to return to cultivate the land in the next season. This right enables all villagers to obtain a cultivable area each year, which will be distributed by the eldest member of the family concerned, or of the founding family, depending on whether or not there are estates, and so on.

More generally, areas of community territory that are not clearly exploited by the customary are open to all for harvesting, whether for hunting or gathering (Kankan sector). Regardless of the type of right attached to a plot, the individual exploiting it is the owner of the trees and all the vegetation growing there for the duration of his contract. At the end of contract, the fruit trees revert to the owner.

To better prevent conflicts in the current situation, the CR office is responsible for controlling the registration of property deeds, in support of the prefectoral services. On the other hand, there is another entity legally responsible for controlling land-related practices: the housing department, the sector and district council. This institution is recognized by the population.

Type

The aim of the approach is achieve equitable, sustainable development that into account the concerns of both men and women. The current situation in the Moribayah RC is one of continual growth in the position of the local population.

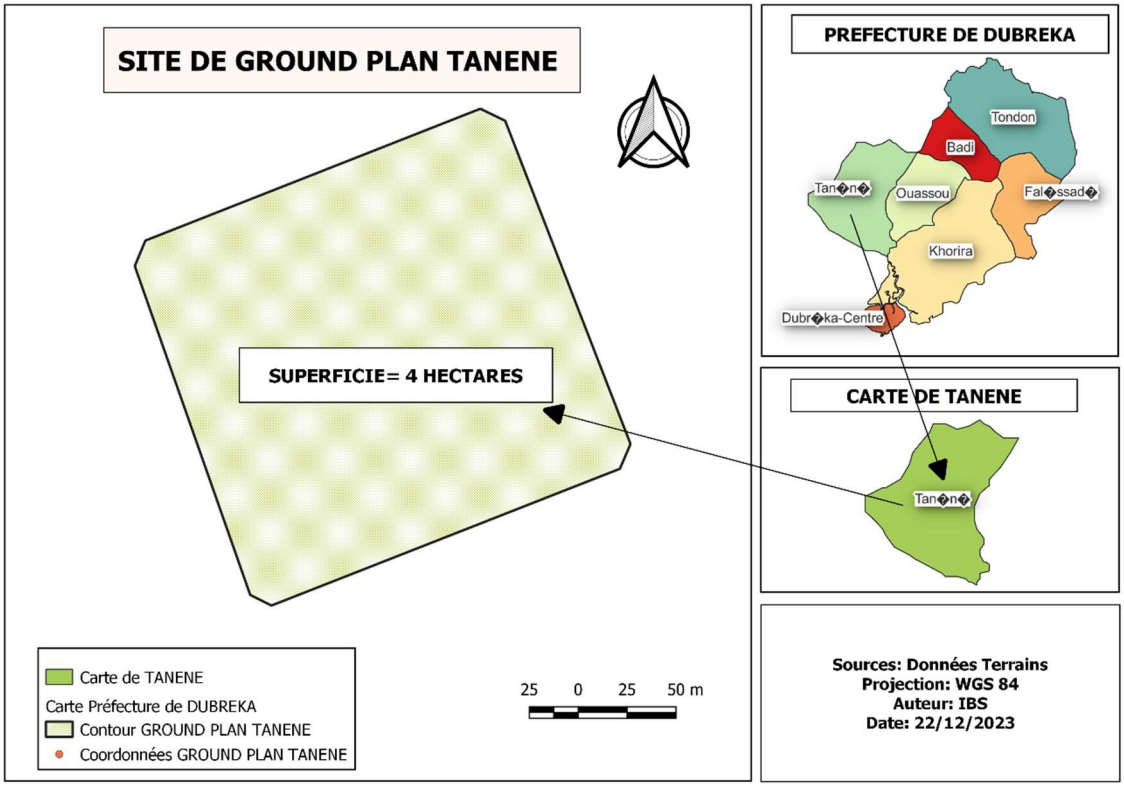
of subordination in which women find themselves despite their efforts, and the failure of many development projects and programs illustrate gender .

Restricted area of the used oil processing unit : rural commune of Tanènè

Geographical location of Tanènè CR

Since 1992, Tanènè has been a CRD (Commune Rurale de Développement), then a CR. The Tanènè RC is located 59 km from the prefectural capital, 172 km from the regional capital and 101 km from the capital Conakry, and is one of six (6) RCs in the Dubréka prefecture. It is bordered to the east by the Ouassou RC, to the west by the Tamita RC (Boffa prefecture), to the south by the Koba RC (Boffa prefecture) and to the north by the Tormelin RC (Fria prefecture).

Due to its geographical location, the Tanènè Bouramaya RC is at the crossroads of the Fria, Boffa, Boké and Conakry, Dubréka prefectures, it a privileged zone for economic activities.



Climate

The Tanènè RC has a sub-Guinean climate characterized two alternating seasons with a regular pattern:

- a dry season from December to April;
- a rainy season from May to December.

It is characterized by a temperature of 37°C in January and the heat of March, April and May of 28°C in the other months.

With a period of cold from December to January and heat from March to May.

The prevailing winds are :

- the monsoon that blows from January to February;
- the harmatant that blows in december ;
- the May-June tornado.

Relief

It is made up of low hills on the coast and alluvial plateaus and plains, ideal for flooded rice cultivation. This relief is divided into four zones:

- the mountainous area (Sanawalya district) where the Dixinn mountain range extends into the Fria prefecture;
- the Kéréba zone, synonymous with savannah, covering the districts of Konfoya, Kanagban, Dembaya, Samaya and Yéniya;
- the Fassa zone, which covers the districts of Kondéya kénéndé Lory, Soubétidé and Tanènè center;
- The Fotonta zone, a forest area covering the districts of Filaya, Soguiya and Kaléta Fotonta.

Vegetation

It is made up of shrub savannah and mangrove, rich in forest species used for timber and firewood. Forest species include sougué, siaréwoli, léngué and mangrove....

Hydrography

Tanènè CR is watered by the Konkouré river and several streams: Douguikha, Conta, Drabo.

Population

The Tanènè Bouramaya RC, which is essentially agro-pastoral and youth-oriented, covers an area of 2,372 km², with a total population of 48,069 inhabitants, including 25,118 women, divided between nineteen (19) districts and seventy-six (76) sectors, and a population density of 18 inhabitants/km².

Occupancy

The main economic activities agriculture, livestock (small ruminants and poultry), artisanal sand mining and transport. Apart from farming and livestock breeding, a large part of the population earns its living from small-scale trade, handicrafts and artisanal fishing. There are also bricklayers

blacksmiths, bakers, hunters, charcoal burners, drivers, basket makers, tailors...

Tradition and religion

The rural commune of Tanènè is home to all the ethnic components of Guinea (Sousou, Peulhs, Kissiens, Malinkés, Tomas, Guerzés, Diakankés), each freely expressing their rich and varied culture through traditional ceremonial dances. Popular dances include yankadi, soli and manè.

Ceremony announcements are always accompanied by cola nuts. Announcements of major events such as religious festivals and hymns are made with tabalas, but these practices are disappearing. Islam (98%) and Christianity (2%) are the religions practiced, and there are fifty-five (55) mosques and two (2) churches (PDL de la CR de Tanènè, 2016- 2020).

Socio-economic organization

In terms of economic organization, there are three (3) unions and eighteen approved groups, whose main activities are rice growing, market gardening and livestock breeding. During the growing season, these various structures are organized into "kilé" or "séré" to speed up work. There is also a transporters' union and youth associations in almost every nineteen (19) district.

The CR of Tanènè is one of the six (6) most densely populated rural communes in the Dubréka prefecture, due to its economic activities and demographic position.

Education

All districts have full-cycle elementary school, in good condition in places, and this asset is reinforced by the presence of a high school and 6 local secondary schools. The shortage of teachers and the low school enrolment rate, especially among young people girls (20%) constitutes a real problem affecting

literacy. There is also the dropout rate for early marriage and household and field work among girls (15%) (PDL de la CR de Tanènè, 2016 - 2020).

Health

The Tanènè RC has only two improved health centers, at Kondéya and Samaya, with a level of equipment that the population is less than satisfied with. The existing health posts are less well-equipped and do not have enough staff in terms of quality and quantity.

Communication

The situation remains that the four (4) metal bridges are in a state of disrepair and certain production areas are isolated. In winter, all villages are inaccessible due to the extensive deterioration of the bridges. The areeba and orange cell phone operators the Tanènè localities have enabled us to cover the entire territory of the CR.

Socio-economic situation

Socio-economic activity in the CR is characterized by rice growing, palm oil extraction, market gardening, fishing, livestock breeding and small-scale trading. These activities are generally carried out by the various social strata of the population. Products are sold locally and in certain markets in the capital Conakry.

We also note the presence of craftsmen and small tradesmen: basket makers, blacksmiths, welders, carpenters, masons, tailors, joiners and mechanics...

Agriculture

The agricultural potential of the Tanènè CR is very significant, but remains insufficiently developed due to a lack of estate development and farm machinery. Agriculture accounts for over 80% of the workforce (PDL de la CR de Tanènè, 2016 - 2020).

Breeding

The most important species are cattle, sheep, goats and poultry, which are raised on all the concessions of the nineteen (19) private poultry farms.

Artisanal fishing

The artisanal fishing sector plays an important role in the CR's economy, particularly in terms of food security, job creation and income generation. Artisanal fishing takes place in the inlets of the Atlantic Ocean and the Konkouré River.

The sector's difficulties include

- illegal fishing ;
- poor management of fishery resources;
- lack of fishing gear and equipment;
- landlocked landing stages;
- unsanitary landing stages;
- the lack of landing facilities;
- the lack of cold storage facilities for fish products.

Crafts and small shops

The Tanènè RC basket-makers, blacksmiths, fishermen, welders, carpenters, masons, tailors, joiners and mechanics - in short, all the trades. Handicrafts face difficulties such as: scarcity of raw materials; lack of financial support; very low value-added of handicraft products.

Trade

Three weekly markets operate in the districts of Tanènè center 1, Koporowa, Kaléta, Fotonta and Konfonya. They are supplied with local products (local rice, fonio, maize, peanuts, tubers, tomatoes, okra, chillies, eggplants, lettuce, etc.) and imported products (rice, canned goods, building materials, etc.).

Environment

Vegetation cover in rural commune of Tanènè has improved thanks to the support of the government, which has reforested sixty hectares (60 ha) of fast-growing species in fifteen (15) districts. Nowadays, in certain localities of the CR, animal and plant species are gradually disappearing due to anthropic effects. The lack of public latrines and the poor management of household waste in the communities have a negative impact on public hygiene.

GENERAL CONSIDERATION OF CLIMATE CHANGE IN CEGEDI'S AREAS OF ACTIVITY

Climate change

The main environmental constraints in the Tanènè and Moribaya RCs inappropriate agricultural practices, abusive and uncontrolled exploitation of forest and wildlife resources, bush fires, extreme poverty, climate variability and change.

The main climatic disturbances identified reduced rainfall, recurrent drought and disruption of the rainfall regime. This is at the root of the drying up of watercourses, drying up of soils, destruction of plant cover, the drop in agricultural production and the resurgence of water-borne diseases.

Vulnerability and change

Analysis of meteorological rainfall data for the prefectures of Forécariah and Dubréka (1980 to 2011) shows an almost constant decline in average rainfall and an increase in average temperature.

Rising temperatures are accompanied by changes in the distribution and volume of precipitation. This drop in precipitation will have major impacts on water resources (surface and groundwater) and the region's main socio-economic sectors, as well as on the RCs. Rising surface temperatures will submerge low-lying areas, leading to the disappearance or migration of animal species, shortage of drinking water, loss of farmland and crops, social conflicts and the proliferation of disease.

The advancing drought has led to the drying up of land, the degradation of spring heads, the drying up of small streams, the silting up of river beds, the loss of livestock, the resurgence of bush fires, population migration, famine, the proliferation of water-borne diseases, etc. In addition to these consequences, there is the disruption of rainfall patterns (which disrupts the agricultural calendar, leading to loss of crops and income, disruption of river systems, etc.) and stormy rains (which cause loss of property, uprooting of trees, landslides, etc.).

Integrating the effects of climate change

Taking into account the effects of climate change has been based on important facts observed on the ground in the fight for survival. The priority activities identified deal with issues such as desertification and climate change.

Ecosystems and their resources are affected by a generalized process of degradation attributable mainly to anthropogenic factors and climate variability/change. The degradation of forest ecosystems in

The Tanènè and Moribaya RC is particularly noticeable in agricultural areas and around built-up areas. Forests are drying out and regressing. This regression is reducing the habitat for animal species, exposing soils and greatly reducing water resources.

Extensive livestock farming using renewal fires and logging have led to considerable degradation of the land. Bushfires are a major annual cause of devastation and degradation of forest resources in the RCs. These fires are generally of anthropogenic origin (hunting, agriculture, livestock rearing, beekeeping, etc.).

Another no less important factor of degradation is the manufacture of baked bricks and carbonization, which is generally practised on the banks of watercourses, using large quantities of green wood. It is practised throughout the RC sectors and districts.

