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Unity - Solidarity - Development

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STUDY OF DRINKING WATER SUPPLY SYSTEMS IN NGAZIDJA

GREEN CLIMATE FUND (GCF)

PROJECT « ENSURING A CLIMATE-RESILIENT WATER SUPPLY IN THE
COMOROS »

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

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LIST OF ABBREVIATIONS

AEP	Drinking water supply
APD	Detailed Preliminary Project
APS	Preliminary draft summary
AFD	Agence Française de Développement
CCAG	Cahier des Clauses Administratives Générales
CCP	Special Conditions of Contract
CIE	Inter-ministerial Committee for the Environment
DAO	Tender documents
DE	Outside diameter
DGEF	General Directorate for the Environment and Forests
DN	Nominal diameter
EIES	Environmental and Social Impact Assessment
ER2C	Ensuring a climate-resilient water supply
FVC	Green Climate Fund
HSE	Health, Safety and Environment
MES	Suspended Matter
MRG	Grievance Redress Mechanism
MAPEAU	Ministry of Agriculture, Fisheries, Environment, Land Management and Urban Planning
NGO	Non-governmental organization
PAP	Population affected by the project
HDPE	High density polyethylene
ESMP	Environmental and Social Management Plan
QHSE	Quality, Health, Safety and Environment
UNDP	United Nations Development Programme
SAEP	Drinking water supply system
UC	Union of the Comoros
VBG	Gender-Based Violence
AEP	Drinking Water Supply

1 SUMMARY

Comoros has received Green Climate Fund (GCF) funding of more than \$41.9 million for the "Ensuring Climate Resilient Water Supply in the Comoros Islands" project. The main objective of the project is to strengthen the resilience of drinking and irrigation water to climate change risks for 15 of the most vulnerable areas of the Union of Comoros. Specifically, the project focuses on: creating a paradigm shift in water governance by integrating climate risk reduction into water sector legislation, institutional arrangements, planning, and budgeting; understanding and adapting to climate risks to the country's fragile water resources and weak water management systems using watershed protection and rehabilitation coupled with hydrological monitoring and forecasting ; integrating climate risk reduction into the design of water supply systems; developing drinking water supply and irrigation infrastructure to ensure access to drinking water for 450,000 people (60% of the Comorian population) and including the operation and management of multiple water sources.

Fifteen target areas on the three islands, comprising 103 villages, were selected because of their vulnerability to climate change and their good hydrogeological and hydraulic potential for water storage and catchment, distributed as follows: 6 areas on Grande-Comores; 7 areas on Anjouan; and 2 areas on Mohéli Island

The project was reviewed under the UNDP Social and Environmental Standards procedure and was classified as a moderate risk project with 10 risks identified, of which seven were rated moderate and three were rated low.

Since during the design phase of the project, the sites for the installation of the infrastructure were not yet identified, an Environmental and Social Management Framework (ESMF) was prepared to try to outline the possible impacts and the types of mitigation measures that might be required during the implementation of the project.

Also, the ESMF states in its executive summary that environmental and social management plans (ESMPs) could be prepared if deemed appropriate.

In addition, the development of this ESMP meets the requirements of the AIF in its clause 10.2 (j), which states that: "Prior to commencing any construction work or activity for the implementation of the project, the accredited entity shall submit the detailed environmental and social management plan for the relevant construction work or activity to be carried out, in a form and substance satisfactory to the VFC Secretariat.

To this end, this ESMP is a corollary of the ESMF. It deals with aspects related to the establishment of drinking water supply systems (WSS), relating to sub-activities 3.2 of component 3 of the project, on the autonomous island of Ngazidja.

Along the same lines, other ESMPs have been developed to cover the other islands (Mohéli and Anjouan). As this ESMP only concerns the installation of the water supply network (construction of the tanks and installation of the piping) in Ngazidja, a separate drilling ESMP has already been prepared for the drilling works.

In accordance with good practice and in keeping with the UNDP SES, the ESMP attempts to identify additional risks and impacts that were not initially identified in the ESMF at the time of project design and to confirm those that were initially identified.

In order to ensure correlation between the ESMF and the ESMP, the impacts identified in the ESMF in relation to the installation of drinking water supply systems in the six zones (zones 1, 2, 3, 4, 5 and 6) in Ngazidja, as well as the management measures and environmental and social monitoring and follow-up, have been integrated into this ESMP development process.

In its impact identification methodology, the ESMP highlighted the impact-causing activity and the impact receptors (natural and human) during the different phases of the project (pre-construction, construction and operation). This was done in order to have all possible management measures in place to allow for the proper implementation of the activities.

In Ngazidja, the project will provide drinking water and irrigation to 81 villages with a total population of 144,122 (in 2018). This population is expected to reach 238,332 by 2042.

The main actions planned in the framework of the project can be summarized as follows:

- Construction of reinforced concrete tanks (recovery tank and distribution tanks);
- Piping for delivery and distribution lines
- Supply, transportation, earthworks and installation of new HDPE water supply and distribution pipes and construction of management and protection works
- Installation of pumps to deliver water to the distribution tanks
- Installation of dosing pumps for water disinfection

Under current conditions, only a few localities in Zone 5 have a drinking water supply system. This water supply system serves the villages of Chomoni, Mtamdou, Sima, Hassendjé, Chamro and Samba Madi. The existing works of this water supply system include the following infrastructures

- The head tank of Chomoni (120 m³) is located at a hundred meters from the well
- The secondary reservoir of Mtsamdou (60m³)
- With a pump, the Mtsamdou reservoir discharges to another reservoir in Sima (60m³).
- The village of Sima also has an impluvium of about 200 m³, which serves as a backup during the dry season.

The remaining 5 areas do not have a potable water system. The communities depend solely on rainwater harvesting and are supplied from traditional cisterns. These family cisterns (a few cubic meters) or larger collective ones (100-200 m³) are intended for domestic water supply, which is particularly crucial in the dry season. They are often stored in unsanitary conditions and are not always sufficient in quantity; it is then necessary to resort to supplying water to these areas by tanker truck, an expensive system for the users.

The environmental and social analysis conducted in this study shows that the drinking water supply project in the six selected areas of Ngazidja Island complies with the country's environmental laws and regulations and UNDP standards. This compliance will be achieved through the establishment of a participatory approach by the beneficiary communities and the effective use of the grievance mechanism and stakeholder engagement plan.

This project meets the objectives of improving the quality of life of the beneficiary population and reducing the economic, health and technical vulnerability of the towns and villages concerned.

During this analysis, the identification and evaluation of the positive and negative impacts of the project on the natural and human environment were carried out using an impact matrix that correlates the project components with the various components of the natural and social environment of the region.

For the pre-construction and construction phases, the primary adverse impacts identified are:

➤ **During the near-construction phase:** the non-valuation of the local workforce, the non-valuation of migration flows in search of work.

➤ **During the execution phase:**

Noise and atmospheric pollution linked to the traffic of the construction site machinery, risk of accidental fuel leakage from the construction site machinery, congestion by the construction site waste, risk of soil pollution by the fuels of the construction site machinery, risk of silting up of the crops in the fields bordering the work sites, risk of work accidents, risk of introduction of invasive plant species, Risk of accidents to site personnel and local residents, risk of temporary inconvenience to traffic and to the population living near the work sites, risk of STI contamination, risk of increasing the rate of contamination by the COVID-19 virus, especially among site workers, disturbance of wildlife, risk of exploitation of children and GBV, etc.

➤ **In the operation phase:**

Risk of waste in the use of water and increase in wastewater discharges, risk of air pollution due to the operation of generators, risk on the maintenance of infrastructure, poor quality of water for consumption ...

It should be noted that during this phase, the positive impacts of the project prevail and include: (i) Satisfaction of vital needs and improvement of the quality of life of the beneficiary population and reduction of waterborne diseases through access to purified drinking water in sufficient quantity, (ii) Reduction of the water chore for women and girls, allowing them to have time available to engage in income-generating activities for women and to go to school for the girls.

In order to avoid and/or minimize potential negative impacts, several measures are to be applied by those responsible during the different phases of the project. These measures are the subject of this Environmental and Social Management Plan (ESMP). These measures will be integrated in the attributions of the work companies, in the application of the good practices in the rules of the art and are included in their general expenses. These include:

□ For the construction site installation phase and the execution phase, the impacts identified are moderate to low. For the most part, these impacts require the implementation of good work management practice measures to be followed by the contractor and the work monitoring authorities such as: (i) Ensuring the periodic disposal of waste from the works to avoid soil pollution; (ii) ensuring the categorical and immediate restoration of the site installation areas; (iii) Equipping workers with Personal Protective Equipment; (v) Ensuring the implementation of a signaling system to allow the movement of goods and people, (vi) the protection of property and crops ...etc.

□ **For the operation phase of the project**, the negative impacts identified are mainly related to the management, maintenance and control of the systems to be installed and the quality of the water supplied to the population. To this end, the proposed environmental measures are as follows:

- The organization of sensitization and outreach missions to the project's beneficiary populations on (i) the need to pay for water consumption for the continuity of the service, the sustainability and durability of the infrastructure to be installed, (ii) the proper use of water by avoiding waste, (iii) the management of domestic wastewater to avoid its stagnation on the surface, which can promote the creation of environments conducive to the development of vectors of parasitic or infectious diseases (malaria), and others.
- The respect of the safety perimeters established by the water code around the drilling areas. It would be necessary to (i) organize awareness-raising missions on the need for and importance of respecting the safety perimeters defined in the water code in order to avoid water resource pollution, (ii) program and conduct reforestation campaigns in the watersheds in order to increase the rate of water infiltration into the water table.
- Continuous monitoring of the quality of the water collected by means of periodic physicochemical and bacteriological analyses.
- Carry out periodic maintenance of the various network structures and continuous monitoring of the condition of the water supply and distribution pipes.

The proposed ESMP includes (i) identification of positive and negative impacts arising from project activities, (ii) impact analysis, (iii) impact assessment and mitigation measures, (iv) follow-up and monitoring measures to be observed during the different phases, (v) an awareness and capacity building program for project beneficiaries and the water resources management committees that will be set up and future system managers.

The environmental aspect of the project is taken into account as early as the preparation phase of the DAO. The latter includes environmental and social clauses that are an integral part of the contract and that must be respected by the companies.

The implementation of this ESMP on each intervention site requires the serious and responsible commitment of all stakeholders in order to guarantee the sustainability of the project and its success from an environmental and social standpoint. For greater efficiency, it is suggested that the DGEF recruit a Control Office to which the permanent monitoring and supervision of the work will be entrusted. In the event of non-compliance or non-application of environmental measures, this control office (through the intermediary of its environmental and social expert) will initiate the process of formal notice to be sent to the company. The supervision of the works during the different phases and at the time of the reception of the works will be ensured by the DGEF and the environmental expert of the project.

The proposed capacity building program includes two technical training sessions to supplement the technical skills of the various stakeholders in the exercise of their profession, management tools and good environmental and social practices so that the environmental protection reflex becomes a reality for all project stakeholders. The people concerned by this program are (i) the technical managers of the DGEF who will be in charge of controlling and monitoring the implementation of the various measures indicated in the ESMP, (ii) the members of the IWRM committee who will be in charge of the management and protection of water resources, (iii) the staff of the DGME as a technical department of the Ministry in charge of water, (iv) the various operators and (v) the water management committees at the community level. Training will be provided by the project.

The outreach program for project beneficiaries will be established throughout the project implementation period. For greater effectiveness, it should also continue during the first year of project operation. The sensitization will cover various areas, mainly the maintenance of the infrastructure to be installed, the management and preservation of water resources, the adoption of hygiene and sanitation rules, the empowerment of project beneficiaries to respect the infrastructure to be installed under the project and to avoid illegal exploitation of water, and the promotion of gender equality and equity

The implementation of project activities could generate impacts on direct project beneficiaries, but also on communities or any other person or structure, directly or indirectly. The project has a grievance mechanism in place to manage potential risks and conflicts, disseminate information, provide advance notice, and increase the accountability of the various project stakeholders and beneficiaries.

This mechanism was made known to the beneficiaries and stakeholders of the project implementation.

A register of complaints is established at the level of the local authorities (town hall, village chiefs). During the works, a register of complaints will be established at the level of the construction site and will be regularly monitored by the control office. All complaints will be reported to UNDP and the project within 24 hours of receipt. After review, complaints regarding corrupt practices will be forwarded to UNDP for comment and/or guidance and to DGEF.

Resolved and unresolved complaints and their reasons will be published in a report produced every six months.

Within the framework of the project, the environmental and social management framework and the environmental and social management plans have been validated by the stakeholders and by the technical committee for the validation of impact studies at the national level.

2 INTRODUCTION

2.1 GENERAL CONTEXT OF THE PROJECT AND THE STUDY

The technical studies of the water supply systems for domestic purposes for 103 localities (450,000 inhabitants) and for agricultural purposes for the irrigation of 1100 ha located in 15 target areas in the Comoros Islands - Grande Comore, Anjouan and Moheli - are part of the project entitled "Ensuring Climate Resilient Water Supply in Comoros". The project is designed to address the vulnerability of the country's water supply to extreme weather events due to the fragility of its water resources and the lack of human and financial resources due to its small population and the isolation of its islands.

The fifteen target areas on the three islands were selected because of their vulnerability to climate change, their good hydrogeological and hydraulic potential for water capture and storage, the limited donor support for water supply in these localities to date, and the potential collaboration envisioned with donors conducting complementary interventions there.

The project objectives will be achieved through the following three components:

- A national approach to water planning that integrates climate change resilience into public policy, plans, legislation, budgeting, and institutional arrangements, including regulators and service providers, to ensure that sufficient human and financial resources are available to support climate change resilience
- Ensure adequate water resources are available during periods of drought and flooding and actively manage watersheds in a manner that not only prevents climate-induced overrides but also, to the extent possible, enhances water resource protection, including providing forecasts and alerts on water resource conditions to allow for adaptive management;
- Building climate-resilient infrastructure and technologies to manage and respond to water shortages caused by droughts, floods, storm damage, storm surges, wildfires, power outages, and water needs induced by rising temperatures.

As part of the implementation of Component 3, the project plans to set up drinking water supply systems in Zones 1, 2, 3, 4, 5 and 6 in Ngazidja, the subject of this ESMP.

The target areas on the island of Ngazidja are presented in Table 1 below.

Table 1: Target areas for project interventions in Ngazidja

Islands	Zones
Ngazidja	<p>Zone 1: Mvouni, Mkazi, Mavingouni, Tsidjé, Mirontsi, Salimani, Moroni Sahara, Maouéni, Sambambodoni, Dimadjou, Dzahani II, Ouellah, Sima, Dzahadjou, Bahani, Sambankouni, Vanadjou and Mhandani, VounaMbadani, Zipvandani, Batsa, Milembeni and Ntsoudjini.</p> <p>Zone 2: Dembeni, Itsoudzou, Kandzile, Makorani, Mandzissani, Mboude, Mdjamkagnoi, Mindradou, Mlimani, Panda, TsiniMoichongo, Dima, Domoni, Dzoidjou, Famare, Ifoundihe Chadjou, Ifoundihe Chamboini, Ououziouini and Nkourani</p> <p>Zone 3: Dzahadjou, Hetsa, Mbambani, Mdjoiezi, Singani</p> <p>Zone 4: Bandamadji, Chezani, Hantsindzi, Madjeoueni, Ndroude, Nioumamilima, Sadani/Mavatseni and Trelezini</p> <p>Zone 5: Songomani, Toiyfa and Ngaza, Boeni, Chamro, Chomoni, Dzahadjou, Irohe, Koimbani, Saadani, Sada, Samba Madi, Sima, Dzahani, Hambou, Hassendje, Itsinkoudi, Kouhani and Mtsamdu</p> <p>Zone 6: Bangani, Bibavou, Boenindi, Diboini, Mbaleni, Mbambani, Milevani and Oussivo</p>

2.2 OBJECTIVES OF THIS PLAN

This project, supported by UNDP as an Accredited Entity of the Green Climate Fund (GCF), has been screened according to UNDP's environmental and social standards procedure and has been classified as a category B moderate risk project.

The main purpose of this ESMP is to integrate during this phase of the Project's implementation, in addition to the environmental and social impacts identified in the ESMF, the specific considerations of the natural and human environment so as to allow the Project to be carried out while ensuring their protection.

The scope of this study as defined in the terms of reference covers the identification and analysis of the impacts on the natural and human environment, the identification of measures/actions to eliminate, reduce or mitigate environmental and social risks, the establishment of follow-up/monitoring measures to be observed, as well as the enhancement of the positive impacts of the project.

2.3 METHODOLOGICAL APPROACH

The ESMP was developed to meet the requirements of the GCF and the UNDP SES. The findings of the beneficiary community consultations, site visits, environmental and social data analysis, and documentation served as the basis for the preparation of this ESMP.

- **Data processing and analysis**

The exploitation and analysis of the data was based on the review of project documents (ESMF, SESP, stakeholder engagement plan, gender action plan), information collected during interviews with national institutions such as the DGEF, the DGEME, the Directorate of social protection and promotion of gender and via the Internet. It allowed for the collection and synthesis of:

- Data on the legislative and institutional framework
- Biophysical and human environment data
- Socio-economic data from the project's area of influence;
- Data on the socio-economic impacts of the project

- **Organization of consultation meetings**

Consultation meetings were organized by the project team with the communes covering the project intervention zones in Ngazidja, in order to gather their opinions on the project.

- **Field Observations and Investigations:**

Field missions to each infrastructure site were organized to observe and diagnose the current state of the environment, identify sensitive areas and analyze the main socio-environmental issues.

No sensitive areas were identified during the field missions. The project does not occur in or near a protected area, nor in or near a sensitive area.

- **Analysis of collected data:**

Once the documentation was analyzed and the field observations were made, the information collected was analyzed in order to :

- Insert the project in the political, legislative and institutional framework
- Have a description of the project and the environment in its biophysical and human components
- Describe the sites and activities to be performed
- Identify the environmental and social impacts likely to be generated by the project activities
- Propose measures for the removal, reduction or mitigation of identified potential negative impacts and measures to ameliorate the impacts
- Develop a follow-up and monitoring plan for the relevant impacts identified.

3 INSTITUTIONAL AND LEGAL FRAMEWORK

This chapter describes the institutional and legal framework applicable in Comoros for the Ngazidja domestic and irrigation water supply project.

3.1 OVERVIEW OF INSTITUTIONAL ARRANGEMENTS FOR ESMP

This ESMP is technically validated by the project implementation stakeholders and by the Technical Committee for the Evaluation of Environmental and Social Impact Studies at the national level. The Directorate General of Environment and Forestry (DGEF) will be responsible for overseeing the implementation of the ESMP. UNDP will obtain the endorsement of the DGEF and ensure that the ESMP is properly implemented. In the event of non-compliance with the measures identified in this ESMP, the Project Implementation Team (PIT) will ensure that timely corrective action is taken by the contractor.

Other stakeholders that may play an important role in the implementation of the ESMP include

- The General Directorate of Energy, Mines and Water (DGEME): The DGEME is the main national institution responsible for sovereign missions in the water sector. In this sense, the project must ensure that it has the necessary information for better project implementation and that environmental protection requirements coincide with project activities.
- The communes: Under the law on the Water Code in the Union of the Comoros, the project management of the public drinking water supply and sanitation service is delegated to the communes (local authorities). In this case, the municipalities are responsible for the direct or indirect management of their assets and services. They are also in charge of environmental preservation and sanitation and monitor projects in their district.
- The ministry in charge of health, which can intervene in the missions of sensitization and popularization of the population in social and health matters;

- The Labor and Social Laws Inspectorate will be responsible for (i) ensuring the enforcement of laws, regulations and collective agreements relating to working conditions and the protection of workers in the exercise of their profession, particularly those relating to hours of work, wages, safety, health and welfare, employment of children and youth, and other related matters; and (ii) providing information, recommendations and advice to employers and workers on how to comply with legal provisions... Under the project, the Labor and Legal Inspectorate will be able to conduct inspections throughout the construction period and will intervene in case of disputes.

3.2 LEGAL AND LEGISLATIVE FRAMEWORK OF THE PROJECT

The legal framework of the Union of the Comoros is made up of national legislation (the Constitution, laws, decrees, orders, and ordinances) and international and regional conventions ratified by the Union of the Comoros.

This ESMP for the Ngazidja domestic water supply project has been prepared in accordance with the legislation in force. The following paragraphs present the main legal and regulatory texts applicable to the project.

3.2.1 National legislation

- **The Constitution of the Union of the Comoros:** The Comorian State has embarked on a new policy of environmental protection and conservation, defined by the Constitution of 23 December 2001, revised in 2009 and in 2013. The legal foundations of the environmental policy are found in this Constitution, which proclaims in its preamble the right of the Comorian people to a healthy environment and the duty of all to safeguard it. It also requires the state to respect international agreements ratified by the country, including those relating to children's and women's rights. Under the constitution, the tasks of the state include "improving the quality of life of the Comorian people and protecting the landscape, nature, natural resources and the environment, as well as the historical, cultural and artistic heritage of the Nation" (art. 8).
- **The Framework Law on the Environment:** Law No. 94-018 of June 22, 1994, as amended by Law No. 95-007 of June 19, 1995, governs all activities relating to the sustainable management and conservation of biological diversity resources in terrestrial, coastal and marine environments. It sets out the general principles that must inspire and guide the regulation of activities likely to affect the environment and has three main objectives:
 - To preserve the diversity and integrity of the environment of the Comoros, which is particularly vulnerable because of its insularity,
 - To create the conditions for a sustainable use of natural resources, in terms of quality and quantity, for present and future generations,
 - To ensure an environmentally sound and balanced living environment for all citizens.

In order to achieve these objectives, the framework law requires that any public or private investment project likely to affect the environment be subject to an environmental and social impact assessment (ESIA) (section 3, articles 11 to 14).

In this phase of the project's implementation, the identification and validation of all the infrastructure installation sites has enabled the development of this environmental and social management plan, a corollary of the ESMF. The ESMF, like the ESMPs, have been technically validated by the project implementation stakeholders and by the national committee for the validation of environmental and social impact studies.

This framework law, which is currently being revised, is an opportunity to integrate other environmental and social assessment and monitoring tools.

- **Law No. 20-036/UA of 28 December 2020**, on the Water and Sanitation Code in the Union of the Comoros. It defines the principles, rules, procedures and institutions for the planning, use, protection and development of water resources and the environment. **The management of water resources must comply with the provisions of this law.**
- **Decree n° 01/52/CE** relating to Environmental Impact Studies. This Decree, taken in application of article 14 of the framework law n°94-018 of June 22, 1994 modified relating to the environment, aims at regulating the modalities of realization and presentation of the impact studies as well as the modalities of their examination by the administration and of information of the public.
- **Forestry legislation**
 - Law No. 88-006 of July 12, 1988, on the legal regime of reforestation, reforestation and forest management.
 - Order No. 66-617 regulating the rights of use, dated May 11, 1966.
 - Order No. 66-398/PROD implementing Resolution No. 65-19 of December 14, 1965, regulating land clearing and vegetation fires.
 - Order of August 5, 1932 regulating the exploitation of mangrove stands.
 - Overall, this forestry legislation establishes rules for the protection, management and exploitation of all forests subject to the forestry regime, namely
 - Natural forests such as integral nature reserves, special reserves, national parks, classified forests, state forests and forest reserves,
 - Woods, forests and woodlands, property of a forestry group constituted with the aim of carrying out in coastal regions a land policy of safeguarding the coastal area, respecting natural sites and the ecological balance.

Any clearing operations required on construction sites (reservoirs, pipelines) and along supply and distribution lines must comply with forestry legislation. Before carrying out any work, the company must have in its possession all the necessary permits and authorisations, and carry out the activities in compliance with the national laws and regulations in force.

- **Law No. 95-013/A/E**, on the Public Health and Social Action Code: this law provides, among other things, for provisions relating to any other form of deterioration in the

quality of the living environment due to factors such as air or water pollution, industrial waste and noise. This ESMP is developed to put in place management measures for the mitigation of impacts on the natural and human environment in order to allow for the proper implementation of the project and ensure its success.

▪ **Law n°84-108 on the Labor Code**

The law establishes the right to work, training and professional development for all and prohibits forced or compulsory labor (Art. 2). It is applicable to workers and employers carrying out their professional activity in Comoros. Law No. 84-108 was amended by the Law of June 28, 2012 repealing, amending and supplementing certain provisions of Law No. 84-108/PR on the Labor Code.

The law specifies the rights and obligations of employers and employees regarding: the employment contract (Title III), wages (Title IV), working conditions (Title V), working conditions of foreign workers (Title VI), health, safety and medical service (Title VII), enforcement agencies and means (Title VIII), labor disputes (Title IX), penalties (Title X) and transitional provisions (Title XI).

Throughout the implementation of activities, the project must comply with the labor code.

In the same context, companies must also comply with the labour code, as well as with all laws applicable to the project, namely: the law against child labour and trafficking and the law on the prevention and repression of violence against women.

A specific clause for the respect and compliance of these laws will be inserted in the DAO

- **Law No. 14-034/UA of December 22, 2014,** on combating child labor and trafficking complements the provisions of the labor code.
- **Law -N° 14-036/UA of December 22, 2014,** on the prevention and repression of violence against women: The purpose of this law is to combat all forms of violence against women and girls in the Union of Comoros.

The project will have to comply with the provisions of this law, in particular by combating all forms of gender-based violence in its activities and those of its suppliers and providers.

- **Arrêté n° 31/01/MPE/CB of 14 May 2001** relative to the protection of species of wild fauna and flora in Comoros. This decree lists the provisions to be respected to ensure the protection of wild fauna and flora and provides a list of category 1 species, which are fully protected, and category 2 species, which are partially protected because of their endemism, rarity or the threats of extinction they face.

In this regard, the sites where the water supply works will be carried out do not harbor endemic flora or fauna species that are fully or partially protected. These sites are located on areas already transformed for agriculture.

3.2.2 International agreements, conventions and treaties

The Union of Comoros has ratified various international conventions and treaties on environmental protection and social issues, which demonstrates its willingness to integrate the environment into development. The most relevant to this project are:

- The RAMSAR convention on wetlands of international importance of 1971. Ratification by decree n°94 -007/AF of June 6, 1994
- The Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora of 1972). Ratification by decree n°94 -005/AF of June 6, 1994
- The United Nations Framework Convention on Climate Change (1992). Ratification by decree n°94 -010/AF of June 6, 1994
- The Convention on Biological Diversity (June 5, 1992), Rio Earth Summit, ratified on August 30, 1994.

3.2.3 UNDP Social and Environmental Standards (2015)

The UNDP Guidance Note on Social and Environmental Assessment and Management defines the ESMP as a key outcome of the assessment process and consists of avoidance, mitigation, monitoring, and institutional measures - as well as the measures needed to implement these measures - to achieve the desired social and environmental sustainability outcomes. UNDP support for the project covered by this study means that the project must comply with the social and environmental standards (SES) of this international institution and must align with its general principles in the programming and design of the projects it supports. These standards are guidelines that must be taken into account in the environmental and social assessment of the activities to be undertaken by the project. Through these standards and principles, UNDP aims to:

- Strengthen the environmental and social benefits of programs and projects
- Avoid negative impact on people and the environment
- Minimize, mitigate and manage their negative impact where it cannot be avoided
- Strengthen the capacity of UNDP and its partners to manage environmental and social risks
- Ensure full and effective stakeholder participation, including a mechanism for responding to complaints from those affected by a project.

The SES requires that all UNDP programs and projects promote environmental and social opportunities and benefits and ensure that negative environmental and social risks and impacts are avoided, minimized, mitigated and managed.

The following UNDP 2015 GES principles are applicable to the project:

□ **Principle 1: Human rights.**

In the area of human rights, UNDP will support the government in meeting their human rights obligations and empowering individuals and groups, particularly the most marginalized, to realize their rights.

□ **Principle 2: Gender equality and women's empowerment.**

With respect to Principle 2, this ESMP has made provisions to ensure the participation of women in all stages of project implementation, including in the training program and in the monitoring and follow-up plan for risk and impact management and mitigation measures.

□ **Principle 3: Environmental sustainability.**

For Principle 3, UNDP is committed to integrating environmental sustainability throughout the project cycle. Thus, environmental sustainability issues are considered and integrated into the concept, design of a project and this ESMP. UNDP's commitment to integrating environmental sustainability into this project is focused on meeting standards 1, 2, and 7 to promote sustainable development.

The following UNDP SES 2015 standards are applicable to the project:

- **Standard 1: Biodiversity conservation and sustainable natural resource management**

The applicability of this standard is established during the environmental and social review and categorization process. In areas with modified habitat, UNDP will ensure that measures in this ESMP are implemented to minimize impacts on natural resources, including avoiding the introduction of invasive plant species.

- **Standard 2: Climate Change Mitigation and Adaptation**

Regarding standard 2, UNDP will assist the government in integrating the objectives of reducing emissions and resisting climate shocks in the implementation of this project. Thus, this ESMP will identify the mitigation and adaptation measures to be implemented.

- **Standard 3: Health, Safety and Working Conditions in the Community**

The Community Health and Safety Standard recognizes that project activities, equipment, and infrastructure may increase community exposure to risks and impacts. As such, UNDP will assist the Government in implementing the necessary measures to avoid or minimize the risks and impacts to community health and safety that may result from project activities. These measures are incorporated into this ESMP. This project is likely to improve the supply of drinking water to the population. It is therefore directly aimed at improving the health, safety and working conditions of communities.

- **Standard 4: Cultural Heritage**

Based on field investigations, the project does not fall within any of the scope of this standard:

-The project will not cause a negative impact on cultural heritage

-It is not located on or near a cultural heritage site

-It does not involve significant excavation, demolition, earth movement, flooding or other environmental changes¹

-It will not use tangible or intangible forms of cultural heritage for commercial or other purposes.

- **Standard 5:** Displacement and Relocation.

This standard is not applicable to this project. The assumption made in the ESMF (paragraph 25) has been confirmed in the ESMP because no displacement or relocation is contemplated.

- **Standard 6:** Indigenous Peoples

Standard 6 was not triggered because the project will not impact Indigenous peoples.

- **Standard 7:** Pollution Prevention and Resource Efficiency

Regarding Standard 7, UNDP will ensure that projects avoid the release of pollutants, and if they cannot be avoided, minimize and/or limit them. This applies to the release of pollutants to air, water, and land, and to ensuring that pollution prevention and control technologies and practices consistent with international good practice are applied during the project life cycle.

Resource efficiency, specifically water and energy, is also highly relevant to this sub-project. As part of the project, the drinking water supply network is sized according to the evolution of the population. Piezometers will be installed in each water source to allow monitoring of the capacity of the resource to supply water. Integrated water resources management committees will be set up to ensure the monitoring and rational management of water resources.

¹ This ESMP only concerns the installation of the water supply network (construction of the tanks and installation of the piping). A separate drilling ESMP has already been prepared for the drilling works.

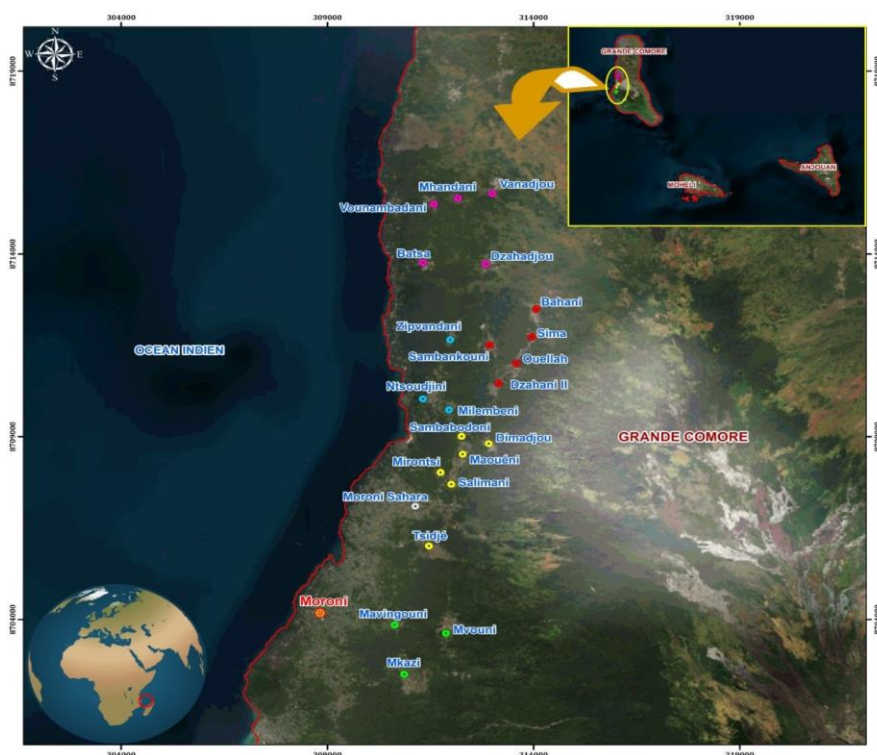
4 Project Description

4.1 Zone 1

4.1.1 Reference situation

Zone 1 consists of 23 localities, namely: Mvouni, Mkazi, Mavingouni, Tsidjé, Mirontsi, Salimani, Moroni Sahara, Maouéni, Sambambodoni, Dimadjou, Dzahani II, Ouellah, Sima, Dzahadjou, Bahani, Sambankouni, Vanadjou, Mhandani, VounaMbadani, Zipvandani, Batsa, Milembeni and Ntsoudjini.

Figure 1: Location map of the villages in zone 1



As a source of water supply, the populations of the villages in zone 1 use the same method: rainwater storage tanks (underground and overhead tanks). Indeed, Zone 1 has no public drinking water supply. The inhabitants have built, at their own expense, tanks generally in reinforced concrete, others use plastic tanks. In general and in the majority of cases, each house has a tank for rainwater collection and storage. The storage capacity of the tanks varies from house to house. Distribution in is generally done by electric pumping or by manual drawing, with buckets for domestic use.

Before each new installation in the rainy season (November to May), all tanks are washed and made clean to accommodate the new rains.

Generally, the amount of rainwater stored covers the needs of the population for most of the year. For the months when the quantities of water collected are not sufficient, the populations have recourse to tanker trucks from Moroni, which they buy at between 70,000 and 80,000 KMF depending on the period.

The problem, which is no less important, is the lack of potable water in all the project villages due to the lack of treatment. More than half of the households (63%) consider the water they use to be potable, compared to 36% who state the opposite. This can have disastrous consequences on the health of consumers.



Photo 1: Concrete tank in Mkazi

4.1.2 Project Description - Zone 1

The design retained by the proposed study is based on a system of supplying water to all 23 localities from two production wells pumped to a reservoir at Mvouni, with a suppressor along the way. Then a gravity supply to 11 localities from the Mvouni reservoir. Then a suppressor to a reservoir in Bahani. And finally, a gravity supply to the remaining 12 localities.