Effects of climate change and vulnerability of resources and socio-economic groups

Current climate hazards that threaten livelihoods can be described in terms of their range of consequences, duration and frequency of occurrence. Trends in risk frequency and severity should also be noted.

Analysis of vulnerability and adaptation to climate change shows that declining rainfall, rising temperatures, population growth and extreme poverty make resources and socio-economic groups highly vulnerable to climate change. The droughts observed have strongly influenced the hydrological regime of rivers.

POLITICAL, LEGAL AND INSTITUTIONAL FRAMEWORK

policy framework

National Environmental Policy

The country's environmental situation is characterized by the ongoing degradation of natural resources (deforestation, soil erosion and degradation, pollution and nuisances, drying-up and silting-up of waterways, loss of biodiversity, uncontrolled urbanization, mining, etc.), fostered and accelerated by the virtual absence of control mechanisms and the very sharp impoverishment of the population in recent years.

Unfortunately, the country has only limited capacity to deal with them. Since 1986, the Guinean authorities have become increasingly aware of the need to plan and implement a strategy for the rational exploitation of natural resources and environmental protection, with a view to the country's sustainable development. To this end, the government has adopted a code for the protection and enhancement of the environment, a National Environmental Action Plan (PNAE), sectoral policies, strategies and action , as well as several other legislative and regulatory texts.

However, importance of the environment is such that it is now necessary to ensure the implementation of a global environmental policy. Hence the need for Decree D/2013/028/PRG/SGG approving the national environmental policy dated February 08, 2013.

Ordinance No. 079/PRG/SGG/86 on territorial reorganization and institutionalization of local authorities, and Ordinance No. 091/PRG/SGG/90 on the financial and fiscal regime of rural development communities (CRDs), set out the direction of decentralization, the powers and means of action, and the bodies and administration of local authorities in Guinea.

For CEGEDI, this policy is one of the requirements for the emergence of these industrial and domestic waste management and recovery activities.

National Environmental Action

The National Environmental Action Plan (PNAE) was adopted by the Council of Ministers on September 24, 1994. It constitutes the national Agenda 21 and the basis for environmental policy. It occupies a pivotal position with the sectoral strategies that have an impact on natural resource management, and is anchored in all previous sectoral strategies, notably the National Forestry Action Plan (PAFN), the Mangrove Management Scheme (SDAM) and the 1991 Agricultural Development Policy Letter.

The fundamental principle underlying the PNAE is the integration of the environmental dimension into Guinea's economic and social development policies, with two main objectives: the rational and sustainable management of natural resources, and the definition or reinforcement of sectoral policies. In fact, the practical implementation of each of the NEAP programs is the responsibility of several ministerial departments, which are more concerned with implementing the sectoral strategies drawn up within them than with those relating to the NEAP programs.

The spirit of this policy is part of the CEGEDI logic, and is one of the aims of this ESMP.

Biological Diversity Strategy and Action

In September 2001, the Guinean government adopted its National Strategy for the Conservation of Biological Diversity and the Sustainable Use of its Resources, together with its Action Plan up to 2015. The main activity consisted in drawing up the national monograph, which took stock of documentary knowledge of biological diversity.

The objectives of the Strategy and Action Plan are conservation, sustainable use, general measures for the conservation and sustainable use of biological diversity, and strengthening international cooperation. However, funding for the implementation of the Strategy and Action Plan from donors has not been sufficient. Despite this, Guinea has also prepared a National Biosafety Framework and has a National Biodiversity Clearing House.

National Water Resources Management Policy and Strategy

The diagnosis that led to the drafting of this policy revealed that the main problems relating to the management and development of water resources are as follows:

- Insufficient knowledge of all water components (atmospheric water, continental and marine surface water, groundwater and deep water);
- inadequate and, in some places, lacking hydro-ecological monitoring systems for national and shared river basins;
- silting up and silting up of riverbeds in certain stretches of rivers, lakes and ponds;
- localized pollution caused by industrial, agricultural and/or craft activities;
- insufficient intervention capacity of services and organizations in charge of water resource management in particular, and environmental management in general, especially at the decentralized territorial level.

The policy and strategy are set out in the Lettre de Politique sectorielle de l'Eau et de l'Assainissement, prepared with funding from the World Bank. It was jointly approved on August 16, 1996 by the Ministers Agriculture, Water and Forests, Natural Resources and Energy, and Urban Planning and Housing. It stipulates, among other things, that water, as a source of life, has always been a priority concern for the Government of Guinea in its social and economic development policy, both in towns and peri-urban agglomerations and in rural areas.

The rural and urban sanitation component of this policy remains essential for the implementation and development of this project. For this project concerns waste management in all its possible value chains.

National Industrial Development Policy (PNDI 2022)

This new policy, launched on September 14, 2022, is an 84-page document designed to give impetus to the creation of a high-performance, competitive industrial fabric capable of generating jobs and contributing to the country's economic growth. The policy aims, on the one hand, to take better account of the specific nature and vulnerability of the industrial sector in Guinea; to develop technology transfer; to support institutes, universities and research centers in the development of the country's industrial sector; and, the other hand, to promote sustainable, equitable and transnational relations through win-win partnership agreements. This policy is in line with the objectives of CEGEDI's waste management and recovery project.

National Sustainable Development Strategy

Guinea has ratified a good number of international conventions on environmental protection, and has adopted the African Union's Agenda 2063 and the United Nations' Agenda 2030, targeting 17 Sustainable Development Goals (SDGs) to be achieved by the entire international community.

During the consultation workshops, this vision was translated into a number of orientations that were identified as necessary for the country's sustainable development:

foster inclusive and equitable social cohesion, improve the quality of life of Guineans, improve governance, improve the management and development of natural resources, and promote a common culture of sustainable development through information, education and communication.

The national sustainable development policy is based on seven (7) strategic axes: promoting good governance; promoting human development and access to basic social services; sustainable, modern and environmentally-friendly agriculture; rationally managing natural resources and strengthening biodiversity conservation; achieving energy transition through the development of clean energies; promoting a culture of peace, social cohesion, cultural diversity and sustainable development; promoting gender, equity, training and green jobs for young people.

This policy is actually a preoccupation for CEGEDI in its strategy of waste management through collection, treatment, recovery or disposal.

National Action Program to Combat Desertification (PAN/LCD) Adopted in June 2006, the PAN/LCD aims to simultaneously promote actions to combat desertification and activities, a view to combating poverty and contributing to food security. In addition, the PAN/LCD is structured around the following main areas of action: (i) safeguarding the ecosystems of the Fouta Djallon massif and its physical extensions; (ii) combating poverty; (iii) rational and integrated management of natural resources; (iv) decentralization and effective participation of stakeholders at grassroots level; (v) partnership between stakeholders. The program scale chosen is the natural region, in the sense that it represents a relatively homogeneous ecological unit capable of facilitating the implementation of the planned actions. In this respect, it remains the most relevant scale for environmental planning.

National Strategy on Climate Change (SNCC)

The overall objective of the strategy is to strengthen Guinea's adaptive capacity in order to increase resilience to climate change and mitigation opportunities towards low-carbon sustainable development.

carbon. The SNCC is based on 9 strategic axes that contribute achieving this objective. CEGEDI will take account of these policy guidelines.

National Disaster Management Plan (PNGC)

This plan, drawn up in 1994, aims to promote inter-sectoral relations, boost cooperation between the government and donors, and determine responsibilities in disaster management. The plan makes it possible to develop all the tools needed for disaster management in terms of preparedness, response and rehabilitation. More specifically, it will (i) identify potential risks and describe their effects on people and property; (ii) define the roles and responsibilities of emergency services, state services, support organizations, international institutions, NGOs and community organizations; (iii) prescribe and implement warning system for the public. The project will take into account the objectives of this plan.

Public health policy

The vision of the new health policy is a Guinea where all populations are healthy, economically and socially productive, with universal access to quality health care and services and full participation. It is inspired by the vision set out in the Poverty Reduction Strategy, which has the long-term ambition establishing an efficient, accessible and equitable healthcare system capable satisfying the right to health of all, particularly the most vulnerable. In this context, the project should contribute to improving the well-being of the Guinean population.

National Public Hygiene Policy (PNHP)

Formulated in 2010, the PNHP focuses on reducing the prevalence of diseases linked to poor hygiene, via a national health development plan PNDS 2015-2024, which aims to combat a national epidemiological profile dominated by (i) communicable diseases such as tuberculosis and STI/HIV, AIDS, COVID 19 (ii) tropical diseases with epidemic potential, such as malaria and certain hemorrhagic fevers, (iii) non-communicable diseases, (iv) nutritional imbalances, (v) pathologies linked to pregnancy and childbirth... and based on (i) strengthening the

prevention and management of illnesses and emergencies, promoting the health of mothers, children, adolescents and the elderly, and strengthening the national health system.

To safeguard the health of its employees and of the communities living near the two sites, CEGEDI SA will comply with the fight against the national epidemiological profile by organizing awareness campaigns on STI/HIV/AIDS, malaria and COVID 19. The health measures to be taken will be important for workers and neighboring communities, as the project could attract foreign workers. From this point of , there is consistency between the implementation of project activities and the national public hygiene policy as regards hygiene and public health measures.

Land policy

The Declaration of Land Policy in rural areas was adopted Decree no. D/2001/037/PRG/SGG of May 17, 2001. It does not replace the Code Foncier et Domanial, but sets out the strategic orientations that the legal framework must take into account. It constitutes the strategic legal framework for land management in rural areas. Through this policy, the government aims to promote land tenure security by providing appropriate responses to previously identified areas of insecurity.

The Land Policy focuses on two main tools for securing land tenure: the gradual formalization of transactions and other agreements concerning land in rural areas; and institution and strengthening of village and inter-village negotiation and conciliation mechanisms.

With regard to expropriation, it states that no one may be expropriated except for the benefit of the more general public interest, and only if the expropriation is first accompanied by fair compensation.

Since 1999, the Republic of Guinea has had a Code Foncier et Domanial (law L/99/013/AN), the aim of which is to improve land tenure security for the population.

Guineans and foreigners. The Code forms the legal basis for the administration and management of both private and public land. It provides regulatory support for the definition of property rights and the qualification of owners. It defines the framework for infringements of property rights, thereby helping to reduce the legal risk of ownership. Finally, it deals more specifically with questions of public ownership and land registration.

Tanènè waste processing unit is , and is located in an industrial zone. The Moribaya waste collection center, on the other hand, is owned by CEGEDI, according to the relevant documents, notably the land title deed.

National Gender Policy (PNG)

Established in January 2011, overall aim of the National Gender Policy (PNG) is to promote the participatory and equitable development of men and women (by ensuring equal and equitable access to and control over resources and decision-making spheres), while respecting their fundamental rights.

In line with the objectives and principles of the PNG, CEGEDI must, as far as possible, integrate actions in favor of the advancement of women and people living with disabilities by striving, as far as possible, to respect gender equality in the recruitment of labor and by building infrastructures adapted to people with disabilities.

Energy Sector Development Policy Letter (LPDSE)

The general policy statement of the energy sector development policy letter DPG/LPDSE 2021 expresses the Guinean government's fundamental orientations in terms of energy development, and has the following main objectives: (i) to clarify the government's choices and commitments in terms of energy development, making clear the objectives, stages and means with the necessary coherence, both between different components of the energy sector development strategy, and between the energy sector as a whole and the development strategy.

(ii) involve all the national players concerned, to ensure that they participate in and adhere to the chosen policy, in knowledge of the benefits it will generate as well as the costs it will entail; the main aim of this involvement is to overcome a number of cross-cutting constraints that have weighed in the past on the implementation of strategies and policies decided upon as early as 1992; (iii) to ensure the necessary coordination with development partners involved in supporting the development of the energy sector in Guinea, so that the partnership is implemented on a clear basis, setting out the roles and expectations of all parties involved; (iv) affirm the Guinean government's commitment alongside the countries of the sub-region in the new framework hydroelectric resource development and interconnection initiatives, whose promising assets can open up a new era in the region's energy development, as well as in the institutional reform of the power sector; (v) initiate institutional reform of the sector in such a way as to ensure the necessary coherence with development objectives and implementation strategy.

CRGEDI will have to take this policy into account to meet the energy needs of its industrial and domestic waste management project at its Tanènè and Moribaya facilities.

legal framework

Two (2) types of legal instrument have been taken into account in the ESMP for CEGEDI's industrial and non-hazardous waste management and recovery project in the rural communes of Tanènè and Moribaya. These are national legal texts and multilateral agreements on the environment and natural resources.

Guinea's legal and regulatory framework in this area

At the national level, several legal, legislative and regulatory texts relate to this project, the most relevant of which are:

- Guinean Transition Charter of September 27, 2021;
- Environment Code ;

- Industry code ;
- Code de travail ;
- Mining code ;
- Water Code ;
- Public Health Code.

Guinean Transition Charter of September 27, 2021

The Guinean Transition Charter does not explicitly mention environmental protection. However, it does recognize fundamental rights and freedoms, as well as access to well-paid employment. The project to set up cold emulsion manufacturing unit must respect this Charter in its preparation and implementation phases, by contributing to the creation and sharing of wealth and by helping to improve the living environment of the population.

Environment Code

Decree **No. 221/PRG/SGG/2019** promulgating **Law L/2019/0034/AN** of July 04, 2019 on the Environmental Code of the Republic of Guinea, which came force on July 26, 2019, aims establish the fundamental principles intended to promote sustainable development, manage and protect environment and natural capital against all forms of degradation (Article 1er).

CEGEDI's industrial waste management, recovery and processing project must comply with this code and other legal and regulatory instruments in force.

Environmental and social impact assessment

Article 28 of this code stipulates that any development or operation project likely to harm the environment is subject to a prior environmental and social impact assessment.

Soil and subsoil

Article 41 stipulates that the soil and subsoil and the wealth they contain are to be protected, as limited resources whether renewable or not, against all forms of degradation and managed in a sustainable and rational manner. The measures provided for by

the texts in force to ensure the preservation of soils erosion can be declared to be in the public interest and imposed on any landowner or occupier.

Article 42 completes the management of land assets by promoting the rational and sustainable use of soil to combat desertification, erosion, loss of arable land and the use of chemical products.

This requirement applies to CEGEDI's entire waste management and recovery chain.

Air and atmosphere: obligations

The preservation of air quality and the atmosphere is the responsibility of the State. Any natural or legal person owning, operating or using industrial or commercial establishments, vehicles or any other object, must comply with current technical standards relating to air emissions (Article 65).

Air and atmosphere: prescriptions

Article 66 of the current Environment Code prohibits the direct or indirect emission or release into air of soot, dust, toxic, corrosive or radioactive gases, or any other chemical substances likely to generate air pollution in excess of regulatory limits.

The Ministry of the Environment draws up a list of substances, fumes, dusts, vapors, gases or liquids and, in general, of all materials whose release into the atmosphere is prohibited or subject to prior authorization, and revises it as necessary.

In the same vein, article 68 stipulates that when persons responsible for polluting emissions into the atmosphere in excess of the standards set by the authorities have not taken steps to comply with the regulations, the environmental department will send them a formal notice to this end.

Industrial and technological disaster risks

Synthesizing articles 96 and 97, it can be seen that the operator of any classified facility is required to draw up an Internal Operation Plan (POI) to prevent all industrial, energy, radiological and nuclear risks, as well as atmospheric, telluric and marine pollution. Every operator of a classified facility is required to set up a first-response system in the event of a disaster.

Waste

Article 103 (of Law L/2019/0034/AN of July 04, 2019) stipulates that all waste, whatever nature, must be collected, treated and disposed of in an environmentally friendly manner in order to prevent, eliminate or reduce its harmful effects on human health, natural resources, fauna, flora and the quality of the environment.

This provision applies without prejudice to the special provisions concerning classified facilities and establishments, solid waste, wastewater, gaseous effluents, shipwrecks and discharges or dumping from ships, instituted in the present code and the regulations in force.

Noise and vibration pollution

Noise emissions likely to be harmful to human health, constitute an excessive nuisance for neighbors or harm the environment are prohibited (Article 134). Persons responsible for such nuisances must take all necessary steps to eliminate or reduce them. When justified by the urgency of the situation, the Ministry in charge of the environment will take all necessary measures to put an end to the nuisance.

Energy efficiency

According to article 145, the State promotes the use of energy efficiency techniques in order to combat all forms of energy waste by reducing to a minimum, in an economically efficient manner, any impact harmful to the environment by energy cycle operations, while ensuring compliance with safety standards. State, local authorities and private sector companies

take environmental considerations into account when formulating and implementing their energy policy.

Renewable energies

Continuing in the same vein, articles 146 and 147 respectively stipulate that any natural or legal person owning, operating or holding buildings or industrial or commercial establishments must promote the use of renewable energies.

Transitional provisions

Articles 209 and 210 are based on the provision that, "within a maximum period of two years, starting from the updating of the National Environmental Action Plan (PNAE), the global, sectoral and local public policies in force are brought into line with the orientations and objectives defined by the latter". Classified facilities currently in operation have two years to comply with the norms and standards set out in the present code and its implementing texts.

Classified facilities

Decree D 200/PRG/SGG/89 of November 8, 1989 on the legal status of "Classified Installations for Environmental Protection" sets out the administrative and financial provisions applicable to classified installations.

Classified facilities are installations which, because of the nature of their activities or the actual volume of the activities undertaken, require special authorization under Guinean environmental legislation. Decree 03/8003/PRG/SGG of October 21, 1993, setting out the technical nomenclature for facilities classified for environmental protection, sets thresholds for each industrial activity, reflecting the level of potential damage arising from the activity, and above various obligations apply. Industrial sites are classified as either Class I or Class II sites, depending on the level of damage caused to the environment.

These texts apply to the CEGEDI waste management, treatment and recovery project in the rural communes of Tanènè and Moribaya.

Land and property code

The Code Foncier et Domanial promulgated by Ordinance O/92/019 of March 30, 1992, constitutes the legal basis for the administration of both private and public land in the Republic of Guinea. The acquisition of land is necessary for the construction of the cold emulsion manufacturing unit. To this end, CEGEDI must comply with the provisions of the land and property code.

Water code

Law L/94/005/CTRN of February 14, 1994 on the Water Code in the Republic of Guinea, regulates the rational management of the country's water resources, with the watershed or group of watersheds defined as the basic unit. It deals with the legal regime of water resources, the right of use and the order of priority, the uses of water resources, groundwater, the prevention of the harmful effects of water, hydraulic works and developments, the protection of water quality, protection zones and protected regions, the planning and administration of water resources, financing and pricing, the hydraulic fund, and international waters.

In this case, the installation of the cold emulsion production unit is likely to have an impact on both surface water and groundwater. CEGEDI must therefore comply with the provisions set out in this code.

Forestry code

Ordinary Law L2017/060/AN of December 12, 2017 on the Forestry Code of the Republic of Guinea and its implementing texts, deal water and soil in connection with forest and wildlife resources. The installation of an emulsion manufacturing unit may affect forest areas. Deforestation may occur in the project's borrow area. In such cases, CEGEDI must comply with this code.

Mining code

Law L/2011/006/CNT of September 09, 2011 on the mining code of the Republic of Guinea, amended by law L/2013/053/CNT of April 08, 2013, amending certain provisions of the mining code, aims to regulate the mining sector in order to promote investment and ensure better knowledge of the soil and subsoil of the Republic of Guinea (article 2).

Construction and Housing

The purpose of Law L/2015/020/AN on the Construction and Housing Code in the Republic of Guinea is to organize, regulate and promote investment, production, operation and management activities in the construction and housing sectors throughout the country. CEGEDI SA must strictly comply with the provisions of this code during redevelopment work on its sites.

Public Health Code

Law L/97/021/AN of June 19, 1997 on the Public Health Code is the cornerstone of Guinean legislation for the protection and promotion of public health, and covers many aspects relevant to the project, including provisions on drinking water for human consumption and water pollution, domestic and industrial wastewater disposal, and waste treatment.

Industrial wastewater discharge

Articles 48, 49 and 50 of the French Public Health Code prohibit the discharge of industrial wastewater: "Any discharge of raw industrial wastewater into the sea, watercourses, ponds, lakes, gutters or public sewers is strictly prohibited. Before any discharge, industrial wastewater must undergo one or more treatments in accordance with current regulations". If discharge is required, article 50 specifies that "before any discharge, treated wastewater must meet physical, chemical and bacteriological quality criteria guaranteeing the equilibrium of the receiving environment".

Toxic industrial waste

Article 52 stipulates that toxic industrial waste must be disposed of in accordance with regulations. And article 54 states: "Any untreated waste dump of any kind whatsoever is strictly prohibited".

Labour code

The Labor Code, instituted by Ordinance No. 003/PRG/SGG/88 of January 28, 1988 and amended Ordinances 91/002/PRG/SGG and 91/026/PRG/SGG of February 8 and March 11, 1991, is the main source of legislation governing employment practices and labor relations in Guinea. provisions of this law are applicable to individual and collective relations between workers and employers exercising their professional activity in the mixed and private sectors in the Republic of Guinea.

To this end, CEGEDI SA must comply with rules governing recruitment and termination of employment, as well as working conditions incorporating employee health and safety. CEGEDI must also encourage the creation of employers' unions and trade unions, with rules applicable to the settlement of disputes and collective agreements.

Occupational health and safety

All company managers are required to organize appropriate practical training occupational health and safety for new recruits, for those changing workstations or techniques, and for those returning to work after a leave of more than six months. This training must be updated for the benefit of all personnel in the event of changes in legislation or regulations (Article 231.6).

Article 232.1 of the present code stipulates that all companies must provide occupational medical services for all employees. Candidates selected employment must undergo a medical examination at the latest before the trial period expires. Employees must a medical examination at least once a year to ensure that they are

the employee's good health and continued fitness for the job. These examinations must be carried out by CEGEDI's occupational health services or the national occupational medicine service.

Local government code

The purpose of Law L/2016/AN adopting and promulgating the Local Authorities Code and its implementing regulations is to determine the rules governing the organization of local authority structures, their powers and their operating procedures, in accordance with the procedures of participatory democracy, with a view to achieving decentralization and comprehensive, fair and sustainable development within the framework of the unity of the State.

This code defines local authorities as all urban communes and rural development communities. Local authorities have their own assets, property and financial resources, which they manage through programs and budgets; they are subject to rights and obligations. All these elements are distinct from the assets, resources, programs, budgets, rights and obligations of the State.

CEGEDI's industrial and domestic waste management project will have to comply with the requirements set out in the local authority code.

Pastoral code

This pastoral code, according to Law L/95/51/CTRN of August 29, 1995, lays down the legal principles for organizing the exploitation of natural resources livestock purposes, and for guaranteeing pastoral use rights. In the case of project, there is a risk of domestic and livestock animals in neighboring communities being affected by vehicular traffic during waste transport. The CEGEDI authorities must therefore take this requirement into account.

Social Security Code

Law L/94/006/CTRN of February 14, 1994, establishing the Social Security Code, sets out the general terms and conditions for the implementation of the Social Security Code in the Republic of Korea.

Guinea, of the principles governing social security. The purpose of social security is, in particular, provide salaried workers and their families with protection against economic and social hardship resulting from the loss or substantial reduction of their assets, as provided for in Article 2.

As part of this project, CEGEDI and its subcontractors must treat their employees in accordance with the principles defined in this law throughout all phases of the project.

International conventions and agreements

Basel Convention

This convention concerns the control of transboundary movements of hazardous wastes and their disposal. The convention was adopted in Basel, Switzerland, on March 22, 1989, and was acceded to by Guinea in 1995.

Bamako Convention

The Bamako Convention deals with the import ban hazardous waste for African countries, the control of transboundary shipments and the management of such waste within African countries. This convention was negotiated and signed by the states of the African Union in Bamako in 1991.

Stockholm Convention

The Stockholm Convention, ratified by Guinea on May 22, 2002, aims to protect human health and the environment from POPs. The Convention applies to twelve (12) Persistent Organic Pollutants (POPs) that possess toxic properties, resist degradation, accumulate in living organisms and are transported air, water and migratory species across international boundaries and deposited far from their site of origin, where they accumulate in terrestrial and aquatic ecosystems.

Rotterdam Convention (2000)

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Chemicals and Pesticides

Hazardous Chemicals in International Trade (2000), aims to encourage shared responsibility and cooperation between parties in the international trade of certain hazardous chemicals, in order to protect human health and the environment from potential harm and to contribute to the environmentally sound use of these products by facilitating the exchange of information on their characteristics, by establishing a national decision-making process applicable to their import and export, and by ensuring the communication of these decisions to parties.

This Convention applies to banned or severely restricted chemicals and severely hazardous pesticide formulations. It was ratified on September 7, 2000 and acceded to on February 24, 2004 by Guinea.

Convention to Combat Desertification

This convention, to which Guinea acceded in 1997, combats desertification and mitigates the effects of drought in countries seriously affected by drought and/or desertification, particularly in Africa.

United Nations Framework Convention on Climate Change

This convention came into force on March 21, 1884, and was ratified by Guinea in 1993. It sets out a series of commitments designed to promote the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. It calls for the use of appropriate methods, such as impact studies, to reduce the effects of measures to mitigate climate change.

It is in this context that CEGEDI has requested the implementation of this ESMP, with a view to mitigating and minimizing the potential impacts and risks associated with its activities in the management and recovery of industrial waste (ordinary and hazardous), domestic waste and electronic waste.

CITES Convention, Washington 1973

Its aim is to ensure that no wild species, animal or plant, becomes or remains subject to unsustainable exploitation as a result of international trade. It provides a legal framework and procedural mechanisms to regulate international trade in species of wild fauna and flora to ensure that it does not contribute to their decline in their natural habitat.

Montreal Protocol on Substances that Deplete the Ozone Layer The treaty was first signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds which reduce ozone in the atmosphere, y including chlorofluorocarbons (CFCs), halons, carbon tetrachloride and methyl chloroform, are to be phased out.