The general design of the drinking water supply systems for the 23 localities is as follows:

- Pumping of water from boreholes at 121.79 m to a reservoir at 229.36 m, called R/SR1, which will play the role of storage/regulation, as well as a recovery tank for a second pumping.
- A gravity supply from R/SR1 to 3 localities through an intermediate reservoir for the lower part of Moroni Sahara,
- A second pumping from R/SR1 (elevation 229.36 m) to a reservoir at elevation 347.48 m, called R/SR2, which will play in addition to the role of storage/regulation, the role of recovery tank for a third pumping,
- A gravity supply from R/SR2 to 5 localities by means of two reservoirs and two intermediate load breakers,
- A discharge from R/SR2 (elevation 347.48 m) to a reservoir at Mvouni (elevation 459.46 m) used to serve Mvouni only,
- An R/SR3 reservoir that will play the role of a storage/regulation tank for a fourth pumping operation in addition to the storage/regulation role,
- A gravity supply from R/SR3 to 4 localities by means of two tanks and two intermediate load breakers,
- A discharge from R/SR3 (elevation 306.04 m) to a reservoir in Dimmadjou (elevation 447.96 m).

- A gravity supply from the Dimmadjou reservoir to two localities, by means of a load breaker, and to a reservoir called R/SR4 at elevation 420.82 m, which will play the role of a storage/regulation tank for a fifth pumping operation
- A gravity supply from R/SR4 to 6 localities by means of three tanks and two intermediate load breakers,
- A discharge from R/SR4 (elevation 420.82 m) to a reservoir at Bahani (elevation 600.09 m).
- A gravity supply from the Bahani reservoir to 3 localities by means of one reservoir and two intermediate load breakers.

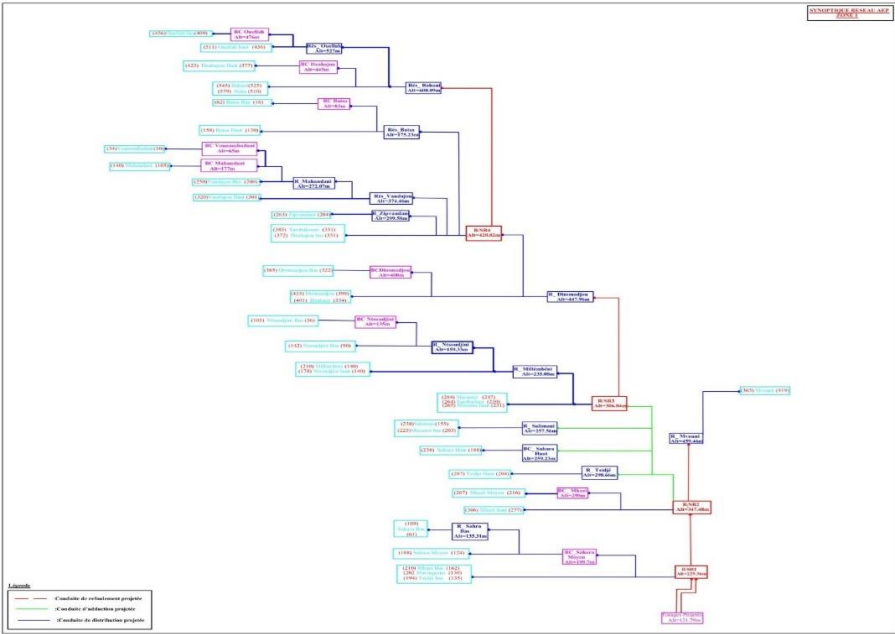
❖ **Disinfection and water treatment**

No other treatment of the borehole water is expected other than disinfection. The treatment is proposed at the level of the inlet to the recovery tank (R-00) which then serves all the other tanks. The proposed system is based on the injection of chlorine solution (dilution made either from granulated calcium hypochlorite which can be easily imported or from "daquin" - solution obtained by saltwater electrolysis). This type of system has been used for several years in Comoros

❖ **Choice of pipe characteristics**

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), its affordability, its pre-existence in Comoros (this material is frequently found in the territory), its resistance to soil stresses (resistance to inching) as well as its health safety (according to the National Institute for Environmental Health Information (Canada).

Below is a synoptic diagram of the water supply systems proposed by the study:



4.2 ZONE 2

4.2.1 Reference situation

Zone 2 is made up of 19 localities: Dembeni, Itsoudzou, Kandzile, Makorani, Mandzissani, Mboude, Mdjankagnoi, Mindradou, Mlimani, Panda, Tsini Moichongo, Dima, Domoni, Dzoidjou, Famare, Ifoundihe Chadjou, Ifoundihe Chamboini, Ouzioini and Nkourani.

Figure 2: Location map of the villages in zone 2



There is no functional drinking water supply network in Zone 2. A network supplied from the Makorani well known as "UN 39" by successive pumping to the existing reservoirs of Makorani, Tsinimoichongo and Kandzile existed previously. Most of the facilities are incomplete and very degraded: only the concrete tanks could be rehabilitated.

The other villages in the zone do not have water supply, and in all villages, families frequently use cisterns: these are basins with variable volumes, but rarely larger than 20 m³, which are filled with rainwater, either directly or after the rain has run off corrugated iron sheets. These structures are often in poor condition, even though they have been rehabilitated in the past, and above all, their design only allows for rudimentary storage, without treatment or protection from contamination, and the water that stagnates there is unhealthy.

4.2.2 Project Description - Zone 2

Supply and installation of HDPE supply and distribution pipes (OD32 to OD63mm) and ND50 cast iron pipes. For the localities located below 500 m, i.e. all the localities in the zone except Kourani and Famaré, it is proposed to deploy a water supply system from two water points: the future borehole and the UN 39 well.

The recovery tank (TN 126m) pumping from the UN39 well and the future Makorani borehole will supply the various reservoirs. Each of the reservoirs serves one or more localities via a more or less extensive distribution network:

- R01: Tsinimoichongo
- R02: Kandzilé and Mboude
- R03: Dembéni, Djamkagnoi, Dima, Ouzioini and Ifoundihé Chadjou
- R04: Panda, Mindradou, Mandzissani, Mlimani, Ifoundihé Chambouani,
- R05: Domoni and Dzouadjou

- R00: the recovery tank directly serves Makorani and Itsoundjou

The configuration of the area implies then to project secondary reservoirs on the localities to be served. The recovery tank will pump water to the R01 reservoir at elevation 310m and the R03 reservoir (elevation 354m) will be fed by gravity by the R02, located in Kandzilé (elevation 460m), which is itself fed by pumping from the R01. The R03, fed by the R02 will allow by pumping feed the R05. Finally, the pumping tank will allow to feed the R04.

In summary, the project includes:

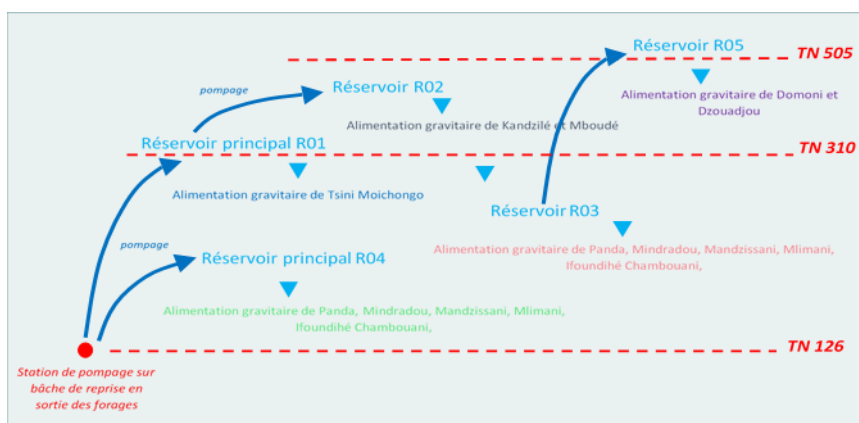
- 1 pumping station on a recovery tank at the outlet of the boreholes
- 4 pumping stations supplying the reservoirs
- 2 main tanks and 3 secondary tanks
- 5 gravity feeders
- Pipeline network
- A "conventional power supply" based on a SONELEC subscription with an emergency generator

❖ Disinfection and water treatment

No other treatment is expected for the borehole water than disinfection. The treatment is proposed at the level of the entry into the recovery tank (R-00) which then serves all the other tanks. The proposed system is based on the injection of chlorine solution (dilution made either from granulated calcium hypochlorite, which can be easily imported, or from "daquin" - a solution obtained by electrolysis of salt water): this type of system has been used for several years in the Comoros.

❖ Choice of pipe characteristics

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), its affordability, its pre-existence in Comoros (this material is frequently found in the territory), its resistance to soil stresses (resistance to inching) as well as its health safety (according to the National Institute for Environmental Health Information (Canada)).

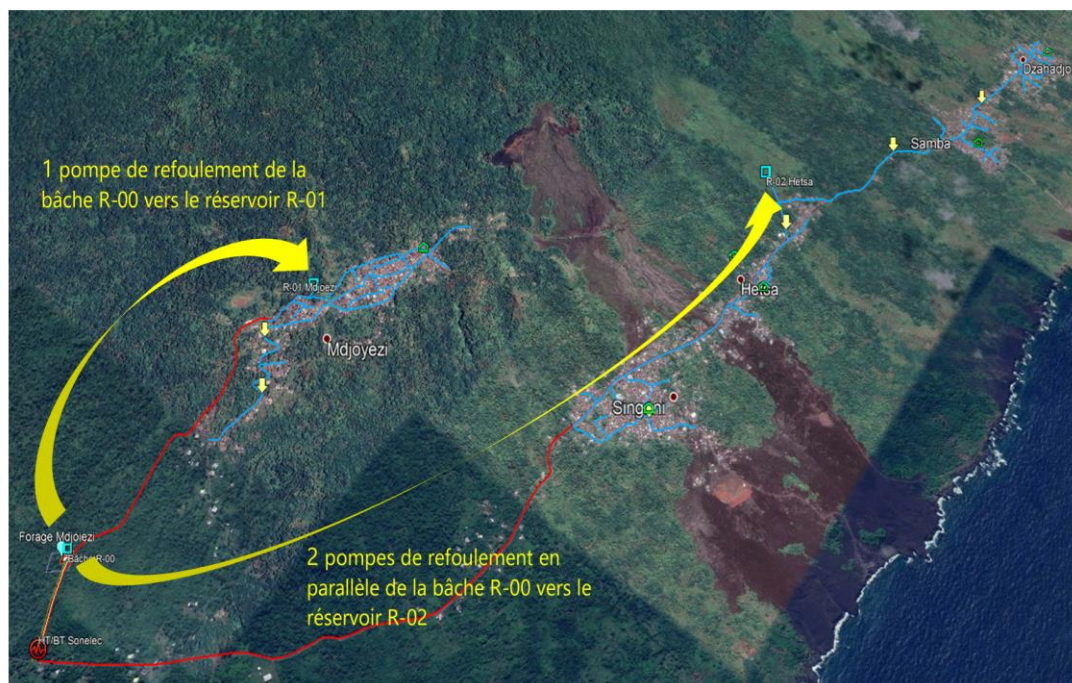


4.3 ZONE 3

4.3.1 Reference situation

Zone 3 is made up of five localities: Dzahadjou, Hetsa, Mbambani, Mdjoiezi and Singani.

Figure 3: Map showing the location of the villages in zone 3



In zone 3, no drinking water supply network has been identified. Only a few collective impluviums are present north of the village of Mdjoiezi and there are various family cisterns. The sanitary condition of these infrastructures is not optimal and the water treatment is very random. It is not feasible to integrate them into a new and efficient distribution system. No existing structure or part of an existing structure will therefore be integrated into the design of the Zone 3 drinking water supply system.

4.3.2 Project Description - Zone 3

The proposed borehole (elevation 115m) will be accompanied by a recovery tank at this elevation, thus allowing two reservoirs to be supplied by pumping at Mdjoiezi and Hetsa.

In summary, the project includes:

- 1 pumping station on a recovery tank at the borehole outlet
- 2 pumping stations supplying the reservoirs
- 2 main reservoirs
- 2 gravity feeders
- Pipeline network
- A "conventional power supply" based on a SONELEC subscription with an emergency generator

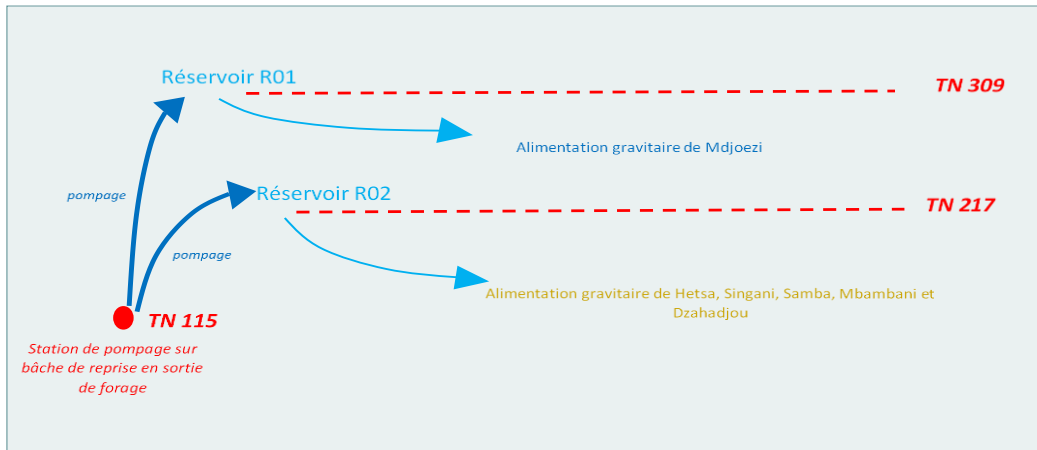
❖ Disinfection and water treatment

No other treatment is expected for the borehole water than disinfection. The treatment is proposed at the level of the entry into the recovery tank which then serves all the other tanks. The proposed system is based on the injection of chlorine solution (dilution made either from granulated calcium hypochlorite which can be easily imported or from "daquin" - a solution obtained by electrolysis of salt water): this type of system has been used for several years in the Comoros.

❖ Choice of pipe characteristics

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), affordable, already exists in Comoros (it is frequently found in the country), resistant to soil stresses (puncture resistance) and safe for health (according to the National Institute for Environmental Health Information (Canada)).

The schematic diagram of the Zone 3 water system is as follows



4.4 ZONE 4

4.4.1 Reference situation

Zone 4 is made up of 8 localities: Bandamadji, Chezani, Hantsindzi, Madjeoueni, Ndroute, Nioumamilima, Sadani/Mavatseni and Trelezini.

Figure 4: Location map of the villages in zone 4



There is no drinking water supply network in Zone 4. Field surveys have identified a well with an attached concrete reservoir that serves three standpipes in a neighborhood of Ndroudé (infrastructure in operation), but these water points are not treated, and their ownership is uncertain. Thus, no existing structure or part of a structure is included in the design of the drinking water supply for this zone 4.

However, in the village of Chezani, there is a well-type borehole completed in 2019 as part of the "GECEAU project" which is not equipped. It will be the only water supply point for zone 4. At the time of the project's dimensioning (as part of the project, the sizing of the AEP networks is planned until 2042), it is expected that the existing borehole will be the only water point. Beyond this horizon (after 2042), the impact of a second borehole will have to be evaluated and/or compared to other alternative solutions depending on the evolution of the needs of the area and the available water access technologies.

4.4.2 Project Description - Area 4

The existing borehole (TN 130m) will be accompanied by a recovery tank at this level, thus allowing the supply of three zones:

- The area below this level (Ndroudé and Hantsindzi);
- A zone towards which a main reservoir could serve the "middle" altitudes between the TN 130 and 286 m (Chézani, Nioumamilina, Trelezini and Bandamadji);
- An area of higher altitude, above TN 286 m (Madjeouéni), which would be supplied by a reservoir itself served by a return pump from the main reservoir.

The configuration of the area implies then to project secondary reservoirs on the localities to be served. In addition to the main reservoir and the reservoir on the heights of Chézani, there is a reservoir for the Ndroudé and Hantsindzi area, another to the south for Nioumamilina and a final one for Télézini and Bandamadji.

In summary, the project includes:

- 1 pumping station on a recovery tank at the outlet of the wells
- 2 pumping stations supplying the reservoirs
- 1 main tank and 4 secondary tanks
- 4 gravity feeders
- Pipeline network
- 3 photovoltaic generators composed of several modules with support, one of which coupled to a generator as well as two (2) MV/LV transformers on the SONELEC network.

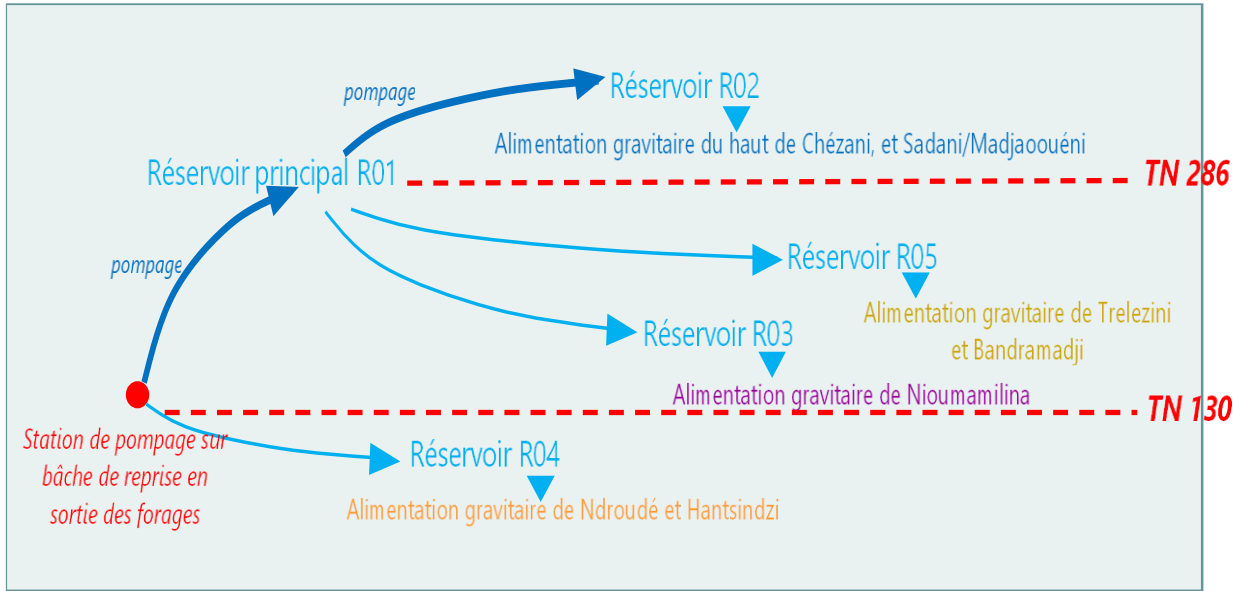
❖ **Disinfection and water treatment**

No other treatment of the borehole water is expected other than disinfection. The treatment is proposed at the level of the inlet to the recovery tank (R-00) which then serves all the other tanks. The proposed system is based on the injection of chlorine solution (dilution made either from granulated calcium hypochlorite which can be easily imported or from "daquin" - solution obtained by salt water electrolysis). This type of system has been used for several years in Comoros

❖ **Choice of pipe characteristics**

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), its affordability, its pre-existence in Comoros (this material is frequently found in the territory), its resistance to soil stresses (resistance to inching) as well as its health safety (according to the National Institute for Environmental Health Information (Canada)).