The protocol was ratified by Guinea in June 1992 and must be applied by CEGEDI in the use of its refrigerants.

Convention on Biological Diversity (Rio de Janeiro 1992)

The Convention on Biological Diversity (CBD) establishes a system of protected areas to conserve biodiversity, ensure the subsistence of its components, and share the resulting benefits fairly and equitably. This convention is transposed into Guinean legislation by the Code for the Protection of Wildlife and Hunting Regulations.

World Bank DPL (Development Policy) agreement for natural resource management

The DPL Natural Resources Management Loan Agreement requires the Government of the Republic of Guinea to carry out or commission an environmental and social impact assessment prior to any mining or industrial project, in accordance with terms of reference drawn up in consultation and agreement with the World Bank. This agreement is transposed into the Guinean environmental code, specifically in articles 25 and 28.

A reading of these various legal and regulatory texts, at both national and international level, shows that any environmental assessment is an essential part of the process.

administrative and legal procedures. To meet the requirements of these texts, the ESMP covers waste management relating to the collection, transport, treatment, processing or disposal of used oils and all other industrial and domestic waste.

institutional framework

Several institutions are involved in this project.

French Ministry the Environment and Sustainable Development

Article 1 of Decree D/2022/0042/PRG/SGG on the remit and organization of the Ministry of the Environment and Sustainable Development stipulates that the Ministry's mission is to design, develop, implement and monitor government policy in the fields of the environment and sustainable development.

The main departments involved in this project are :

- Direction Nationale des Pollutions, nuisances et changements climatiques (DNPNCC) ;
- Direction Nationale des Forêts et de la Faune (DNFF) ;
- Direction Nationale de l'Assainissement et du Cadre de Vie (DNACV).

The relevant autonomous public bodies include :

- Guinean Environmental Assessment Agency (AGEE);
- Environment and Natural Capital (FECAN) ;
- Office Guinéen des Parcs Nationaux et de Réserves de Faune (OGPNRF) ;
- Center Nationale de Surveillance et d'Observation Environnementale (CNSOE);
- Office Guinéen du Bois (OGUIB) ;
- Marine Environment Protection Service.

Guinean Environmental Assessment Agency (AGEE)

This agency will play a role in the environmental and social management of the project, by approving the ESMP report, issuing the environmental permit and monitoring the implementation of the ESMP.

The AGEE will carry out monitoring missions to ensure that CEGEDI's commitments are respected, in accordance with current laws and regulations. It may also chair the ESMP implementation monitoring committee. In terms of capacity, the AGEE has the technical skills to monitor environmental impact assessment procedures, and to supervise and monitor compliance and legality, particularly for development projects.

CEGEDI will have a Health, Safety and Environment Officer (HSSE) who will oversee the application of the measures contained in the Project's ESMP.

Ministry Commerce, Industry and SMEs

The Ministry of Commerce, Industry and SMEs is responsible for designing, drawing up, implementing and monitoring government policy in the fields of commerce, industry and SMEs, investment and public-private partnerships.

In this capacityhe is responsible for :

- draw up legislation and regulations in the fields of trade and e-commerce, industry and SMEs, private investment and public partnerships, and ensure their application;
- develop and strengthen relations with national bi- and multilateral institutions specializing in trade, industry, SMEs and private investment;
- promote female and youth entrepreneurship for the development of the trade, industry and SME sectors;
- oversee the application of environmental legislation and regulations in the fields of trade, industry and SMEs;

- compliance with regulations governing the establishment of commercial and industrial units;
- draw up export promotion programs for local products, and implement regulations governing commercial establishments...
- develop and implement government policy on price competition and weights and measures;
- protect individual property rights;
- implement national quality policy in the fields of standardization, verification, accreditation testing and metrology,
- promote technology transfer and improve the business environment to encourage private investment.

The main departments concerned are :

- Direction Nationale du commerce intérieur et de la concurrence ;
- Direction nationale du commerce extérieur et de la compétitivité ;
- Direction Nationale de l'Industrie ;
- Direction Nationale des PME et du contenu local ;
- Direction Nationale de la promotion du secteur privé ;
- Direction Nationale du partenariat public privé.

The autonomous public bodies of the Ministry of Commerce, Industry and SMEs relevant to this project are :

- Private Investment Promotion Agency ;
- Office national de contrôle de qualité ;
- Industrial park development and management agency.

Ministry Territorial Administration and Decentralization

This ministry is responsible for developing and implementing national policy on decentralization and community development in the Republic of . It comprises seven main departments: the National Department Decentralization, Local Development, Public Liberties and Judicial Regulation, and the National Department of Local Government.

political affairs, electoral administration, civil status and land administration.

At the decentralized level, the Ministry is essentially represented by the services of local authorities (administrations at governorate, prefecture and sub-prefecture level). The activities planned under this project are and will be carried out at local authority level. Implementing this ESMP to improve the project's environmental and social performance will require collaboration with the local authorities of the Kindia region, the prefectures of Forécariah and Dubreka, and the decentralized authorities of the Moribayah and Tanènè RCs.

National Public Health Agency (ANSP)

ANSP's mission is to support local authorities and the sectoral ministries concerned in implementing the government's sanitation and public health policy.

As such, it is responsible, among other things, for drawing up, implementing and monitoring strategies, plans, programs and projects relating to liquid sanitation and waste collection and recovery. Assisting local authorities in the implementation and rational use of sanitation and public health infrastructures and equipment. It also participates in the mobilization of resources from the State, technical and financial partners and other donors. It also monitors compliance with contractual commitments between the State, technical partners and operators in the sanitation and public health sector, such as CEGEDI.

Ministry Urban Planning, Housing and Regional Development

Its mission is to design, draw up, implement and monitor government policy in the fields of urban planning, housing and regional development.

In this capacity, it is particularly responsible for: developing and implementing urban renewal and urbanization policy, ensuring the implementation of the

housing policy in urban and rural areas; develop spatial planning tools at national, regional and local levels; develop and implement liquid waste and network sanitation projects in conjunction with the departments concerned; contribute to the development of the private sector in urban planning and real estate promotion; ensure the implementation of structuring socio-economic infrastructures; promote the use of local materials and construction techniques adapted to the environment; ensure land security and access to land ownership; take into account the environmental dimension in the department's programs and projects; promote gender and equity in the department's activities.

This ministry will ensure that the land on which the facilities are to be built has been legally acquired by CEGEDI. The Tanènè site is by the State on an industrial estate, while the Moribaya site is owned by CEGEDI, which holds the land title.

Ministry Agriculture and Livestock

The Ministry's mission is to design, draw up and implement government policy in the fields of agriculture and livestock, and to ensure its coordination and monitoring-evaluation. As such, it is particularly responsible for contributing to: achieving food security; supporting the emergence of a dynamic private sector for the production, supply and local distribution of agricultural inputs and equipment; promoting the development of agro-industrial and export crops.

The Ministry comprises the following technical departments: the National Department of Agriculture, the National Department of Rural Engineering, the National Department of Animal Production and Industries, the National Department of Veterinary Services, and the National Department of Planning and Capacity Building.

These departments will play a role in the environmental and social management of the project, providing advice on the use of sustainable agricultural and livestock techniques and practices. The Ministry's technical departments, in particular

at deconcentrated level could be involved in the environmental and social management of the project.

Ministry of Labor and Public Service (MTFP)

The mission of the Ministry of Labor and the Civil Service is to design, develop and coordinate the implementation of government policy in the fields of labor and the civil service. Like other ministerial departments, the Ministry has numerous services, including technical directorates, attached services, support services and public administrative establishments.

Among the departments involved in the CEGEDI project for the management and recovery of industrial waste (ordinary and hazardous), domestic waste and electronic waste, is the Labor Inspectorate, whose mission is to monitor the application of labor legislation and regulations. It is headed by a general labor inspector. To accomplish its mission, it includes support services from the technical departments of the deconcentrated services.

National Agency for Risk Management, Emergencies and Humanitarian Disasters (ANGRUCH)

Under the supervision of the Ministry Territorial Administration and Decentralization (MATD), ANGRUCH's mission is to draw up and implement government policy humanitarian action and the rehabilitation of disaster areas.

ANGRUCH's main mandate is to initiate and organize humanitarian action programs throughout the country. To this end, SENAH's mandate covers all types of crisis, not just natural or environmental disasters. Its functions are to :

- coordinating emergency relief and assistance to disaster victims and displaced persons on national territory, and overseeing the development and implementation of a national disaster prevention plan and sectoral plans;

- research and disseminate information on risk areas;
- inform and raise awareness among citizens and partners... about the effects of disasters and calamities throughout the country;
- initiate, coordinate and supervise the mobilization of financial, material and human resources for humanitarian action.

Service Nationale de Gestion des Catastrophes et des Urgences Environnementales (National Disaster and Environmental Emergency Management Service)

Set up in 2005 under authority of the Ministry of the Environment, Water and Forests (Arrêté A/2005/03591/ME/CAB), the Service Nationale de Gestion des Catastrophes et des Urgences Environnementales (SNGCUE) is responsible for implementing and monitoring government policy on the prevention and management of disasters and environmental emergencies.

The Centre National de Gestion des Catastrophes et des Urgences Environnementales (CNGCUE) has a mandate to coordinate not only preventive activities, but also environmental disasters and emergencies, namely: (i) to coordinate the prevention and management of all environmental disasters and emergencies of natural or man-made origin;
(ii) coordinate the development and implementation of sectoral disaster prevention and management plans. The text is unclear as to whether the CNGCUE is mandated to deal with "environmental disasters and emergencies" or disasters in general.

Directorate General of Civil Protection (DGPC)

Under the Ministry of Security and Civil Protection, the Direction Générale de la Protection Civile (DGPC) is the oldest institution in the field of civil protection. It was created in 1954; in 1973 following Arrêté N°880/MDI/CAB/73 of February 28, 1973 creating a Special Civil Protection Commissariat in Conakry reaffirmed the existence and role of Civil Protection. In 2013, the latest update was made through Law L/2013/45/CNT on the special status of civil protection. It confers the

Protection Civile is responsible for planning prevention, forecasting, intervention, rescue and assistance actions, as well as acting as the State's technical advisor on risk prevention and management.

Decree D/2013/002/PRG/SGG on the remit and organization of the Ministry of Security, Civil Protection and Security Service Reform confirms the rank of the Civil Protection Directorate General at the same level as the National Police Directorate General.

The technical services of these departments could be called upon to contribute to the environmental and social management of the project, in particular as part of capacity-building for workers in the prevention and management of risks and disasters.

Local authorities

Article 14 of the Environment Code states that local authorities participate in environmental management by implementing the powers transferred to them. They exercise these powers in accordance with current legislation and regulations.

Article 29 of the Republic of Guinea's revised Local Authorities Code lists the environment and living conditions (hygiene and sanitation) as one of the communes' specific areas of competence.

Similarly, article 15 states that local authorities are to draw up Environmental Action in line with the requirements of the National Environmental Action Plan. These authorities guarantee the population participation in decision-making inherent in local environmental protection and the sustainable development of their territories, as well as access to reliable environmental information.

From the private sector

Private companies and public and mixed companies with industrial and/or commercial are required to integrate concerns.

environmental management systems that meet the requirements of sustainable development.

They also ensure that :

- Reduce to a strict minimum the negative effects of their activities on receiving environments and ecosystems;
- Conduct periodic environmental audits of their facilities and activities;
- Require their suppliers and service providers to integrate the environmental dimension into the services and products they provide;
- Supply from information on the transparent and reliable information environmental management ;
- Certification of their companies.

Civil society organizations

State-approved environmental protection associations are responsible for carrying out, either on their own initiative or in partnership with the State, local authorities and the private sector, any action of general interest relating to the protection of the environment, health and quality of life (Art. 17 of the Environment Code).

IDENTIFICATION AND ANALYSIS OF IMPACTS

Methodological approach to analyzing impacts

Analysis of the project's impact on the environment is carried out over the entire life of the project. The identification of project-related impacts is based on an analysis of possible relationships between the various receiving environments, project activities and the technology to be used. This analysis links the sources of impact associated with the project to the environmental components likely to be affected. The matrix approach, which highlights the interactions between planned activities and environmental components, was used to identify impacts. It presents, in summary form, the essential characteristics of the environmental impacts of the activities planned as part of the project.

Identifying impacts

The identification of impacts is based on possible relationships between receiving environments and project-related activities. This analysis makes it possible to relate the sources of impact associated with the collection, treatment, recovery and/or disposal of waste categories to the environmental components likely to be affected.

The matrix approach, which highlights the interactions between activities and environmental components, was used to identify impacts. It summarizes the essential characteristics of the impacts of activities on the environment.

Sources and receptors of impact

Sources of impact are defined as all activities likely to cause environmental impacts in the context of a project's implementation. The impact receptors likely to be affected by CEGEDI's waste collection, recovery and/or disposal activities correspond to the sensitive elements of the study area, i.e. those likely to be significantly modified by the activities.