The Zone 4 water system is shown in the following diagram:

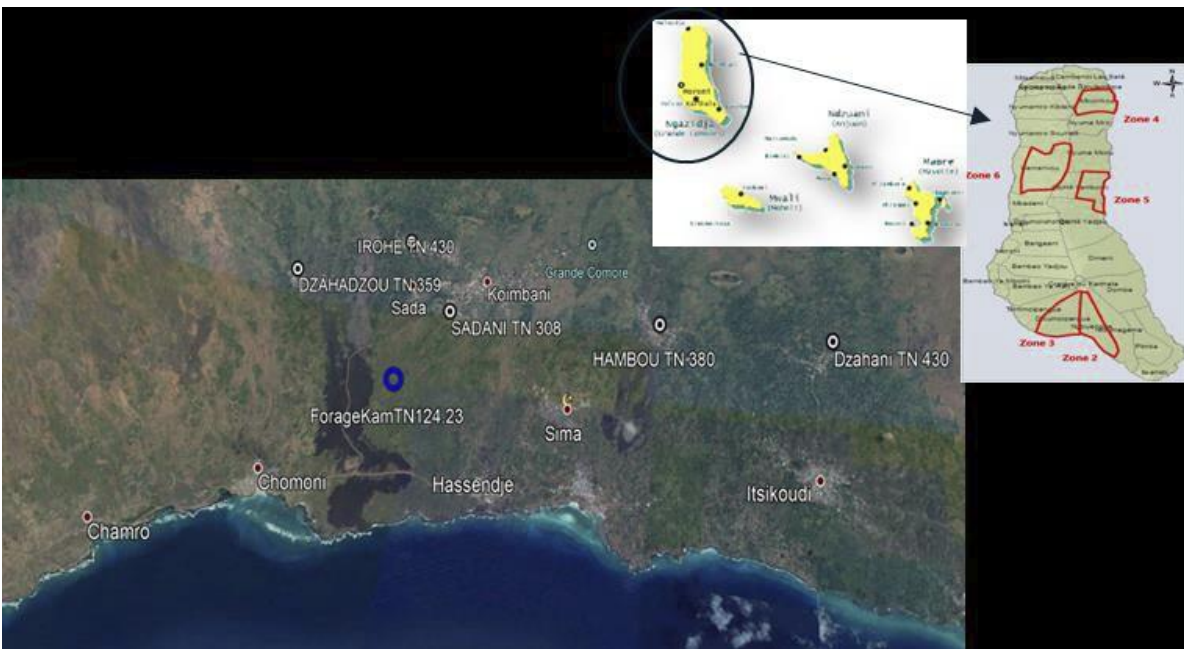


4.5 ZONE 5

4.5.1 Reference situation

Zone 5 is composed of 18 localities which are: Songomani, Toiyfa and Ngaza, Boeni, Chamro, Chomoni, Dzahadjou, Irohe, Koimbani, Saadani, Sada, Samba Madi, Sima, Dzahani, Hambou, Hassendje, Itsinkoudi, Kouhani and Mtsamdu.

Figure 5: Location map of the villages in zone 5



Zone 5 has a drinking water supply system between Chomoni and Mtsamdou. It is supplied by a well with a diameter of 1.4 m, 78 m deep and a static level of 76 m, with a nominal capacity of 10 m³/h. Its conductivity has been measured at 4800 µS/cm (i.e. probably around 3 g/l). This level of salinity does not allow, a priori, to overexploit this well, given the risk of further degrading its quality. However, this well can continue to be exploited on top of the new network which will be set up.

This water supply system serves the villages of Chomoni, Mtamdou, Sima, Hassendjé, Chamro and Samba Madi. The other localities in Zone 5 do not yet have access to drinking water (see Table 2).

Table 2: Existing Infrastructure in Zone 5

Type of infrastructure	Capacity	Location
Head tank	120 m ³	Chomoni
Secondary tank	60m ³	Mtsamdou
Secondary tank	60m ³	Sima
Emergency tank (during dry seasons)	200 m ³	Sima

The network of pipes of this existing water supply system runs along the villages of the coast. This network was built in 2010 by Hydraulique sans frontières (HSF) and serves the villages of Samba-Madi, Chamro, Chomoni, Hanssendje, Mtsamdou and Sima through a series of standpipes.

In addition to the new network to be set up, this existing network will be maintained and improved.

4.5.2 Project Description - Zone 5

The planned drilling (TN 124.23m) will be accompanied by a recovery tank at 124 m, allowing to supply:

- The head tank of Chomoni (120 m³) located at a hundred meters from the well
- It will allow to feed a reservoir at Itsikoudi-low TN 121 m which will feed itself thanks to a pump the reservoir of Itsikoudi-high TN 261 m
- Two reservoirs located between the TN 124 and 505 m (Sadani and Koimbani)

In summary, the project includes:

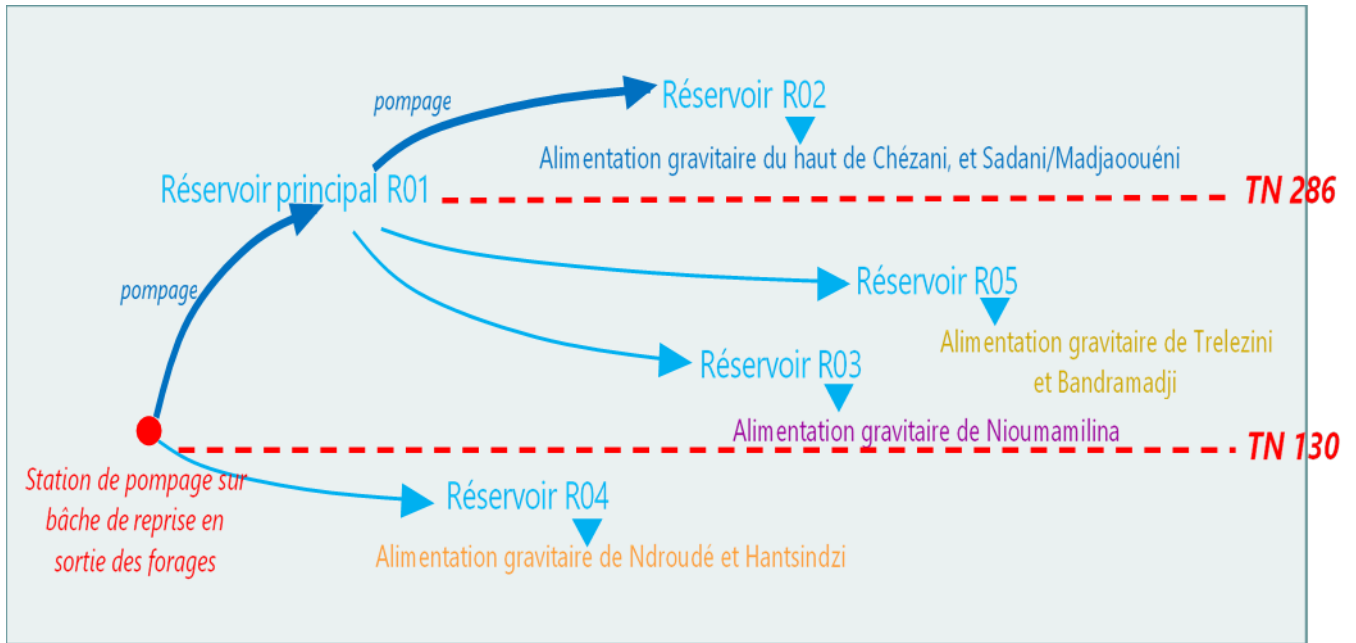
- 1 pumping station on a recovery tank at the outlet of the wells
- 4 pumping stations supplying the R01, R02, Sima and R04 reservoirs □ 1 main tank and 5 secondary tanks
- 3 gravity feeds
- Pipeline network
- A "conventional power supply" on the basis of a SONELEC subscription with an emergency generator
- Disinfection and water treatment

No other treatment of the borehole water is expected other than **disinfection**. Treatment is proposed at the level of the inlet to the recovery tank (R-00) which then serves all the other reservoirs. An additional chlorination is proposed at the Koimboini, Mtsamdu and Itsikoudi Haut reservoirs. The proposed system is based on **the injection of chlorine** solution (dilution made either from granulated calcium hypochlorite which can be easily imported or from "daquin" - solution obtained by salt water electrolysis). This type of system has been used for several years in Comoros.

□ Choice of pipe characteristics

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), its affordability, its pre-existence in Comoros (this material is frequently found in the territory), its resistance to soil stresses (resistance to inching) as well as its health safety (according to the National Institute for Environmental Health Information (Canada)).

The layout of the main components of the project is shown in the following schematic diagram:

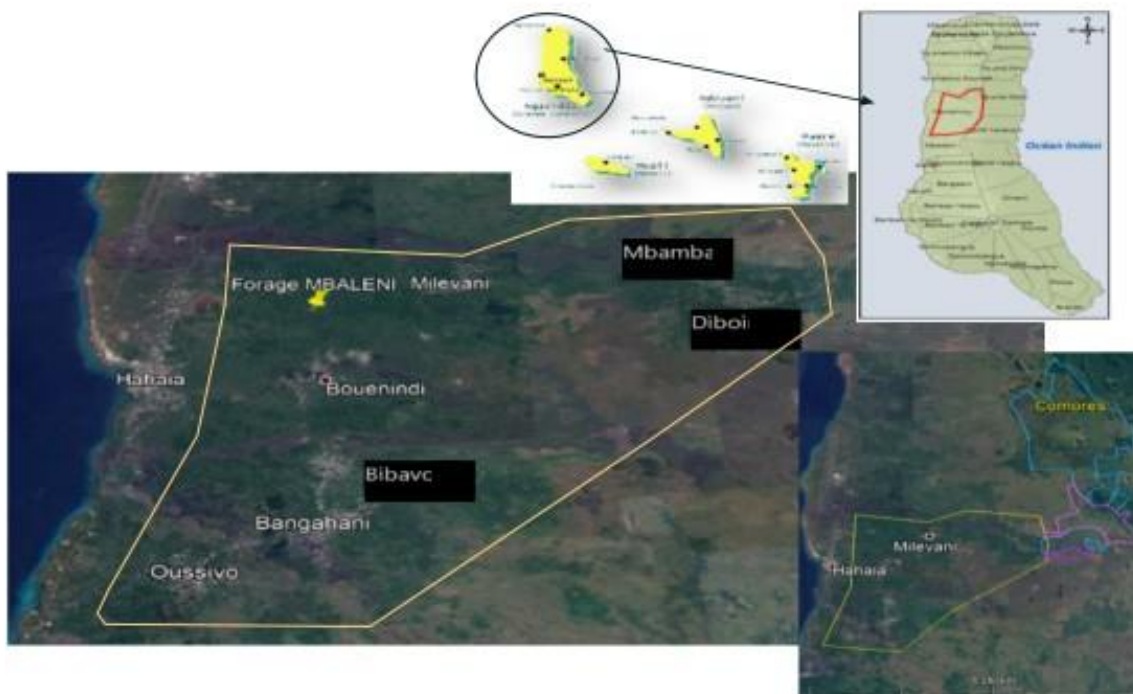


4.6 ZONE 6

4.6.1 Reference situation

Zone 6 is composed of 8 localities which are: Bangani, Bibavou, Boenindi, Diboini, Mbaleni, Mbambani, Milevani and Oussivo.

Figure 6: Location map of the villages in zone 6



In the 8 localities of zone 6, no drinking water supply network has been identified. Water is supplied from rainwater through family cisterns. There are also some collective cisterns, such as in the village of Diboini. The sanitary state of these infrastructures is not optimal and the treatment of the water is very random. It is not feasible to integrate them into a new and efficient distribution system. No existing structure or part of an existing structure will therefore be integrated into the new drinking water supply system for zone 6.

4.6.2 Project Description - Zone 6

On the basis of the estimated needs and a pumping time on the future drilling of 16 hours per day maximum, **it is expected that this drilling, cased in diameter 8 inches, can provide a nominal flow of at least 53 m³ /h.** This flow rate seems achievable, considering the historical flow rates of the boreholes and the flow rates obtained on the 8-inch boreholes within the framework of the GECEAU program (distributed in different points of the island) which have reached or exceeded this order of magnitude.

In summary, the project includes:

- 1 pumping station on a recovery tank at the outlet of the wells
- 3 pumping stations supplying the reservoirs
- 2 main tanks and 2 secondary tanks □ 4 gravity feeders
- Pipeline network
- A "conventional power supply" on the basis of a SONELEC subscription with an emergency generator

- **Disinfection and water treatment**

No other treatment of the borehole water is expected other than disinfection². The treatment is proposed at the level of the inlet to the recovery tank (R-00) which then serves all the other tanks. An additional chlorination is then proposed at the level of the 4 secondary tanks.

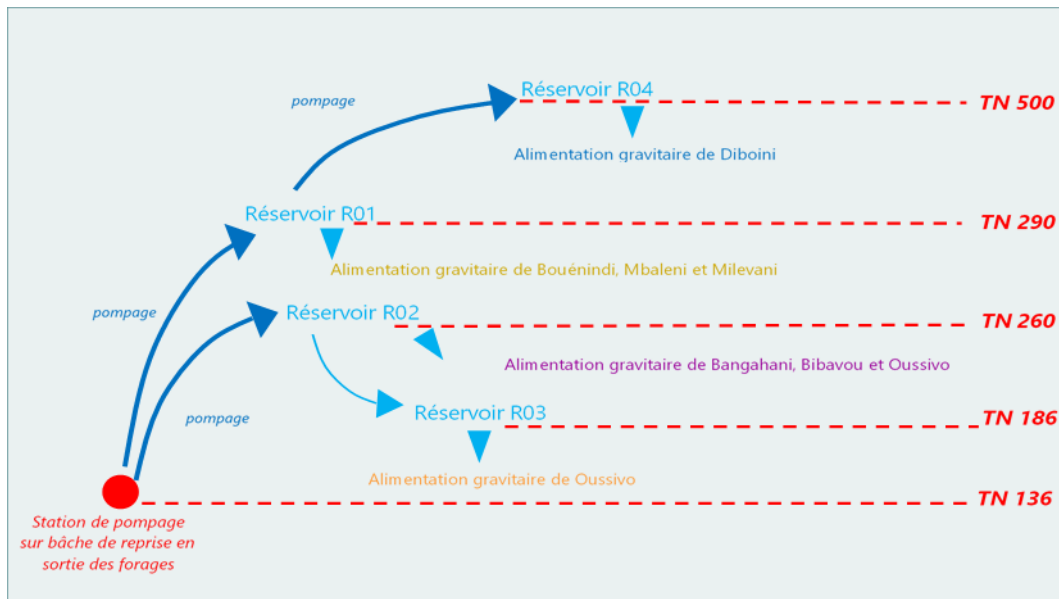
The proposed system is based on the injection of chlorine solution (dilution made either from granulated calcium hypochlorite, which can be easily imported, or from "daquin" - a solution obtained by salt water electrolysis). This type of system has been used for several years in Comoros.

- **Choice of pipe characteristics**

The choice of materials for the pipes fell on HDPE because of the ease and speed of installation (no sand bed but sifted run-of-mine), its affordability, its pre-existence in Comoros (this material is frequently found in the territory), its resistance to soil stresses (resistance to inching) as well as its health safety (according to the National Institute for Environmental Health

² On the island of Ngazidja, the groundwater is free of suspended matter and turbidity. This is why only chlorine disinfection is used. On the other hand, on the islands of Anjouan and Moheli, river water is used instead. There, we use systems of decanters, filtration and disinfection.

Information (Canada).The layout of the main components of the project is shown in the following schematic diagram:



➤ **Summary of the location of the infrastructures**

Based on the preliminary design studies of the project, the locations of the infrastructures are represented in the following table:

Table 3: Location of infrastructure to be built in the 6 zones

Zone	Site of work	Work name	Dimensions	Geographical coordinates		
				Latitude	Longitude	Altitude (m)
Zone 1	Mvouni	Tarpaulin BC5	V = 3,50m3	11° 40' 27.45" S	-43° -17' -1.09" W	400
		Tank R6	V = 250m3	11° 43' 55.914" S	-43° -16' -48.939" W	459.8
		Tank R2/SR2	V=100m3	11° 43' 59.042" S	-43° -16' -22.533" W	348.6
	Mkazi	Tarpaulin BC1	V = 3,50m3	11° 44' 2.657" S	-43° -16' -6.857" W	290.3
		Tank R1 /SR1	V=100m3	11° 43' 47.653" S	-43° -15' -55.888" W	228
		Tarpaulin BC2	V = 3,50m3	11° 41' 54.411" S	-43° -16' -18.618" W	200.1
	Sahara-Bas	Tank R5	V = 250m3	11° 41' 41.567" S	-43° -16' -4.236" W	135
	Tsidjé	Tank R7	V=100m3	11° 42' 15.123" S	-43° -16' -37.279" W	298.7
Tarpaulin BC3		V = 3,50m3	11° 41' 45.551" S	-43° -16' -38.981" W	259.7	

Zone	Site of work	Work name	Dimensions	Geographical coordinates		
				Latitude	Longitude	Altitude (m)
	Salimani	Tank R8	V=100m3	11° 41' 3.875" S	-43° -16' -40.856" W	261.8
		Tank R3/SR3	V = 250m3	11° 40' 28.835" S	-43° -16' -47.907" W	300
	Millémbéni	Tank R9	V=100m3	11° 40' 6.896" S	-43° -16' -41.736" W	235.9
	Ntsoudjini	Tank R10	V=100m3	11° 39' 51.922" S	-43° -16' -24.66" W	160.9
	Dimmadjou	Tank R11	V = 250m3	11° 40' 29.642" S	-43° -17' -8.538" W	450.3
		Tank R4/SR4	V = 250m3	11° 39' 32.812" S	-43° -17' -12.42" W	419.2
	Zipvandani	Tank R12	V= 50m3	11° 38' 27.337" S	-43° -16' -51.131" W	298.5
		Tarpaulin BC6	V = 1,20m3	11° 37' 50.855" S	-43° -16' -45.545" W	293.7
	Batsa	Tank R13	V= 50m3	11° 37' 53.32" S	-43° -16' -22.388" W	174.9
		Tarpaulin C7	V = 3,50m3	11° 37' 47.787" S	-43° -16' -0.568" W	80.1
	Vanandajou	Tank R14	V= 50m3	11° 37' 32.028" S	-43° -17' -4.444" W	372.9
	Mahandani	Tank R15	V= 50m3	11° 36' 46.001" S	-43° -16' -51.885" W	271.5
		Tarpaulin BC8	V = 3,50m3	11° 36' 48.525" S	-43° -16' -27.574" W	175.4
	Ouellah	Tarpaulin BC 10	V = 3,50m3	11° 39' 18.767" S	-43° -17' -25.811" W	475.8
	Ouellah	Tank R17	V= 50m3	11° 39' 1.738" S	-43° -17' -35.192" W	527.2
Bahani	Tank R16	V = 250m3	11° 38' 56.971" S	-43° -17' -43.541" W	600.8	
	Tarpaulin BC11	V = 3,50m3	11° 38' 11.727" S	-43° -17' -20.278" W	448.7	
Zone 2	Kandzile	Tank _R02	V= 323 m3	11° 51' 27.013" S	-43° -23' -35.547" W	459.9
	Domoni	Tank _R05	V=105m3	11° 52' 42.648" S	-43° -25' -29.555" W	505.4
	Dembeni	Tank _R03	V= 288m3	11° 52' 37.091" S	-43° -24' -35.562" W	353.6
	Panda	Tank _R04	V=105m3	11° 52' 29.477" S	-43° -23' -48.911" W	230.1

Zone	Site of work	Work name	Dimensions	Geographical coordinates		
				Latitude	Longitude	Altitude (m)
	TsiniMoichong o	Tank _R01	V=425m3	11° 50' 56.164" S	-43° -22' -45.158" W	312.1
	Makoran	Tarpaulin _R00	V=466m3	11° 51' 3.588" S	-43° -22' -5.251" W	125.4
	Famaré	collector and filter		11° 51' 40.066" S	-43° -25' -50.854" W	688
	Famaré	Cistern		11° 51' 41.203" S	-43° -25' -52.007" W	682.4
Zone 3	Hetsa	Tank R-02	V=230m3	11° 50' 46.772" S	-43° -19' -52.221" W	216.6
	Mdzoiézi	Tarpaulin R-00	V=350m3	11° 50' 6.854" S	-43° -18' -0.001" W	118.2
	Mdzoiézi	Tank R-01	V= 160m3	11° 50' 6.314" S	-43° -18' -45.807" W	308.2
Zone 4	Chézani	Forage F00	V=495m3	11° 25' 31.509" S	-43° -23' -48.953" W	128.9
	Trelezini	Tank R02	V= 210m3	11° 24' 49.032" S	-43° -23' -11.857" W	236
	Chézani	Tank R03	V= 210m3	11° 25' 27.538" S	-43° -24' -0.702" W	87
	Chézani	Shaft		11° 25' 11.071" S	-43° -24' -12.15" W	50
	Ndroudé	Existing Tank		11° 25' 12.115" S	-43° -24' -13.237" W	48
	Ndroudé	Fountain bollard BF2		11° 25' 12.673" S	-43° -24' -27.45" W	27
	Ndroudé	Fountain bollard BF3		11° 25' 16.597" S	-43° -24' -34.798" W	20
	Ndroudé	Fountain bollard BF1		11° 25' 21.216" S	-43° -24' -31.993" W	30
	Chézani	Tank R1a		11° 26' 7.505" S	-43° -23' -8.884" W	389
	Chézani	Tank R1b		11° 26' 6.94" S	-43° -23' -13.758" W	348
	Chézani	Tank R04	V= 210m3	11° 26' 20.933" S	-43° -23' -11.166" W	393
Chézani	Tank R05	V= 210m3	11° 26' 28.471" S	-43° -23' -40.189" W	296	
Zone 5	Koimbani	Tank		11° 38' 20.4" S	-43° -22' -44.4" W	149.8
	Sada	Tank		11° 38' 9.6" S	-43° -21' -57.6" W	385.5

Zone	Site of work	Work name	Dimensions	Geographical coordinates		
				Latitude	Longitude	Altitude (m)
	Irohe	Tank		11° 37' 58.8" S	-43° -21' -36" W	480.6
	Koimbani-Chomoni	Tank R00 TN 124	V=432m3	11° 38' 20.811" S	-43° -22' -54.404" W	123.3
	Sadani	Tank R01 TN 310	V=264m3	11° 37' 50.471" S	-43° -22' -16.876" W	308.5
	Koimbani	Tank R02 TN 505	V=264m3	11° 36' 54.521" S	-43° -21' -18.4" W	505.9
	Boieni	Tank TN 500		11° 38' 27.6" S	-43° -21' -35.8" W	501.9
	Boieni-Bas	Tank TN 396		11° 38' 26.3" S	-43° -21' -56.4" W	398.9
	Itsikoudi-haut	Tank R04 TN 261	V=162m3	11° 35' 11.6" S	-43° -22' -51.1" W	259.1
	Dzahani	Tank TN 505		11° 34' 50.317" S	-43° -21' -39.628" W	503.2
	Itsikoudi-bas	Tank R03	V=162m3	11° 35' 32.6" S	-43° -23' -13.9" W	118.8
Zone 6	Mbaléni	Tarpaulin R-00	V=210m3	11° 33' 27.152" S	-43° -17' -10.462" W	137.6
	Milévani	Tank R-01	V=147m3	11° 33' 18.425" S	-43° -18' -15.815" W	288.5
	Bangahani	Tank R-02	V=147m3	11° 34' 59.23" S	-43° -17' -28.243" W	259.5
	Diboïni	Tank R-04	V=105m3	11° 33' 36" S	-43° -19' -44.4" W	498.8
	Oussivo	Tank R-03	V=147m3	11° 35' 16.638" S	-43° -16' -50.104" W	186.1

5 REFERENCE DATA

5.1 AREAS OF INTERVENTION OF THE PROJECT

The project intervention in Ngazidja will cover six zones, which are zone 1, 2, 3, 4, 5 and 6 that are part of the island of Ngazidja. The targeted population in the 6 zones is 144,122 inhabitants and is expected to reach 238,332 inhabitants in 2042 (Table 4).

Table 4: Number of inhabitants benefiting from the project

Zone	Villages concerned	Number of inhabitants 2018	Number of inhabitants 2042
Zone 1	Mvouni, Mkazi, Mavingouni, Tsidjé, Mirontsi, Salimani, Moroni Sahara, Maouéni, Sambambodoni, Dimadjou, Dzahani II, Ouellah, Sima, Dzahadjou, Bahani, Sambankouni, Vanadjou et Mhandani, VounaMbadani, Zipvandani, Batsa, Milembeni et Ntsoudjini.	64 600	104 269
Zone 2	Dembeni, Itsoudzou, Kandzile, Makorani, Mandzissani, Mboude, Mdjamkagnoi, Mindradou, Mlimani, Panda, Tsini Moichongo, Dima, Domoni, Dzoidjou, Famare, Ifoundihe Chadjou, Ifoundihe Chamboini, Ouzioini et Nkourani	28 108	47 386
Zone 3	Dzahadjou, Hetsa, Mbambani, Mdjoiezi, Singani	10 290	17 347
Zone 4	Bandamadji, Chezani, Hantsindzi, Madjeoueni, Ndroude, Nioumamilima, Sadani/Mavatseni et Trelezini	13 830	23 316
Zone 5	Songomani, Toiyfa et Ngaza, Boeni, Chamro, Chomoni, Dzahadjou, Irohe, Koimbani, Saadani, Sada, Samba Madi, Sima, Dzahani, Hambou, Hassendje, Itsinkoudi, Kouhani et Mtsamdu	18 170	30 632
Zone 6	Bangani, Bibavou, Boenindi, Diboini, Mbaleni, Mbambani, Milevani et Oussivo	9 124	15 382
Total		144 122	238 332

Far from the geographic boundaries of the project intervention areas, the potentially affected population (PAP) extends to all persons using the traffic routes (roads and lanes) along which work will be performed as part of the project.

5.2 PHYSICAL AND NATURAL ENVIRONMENT

5.2.1 Geomorphology of the project area

The Union of Comoros is composed of four islands of volcanic origin, including Ngazidja, Moheli, Anjouan and Mayotte, the latter under French administration. Despite their common characteristics due to their volcanic origin, their morphology presents a great variability due to their different stages of evolution. The areas concerned by the present ESMP are located on the island of Ngazidja.

The island of Ngazidja is the youngest of the islands, formed about 130 000 years ago by two active volcanoes, Karthala which is still active, and La Grille, now dormant and located in the north. Indeed, the island of NGAZIDJA is marked by a new constitution and relief corresponding to a recent volcanism which covered with its contributions the altered reliefs of the previous period of rest; everywhere one meets recent flows of scoriaceous materials, blackish, very permeable, especially around the Khartala volcano, with a multitude of small side craters crowned with pozzolan. The result is a mountainous relief with a gentle or medium slope towards the sea, without any well-marked valley; the precipitations are very abundant and infiltrate instantaneously filling the water tables present in the region.

5.2.2 Climate

Comoros has a humid tropical climate with an oceanic influence, characterized by two main seasons: a hot and humid season (austral summer) and a dry and cool season (austral winter). This climate is characterized by large local variations in relation to exposure to prevailing winds and altitude.

The average annual temperature is around 21.3°C. The island of Ngazidja is subject to trade winds (Kussi) during the dry season and to monsoons (Kashkazi) during the rainy season (Battistini and Verin, 1984). The annual rainfall on this island varies from 1000 mm (on the coastal areas) to 5000mm (on the western slope). The average annual rainfall and its distribution during the year vary according to exposure and altitude. The western slope is the rainiest.

The Comoros can be crossed by cyclones, mobile air masses, in strong rotation, accompanied by very violent winds and rains. There are three types of cyclones that can hit the Comoros. These three types are related to the site of formation: near the archipelago, north of Madagascar and east between 55 and 65° East longitude.

5.2.3 Climate change

The Union of Comoros is experiencing the adverse effects of climate change, which is significantly affecting various sectors, including water resources, health, energy, agriculture and forestry.

In general, the north and north-east of Ngazidja Island are drier and warmer during the dry season. These are the areas most affected by water scarcity due to the premature drying up of water points.

5.2.4 General overview of water resources

The island of Ngazidja does not have a permanent hydrographic network despite the abundance of rainfall. Permanent surface water is non-existent because of the porosity of the soil. However, three natural springs are present, citing only the one located in Maoueni to the west of the forest of the Grille massif.

95% of the rainwater infiltrates. The geological and pedological characteristics of the soils (the vertical permeability of the outcropping rocks is very high), hydrological (low groundwater reserves: groundwater is more a matter of hydrogeology than hydrology, which generally concerns surface water), pluviometric (rainfall generally does not last more than a few tens of minutes), geomorphological (the surfaces of the catchment areas are small) agree to limit the flow in the talwegs to brief periods of intense rainfall. Immediately after the rainfall stops, the channeled water flows and infiltrates quickly to leave again dry beds.

The runoff coefficient is estimated at 5%. The effective rainfall coefficient, i.e. the fraction of the total rainfall that feeds the water table, is estimated at 57%. Taking into account the average annual rainfall of the island of Ngazidja, the effective evapotranspiration and the runoff coefficient, the average flow of the generalized water table of Ngazidja, which discharges into the sea, has been estimated at 23 m³. day⁻¹ meter of coastline⁻¹.

5.2.5 Groundwater

In addition to previous studies and pilot programs, a geophysical survey is being conducted by the project (not part of this ESMP), which has provided a better understanding of groundwater conditions, including validation of drilling points. There is very large spatial variation in groundwater salinity between wells, which may be related to some extent to geological heterogeneity.

5.2.6 Biological environment

The Comoros, which is made up of small volcanic islands, is not home to a large number of different species - the islands were formed very recently from a geological point of view, so it has not taken long for organisms to colonize them - and they are not home to native mammals or amphibians, as these are less easily dispersed in isolated islands. But the islands do support a number of endemic species. The mammal diversity of Comoros, like most other volcanic islands, is limited to marine mammals and bats.

The rich volcanic soils of the islands favor the growth of abundant vegetation. Generally speaking, Comoros is characterized by dense, generally green and very diverse vegetation, which varies according to the type of soil and microclimate, which are numerous on the islands. Beyond the coastal areas are coconut, mango and banana trees, and above them is a forest zone with many varieties of tropical hardwoods. Frog wood, lichens and heather grow on the highest peaks.

The project intervention areas are located at low and medium altitude. In these areas, the vegetation is characterized by crops (food crops and cash crops) and agroforestry, the most abundant species of which are fruit trees (mango, jackfruit, breadfruit, orange trees, lemon trees), a few palm trees (coconut trees), eucalyptus and badamiers. The endemicity of species is beyond the mid-altitude zones, in the primary forests.

The RAMSAR site in Ngazidja, which is Karthala, is located at an altitude of 2361 m. The Project does not intervene in or near that RAMSAR site.

5.3 CHARACTERISTICS OF THE SOCIO-ECONOMIC ENVIRONMENT

5.3.1 Demographics and socio-economic activities

In 2018, the population of the island of Ngazidja constitutes about 51% of that of the Union of Comoros. On the 1,147 km² of the island of Ngazidja, the 379,367 inhabitants (2018) are distributed in 12 prefectures/regions. The largest concentration of the population is in the capital city of Moroni (54,000 inhabitants). According to the latest general population and housing census conducted in December 2017, young people under 20 represent 53% of the population compared to 2% for people over 65. As for the Comorian female population, it constitutes a little more than half of the total, i.e. 50.1% and those of childbearing age 23.6%.

5.3.2 Health

In Ngazidja, the health system consists of the island health administration and the Regional Hospitals (CHR). At the peripheral level, there are 17 health districts in the Comoros, including 7 in Ngazidja. These health districts are covered by one surgical medical center (CMC) and three urban medical centers (CMU) in Ngazidja. In addition, there is a network of Armed Forces health clinics, the CARITAS Catholic Mission clinic, a growing private service and 49 peripheral health posts and several community health structures. Thanks to the existence of all these structures, geographical accessibility to a health center within a 5 km radius is estimated at 45% in Ngazidja.

Malaria is the primary reason for medical and pediatric consultations, accounting for 29% of consultations in 1999, compared with 30.35% in 1992. Acute diarrheal diseases mainly affect children under 5 years of age and were the second most common reason for consultation (12%) in 1999 compared to 14.7% in 2001. Acute respiratory infections mainly affect children under 5 years of age and were the second most common reason for consultation (12%) in 1999, compared to 14.7% in 2001. The HIV prevalence rate is estimated at less than 0.12% in December 2002. HIV infection affects both sexes with a female/male ratio of 1.1. In 2002, the cumulative number of cases reached 69, including 29 deaths. The spread of AIDS is confirmed year after year. According to projections of the evolution of HIV in Comoros and in the absence of a reversal of trends, the average annual growth rate of the number of people infected by HIV could reach 31.2% in 2018.

5.3.3 Agriculture

There are two main categories of farming systems:

- "Lowland" farms, located in areas of altitude below 600 m ;

- And those of "High", which correspond to different climatic conditions.

The low and medium altitude zones are reserved for cultivation systems associating, on the same plot of land, a tree stratum dominated by coconut and clove trees, an intermediate stratum occupied by banana trees and a lower stratum assigned to export crops in association with food production. The altitude zones between 500 and 900 m are devoted to systems based on food crops.

At the margin of the last forests, at an altitude of 800 to 1,200 m, are banana plantations. Food production consists of bananas, fresh tubers such as cassava, sweet potatoes, taro and yams, breadfruit and market garden produce. It is mainly intended for self-consumption.

Among the main constraints to agriculture are: i) unresolved land issues following the disappearance of the colonial domains and the confused management of the public domain; ii) the high cost of communications between and within the islands; iii) insularity and location away from the main maritime routes, both of which have a negative impact on the competitiveness of agricultural exports.

5.3.4 Livestock

In Ngazidja, livestock is raised on cattle, sheep, goats and poultry. It is a form of animal husbandry for hoarding and notability, on the occasion of "big weddings. Strictly speaking, there is no livestock farming for economic production, nor is there any pastoral space.