Identifying source activities impacts

CEGEDI's main impact-generating activities of collection, recovery, treatment, recycling, disposal and processing of industrial and domestic waste are :

- collection ;
- transport ;
- unloading ;
- sorting ;
- storage ;
- recycling and/or processing ;
- elimination.
- Maintenance of industrial installations and rolling stock.

Analysis of impacts

Analysis of the positive impacts of CEGEDI's industrial waste oil-to-gas and coal unit in Tanènè

Like all industrial activities, the Tanènè waste oil-to-gas and coal conversion plant and the Moribaya waste collection center also generate positive impacts.

Job for local workers

The project will create direct and indirect jobs by recruiting and developing local manpower and transferring skills. Employees will be recruited for waste collection, transport, sorting, storage, treatment, processing or disposal.

industrial policy and stimulating the local economy

As part of the country's industrial policy, this project will help strengthen the industrial fabric of the Dubréka and Forécariah prefectures. Increased tax revenues for the Tanènè and Moribaya town councils.

Positive impact on the project's receiving environments Positive impact on water

The impact of this project will preserve water quality by avoiding contamination from deliberate or unintentional spills of used oil, which will be used as a raw material for obtaining gas and coal. A means of reducing the impact on water.

Positive impact on the soil

Once waste oils are rationally managed, this will prevent them from being dumped. This practice will reduce the impact of waste oils on soil physicochemical parameters.

Positive impact on the air

The waste management value chain will improve ambient air quality by eliminating odors and atmospheric emissions.

Analysis of the negative impacts of converting waste oil into gas and coal

As the used oil processing site is located in an industrial zone, cumulative impacts are observable. Receiving environments are specifically impacted by waste oil recovery operations.

Negative impact on noise pollution

The surrounding environment will be disturbed by noise from the vehicles transporting the used oils from the collection sites to the Tanènè industrial zone on the CEGEDI site.

Negative impact on soil

- Land use reduces the land area occupied by the project, which is estimated at one (1) hectare.
- Soil erosion will be caused by site development work and runoff.
- Damage to soil structure or mechanical parameters caused by repeated movement of rolling stock.
- Soil contamination :

- accidental spillage of used oils or other hazardous products;
- eliminating waste through landfill process.

- Aesthetic problem (management methods create an aesthetic problem on the ground).

Negative impacts on air

Air emissions come from :

- emissions from boiler fumes, emergency generators and machinery exhaust from the industrial unit;
- rolling stock transporting used oil.

Negative impact on water

The discharge of used oil, due to the absence of a system channeling wastewater and runoff, can lead to contamination of surface and groundwater through percolation.

Waste management

The main wastes produced during waste management operations are :

- waste oils from industrial machinery and rolling stock;
- wastewater from toilets and cleaning of the waste processing or disposal circuit.

All this waste is managed in accordance with CEGEDI's management process, which takes account of the relevant requirements in the Republic of Guinea. Used oil is used as a raw material to obtain coal and gas.

<u>Table 1</u>: Identification of the negative impacts of converting waste oil into coal and gas at Tanènè

N°	ACTIVITIES	IMPACTS GENERATED
1	Collection	- Risk workplace accidents ; - Risk of accidental spillage of used oil
2	Transport	- Risk road accidents ; - Risk of accidental spillage of used oil ; - Dust in the air; - Smoke emissions from rolling stock
3	Unloading	- Risk workplace accidents ; - Risk of accidental spillage of used oil ; - Risk infiltration / percolation of used oils ; - Risk of deterioration in air quality through CO, CO_2, NO_x emissions).
4	Valuation	- Risk of accidental spillage of used oil ; - Risk soil contamination ; - Emissions from gases from industrial unit operation
5	Storage	- Risk workplace accidents ; - Risk gas emissions from finished products: gas and coal;

		- Degradation of the vegetation cover of the coal storage point obtained during the transformation process; - Risks of surface water contamination and underground through contact between coal and rainwater or runoff.
5	Maintenance of industrial installations and rolling stock.	- Risk of accidental spillage of used oil ; - Risk workplace accidents ; - Risk of soil contamination by hazardous products products (such as hydrocarbons) ; - Flue gas emissions from maintenance of the industrial unit and rolling stock.

Analysis of the positive impacts of CEGEDI's waste collection center in Simebounyi in the Moribaya RC.

Waste processing and recovery operations will also generate positive impacts.

Job creation local workers

This project will generate direct and indirect employment by recruiting locally and developing the workforce, as well as promoting the transfer of skills. Employees will be engaged in activities such as waste collection, transportation, sorting, storage, treatment, processing or disposal.

Strengthening industrial policy and stimulating the local economy

As part of the country's industrial policy, this project will help strengthen the industrial fabric of the Dubréka and Forécariah prefectures. Increased tax revenues for the Tanènè and Moribaya town councils.

Positive impacts on the project's receiving environments

Positive impact on water

This project will help to preserve water quality by avoiding contamination through environmentally sound waste management. This is because spills and prolonged storage of waste will constitute risks of contamination that will be mitigated by the said management.

Positive impact on the soil

In the same way as water, once waste is rationally managed, this will prevent it from being dumped. This practice will reduce the environmental footprint of waste by modifying soil physicochemical parameters.

Positive impact on the air

The waste management value chain will improve ambient air quality by eliminating odor nuisance.

Negative impact of the landfill on environment

Negative impact on soil

- Land use reduces the land area occupied by the project, which is estimated at one (1) hectare.
- Soil erosion will be caused by development work the site of the new facilities and runoff water.
- Damage to soil structure or mechanical parameters caused by repeated movement of rolling stock.
- Soil contamination :

- accidental spillage of hazardous waste;
- eliminating waste through landfill process.

- Aesthetic problem (management methods create an aesthetic problem on the ground).

Negative impacts on air

Air emissions come from :

- olfactory emissions from waste ;
- emissions from boiler fumes, emergency generators and machinery exhaust from the various industrial units;
- wheeled vehicles transporting waste from collection sites to storage and processing sites.

Negative impact on water

Drainage of waste due to a lack of wastewater or runoff drainage systems can lead to contamination of surface and groundwater. This is because the decomposition of waste releases toxic elements that can contaminate groundwater and surface water.

Negative impact on noise pollution

The surrounding environment will be disturbed by noise from the vehicles transporting waste from the collection sites to the landfill site for recycling.

waste management

The main wastes produced during waste management operations are :

- waste oils from industrial machinery and rolling stock;
- wastewater from toilets and cleaning of the waste processing or disposal circuit;
- Used oils from maintenance of machinery, emergency generators and rolling stock...

All this waste is managed in accordance with CEGEDI's management process, which takes account of the relevant requirements in the Republic of Guinea. Used oil is used as a raw material to obtain coal and gas.

<u>Table 2:</u> Identification of the negative impacts of the Simebounyi waste collection centre in Moribaya

N°	ACTIVITIES	IMPACTS GENERATED
1	Collection	- Risk workplace accidents ; - Risk of accidental spillage of used oil
2	Transport	- Risk road accidents ; - Risk of accidental spillage of used oil ; - Dust in the air; - Smoke emissions from rolling stock ; - Risk of contaminating workers with diseases
3	Unloading	- Risk workplace accidents ; - Risk of accidental spillage of used oil ; - Risk waste oil seepage; - Risk of deterioration in air quality due to greenhouse gas emissions (CO, CO_2, NO_X). - Risk of contaminating workers with diseases
	Sorting	- Risk workplace accident (injury) - Risk of contaminating workers with diseases
4	Valuation	- Risks of spillage unintentional of hazardous waste ; - Risks of contamination of soil by the disposal of certain wastes - Emissions from gases from industrial unit operation
5	Storage	- Risk workplace accidents ;

		- Risk gas emissions from finished products: gas and coal; - Risks of contamination of surface and ground water through waste contact with rainwater or runoff
5	Maintenance of industrial installations and rolling stock.	- Risk of accidental spillage of used oil ; - Risk workplace accidents ; - Risk of soil contamination by hazardous products products (such as hydrocarbons) ; - Flue gas emissions from maintenance of the industrial unit and from rolling stock

***Table 3*: Negative impacts and risks of waste-to-energy plants**

Environment receiver	**Source**	**Discharge**	**Impacts generated**
Soil	Site development and site occupation	Site operation	Reduction in occupied land area through projects
	- rolling stock, - stormwater and runoff	Flying dust; Spills of products and waste	Soil erosion and structural degradation or physical parameter soil chemistry
Air	Machine industrial machinery, emergency generator	Greenhouse gas emissions	Air quality deterioration by emission of (gas combustion and steam (CO, CO_2

	Waste for recovery or disposal	Odors from decomposition of mainly biodegradable waste. Emission of gases from certain hazardous wastes	Deterioration air quality and olfactory nuisances generated by the management of of hazardous or biodegradable waste
Water	Uncontrolled storage waste (leachate), water fr om run-off, accidental spills haz ardous waste or products	Contact, infiltration and percolation	Changes in physico-chemical and bacteriological and bacteriological water of surface a nd underground

Occupational risks and accidents

Risk of falling

Falls will be caused by steps or when getting on or off vehicles, when covering and uncovering skips, and when moving on uneven floors and slopes.

Risk workplace accidents

The waste collection, transport, unloading, sorting, processing and disposal teams are exposed to the risk of work-related accidents if Personal Protective Equipment is not strictly observed throughout the process.

Risk road accidents

They will be caused by the behavior of drivers during vehicle maneuvers, from collection to transport to unloading.

Chemical hazards

Chemical hazards are caused by the handling of hazardous products, leaking or ruptured containers, and exposure to harmful dusts.

POLICY AT POLICY HYGIENE, HEALTH, SAFETY AND ENVIRONMENT

environmental policy

CEGEDI's policy is to establish and maintain standards of health, safety and environmental protection in the workplace, in order to prevent injury or illness, property damage, fire, loss of safety and environmental pollution. The workplace health, safety and environmental protection objectives defined in this policy have the same status as all other CEGEDI objectives.

Responsibility for implementing this policy rests directly and personally with the hierarchy, from the Management Board down to the individual employees. This is summarized in the company's declaration on safety, health, environment and quality as follows.

Environmental policy statement

At CEGEDI, we understand that our environmental performance is essential to our success. We believe that our employees are our most valuable assets. Providing a healthy, safe and sustainable working environment is one of our key responsibilities. Our responsibility to environment is guided by the following commitments.

- Commitment to conducting our business in a way that protects and preserves the environment and reduces our environmental footprint.
- Commitment to conducting our business with a goal of zero work-related injury and illness for our employees, subcontractors and other stakeholders.
- Commitment to protecting and maintaining the safety of our employees and the general public, by providing resources to improve health and safety in the workplace.
- Commitment to comply with applicable environmental laws and regulations.
- Commitment to communicating the Health, Safety and Environment (HSSE) policy to employees, customers, consumers and other stakeholders.

- Commitment to periodically receive the Occupational Health and Safety (OHS) policy to ensure that it remains relevant and appropriate to the organization.

At CEGEDI, reducing waste in all its forms offers us the greatest potential for conserving resources and improving the environment. It will also most likely lead to a reduction in operating costs, all of which will go directly to the bottom line.

Based on the company's environmental policy and also in recognition of current trends in environmental awareness, CEGEDI is committed to developing an effective and efficient environmental management system in operation of landfill and used oil processing plant.

Objectives

The objectives CEGEDI's environmental policy are :

- optimize the use of resources by applying resource conservation methods such as the recovery and reuse of material resources;
- Prevent or minimize the environmental impact of the landfill's activities and the waste processing and recovery plant by applying effective and efficient waste reduction measures;
- unavoidable impacts installing modern, efficient and economical equipment that is less polluting, viable and practical in reducing environmental pollution;
- Eliminate or isolate the source of pollution well-designed systems;
- ensure the application of best operating practices, techniques and procedures that minimize potential and actual negative impacts on the environment;
- ensure training of all employees at all levels to develop environmental awareness and commitment to the company's ESMP;

- ensure self-regulation and compliance with environmental legislation and regulations essential to the company's good image.

Occupational health and safety policy

To regain the dynamic morale and spirit mutual trust without which a company cannot succeed, it is necessary to look after staff throughout their working lives, right through to retirement. In recognition of this fact, CEGEDI gives the highest priority promoting and preserving the health and safety of its employees. Employees, for their part, have a clear duty to take all necessary precautions concerning their health and safety at work.

Gender policy

The overall aim of this policy is to equality and equity between men and women through the significant and sustainable reduction of all forms of disparity and discrimination based on gender.

CEGEDI's vision is to build a society free of all forms of inequality and inequity, guaranteeing personal and professional fulfillment for all workers.

In order to preserve this policy, the company must adopt a policy of sharing responsibility between men and women, from the top to the bottom of the hierarchy. This state of affairs is a practice that ensures equality and equity in the workplace.

Obligation under legislation and guidelines PGES

With regard to legislation and ESMP guidelines, CEGEDI SA takes all necessary measures and precautions to ensure compliance with such legislation and guidelines. Such legislation and guidelines include LOI L/2019/0034/AN portant code de l'environnement, le code de protection de

l'environnement (law 0030), the 2019 environmental assessment regulations and the environmental quality guidelines.