5.3.5 Fishing

Artisanal fishing in Ngazidja is for the most part artisanal. It is characterized by the use of small boats, 6.3 to 7.1 m in length, made of fiberglass, with no deck and motorized, with an engine power not exceeding 25 hp. Their number has been estimated at 1,500.

The fishing techniques used are longline and trolling. In general, apart from the good practice of traditional fisheries, the technical level of the fishermen is limited and relatively low.

6 STAKEHOLDER ENGAGEMENT

During the design of the project, consultations were carried out with the various stakeholders, including the beneficiary communities, in accordance with the stakeholder engagement plan. Based on this plan, the beneficiary communities were involved in the various phases of the project from design to implementation. **A consultation meeting** was held involving all parties: local authorities, NGOs and beneficiary communities including women's associations, opinion leaders and youth representatives. In addition to presenting the activities to be carried out, the objective of these consultations was to raise awareness among the various parties and to gather their opinions. The involvement of the stakeholders, and in particular that of the beneficiary communities, is essential for the appropriation and advancement of the project. No protests against the project were expressed. The parties present at these meetings expressed their willingness to accompany and support the project so that it can achieve its objectives and that the supply of drinking water and irrigation in the beneficiary localities becomes a reality. **The main points raised, the responses provided and the lists of participants are consolidated in the consultation report (see Annex 1).**

7 ANALYSIS OF ALTERNATIVES

Analysis of possible alternatives capable of achieving the project objectives with less impact on the environment and the project was a key component of the project design. Several alternatives were considered during the pre-feasibility study phase. The selected alternatives were then studied in detail during the feasibility phase and a more precise project cost was determined.

The most relevant proposed project alternatives are:

- The "No Project" Alternative
- Design Alternatives
- Flow Alternatives
- Distribution System (Piping) Alternatives
- Storage Tank Alternatives
- Energy alternative

7.1 NO PROJECT “ALTERNATIVE”

The "No Project" alternative is the option of not implementing the proposed project. This alternative would imply that the proposed development would not be carried out and the situation would remain as it is now. This would avoid any environmental, social, economic and cultural impacts. Under current conditions, the population in the project intervention areas has very little drinking water supply. Assuming that water supply systems would not be developed on the island of Ngazidja, the site would remain in its current state, as no specific development is currently planned for the area. There would be no improvement in the quality of life, no education in poverty, no improvement in access to potable water, no improvement in the overall health of the beneficiaries, etc. Direct benefits associated with construction activities, such as increased employment opportunities and related economic benefits, would also not occur if the project did not proceed.

7.2 DESIGN ALTERNATIVES

After an engineering diagnosis of the existing water supply infrastructure (only in Zone 5), two alternatives were considered during the design phase: upgrading the existing water supply system and an entirely new system.

The existing network could not sustainably improve the living conditions on the island. Therefore, the second alternative (the construction of a new water supply infrastructure) was chosen. This new system will be designed taking into account the demographic evolution, the social and economic situation of each intervention zone and the needs of the beneficiaries.

7.3 FLOW ALTERNATIVES

The geomorphological conditions of Ngazidja have led the project to choose mixed distribution systems that will couple pumping and gravity flow systems. This system was chosen because in Ngazidja, the water sources are all underground and the water must be pumped. The water will then be stored in tanks before being distributed by gravity.

7.4 ALTERNATIVES FOR THE DISTRIBUTION NETWORK (PIPING)

High-density polyethylene (HDPE) was chosen over PVC and cast iron as the material for the distribution systems. HDPE is easy to install, affordable and resistant to soil chemistry. In addition, the material is widely used in Comoros, so there is local knowledge of installation and repair.

7.5 STORAGE TANK ALTERNATIVES

The storage tank could have been metallic or concrete. Based on the comparative analysis of the existing situation, it appears that metal tanks require less time and labor to install. They are more economical. However, being an island country with a very narrow continental shelf, this type of infrastructure is very corrosive to the salt and is not appreciated by many beneficiaries. Concrete tanks, on the other hand, require more time, materials, labor and money to install, but they are very strong, resilient and can last a long time (several generations). Their maintenance is very easy and manageable by the population. Therefore, this alternative was adopted for the project.

7.6 ENERGY ALTERNATIVES

A comparison of energy choices has been considered for pumping needs: (i) The National network (SONELEC), (ii) generators, (iii) photovoltaic systems, (iv) mixed solutions. The analysis of the sources of energy made it possible to privilege:

- The "conventional power supply" option on the basis of a SONELEC subscription with an emergency generator in zones 1,3, 5 and 6. This choice is guided by the fact that in these zones load shedding is less felt.
- On the other hand, in the case of zones 2 and 4, where load shedding is perpetual, the preferred choice is the energy mix (photovoltaic-National network (SONELEC)).

8 IDENTIFICATION, ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL AND SOCIAL IMPACTS OF PROJECT AREAS 1, 2, 3, 4, 5 and 6 AT NGAZIDJA

8.1 METHODOLOGY FOR IDENTIFYING AND ASSESSING IMPACTS

The identification of the impacts was based on the documentary analysis, mainly the ESMF and the analysis of the data collected in the field, by highlighting the components of the project (activities sources of impact), to the components of the receiving environment (physical, natural and human environment) during the different phases (pre-construction, construction and operation).

This comparison of project elements and environmental components (physical, social, natural) makes it possible to evaluate the probable impact and thus to have all the possible mitigation

measures available for the proper implementation of activities. To this end, a matrix for highlighting the probable impacts on each of the activities to be carried out during the different phases was adopted (see Table 9). Subsequently, the determination of significance and the assessment of impact risks were carried out in accordance with the methodology adopted in the project's ESMF (see Tables 5, 6, 7 below).

Table 5: Risk Impact Assessment

Score	Rating	Social and environmental impacts
5	Extreme	Significant adverse impacts on human populations and/or the environment. Adverse impacts of large magnitude and/or spatial extent (e.g., large geographic area, large number of people, trans boundary impacts, cumulative impacts) and duration (e.g., long-term, permanent and/or irreversible) adversely impacted areas include areas of high value and sensitivity (e.g., valuable ecosystems, critical habitats); adversely affect Indigenous Peoples' rights, lands, resources, and territories; involve significant levels of displacement or relocation; and involve a high degree of risk to the environment. Adversely impacted areas include areas of high value and sensitivity (e.g., valuable ecosystems, critical habitats); adversely impact Aboriginal peoples over rights, lands, resources, and territories; involve significant levels of displacement or relocation; generate significant amounts of greenhouse gas emissions; impacts may result in significant social conflict.
4	Extended	Negative impacts on people and/or the environment of considerable magnitude, spatial extent, and duration, but more limited than extreme (e.g., more predictable, mostly temporary, reversible). Project impacts that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of Indigenous Peoples should be considered at a minimum.
3	Intermediate	Impacts of moderate magnitude, limited in magnitude (site-specific) and duration (temporary), can be avoided, managed and/or mitigated through relatively simple accepted measures.
2	Minor	Very minor impacts in terms of severity and magnitude (e.g., small area affected, very small number of people affected) and duration (short), can be easily avoided, managed, mitigated
1	Negligible	Negligible or no negative impacts on communities, individuals and/or the environment

Table 6. Assessing the "probability" of a risk

Score	Rating
5	Expected
4	Very likely
3	Moderately likely
2	Low likelihood
1	Not likely

Table 7. Deterring the signification of risk

Impact	5	High	High	High	High	High
	4	Moderate	Moderate	High	High	High
	3	Low	Moderate	Moderate	Moderate	Moderate
	2	Low	Low	Moderate	Moderate	Moderate
	1	Low	Low	Low	Low	Low
	1	2	3	4	5	
	Probability					

8.2 THE ACTIVITIES SOURCE OF IMPACTS

The sources of potential impacts are defined as all the activities planned within the framework of the project. Impact receptors (or environmental components likely to be affected by the project), correspond to the sensitive elements of the study area, i.e. those likely to be considerably modified by the project activities (or sources of impact).

Implementation of the proposed developments could result in some adverse impacts on the human and natural environment. For the most part, these impacts are generally temporary and controllable.

The major sources of impacts are summarized below:

8.2.1 Pre-work phase

- Request for authorizations
- Reservation of the sites by the company for the installation of the building sites
- Communication of the work schedule
- Recruitment of site personnel
- Storage of materials and hydrocarbons

8.2.2 “Throughout the work”

- Site clearing and earthworks
- Vehicle traffic
- Vehicle maintenance
- Site installation

- Construction of the catchments
- Construction of the tanks
- Construction of water treatment station (for water treatment with chlorine)
- Water withdrawal for the works
- Installation of HDPE pipelines for water supply
- Site restoration (after construction)
- Restoration of sites used for the installation of construction sites and the supply of materials.

8.2.3 “Operational phase”.

- Operation of water supply infrastructure
- Water treatment and disinfection
- Infrastructure maintenance and upkeep
- Individual connection to different networks

NB: The infrastructures to be put in place are not of great capacity and are dispersed in the various localities. Their impacts are therefore very limited at the installation site and are temporary. The application of good environmental and social practice measures will be sufficient to mitigate these impacts.

Water supply activities do not take place in or near protected areas.

8.3 IDENTIFICATION OF IMPACTS ACCORDING TO THE ACTIVITIES THAT CAUSE IMPACTS DURING THE DIFFERENT PHASES

The impacts of the ESMP were identified based on the ESMF analysis and field surveys.

This allowed us to determine:

- Risks and impacts identified in the ESMF that are applicable to the establishment of drinking water systems in Ngazidja.
- Risks and impacts identified in the ESMF that are not applicable to the establishment of drinking water systems in Ngazidja
- Identification of other risks and impacts that were not identified in the ESMF and that complement it.

To identify impacts, the ESMP highlighted activities that cause impacts at different phases of the project (pre-construction, construction, and operation/use). This allowed for the identification of impacts according to the impact receptors (natural and human level). To this end, the dimensions and impacts identified in the ESMC are well integrated into the ESMP.

In addition, the scope of the activities covered by this ESMP is limited to the sub-activities of construction of the drinking water supply system in the six zones of Ngazidja, which are part of project activity 3.2 as described in Table 2 of the ESMP.

a) Risks and impacts identified in the ESMF, related to the establishment of the drinking water systems in Ngazidja ;

- Disturbance of the animals' way of life (livestock)
- Pollution of the terrestrial environment
- Contamination of groundwater
- Risk of soil erosion
- Air pollution
- Production of solid / liquid / hydrocarbon waste
- Noise pollution
- Accident to site personnel and population
- Impact on women and children
- Risk of spills and/or physical damage associated with liquid chlorine
- Non-inclusion of women in training
- Damage to infrastructure by flooding, landslides, etc.
- Social risk
- Introduction of weeds
- Decrease in vegetation cover
- Fire and emergency management and prevention strategies implemented

b) Risks and impacts identified in the ESMF that are not related to the establishment of water systems in Ngazidja

- Loss of habitat,

The activities to be carried out in the 6 zones in Ngazidja are not likely to have an impact on habitat.

The project operates in areas already converted to agriculture and social development.

In addition, the infrastructure is small and scattered throughout the areas.

- Potential impacts on threatened species.

The project does not operate in protected areas.

Although there are fully and partially protected endemic species on the island, these have not been identified in the project's infrastructure installation sites (residential/agricultural areas).

- Land Use Change

There will be no risks associated with land use change.

- Excessive use of resources

The infrastructure to be installed is small and does not require excessive use of resources.

- Vibration due to construction work

This impact is almost non-existent. Due to the small size of each infrastructure, the supply of construction materials does not require the use of heavy machinery.

- Increased dust levels at sensitive receptors

No sensitive receptors have been identified within the project sites.

However, the impact of dust on crops and the atmosphere has been noted.

c) New risks and impacts identified in the ESMP process

- Temporary traffic disruption
- Equipment selection
- Impacts on groundwater reserves
- Risk of disease and increase in communicable diseases including STIs and Covid-
- Non consideration of local labor force
- Poor quality of water for consumption
- Failure to maintain the infrastructure
- Waste of water
- Production of liquid waste and increase in disease vectors
- Landscape changes
- Silting and destruction of crops
- Impact on the hygiene, health and safety of workers and the local population

The negative impacts identified in the ESMF, which are related to the establishment of the water supply systems in Ngazidja, and those identified by the ESMP, constitute an exhaustive list of impacts that may occur throughout the water supply works and during the operation of the infrastructure to be put in place.

Based on the impacts presented in Table 8 below, the sections on impact analysis, impact assessment and the application of management and mitigation measures, as well as the implementation of impact monitoring and follow-up during the various phases will be addressed.

Table 8: Highlighting of impacts and impact-causing activities during the different project phases

X : Indicates the presence of impact

Type d'impact :

Red box : Negative impact probable

		Negative socio-environmental impacts																												
		Temporary traffic disruption	Choice of equipment	Disruption of the animals' way of life(livestock)	Pollution of the terrestrial environment	Groundwater contamination	Impacts on groundwater reserves	Risk of soil erosion	Air pollution	Production of solid / liquid / hydrocarbon waste	Noise pollution	Accident on site personnel and population	Risk of disease and increase in communicable diseases including STIs and Covid-19	Impact on women and children	No consideration for local labor	Poor quality of water for consumption	Risk of spillage and/or physical damage associated with liquid chlorine	Non-inclusion of women in training	Damage to infrastructure by flooding,	Failure to maintain and service the infrastructure	Waste of water	Production of liquid waste and increase in disease vectors	Changing the landscape	Silting and destruction of crops	Impact hygiène, santé et sécurité des travailleurs et de la population locale	Social risk	Introduction of weeds	Decrease in vegetation cover	Fire and Emergency Prevention and management strategies	Non-inclusion of women in training
Storage of materials and hydrocarbons					X																									
		Work phase																												
Site clearing and earthworks	X	X									X	X	X	X	X								X		X					
Vehicle traffic	X			X			X	X	X			X		X												X				
Vehicle maintenance				X						X		X		X												X				
Site Installation	X	X							X		X	X	X	X	X								X	X	X			X	X	
Construction of boreholes		X		X					X		X	X	X	X	X								X	X	X			X	X	
Construction of the tanks		X					X		X		X	X	X	X	X				X			X	X	X	X			X	X	
Construction of water treatment plants		X							X		X	X	X	X	X				X			X	X	X	X			X	X	

X : Indicates the presence of impact

Type d'impact :

Red box : Negative impact probable

		Negative socio-environmental impacts																												
		Temporary traffic disruption	Choice of equipment	Disruption of the animals' way of life(livestock)	Pollution of the terrestrial environment	Groundwater contamination	Impacts on groundwater reserves	Risk of soil erosion	Air pollution	Production of solid / liquid / hydrocarbon waste	Noise pollution	Accident on site personnel and population	Risk of disease and increase in communicable diseases including STIs and Covid-19	Impact on women and children	No consideration for local labor	Poor quality of water for consumption	Risk of spillage and/or physical damage associated with liquid chlorine	Non-inclusion of women in training	Damage to infrastructure by flooding,	Failure to maintain and service the infrastructure	Waste of water	Production of liquid waste and increase in disease vectors	Changing the landscape	Silting and destruction of crops	Impact hygiène, santé et sécurité des travailleurs et de la population locale	Social risk	Introduction of weeds	Decrease in vegetation cover	Fire and Emergency management strategies	Prevention and Non-inclusion of women in training
Water withdrawal for the works										X		X		X											X					
Installation of HDPE pipelines for water supply	X	X	X				X			X		X	X	X	X				X				X	X	X					
Site restoration																										X				
Site withdrawal																										X				
		Operation phase																												
Operation of water supply infrastructure						X		X													X									X
Water treatment and disinfection																X														

X : Indicates the presence of impact

Type d'impact :

Red box : Negative impact probable

Negative socio-environmental impacts

	Temporary traffic disruption	Choice of equipment	Disruption of the animals' way of life(livestock)	Pollution of the terrestrial environment	Groundwater contamination	Impacts on groundwater reserves	Risk of soil erosion	Air pollution	Production of solid / liquid / hydrocarbon waste	Noise pollution	Accident on site personnel and population	Risk of disease and increase in communicable diseases including STIs and Covid-19	Impact on women and children	No consideration for local labor	Poor quality of water for consumption	Risk of spillage and/or physical damage associated with liquid chlorine	Non-inclusion of women in training	Damage to infrastructure by flooding,	Failure to maintain and service the infrastructure	Waste of water	Production of liquid waste and increase in disease vectors	Changing the landscape	Silting and destruction of crops	Impact hygiène, santé et sécurité des travailleurs et de la population locale	Social risk	Introduction of weeds	Decrease in vegetation cover	Fire and Emergency Prevention and management strategies	Non-inclusion of women in training
Infrastructure maintenance and upkeep	X										X			X	X		X	X											
Individual connection to different networks																			X	X									

8.4 ANALYSIS AND EVALUATION OF THE IMPACTS OF THE PROJECT ON THE NATURAL AND HUMAN ENVIRONMENT

The environmental impacts of the project are analyzed, and their evaluation is presented in Table 10 (evaluation of negative impacts before and after management measures).

No cumulative impacts were identified. There are no other operators in the project intervention zones (this is one of the criteria for zone selection).

Furthermore, the environmental assessment of a project on the environment should not be limited to the description of negative impacts but should also highlight positive impacts. This will help to better judge and evaluate the project from an environmental point of view and in particular to show that the non-implementation of the project itself poses problems for the natural and human environment. The main positive impacts of the project are presented in Section 10.

8.4.1 Analysis of the impacts related to the implementation of water systems during all the different phases

The analysis of an impact makes it possible to situate it and measure its consequence in relation to its receptor. This will enable the impact to be properly assessed and appropriate management measures to be proposed to ensure the proper implementation of activities. With respect to the identified impacts, this analysis will focus on

- **Noise pollution**

Activities related to the construction of infrastructures, the circulation of machinery and the laying of pipes are likely to be a source of noise pollution. This nuisance will be very occasional or even non-existent and much localized in time and space, due to the dispersed nature and very low density of the habitat. This impact will be felt mainly in the towns/villages when the distribution pipes are laid.

Major sources of noise pollution include:

- Layout of the site facilities
- The use of inferior construction equipment
- The use of concrete mixers
- The horn of the vehicles.
- The use of generators in pumping stations during the operation phase

Regardless of the project site, measures must be taken to limit the nuisance caused by construction-related noise.

- **Air pollution**

The execution of the work may occasionally generate temporary emissions of dust or gaseous pollutants during the work phase. In fact, the main air pollution caused by the movement of construction equipment required for the work is dust. It is mainly generated by the movement of machinery on the construction sites and by the transportation of equipment to the construction areas.

The second source of air pollution is exhaust from construction equipment, including sulfur dioxide (SO₂) and nitrogen oxides (NO_x). In all cases, these emissions will be temporary and will not affect the overall level of air quality at the site. However, in order to limit the nuisance caused by dust and exhaust gases, measures must be taken.

- **Impacts on groundwater**

Potential impacts to groundwater will be related to the construction of the boreholes.

In general, almost all of the sites where structures are installed (tanks, pipelines, etc.) are not directly connected to the groundwater.

- **Poor quality of drinking water**

This impact would be related to the quality of water treatment and the lack of maintenance of infrastructure.

- **Poor management of water resources**

The availability of water at all times could lead to waste and depletion of the resource.

- **Risk on the maintenance of the infrastructures**

This risk would be linked to a lack of financial means following the non-payment of invoices.

- **Impact on vegetation**

The main activities affecting vegetation are:

- Site preparation (brush clearing and right-of-way clean-up).

Most of the work consists of laying pipelines along tracks and roads, which does not require a lot of clearing. In addition, the infrastructure to be installed (reservoir, pipe lines, pump

installations, etc.) are not clustered in one location, so their footprint is relatively small, not occupying a very large area.

- Introduction of invasive plant species

During site restoration and as part of the reforestation of watersheds, there is a risk that invasive plant species may be introduced to the sites.

- **Impacts on the soil**

The impact on the soil could be related to the risk of accidental pollution by hydrocarbons from construction equipment, construction materials and construction waste.

- **Waste generation (solid, liquid and hydrocarbon waste)**

Waste generation would be related to the construction of infrastructure and the laying of pipes along the lines.

- **Impacts on traffic**

The implementation of the project will not require the removal or modification of public roads and the existing network of access roads. However, disruptions may be caused during the execution of the work:

- Temporary traffic disruptions during replacement and installation of pipes along roads.
- Risk of work accidents for site personnel and road users

- **Social impacts**

Implementation of the proposed developments could result in some adverse impacts on the human environment, including:

- Risk of spread of the Covid.19 pandemic and transmission of STIs (HIV/AIDS) due to mixing of populations with employees of construction companies.
- Dust generated by earthworks on construction sites can affect the health (respiratory diseases) of workers and the surrounding population, especially sensitive people (infants and elderly).
- Traffic disruption during replacement and installation of pipes along roads. Accident on site for site personnel and users

- Risk of silting and destruction of field crops in the area where the pipes are laid and during clearing for infrastructure construction.
- Impact on women and children: Risk of employment of children on the sites. If female workers are present, risk of abuse and non-integration. Few women or almost none at all engage in such activities
- Non-consideration of the local workforce

There is a risk that during the recruitment of site personnel, the company will not favor local labor, especially unskilled labor. In particular, there could be a risk of marginalization of women during the recruitment of site personnel

- Risk of spillage and/or physical harm associated with liquid chlorine

This risk could have an impact on the health of the beneficiary population and of project workers.

- **Impacts on wildlife**

The realization of works on the sites and the presence of human beings can cause a disturbance on the way of life of certain animals.

8.4.2 Negative impacts of the operational phase

The primary sources of adverse impacts during the operational phase of the project are as follows:

- The increase in the volume of wastewater as a result of improved water access conditions. This could lead to the presence of stagnant wastewater in the vicinity of homes and around network structures, thus creating an environment conducive to the development of vectors of parasitic or infectious diseases (malaria, etc.);
- The risk of destruction of the infrastructures put in place due to the absence of a protection perimeter and the presence of human activities in these zones
- Disruption of water service and risk of social problems between the population and the network operator due to possible delays or non-payment of water consumption by the population, delays in repairing leaks, lack of maintenance of tanks and other network components
- Operation of generators in the event of a power outage from the national grid
- Health and safety impact of employees and users related to equipment operation and maintenance work

8.5 ASSESSMENT OF NEGATIVE IMPACTS AND MANAGEMENT AND MITIGATION MEASURES

The impact management measures include the measures identified in the ESMF (presented in Table 9 below), in addition to other measures identified in the ESMP. Together, these constitute the measures for managing the negative impacts associated with the development of the water systems in Ngazidja during the various phases.

Table N°9: Management measures identified in the ESMF

Component	Performance criteria	Management measures
GROUNDWATER	<p>No significant decrease in groundwater quality and quantity resulting from construction and operation activities near the projects.</p> <p>Water quality shall meet the conditions of approval stipulated by UNDP, DGEF and/or other government agencies, or in the absence of such conditions, the "no aggravation" approach shall be pursued</p>	<p>Conduct regular monitoring of groundwater quality in areas where groundwater is likely to be impacted</p>
ECOLOGY	<ul style="list-style-type: none"> - No clearing beyond established limits - No new weed species introduced as a result of construction activities 	<ul style="list-style-type: none"> - Limit clearing activities and reduce habitat disturbance through protection and proper management of vegetation - Restore vegetation in disturbed areas using native and local endemic species that are strong for the habitat.

<p>EROSION CONTROL</p>	<ul style="list-style-type: none"> - No accumulation of sediment in aquatic environments and/or waters as a result of construction and operation activities 	<ul style="list-style-type: none"> - Plan/organize the work to limit the areas to be cleared and the soils exposed at all times. - Plan/organize the proposed work to ensure that major vegetation disturbances and earthworks are conducted during periods of low rainfall and wind speed. - Remove and store topsoil for use in vegetation restoration and/or return removed soil to agricultural land - Plan/organize work to reduce the amount of time spent storing topsoil - Design storm water management measures to reduce flow velocities and avoid concentration of runoff. - Avoid importing fill that could result in site contamination and is not accompanied by certification/documentation. - When backfill is not available on site, it must be tested
<p>SOCIAL MANAGEMENT</p>	<ul style="list-style-type: none"> - Avoid negative impacts on the local community throughout construction and operations and, to the extent possible, reduce, restore - Community health and safety are protected and the project has an overall positive impact on well-being; - Complaint and grievance mechanisms are in place and 	<ul style="list-style-type: none"> - Conduct community consultation on the purpose and benefits of the infrastructure to be put in place - Ensure compliance with the grievance mechanism process - Women will need to be trained in the maintenance of local water management systems, including monitoring of small waterworks and water treatment systems to indicate when they are in need of repair and to

	<p>proactively managed</p> <ul style="list-style-type: none"> - Consultation with stakeholders will continue. It will help ensure that stakeholders continue to be informed about the project, its progress and any changes that are made. It will also help identify potential problems 	<p>prevent inefficiencies in resource use (e.g., leaks) (ensuring that some of the trainers are female).</p> <ul style="list-style-type: none"> - Design, standardize, and implement socially sensitive water tariffs in each target area that promote climate-sensitive water management.
<p>WASTE MANAGEMENT</p>	<ul style="list-style-type: none"> - Application of the waste hierarchy (avoid, reduce, reuse, recycle) - No littering in the project area or surrounding area due to site personnel activities - No complaints received regarding waste generation and management - Used oil will be collected and sent for recycling 	<ul style="list-style-type: none"> - Give preference to materials that reduce waste - Disposal of waste shall be in accordance with the requirements of the appropriate authorities. - Fuel and lubricant leaks from vehicles and facilities shall be repaired immediately. - Major maintenance and repairs shall be performed off-site whenever possible.
<p>NOISE AND VIBRATION</p>	<ul style="list-style-type: none"> - Noise from construction and operation activities shall not cause an environmental nuisance in a noise sensitive location - Take measures at all times that help reduce noise associated with construction activities - No damage to off-site properties caused by vibrations from construction and operation activities 	<p>Reduce the need for and minimize emissions if noise-generating construction work is to be performed outside of working hours: 7:00 a.m. - 5:30 p.m.</p> <ul style="list-style-type: none"> - Consultation with local residents prior to construction activities, particularly if noise generating activities are to be carried out outside the "hours of the day", i.e. 7:00 a.m. - 5:30 p.m. - The contractor shall provide training to employees and operators to increase awareness of the need to reduce excessive noise

AIR QUALITY	<ul style="list-style-type: none"> - The release of dust/particles must not harm the environment - Take actions at all times that help reduce air quality impacts associated with construction and operation activities 	<ul style="list-style-type: none"> - Limit speeds on roads and access roads - Ensure that vehicles/engines are stopped when not in use. - Ensure that all vehicles, facilities and construction equipment are maintained
EMERGENCY MANAGEMENT MEASURES	<ul style="list-style-type: none"> - No Fire Impact - No failure of water retention structures - No major chemical or fuel spills - No unavoidable industrial or occupational accidents - Provide an immediate and effective response to incidents that pose a risk to health, safety or the environment; and - Reduce damage to the environment due to unforeseen incidents. 	<ul style="list-style-type: none"> - Containment/storage areas for flammable liquids and combustibles shall be designed in accordance with appropriate international standards - Fire extinguishers should be available on site - Open fires are not permitted in the project area - Communication equipment and emergency protocols will need to be in place prior to the start of construction activities - Train all staff in emergency preparedness and response (covering workplace health and safety). Work in coordination with the national disaster management office.

8.5.1 MEASURES SPECIFIC TO THE STUDY PHASE AND THE PREPARATION OF DAO

In order to ensure compliance with the ESMP, environmental and social clauses are included in the tender documents and form an integral part of the contracts with the companies carrying out the work. These clauses will ensure that the environmental and social safeguards are respected by the companies throughout the execution of the works. In

addition, prior to the start of the work, the company must submit its ESMP for the construction site, which will be aligned with the management, monitoring and surveillance measures established in this ESMP.

Contractors will also be required to submit a health, safety and environment procedures manual, as an operational tool expressing the submitted E&S requirements detailed in each ESMP.

Note: The Company's specifications must include all specific environmental provisions and obligations to be implemented. Failure to comply with any of these environmental requirements will constitute a serious offence for which a fine will be imposed on the company.

Thus, other measures were also already taken into account in the final design of the proposed drinking water supply systems. In fact, during the different phases of the study, different alternatives were studied in order to minimize the constraints and to choose the most suitable alternative to the conditions of the area, to the acceptability of the project by the population, etc. Among these measures, we can mention:

- To minimize leaks and pipe breaks, the new pipes to be installed will be buried and made of HDPE, which is tighter and more resistant to breakage and cracking.
- All the works (suction cup, drain, sectioning...) will be protected in reinforced concrete chambers equipped with tamper-proof closing systems, which allows the protection of these works and the elimination of the illicit use of these works for other purposes.
- The tanks will be covered to prevent the intrusion of various contaminants into the water.

8.5.2 IMPACT MANAGEMENT AND MITIGATION MEASURES DURING CONSTRUCTION AND OPERATION OF WATER SYSTEMS

During construction and operation of the water systems, measures will be put in place to manage and mitigate impacts.

In Table 10 below, all risks and adverse impacts that could occur during the construction and operation of the AEP systems are assessed, managed, and mitigated.

This assessment addresses the magnitude of risk and impact prior to and after the implementation of management and mitigation measures.

The assessment shows that the magnitude of the risks and impacts associated with the AEP work activities is "low" with only one impact rated "moderate".

The impact considered moderate is related to natural conditions that are not necessarily related to the work and operation of water systems in the 6 zones in Ngazidja. This is the impact of climate change, particularly variations in rainfall.

The mitigation measures that will be put in place will be beneficial in creating a microclimate.

Table 10: Pre-mitigation risk and impact assessment, and post-mitigation risk and impact assessment.

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
Pre-construction phase							
No consideration for local labor	3	3	Mode rate	In order to stimulate local economic development, it is recommended that priority in hiring be given to local unskilled labor. The choice of local suppliers should also be encouraged.	1	2	Low
				Encourage women to join the work force.			
Work phase							
Temporary Traffic disruption	1	3	Mode rate	A traffic plan for the site will be drawn up, in particular for the movement of machinery at the edge of the work area	1	2	Low
				Road signs in accordance with the regulations will be put in place to warn all users of the presence of the work site. The work should be signaled (at 150 m, then reminder every 50 m).			
				No storage or warehousing of materials or equipment will be permitted within the existing roadway right-of-way			
				The maximum speed for trucks transporting materials in built-up areas is limited to 30 km/h.			
Choice of equipment	2	1	Low	All equipment must be checked by the control office and submitted for validation by the project coordinator. The company must respect the technical prescription of the equipment included in the tender document (DAO)	1	1	Low
Temporary disturbance of wildlife (in the	1	2	Mode rate	Limit noise and dust emissions	1	1	Low

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
work areas, wildlife and livestock could be disturbed by human presence)				Avoid night work			
Pollution of the terrestrial environment	2	1	Low	In case of soil pollution by hydrocarbons, the soiled area will have to be immediately covered with materials with a very high absorption rate (sawdust). The area will then be stripped and evacuated to a suitable landfill after agreement with the project manager on site.	1	1	Low
				Waterproofing the ground at the level of the parking of the machines on the sites in order to protect the ground from oil and fuel leaks			
Groundwater contamination	1	3	Low	Conduct regular monitoring of groundwater quality in areas where groundwater is likely to be impacted	1	1	Low
Risk of soil erosion	2	1	Low	Limit construction site rights-of-way to a strict minimum and do not clear sloping areas	1	1	Low
				Plan/organize the work to limit the sites to be cleared.			
				Plan/organize the proposed work to ensure that major vegetation disturbances and earthworks are conducted during periods of low rainfall and wind speed.			
				Use low-pressure construction vehicles on the ground,			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
Air pollution	4	2	Mode rate	The routes for bringing materials and structures to the site should be as direct as possible	2	1	Low
				Limit speeds on roads and access roads			
				Ensure that vehicles/engines are stopped when not in use.			
				Ensure that all vehicles, facilities and construction equipment are maintained			
				Construction equipment and trucks must be well maintained and comply with current standards. They must be chosen in such a way as to reduce smell, fumes and dust as much as possible			
				Dust abatement measures will be applied on unpaved tracks crossing inhabited areas and on internal traffic routes			
				The use of tarpaulin-covered trucks will be preferred for the supply of the sites.			
Production of solid / liquid / hydrocarbon waste	4	2	Mode rate	Strict application of the "reduce - reuse - recycle" principle in order to minimize the volume of waste to be disposed of in landfills	3	1	Low
				Disposal by landfill should be considered the ultimate solution. Waste disposal sites will need to be identified prior to the start of operations, in consultation with local authorities.			
				Ensure the maintenance of the machines and daily verification of their condition			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
				<p>Ensure the maintenance of the machines and daily check of their condition</p> <p>Fuel and lubricant leaks from vehicles and facilities shall be repaired immediately.</p> <p>Hydrocarbon wastes will be collected in leak-proof drums for disposal in appropriate sites.</p> <p>Major maintenance and repairs shall be performed off-site whenever possible.</p> <p>Give preference to materials that reduce waste</p>			
Pollution sounds	3	3	Moderate	<p>The work schedule of the site is organized to coincide with the activities of local residents (7:00 a.m. to 5:30 p.m.).</p> <p>Consultation with local residents prior to construction activities, especially if noise generating activities are to be carried out outside the "hours of the day", i.e. 7:00 a.m. - 5:30 p.m.</p> <p>The contractor shall provide training to employees and operators to increase awareness of the need to reduce excessive noise</p> <p>The machines to be used on site must be in very good condition to avoid the emission of noise</p>	2	1	Low
Accident on the site personnel and the population	3	3	Moderate	<p>Before the beginning of the works, an information campaign under the management of the Administration should be carried out to involve the local population in the works and also to warn them of the dangers and risks involved</p>	2	2	Low

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
				<p>Prohibition of the work site to the public: Thus, the work site will be the subject of a defense by the installation of a fence and the installation of a system of information of the public (signs of danger).</p> <p>Put up posters to inform the public about the work in progress: duration, surface area, prohibited access, etc.</p> <p>Installation of signage within the work areas with clear information on the obligations to wear personal protective equipment and the risk areas.</p> <p>Establish a health, safety and environmental procedures manual by the contractors</p> <p>Provision of each worker with personal protective equipment</p>			
Risk of disease and increase in communicable diseases including STIs and Covid-19	3	3	Moderate	<p>Favor the recruitment of local labor to reduce the risk of disease proliferation</p> <p>A program of sensitization and information of the personnel of the building site must be implemented by the company, in particular, on the means of protection of the COVID-19, the sexually transmissible diseases and the AIDS and the rules of hygiene to be respected during the period of execution of the works.</p> <p>The company is obliged to provide free of charge individual protection means (disinfectant gel, mask, gloves, special clothes...) for all the workers of the construction site.</p>	2	2	Low