CEGEDI ensures that the ESMP addresses all relevant environmental issues concerning both the company's workers and the external neighborhood as a whole. CEGEDI then ensures that all the prevention, mitigation, compensation and enhancement measures set out in the ESMP are duly complied with. The assistance of consultants is sought on issues outside scope of the company's ESMP, to improve the fluidity of compliance.

MITIGATION AND ENHANCEMENT MEASURES IMPACTS

Bonus measures for impacts

As a reminder, positive impacts are job creation for the local workforce, strengthening industrial policy and stimulating the local economy. In addition, waste management in this project contributes to the preservation of water and air quality, as well as soil structure.

The main factor in CEGEDI's success is the long-term future of its business. And this will depend first and foremost on the proper management and professional maintenance of the facilities.

As for the workers, once recruited and employed, they are managed with professionalism, through the creation of a database, the provision of identification badges and personal protective equipment. To amplify this impact, it is suggested priority be given to local labor, in line with the local content of CEGEDI's industrial units. This will enable local residents to directly feel the positive spin-offs of CEGEDI's landfill and plant through the wages they receive.

Certain sub-projects will be subcontracted to small and medium-sized enterprises (SMEs) and local businesses, enabling them to strengthen their operational capacities in the waste processing chain. This transfer of skills not only contributes to making local expertise available national outreach.

Mitigation measures impacts

Noise abatement measures

Disturbance to the surrounding environment caused by the noise of vehicles transporting waste and the noise generated by plant machinery can be mitigated.

by their regular maintenance or by their renewal because of their level of deterioration.

Soil impact mitigation measures

To mitigate soil erosion caused by runoff, CEGEDI must draw up a plan for channelling runoff and rainwater. To avoid degradation of the soil structure or physical parameters following repeated movement of rolling stock, it is recommended to limit the movement of rolling stock and lay out tracks for the passage of equipment on the site.

Soil contamination mitigated by concreting to make the waste discharge, storage and burial area impermeable. This makes the soil in the storage area more resistant to the action of hazardous waste.

Selective sorting and storage of waste according to category can alleviate the aesthetic problem. This involves arranging the waste in such a way as to prevent it from being scattered, and especially to avoid mixing acidic bases.

Air impact mitigation measures

Air impact mitigation are :

- waste packaging during collection;
- tarpaulin covering for vehicles transporting waste;
- the maximum storage time for waste depends on various parameters (reactivity, quality, storage conditions, etc.). Storage must be rotated to avoid prolonged storage, which leads to aging of the materials and the formation of by-products;
- regular maintenance or renewal of rolling stock and machinery can greenhouse gas emissions (CO, $_{CO2}$, NOx);
- transforming biodegradable waste into fertilizer

Water mitigation measures

To prevent contamination of surface and ground water, it is advisable to condition waste so that it does spill. Channel wastewater

runoff, rainwater and wastewater to prevent them coming into contact with the waste. Failing this, make the floor of waste treatment area impermeable.

Waste management at CEGEDI

Wastewater management

Wastewater from CEGEDI's various activities must be pre-treated by the company itself to avoid or minimize the risk of soil and surface water contamination.

Used oil management

Used oils are collected by the HSSE team at the pre-collection stage in drums labelled according to their source of production. They are then collected and transformed into ecological coal and gas.

Stormwater/runoff management

The area housing the waste oil processing machinery is paved in concrete, but this is not sufficient to prevent contamination of runoff and rainwater by waste oil spills. As a result, CEGEDI needs to pave areas that will encourage water drainage to avoid contact with accidental waste oil spills.

As for the Moribaya landfill site, we strongly recommend that conditions be created to channel rainwater, runoff and wastewater in such a way as to avoid infiltration and contact with other waste. Any discharge of liquid effluents into the environment must be treated beforehand.

Risk management

Risk of workplace accidents

To minimize the risk of workplace accidents, the promoter is recommended to purchase, make available and monitor use of Personal Protective Equipment (PPE) for all workers, including visitors. Operationalization

of this mechanism requires the recruitment of a Health, Safety and Environment (HSSE) Manager.

Traffic accident risks

To reduce the risk of traffic accidents, a traffic prevention and control mechanism must be put in place. This initiative will be punctuated by the installation of traffic signs and control barriers at CEGEDI's waste management sites. In addition, the recruitment and training of security guards and drivers in the contents of the highway code is another asset for minimizing the risk of accidents. Hence the need to establish rules of the road, which will be given to each driver.

Risk of illness

Contact between CEGEDI staff and the local population could be a source of transmission of various contagious diseases, including STI/HIV, Covid 19, etc. The preventive measures to be taken are awareness-raising campaigns through Health Information, Education and Communication (IECS). The preventive measures to be undertaken are awareness campaigns through Information, Education and Communication in Health (IECS). In such circumstances, the communication media to be used are non-media (banners, interpersonal communication, leaflets, institutional film screenings). To achieve this, we need to recruit a specialist in health communication or a similar field.

In addition to these illnesses, there is the risk of respiratory contamination due to the lack of PPE worn when handling certain types of hazardous waste, or during the decomposition of others. To remedy this situation, the HSSE team must monitor all personnel, especially those exposed to waste handling of kind.

Conflict risks and resolution methods

Conflicts resulting from internal and external factors at work can be prevented improving working conditions, respecting local content and the labor code in force in the Republic of Guinea.

Briefly, CEGEDI has to set up an environmental and social management system that integrates hygiene, health and safety at work.

EMERGENCY PREVENTION AND RESPONSE PLAN

CEGEDI must have procedures in place to deal with personal injury and fire accidents. All accidents and injury incidents must be taken to the company or partner clinic for first aid and treatment.

In the event fire, employees in the vicinity of affected areas are required immediately notify the fire department and police by telephone or, in the event of faulty telephone lines, via any readily available vehicle. The company's fire task force is also immediately called to the scene of the fire to protect property and life. Specific plans and procedures for first aid, oil and other spills, and fire evacuation are set out below.

First aid

Well-equipped first-aid kits should be provided to provide first aid in the event of workplace accidents and medical emergencies. CEGEDI should also have an in-house infirmary to provide such first aid. Emergencies that exceed the capabilities of the infirmary should be referred to the appropriate health centers.

Maintenance of first-aid equipment

All workstations must be equipped with first-aid pharmaceutical boxes in accessible areas. All first-aid equipment must be checked, replenished and maintained regularly.

Medical waste management

Waste generated during first aid procedures is collected, labeled, placed in containers and sent for appropriate disposal.

Emergency management

For electric shocks and other electrical emergencies, the first action to be taken by the rescuer is to cut off the power supply and alert the plant nurse for help.

For emergencies involving product splashes, with the help of the first aid attendant, the victim should be placed under running water (eye wash if the splash involves the eye, and emergency shower if the splash involves other parts of the body) without rubbing the affected area. Next, the first-aider should ask for the Material Safety Data Sheet (MSDS) to know how to handle a victim in an emergency involving this product. If the case is beyond his or her reach, the company nurse is alerted for treatment measures.

For emergencies involving falls from height, the first-aider will assess the situation before first aid. In the event of a suspected fracture, the referring medical service is alerted.

For other, more pessimistic scenarios and emergencies, beyond internal competence, the case is urgently referred to the appropriate care centers.

Accidental spills of hazardous products and other waste hazardous

Raw materials and flammable liquids must be handled in such a way as to prevent spills. In the event of a spill, depending on the extent of the spill, the appropriate policy must applied, as outlined in the Spill Control Policy.

Spill control

⟹ Shout - Fuel Spill, Oil Spill or Spill... until all attention is drawn to you.

⟹ Interrupt the discharge of spilled products by closing discharge valves or cease all operational activities and deal with the spill with all due caution.

- All activities and operations in the vicinity of the site, including vehicle traffic, must be stopped.
- Call security to help prevent vehicle movement, if outside the building, and other unauthorized interference.
- Prevent fuel from entering drains and trenches by draining the area with sand or sawdust or absorbent.
- If there is risk of fire, security or other personnel on site must have a full fire extinguisher nearby and be on the alert. In the event of a fuel spill, call the fire department for expertise.
- Recover the product, if are no such risks, and clean the floor with sand or sawdust before washing or cleaning.
- Record the incident in the appropriate logbook. This should capture the response to reducing the hazard, if it is brought under control.
- Report the incident to the incident management and crisis resolution team.

Small spills: (fuel, oil or other products)

In the event of a small spill of fuel or other products :

- use sand or absorbent to absorb spill ;
- collect the soaked sand in the garbage can;
- wash or clean the site;
- document and report the incident to the HSST team;
- in the event of a spill, whether large or small, need to act quickly and effectively.

Protective equipment

Workers must wear PPE and be trained in its use to ensure that they are safe throughout the waste recovery or disposal chain, and do not affect the environment or the public.

The use of fire and emergency spill response equipment (absorbent and spill control kits) is made available and communicated to all appropriate personnel.

Fire evacuation

Based on the fire safety assessment and local regulations, CEGEDI must document a fire emergency plan, describing the preventive controls and response procedures to be carried out for this purpose.

Fire drills

Fire must be held every year to test the effectiveness of the fire emergency plan. This exercise is carried out for each , and the result of the exercise is monitored, recorded and the overall performance measured.

Fire signs

- Measures to be taken by staff in the event of the discovery of a fire in clearly visible places in all parts of the premises, and by visitors and subcontractors, must be posted in the reception booklet.
- A simple map of the site showing exits and the nearest evacuation route should be posted in each office and at specific locations.
- Fire equipment and emergency exits are prominently displayed.

Smoking control

- A site-specific "no smoking policy" must clearly communicated to all employees, visitors and subcontractors.
- Signs clearly identifying "no-smoking" areas must be posted.

Interior storage controls

- All areas, including the maintenance workshop, storage areas and warehouses, are free of flammable and combustible materials;

- All hose reels, fire extinguishers and emergency exits are also kept clear of any obstructive storage;
- Combustible materials are separated from flammable materials and ignition sources.

Water supply

Local water supplies for fire protection are not available at any of the facilities.

Reinforced fire hydrants (RIA) must be on all sides of buildings, spaced 100 m apart or less, and at least 10 m but less than 30 m from any building or structure.

Fire extinguishers

Fire extinguishers of different ratings must be located in key areas of the premises. These must be serviced periodically to maintain their effectiveness. However, they are used by the HSS team at the start of any fire.

Fire-fighting team

- The fire-fighting team must be set up and trained in the education required for the tasks and duties they are expected to perform.
- Refresher training is organized annually to equip the team.

Emergency response

With all in mind, the steps to be taken in the event of a fire becoming a reality. The fire safety team must respond immediately to the fire alarm by calling the fire department and establishing the necessary rescue. It will fight the fire with the fire-fighting equipment available in the building until the fire department arrives.

Evacuation procedure

The fire-fighting team will make sure that all employees stop working and leave the area via the nearest emergency exit and move

immediately to the assembly area for roll call, closing all doors and windows and, if possible, shutting down all machines.

Responsibility for evacuation

The firefighting team will assume responsibility for evacuating workers from the incident area. Safety managers or their designated deputies will conduct a roll call of employees and immediately notify the firefighting team of any missing persons for a more thorough search if possible. Notification should include:

- Missing (full name)
- Where the person works (department)
- If the person came to work that day
- The last place where the individual was seen.

The fire-fighting team must contact any other emergency services, e.g. ambulance, police, if necessary, contact addresses and telephone numbers provided.

Problems safety

Training

Safety awareness and training are an essential component of the company's overall employee training program. Employees are trained not only in the detailed technical aspects of their work, but also in hazard recognition, materials handling, electrical safety, industrial hygiene, first aid and fire safety.

The training program is organized for all levels of staff, including management and supervisors.

Accidents

All industrial accidents are recorded using the accident report form, and the company keeps appropriate records of all accidents that occur on the premises, including the date of accident, the location of accident, the type of

injury, time lost due to an accident, among others. All accidents are investigated.

Health and safety action plan work

Provision and use of PPE

Management will continue to provide personal protective equipment for workers' use. Supervisors must ensure the use of personal protective equipment. Disciplinary action will be taken against workers who disregard the use of PPE.

Health and safety training and awareness

Workers will continue to be educated on health and issues. The program will include seminars and workshops on :

- the importance of PPE ;
- hazard identification and recognition ;
- safety practices when working with machines and equipment with moving parts;
- industrial hygiene and first aid.

Injury prevention

For safe handling of machines and equipment to avoid personal injury, the following points must be strictly observed:

- personnel working with machinery or equipment will be periodically tested and required to practice safe handling of the machinery or equipment;
- supervisors will be empowered to ensure that only authorized, trained and tested personnel are used, and
- workers always wear protective equipment appropriate to the risks to which they are exposed.

Monitoring noise

Annual noise monitoring all facilities will be undertaken, with particular emphasis on sections where noise levels exceed 85 dB. The results of the noise monitoring will help evaluate the performance of the various

machines, rolling stock and equipment that generate noise, and to implement effective maintenance and servicing procedures.

MONITORING AND FOLLOW-UP PROGRAM ENVIRONMENT

Monitoring environmental

The purpose of environmental monitoring is to ensure compliance with :

- ➢ measures proposed in the ESMP, including mitigation measures ;
- ➢ conditions laid down in regulations and standards;
- ➢ the promoter's commitments the institutional players concerned ;
- ➢ requirements relating to other laws and regulations on hygiene and public health, management of the living environment, protection of the environment and natural resources.

To ensure effective monitoring, the Ministry in charge of the Environment must, among other things :

- ensure that the environmental measures proposed in the ESMP and whose implementation is the responsibility of CEGEDI are respected;

- ensure that the measures proposed in the ESMP are taken into account by CEGEDI;
- coordinate the action of other structures involved in monitoring environmental aspects;
- organize monthly meetings with the other structures involved in implementing the ESMP to review progress and propose any necessary adjustments.

***Table 4*: Reporting devices**

Issues	**Proposed device**	**Observation**
Managing the impact of recovery operations or disposal of waste	Hire an environmental expert or a consulting firm to monitor and implement the project. ESMP	Inadequate environmental management system
Management of waste collected and produced during at valuation	Recruit an expert waste manager	
	Setting up an ecological landfill site	

Risk management in the value chain or elimination of waste	Prioritizing health and safety at work in all recovery operations	Weak management occupational health and safety policy

To better monitor the implementation of the ESMP, the reporting system proposes the production of periodic monthly or detailed ESMP implementation reports.

environmental monitoring

Environmental monitoring will cover the waste recovery and/or disposal process in interaction with the elements of the environment being recovered: soil, water (ground/surface), air, waste or other discharges, the health of workers and residents... It will also help to verify the effectiveness of the environmental and social management system.

Environmental monitoring indicators

Indicators are parameters whose use provides quantitative or qualitative information on the environmental and social impacts and benefits of waste management activities. It is essential to monitor all biophysical and socio-economic parameters. It is suggested that the main elements listed in the following tables be monitored.

Table 5: Main monitoring indicators

Indicators	**Frequency of measure**	**Go to in work**	**Medium fro m check**
Number of complaints recorded at course of works	Monthly		Report periodical or detailed
Number and nature social conflicts	Monthly		Report periodical or

related to the work			detailed
Number and type of accidents caused by construction work	Monthly	Design office responsible for control of waste waste recovery and/or disposal activities	Detailed and/or periodic report /report from construction site
Types and degree of pollution and nuisances recorded during the work	Daily		Detailed report
Type and number accidents recorded	Daily		Detailed report
Number of workers recruited from the local population	Monthly		Periodic report
Number of workers reached on safety measures, hygiene and HIV/AIDS	Monthly		Periodic report

CAPACITY-BUILDING, INFORMATION AND COMMUNICATION PLAN

The effective consideration of environmental and social issues in the implementation of project activities requires training and capacity-building for the players involved. These include those responsible for project implementation, and for monitoring and overseeing the mitigation measures identified. They also include customers and other users of the industrial platform and landfill site.

For the proper implementation of the measures contained in the ESMP and for monitoring their application, it seems necessary to take into account the fact that the technical capacities for implementing the various impact mitigation and monitoring measures are not same for all categories of stakeholder.

To this end, it is important to develop an institutional capacity-building program to monitor the implementation of the ESMP. This program should be built around information and awareness-raising campaigns on environmental management; good environmental practices; HSSE measures, etc.

Project Coordination will oversee this capacity-building program, which covers several aspects of project management. This coordination will have to recruit an environmental expert who will be responsible for ensuring that the environmental and social aspects of activities linked to the operation of industrial waste processing units, including used oils, are effectively taken into account.

***Table 6:* Capacity-building, information and communication plan**

No	Modules from reinforcement	Objectives	Target audience	Manager
1	Hygiene, health and safety	Raising awareness of hygiene, health and Safety linked to Work.	All staff and other users from installations	CEGEDI
2	Environmental education	Raising awareness of the need to preserve the environment the environment	All staff and subcontractors.	CEGEDI
3	Maintenance and management training	Strengthen the rational and sustainable management of facilities	Technical department staff installations	CEGEDI
4	Intervention capacity building on management techniques of RISKS, of emergencies.	Enable professional management of plant hazards	HSSE team	CEGEDI
5	Communication and public relations training	Contribute through communication strengthen the partnership between CEGEDI and . outside world	CEGEDI Communication of CEGEDI.	CEGEDI

6	Staff training in basic first-aid concepts related to diseases	Provide primary relief in the event of illness.	All our staff	CEGEDI

SCHEDULE AND IMPLEMENTATION OF PGES

Environmental and occupational health and safety action will be implemented on an annual basis. Actions initiated in one year, but which could not be completed, will necessarily be carried over to following year for implementation in the interests of sustainability.

Planning activities

Year one (1)

The action implemented during year will be repeated throughout the life of the ESMP.

In relation to environment :

- continue to submit statutory Environmental Action Plan (EAP) reports;
- organize environmental education and awareness ;
- air quality monitoring in the dry and wet seasons;
- pursue water and wastewater monitoring, reduction and reuse plans;
- enhance the aesthetic appeal of the industrial facilities and landfill site.

Working with the worker health and safety team:

- continue to organize health and safety awareness seminars for all categories of personnel;
- maintain measures ensure workers use PPE;
- institute a noise and odour monitoring program;
- continue to organize fire prevention and control seminars.

Year two (2)

The action plans to be implemented this year will focus on the environment and worker safety.

Environment

- continue to submit statutory environmental reports PAE ;

- organize seminars and awareness seminars at education and on the environment ;
- air quality monitoring in the dry and wet seasons;
- Pursue the water and wastewater monitoring, reduction and reuse plan;
- determine the characteristics of boiler flue gas waste streams; and
- carry out an energy audit to improve electricity consumption.

With regard to the health and safety of workers

- continue to organize health and safety awareness seminars for all employees;
- organize safety awards for the best-performing section in terms of maintenance;
- continue to provide workers with personal protective equipment and ensure its use;
- continue the noise and odour monitoring program;
- pay particular attention to the use of the protective equipment provided.

Target

Management believes that the action plans could be implemented during the life of the ESMP, and will review each stage of implementation to address any shortcomings. This ESMP is due for revision in the first half of 2026.

Budget

Implementation action will require detailed cost analysis and annual budget review

CONCLUSION

CEGEDI is committed to implementing programs that meet the requirements this ESMP. It will invest to ensure its application in collaboration with stakeholders. This implementation will make it possible prevent, mitigate or minimize the impacts of CEGEDI's waste recovery or disposal operations on the recovered elements of the environment, including the health and safety of site users.

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APPENDICES

Image 1: Bulk waste storage

Image 2: Contaminated waste rock

Image 3: Old safety shoes Image 4: Electrical waste

Image 4: electrical waste

Image 5Empty extinguisher bottles and empty cans

Image 7: Plastic waste

Image 8: Used tires

Image 9: Empty drums

Image 10: Storage space for contaminated waste rock

Image 11: The old empty tanks

Image 12: Rubber

Image 13: The old garbage cans

Image 14: Old oil and diesel and safety helmets

Image 18: Contacting the local authorities

Image 19: Contacting the prefectural authorities

Image 20: Family photo with the Moribaya sub-prefectural authorities

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Image 22Oil recovery unit at Tanènè

Image 23: Used oil processing line

Image 23: Fire extinguishers at the Tanènè facility

Image 24: The cooling system at the Tanènè waste oil recovery plant

Image 26: Photo of CEGEDI consultants and technicians on the Tanènè site

The first picture is only the recycling process, the second one is the overall process including the pelletizer.

Mechanical Grinding and Recycling Processes

First Stage: Flake Production

1. Raw Material Input - PET bottles are fed onto a conveyor belt.
2. Sorting - Non-PET waste materials (e.g., metals, labels, caps) are mechanically separated or manually removed.
3. Crushing - Bottles are mechanically ground into smaller pieces or flakes using a shredder or crusher.
4. Floating Tank (1st) - Density separation: PET flakes sink while lighter contaminants (e.g., caps, films) float.
5. Hot Washing - Uses hot water and possibly detergents to remove adhesives, labels, and grease. This is both a mechanical agitation and mild chemical process.
6. Friction Washer - High-speed rotating paddles scrub flakes to remove fine contaminants.
7. Floating Tank (2nd) - Further separation for cleaner output after friction washing.
8. Dewatering Machine - Mechanically removes water from flakes (like a centrifuge or spin dryer).
9. Label Separator - Further mechanical removal of label fragments using air classification or vibration.
10. Silo Storage - Clean, dry flakes are stored in silos awaiting pelletization.

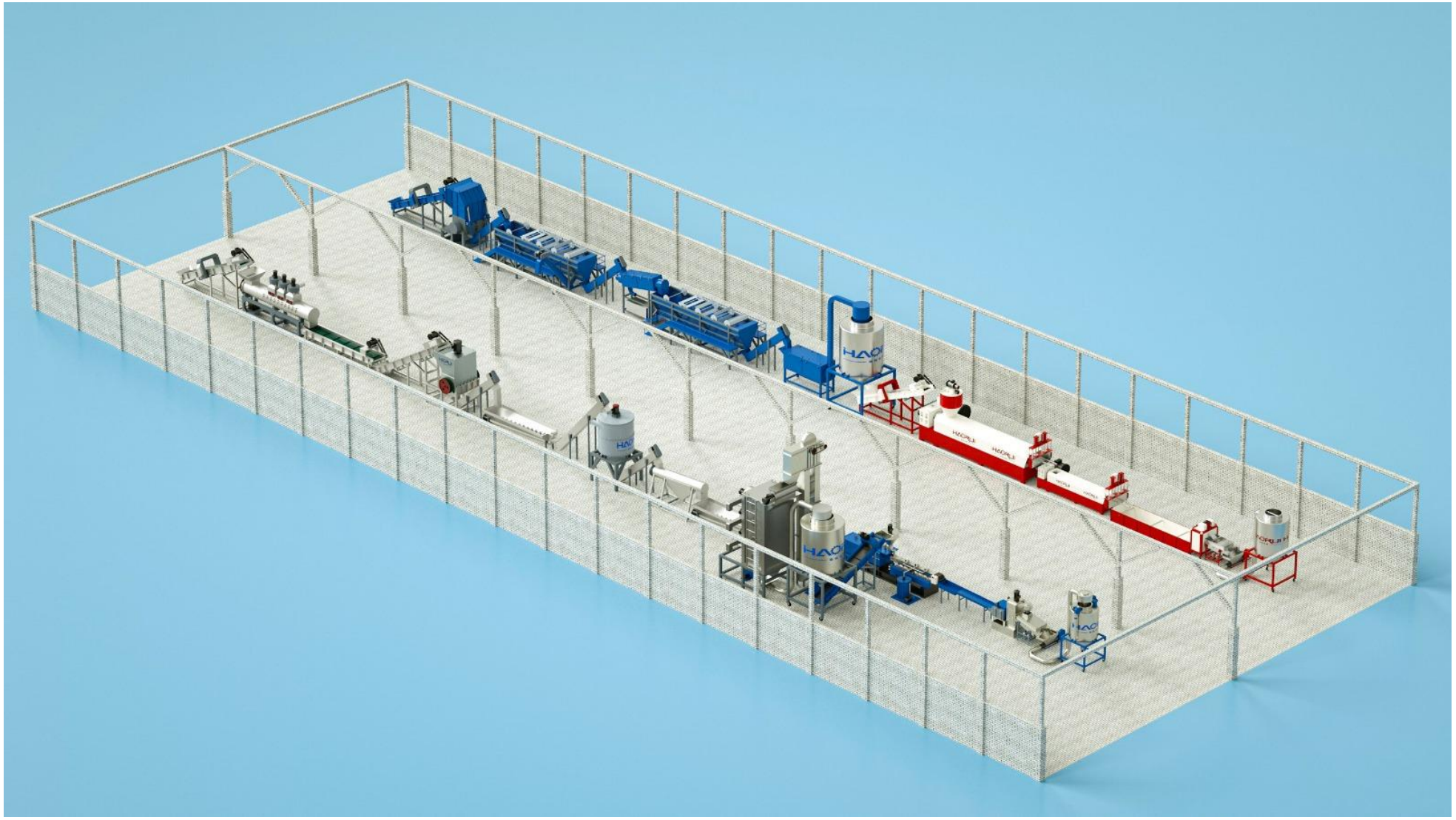
Thermal Processes

Second Stage: Pelletizing

1. Conveyor Belt - Moves cleaned flakes to extrusion line.
2. Extruder Machine - Thermal process: Flakes are melted (around 250–280°C for PET) and pushed through a screw mechanism. Plastic is converted into a molten continuous form (filaments or strands).
3. Water Tank - Cools down the extruded plastic strands using a water bath.
4. Cutting Machine - Solidified plastic strands are mechanically chopped into uniform pellets.
5. Silo Storage - Final pellets are stored for resale or re-use in manufacturing.

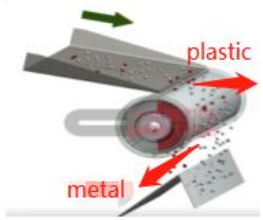
Plastic recycling process involves **thermal processing** with:

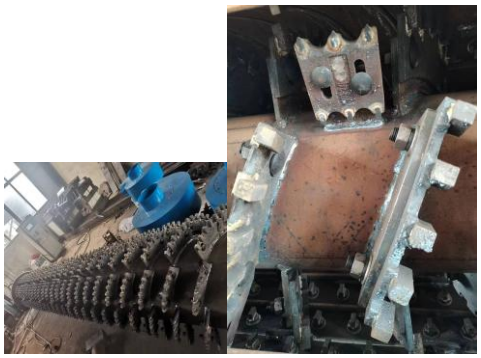
- **A boiler in the first stage** (likely for the hot washing process).
- **An extruder in the second stage** (for melting and shaping plastic into pellets).
- **No chemical reactions** are involved, meaning the process is purely mechanical and thermal.



Overall process including the pelletizer

Detailed Process Flow of Plastic Recycling plant (PET including the pelletizer)

Item	Machine	specifications
1	**Conveyor belt**  	Usage:carry and transport plastic materials 1.All frames and supporters are made of carbon steel 2.Belt width: 600mm 3.Belt length: 5000mm 4.Belt material:rubber 5.The material of belt: Rubber 6.Motor power:2.2kw 7.Side plate thickness:3mm 8.Bearing:TR bearing 9.The thickness of two side plate:3mm 10.Bearing:TR bearing With strong magnetic to separate out the mixed metal, to protect the label remover and crusher blade.
2	**Label remover** 	Usage:remove labels of the PET bottles 1. Motor power: 22Kw/6 level 2. Knife material: alloy and diamond 3. Label suction machine power: 4kw×2 sets 4. Wing motor: 1.5kwX1 set 5. Shaft length: 5500mm 6. Outer cylinder diameter: 630mm 7. Thickness: 10mm 8. Moving knife: 5 heads: 92 pieces, upper and lower three tips: 20pieces

		Fixed knife: 1050 pieces 9. Overall dimensions: 5.8m(L)*1.2m(W)*3m(H) 10. Weight: 2.5T **High label remover rate and avoid damaging the bottles, reduce material loss.** **Use five head big size label , insure high label remove rate.**
3	**Sorting platform** 	Usage：carry and transport plastic material 1. All frames and supporters are made of carbon steel 2. Platform length:5000mm 3. Belt width:800mm 4. Belt material:rubber 5. Motor power:2.2kw 6. Two side plates thickness:3mm 7. Bearing:TR bearing
4	**Conveyor belt** 	Usage:Transport the PET bottle to crushing machine 1.all frames and supporters are made of carbon steel 2.Belt width:600mm 3.Belt length:5000mm 4.Belt material:Rubber 5.Motor power:2.2kw 6.Side plate thickness:3mm 7.Bearing:TR bearing

5	**Crusher**  	Usage:crush plastic materials into flakes 1.Crush plastic materials with water 2.Motor power:55kw 3.The method of cover opening:Driven by motor 4.Rotating blades :6pcs 5.Fixed blades:4pcs 6.The rotation speed of blades:630RPM 7.Motor power of cover opening:1.5kw 8.Screw strength:8.8 9.Bearing:HRB bearing Forced Feeding Devices: 1.Pressing material rotor:1set of vertical design 2.Motor power:2.2kw 3.Rotors design：Spiral shape 4.Material of rotors:carbon steel In the market , most shaft made by 45# steel. We will use 40Cr steel, it has more excellent toughness than 45# steel. so the shaft is more durable, don't broken. (40Cr price is 1.5 times of 45# steel ,but we insist use 40Cr ,to ensure the quality.)
6	**Screw Loader** 	Usage:Transport the PET flakes to floating tank 1.The Dia.of worm shaft:320mm 2.The effective length:2500mm 3.Motor power:2.2kw 4.Thickness of steel plate:3mm 5.Thickness of screws:5mm

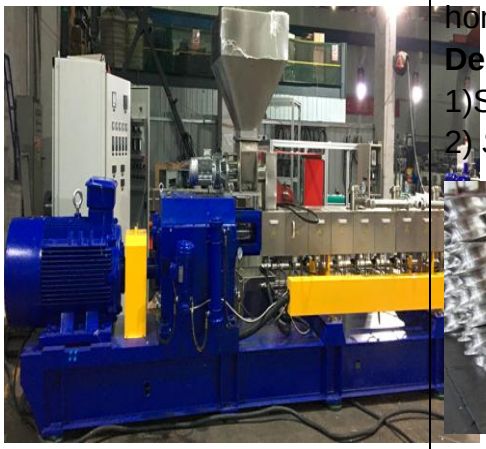
7	**Floating tank** 	Usage:Rinse PET flakes,automatically separate bottles cap and floating silt ,paper scrap 1.effective size:3.4m(L)*0.9m(w)*0.86M(H) 2.Total length:4.8m 3.Motor power:2.2kw 4.Bottom worm shaft number:1 5.Plate thickness:3mm 6.The Dia.of bottom worm shaft:320mm 7.Bottom helical blades thickness:5mm
8	**Screw** 	Usage:Transport the flakes to hot washing tank 1.The Dia.of worm shaft:320mm 2.The effective length:3800mm 3.Motor power:2.2kw 4.Thickness of steel plate:3mm 5.Thickness of screws:6mm

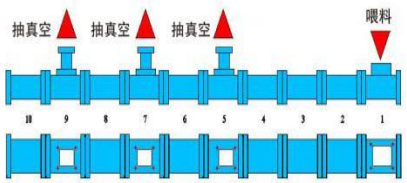
9	**Hot washer** 	Usage:Washing PET flake with hot water 1.Heating method:steam heating(need a steam generator) 2.Motor power:5.5kw 3.Hot washing water temperature:90degree 4.Dia:1.5m×3m(H) 5.Material:carbon steel 6.Plate thickness:4mm 7.Double layer with heat insulation, that improve temperature keeping and save fuel. More safe for worker. 8.With worker operation platform
10	**Boiler** 	Heating system: Steam Evaporation capacity:0.5ton/h Steam pressure:0.09Mpa
11	**Screw** 	Usage:Transport the hot washed flakes to friction machine 1.The Dia.of worm shaft:320mm 2.The effective length:3800mm 3.Motor power:2.2kw 4.Thickness of steel plate:3mm 5.Thickness of screws:6mm

12	**Friction washer** 	Usage:Quick and efficient kneading, cleaning and separation 1.Motor Power:7.5KW 2.Rotor speed: 1440rpm 3.Length:3000mm 4.The raw material of :carbon steel 5.The raw material of mesh: stainless steel 6.Bearing:UCF bearing 7.The thickness of plate:3mm
13	**floating tank** 	Usage:Rinse PET flakes,automatically separate bottles cap and floating silt,paper scrap 1.effective size:3.4m(L)*0.9m(w)*0.86M(H) 2.Total length:4.8m 3.Motor power:2.2kw 4.Bottom worm shaft number:1 5.Plate thickness:3mm 6.The Dia.of bottom worm shaft:320mm 7.Bottom helical blades thickness:5mm
14	**dewatering machine** 	Usage:dry flakes through screwing ,automatic feeding and discharging one time 1.Motor power:18kw 2.Motor speed:1440RPM 3.Dia.of mesh:1.5mm 4.Thickness of mesh: 1.5mm 5.Discharge plastic flakes from side, drain water from bottom 6.Mesh material:stainless steel 7.Material of helical blade:carbon steel 8.Bearing:ZWZ bearing

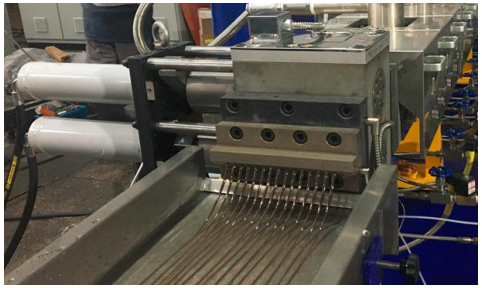
		9.Length:2000mmm 10.With removable shaft blades, easy to replace and save labor. 11.The machine adopts an open frame structure, easy to repair and replace screen.
15	**Bucket elevator** 	400 mm long, 300 mm wide, 7000mm high
16	**Label separator** 	Usage：separate the label and light material from the PET flakes 1.Automatic butterfly valve power :1.5kw 2.fan power: 2.2kw*3sets 3.fan speed: frequency converting control 4.Cavity part that contact material:SS304 5.With feeder to makes the material in average speed and going down with slowly easy to separate the pvc label from PET.

17	**Silo Storage** 	**Usage:** store bulk flakes facilitating efficient storage and distribution of these materials. Dia:1200mm
18	**Belt Conveyor** 	**Usage:** Transfer flakes to pelletizing station Detail: with strong magnet, can remove the metal parts

19	**Single Crew volumetric feeder** 	**Usage**: To reliably and precisely feed plastic flakes into a process at a controlled volume rate, by using a rotating screw to meter the material. **Description:** 1) Feeding Motor is AC Motor 1.5KW 2) Speed control system adopts Delta inverter. 3) Screw design: single threaded screw structure. Reduction gearbox's reduction radio 17:1. 4) Motor and Reduction gearbox adopt tandem style. With horizontal mixer, Feeding body feeds smoothly. 5) Both feeding body and hopper are streamlining, blanking smoothly and clear conveniently.
20	**Twin screw extruder** 	**Usage:** at uses two intermeshing screws within a barrel to convey, mix, melt, and homogenize flakes for extrusion processes. **Description:** 1)Screw Diameter: Φ62.4mm 2) *Screw type material*:  - Modular structure, adopt quality high speed tool steel, screw component connect to shaft by involute spline 3) *Screw shaft material*: Adopt structural alloy steel,40CrNiMo, Heat treatment rigidity=HB300-350

		4) *Barrel material*: The barrel body is made of #45 steel matrix(a101 bimetallic liner) 5)*Screw length/ Diameter Ratio:* 36:1 6) *Effectual Working Length of Screw:* 2160 mm 7) *Rotate speed screw:* 40～400rpm 8) *Reducer gearbox:* Reduction ratio: 3.75:1 Output shaft rotation speed: Max 400RPM Input shaft rotational speed: 1500 RPM max Hard gear surface helical gear gearbox Japan NSK bearing Japan importable seal Oil recycling lubricating Oil pump: 0.75KW 9) *Main Motor Power:* 90KW AC Motor, Siemens Beide brand 10) *Main Frequency inverter:* Adopt Delta inverter 11) *Barrel design:*  The first barrel is for feeding materials, the 5th 7th and 8th barrel for vacuum and the other barrels are of closed mouth type 11) *Barrel Heating Method:* Heating system: 8 sections for heating (including screen changer and die). Cast copper

		heater is used in the first & second section; cast aluminum heater is used in the other sections. 12) *Vacuum Exhaust system:*  Adopt 5.5KW water loop vacuum pump,contain water catchment pressure box 13) *Soft water cyclic system:* Barrel use soft water cooling Soft water tank is separate from engine body Solenoid valves Water pipe uses copper chromium plating processing 14) Cooling pump: 0.55KW
21	**PET hydraulic screen changer**	**Usage:** Filters and purifies molten PET resin, ensuring consistent product quality by removing impurities and allowing for continuous screen replacement without interrupting the extrusion process. **Description:** 1)*Oil pump power*: 1.5KW 2) *Capsule Accumulator Volume*: 6.3L 3) *Screen changing control:* Hydraulic driving 4) *Screen changer material:*

		-38CrMoAlA,runner and slip board surface nitriding -Nitriding Layer Thickness:0.5～0.7mm, -Surface Rigidity:800～900HV 5) *Time of changing Net once*: <2S - Test the fusing temperature with the melt temperature thermocouple - And test the materials pressure with the pressure sensor. 6) *Die head:* 9-5.0
22	**Water Granulator** 	**Usage:** Used to produce granules from Molten resin by adding water which then forms bonds between the particles, creating granules Description: 1)Strand quantity (pc): 15 2)Max. Traction speed (m/min): 96 3)Pellet size (mm): Φ3*3 4) Rotating knife Teeth: 32 5) Motor (KW): 4KW
23	**Centrifugal Dewaterer** 	**Usage:** Used to separate solids and liquids from sludge using centrifugal force, reducing sludge volume and increasing solid content for easier handling, storage, and disposal. Description: 1)Dewaterer Power: 4KW 2)Material: Stainless steel

24	**Vibrating Sieve** 	**Uses:** Used to separate and sort plastics based on size and shape, removing contaminants and ensuring a consistent product quality. **Description:** Capacity: 300kg/h Material: .S. Made; 3 classifying screens to select normal sized pellets
25	**Finished Product Silo** 	**Usage**: Storage containers for recycled plastic pellets, ensuring quality and hygiene, and facilitating efficient handling and processing by protecting the pellets from contamination and moisture. **Description:** 1)Material: Stainless steel 2)Volume: 1.5 m^3 3) Fan: 4KW 4) Pipe diameter: 133mm