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
				<p>The company must provide workers with free hydro alcoholic gels and masks.</p> <p>Respect the barrier measures</p>			
Impact on women and children	2	3	Low	Implementation of awareness-raising actions on gender-based violence (type of behaviors concerned, planned sanctions) on the work sites	1	2	Low
				Adoption of a code of conduct on the sites and zero tolerance to Gender Based Violence and any form of mistreatment, abuse and exploitation of children.			
				Strict prohibition on the use of children			
				<p>In case of incidents of gender-based violence,</p> <ul style="list-style-type: none"> - encourage victims to file a complaint, - Anonymous accompaniment of victims in the formulation, filing and throughout the processing of the complaint. - Setting up, in collaboration with local medical services, a medical and psychological support unit for victims - Dismissal without notice with immediate effect of the offender 			
Damage to Infrastructure by flooding, landslides, etc.	1	3	Low	Avoid installing structures in areas at risk (flooding, earthquake and landslides...) and bury water pipes	1	1	Low
Changing the landscape	2	1	Low	Ensure the cleanliness and structure of the site (orderly storage of materials and equipment),	1	1	Low
				Cleaning of the roadways bordering the site in case of			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
				soiling, Waste management (installation of closed garbage cans), Proper use of parking areas, Restoration of intervention sites after the work site has been withdrawn, etc.			
Siltng and destruction of crops	2	3	Mode rate	Water sites as necessary to limit silting of crops	2	2	Low
				Limit clearing to the area required for infrastructure installation.			
				Clearing operations will be carried out without damage to adjacent un-cleared areas: topsoil is stored within the cleared area and at the edge of the clearing area, trees are felled towards the interior of the area.			
				Sites will be cleared from side to side, or from the center out, to avoid the risk of animal entrapment			
				Mark off the work areas and respect the defined rights-of-way to avoid any intrusion outside the project site boundaries			
Introduction of invasive alien species	1	3	Low	Restore vegetation in disturbed areas using native and local endemic species that are well adapted to the environment prior to restoration, it would be preferable for the company to give the landowner the choice of which species to put on the site.	1	1	Low
Decrease in vegetation cover	3	3	Mode rate	Limit clearing to the area necessary for the installation of the infrastructure. As much as possible, avoid cutting down large trees.	2	1	Low
				Restore vegetation in cleared areas using native and local endemic species that adapt to the environment.			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
				Agree with the owners on the species to be put in place.			
Social risk	1	3	Low	Women will need to be trained in the maintenance of local water management systems, including monitoring of small waterworks and water treatment systems to indicate when they are in need of repair and to prevent inefficiencies in resource use (e.g., leaks) (ensuring that some of the trainers are female).	1	2	Low
				Ensuring compliance with the grievance mechanism process, in particular ensuring that the public is aware of and has access to the GRM.			
				Restore site installations using native and local endemic species. Agree with the owners on the species to be put in place.			
				Inform stakeholders on the status of the project and any changes during the implementation process			
Fire and Emergency Prevention and Management Strategies	3	3	Moderate	No open fires are permitted in the project area	2	2	Low
				Communication equipment and emergency protocols must be established prior to the start of construction activities.			
				Train all staff in emergency preparedness and response (cover health and safety on site). Work in coordination with the national disaster management office.			
				Check and restock first aid kits			
				Use of personal protective equipment			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
Hygiene, health and safety impact on workers and the local population	3	2	Mode rate	<p>Make workers aware of the risks associated with the trade</p> <p>Require cleanliness of the site</p> <ul style="list-style-type: none"> - Require the wearing of PPE - Ensure that PPE is renewed <p>Prohibit the presence of children on the site</p> <p>Prohibit public access to the site and protect it with markers and signs</p> <p>Maintain all electrical equipment, machinery, vehicles and dangerous machines in good working order and prohibit their use without prior training, competence and authorization</p>	2	1	Low
Operation phase							
Impacts on groundwater reserves	3	2	Mode rate	The supply of drinking water could lead to a consequent use of water resources. To sensitize the beneficiary populations on the rational use of water.	1	1	Low
				Fight against erosion and reforestation campaign of the watershed to promote the rapid recharge of the water table;			
				Volumetric meters will be put in place at each connection to reduce water wastage.			
				IWRM committees (integrated water resources management) as well as piezometers will be put in place to allow the monitoring of water resources and to make it possible to take the necessary measures if necessary.			

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
Poor quality of water for consumption	2	3	Mode rate	To ensure a continuous monitoring of the quality of the water collected by means of periodic physicochemical and bacteriological analyses;	1	1	Low
				Carry out periodic maintenance of the various works of the network (reservoirs, treatment plants, management works...) and a continuous control of the state of the supply and distribution pipes to be installed (check the absence of leaks, breakages, illicit connections...).			
Risk of spillage and/or physical damage associated with liquid chlorine	1	3	Low	Provide the technicians in charge of water treatment and POTABILIZATION with adequate equipment for their protection and equip them with tools to properly dose chlorine	1	2	Low
Non-inclusion of women in training	2	3	Mode rate	Encourage women to integrate maintenance work and prioritize it in training. In accordance with the gender action plan, 50% of the participants will be represented by gender.	1	2	Low
Failure to maintain infrastructure	1	3	Low	Information/sensitization of the project beneficiaries to the necessity of paying for water consumption for the continuity of service and the sustainability of the infrastructures to be installed	1	1	Low
				Installation of meters for each connection			
Waste of water	3	3	Mode rate	Sensitization of the beneficiary population of the project for the good valorization of the water by avoiding the waste;	1	1	Low

Unmitigated impacts	Pre-Mitigation Assessment			Prevention and mitigation measures	Post-mitigation evaluation		
	P	C	A		P	C	A
Production of Liquid waste and increase in disease vectors	3	3	Mode rate	Encourage beneficiaries to build septic tanks to avoid the discharge of domestic wastewater into the natural environment, to avoid the stagnation of water that favors the creation of environments conducive to the development of vectors of parasitic or infectious diseases (malaria, etc.)	1	1	Low
Gas release by the use of generators	2	1	Low	The use of the generating set must be done last. The latter must not be left running after the pumping operation to reduce gas emissions into the air as much as possible.	1	1	Low
Health and safety impact of employees and users related to equipment operation and maintenance work	1	2	Low	Equip employees with protective tools (personal protective equipment (PPE), gauge for the use of liquid chlorine, etc.) Inform the local population of the works to be carried out in the event of maintenance of the equipment and infrastructures in place Maintain a diversion if necessary (indicated by road signs) and inform the population	1	1	Low
Impacts of climate change, particularly variations in precipitation	3	3	Mode rate	Reforestation watersheds	3	2	Moderate

P=Probability

C= Consequence

A= Magnitude of the consequence of the risk and or impact

In order to maintain this low level of risk and impact on the water system works, the above-mentioned mitigation measures will be monitored and followed up throughout the construction period and during operation (see Table 11).

9 FOLLOW-UP AND MONITORING OF MANAGEMENT AND MITIGATION MEASURES

9.1 Overview of the monitoring program

The objective of the monitoring and follow-up program is to ensure that improvement and mitigation measures are implemented and that they produce the desired results. It also assesses compliance with national environmental and social policies and standards. This program will be implemented during the construction phase and will also continue during the operation phase. It covers the following principles:

- Control and supervision of the work,
- Monitoring and follow-up during the operational phase,
- And the inspection.

The objective of environmental monitoring is to ensure compliance with: (i) the measures proposed in this ESMP, including mitigation measures; (ii) commitments to local communities and departmental authorities; and (iii) the requirements of other laws and regulations related to public health and safety, management of the living environment of the population, and protection of the environment and natural resources. Environmental monitoring will cover all phases of the project.

A control office will be recruited to ensure the permanent monitoring of the works. In the same way as the water supply works, the control office will ensure the environmental and social control, follow-up and monitoring.

In case of non-compliance or non-application of environmental and social measures, the control office initiates the process of formal notice, through the owner, which will be sent to the company a copy to UNDP.

9.2 Performance criteria for site monitoring and surveillance

The performance criteria indicate the success of and compliance with the implementation of the management measures. In this case for the Ngazidja water supply works, the performance criteria can be summarized as follows:

- No clearing beyond established limits
- No new weed species introduced as a result of site remediation activities
- The community was consulted and the project components were designed with their informed consultation and participation throughout the process;

- All stakeholders are appropriately represented
- Avoid negative impacts on the local community during construction and, to the extent possible, reduce or mitigate such impacts
- Community health and safety are protected, and the project has an overall positive impact on well-being;
- Complaint and grievance mechanisms are in place and proactively managed
- Long-term benefits are assured.
- Application of the waste hierarchy (avoid, reduce, reuse, recycle)
- No garbage dumped in the project area or surrounding area due to project activities
- No complaints received regarding waste generation and management
- Used oil will be collected and sent for recycling
- Noise from construction and operation activities shall not cause an environmental nuisance in a noise sensitive location
- Take measures at all times that help reduce noise associated with construction activities
- No damage to off-site properties caused by vibrations from construction and operation activities
- The release of dust/particles must not harm the environment
- Take actions at all times that help reduce air quality impacts associated with construction and operation activities
- No Fire Impact
- No major chemical or fuel spills
- No unavoidable work or occupational injury
- Provide an immediate and effective response to incidents that pose a risk to health, safety or the environment; and
- Hygiene and sanitation in the temporary bases are ensured
- Good level of maintenance of construction equipment (maintenance sheet)
- The use of personal protective equipment for workers(helmets, bibs, boots, uniforms, gloves, masks, goggles, hydro alcoholic gel, etc.);

The analysis of these criteria is the main input to the monitoring and surveillance reports. It forms the basis for suggestions to reverse or replace ineffective measures.

9.3 Budget for follow-up and monitoring of the measures put in place

During the construction period, the follow-up and monitoring of management measures for the mitigation of risks and impacts are the responsibility of the company. The related budget is included in the company's offer.

In fact, in the preparation of the DAO, the measures for environmental and social management were integrated into it, to be part of the offer of the companies.

During the operation phase, the follow-up and monitoring of management measures for risk and impact mitigation will be the responsibility of the competent authorities (DGEF, DGEME, GIRE committees and SONEDE), with the support of the project during its implementation period. This budget is included in the operating budget of each institution.

The budget for the implementation of this ESMP will be charged to the project. Measures that do not require a budget are indicated by N/A (not applicable).

Table 11 below presents the follow-up and monitoring measures, indicators, frequency, persons responsible for follow-up, and timetable for follow-up and monitoring of management measures to achieve the performance criteria

Table 11: Follow-up and monitoring of risk and impact management and mitigation measures during the different phases

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
Pre-construction phase						
No consideration for local labor	In order to stimulate local economic development, it is recommended that priority in hiring be given to local unskilled labor. The choice of local suppliers should also be encouraged.	Number (Nb) of local workers and technicians hired	Quarterly	Control Office (CO), General Directorate of Environment and Forests (DGEF), Project backup expert (ESP)	Pre-construction phase	Included in the company's offer
	Encourage women to join the work force.	No. of women among the site personnel				
	The company must have a Quality, Health, Safety and Environment (QHSE) manager on its team who will be responsible for the implementation of this ESMP throughout the execution of the works contract.	An operational QHSE manager				
Construction phase						
Temporary traffic disruption	A traffic plan for the site will be drawn up, in particular for the movement of machinery at the edge of the work area	Number of traffic plans developed	1 time	BC, DGEF, ESP	Before the installation of the site	Included in the company's offer
	Road signs in accordance with the regulations will be put in place to warn all users of the presence of the work site. The work should be signaled (at 150 m, then reminder every 50 m).	Number of signs installed	1 time	BC, DGEF, ESP	Throughout the work	N/A

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	No storage or warehousing of materials or equipment will be permitted within the existing roadway right-of-way The maximum speed for trucks transporting materials in built-up areas is limited to 30 km/h.	Presentation of the situation of the environment	Weekly	BC, DGEF, ESP	Throughout the work	N/A
Choice of equipment	All equipment must be checked by the control office and submitted for validation by the project coordinator. The company must respect the technical prescription of the equipment included in the tender document (DAO)	Quality of the equipment to be installed	Once	BC, Project Coordinator (PC)	At the beginning of the work	Included in the company's offer
Temporary disturbance of wildlife	In the work areas, wildlife and livestock could be disturbed by human presence Limit noise and dust emissions Avoid night work	Respect of the schedule (7am to 7:30am)	Daily	BC, ESP	Throughout	N/A
Pollution of the terrestrial environment	Waterproofing the ground at the level of the parking of the machines on the sites in order to protect the ground from oil and fuel leaks In case of soil pollution by hydrocarbons, the soiled area will have to be immediately covered with materials with a very high absorption rate (sawdust). The area will then be stripped and evacuated to a suitable	Nb of soil treatments performed	Quarterly	BC, ESP, DGEF, PND	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	landfill after agreement with the project manager on site.					
Groundwater contamination	Conduct regular monitoring of groundwater quality in areas where groundwater is likely to be impacted	No. of water analyses performed	Weekly	BC, DGEF, ESP	Throughout the work calendar	Included in the company's offer
Risk of soil erosion	Limit construction site rights-of-way to a strict minimum and do not clear sloping areas	Respecting the right-of-way for the work	Daily	BC, DGEF, ESP	Throughout the work calendar	Included in the company's offer
	Plan/organize the work to limit the sites to be cleared.					
	Plan/organize the proposed work to ensure that major vegetation disturbances and earthworks are conducted during periods of low rainfall and wind speed.	Quality of the sites	Quarterly	BC, DGEF, ESP	Throughout the work	Included in the company's offer
	Use low-pressure construction vehicles on the ground,	Quality of vehicles on site	Weekly	BC, DGEF, ESP	Throughout the work	N/A
Air pollution	The routes for bringing materials and structures to the site should be as direct as possible	Site Report	Daily	BC, ESP, DGEF	Throughout the work	Included in the company's offer
	Limit speeds on roads and access Roads					
	Ensure that vehicles/engines are stopped when not in use.					
	Ensure that all vehicles, facilities and construction equipment are Maintained					

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	<p>Construction equipment and trucks must be well maintained and comply with current standards. They must be chosen in such a way as to reduce odors, fumes and dust as much as possible</p> <p>Dust abatement measures will be applied on unpaved tracks crossing inhabited areas and on internal traffic routes</p> <p>The use of tarpaulin-covered trucks will be preferred for the supply of the sites.</p> <p>The regulations in force concerning the fight against atmospheric pollution and the standards for the discharge of exhaust gases from the operation's machinery will be respected.</p>					
Production of solid / liquid / hydrocarbon	<p>Strict application of the "reduce - reuse - recycle" principle in order to minimize the volume of waste to be disposed of in landfills</p> <p>Disposal by landfill should be considered the ultimate solution. Waste disposal sites will need to be identified prior to the start of operations, in consultation with local authorities.</p>	Volume of waste on site	Weekly	BC, ESP, DGEF	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	Ensure the maintenance of the machines and daily verification of their condition	Site report	Daily	BC, ESP, DGEF	Throughout the work	Included in the company's offer
	Fuel and lubricant leaks from vehicles and facilities shall be repaired immediately.					
	Hydrocarbon wastes will be collected in leak-proof drums for disposal in appropriate sites.	Number of drums filled	Weekly	BC, ESP, DGEF	Throughout the work	Included in the company's offer
	Major maintenance and repairs shall be performed off-site whenever possible.					
	Prioritize materials that reduce waste	Type of materials used	Weekly	BC, ESP, DGEF	Throughout the work	Included in the company's offer
Noise pollution	The work schedule of the site is organized so that it coincides with the activities of the residents (7:00a.m. to 5:30 p.m.).	Site Report Complaint filed	Daily	BC, ESP, DGEF	Throughout the work	N/A
	Consultation with local residents prior to construction activities, especially if noise generating activities are to be carried out outside the "hours of the day", i.e. 7:00 a.m. - 5:30 p.m.					
	The contractor shall provide training to employees and operators to increase awareness of the need to reduce excessive noise	Number of training sessions conducted	1 time and as needed	BC, ESP, DGEF	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	Periodically measure the noise level with a sound level meter to verify compliance with established standards The machines to be used on site must be in very good condition to avoid the emission of noise					
Accident on site personnel and population	Before the beginning of the works, an information campaign under the management of the Administration should be carried out to involve the local population in the works and also to warn of the dangers and risks they entail	report of sensitization	1 time and as needed	EP, BC	Before the work and if necessary	Included in the company's offer
	Establish a health, safety and environmental procedures manual by the contractors	100% of companies with a health, safety and environmental procedure manual in place	2 times per year	BC, ESP	Throughout the work	Included in the company's offer
	Prohibition of the work site to the public: Thus, the work site will be the subject of a defense by the installation of a fence and the installation of a system of information of the public (signs of danger).	Number of sites marked with visual beacons in the evening and during the day.	1 time	BC, ESP	Throughout the work	Included in the company's offer
	Put up posters to inform the public about the work in progress: duration, surface area, prohibited access, etc.	Number of signs installed and visuals	1 time	BC ESP, DGEF	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	Installation of signage within the work areas with clear information on the obligations to wear personal protective equipment and the areas at risk.					
	Provision of each worker with personal protective equipment	Number of equipment issued and number of workers wearing protective equipment	1 time and as needed	BC, ESP	Throughout the work	Included in the company's offer
	Put a first aid kit on each site to be renewed as needed.	Nb of first aid kit to renew	1 time and as needed	BC, ESP	Throughout the work	Included in the company's offer
Risk of disease and increase in communicable diseases including STIs, HIV/AIDS and Covid-19	Prioritize the recruitment of local labor to reduce the risk of disease proliferation	Number of local workers recruited	Once	BC, ESP	At the beginning of the work	Included in the company's offer
	A program of sensitization and information of the personnel of the building site must be implemented by the company, in particular, on the means of protection of the COVID-19, the sexually transmissible diseases and the AIDS and the rules of hygiene to be respected during the period of execution of the works.	No. of outreach carried out	Quarterly	BC, ESP	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	<p>The company is obliged to provide free of charge the means of individual protection (disinfectant gel, mask, gloves, special clothes...) for all the workers of the site.</p> <p>The company must provide workers with free hydro alcoholic gels and masks.</p> <p>Respect the barrier measures</p>	<p>Number of materials given to workers,</p> <p>No. of cases of illness on site.</p>	Quarterly	BC, ESP	Throughout the work	Included in the company's offer
Impact on women and children	Implementation of awareness-raising actions on gender-based violence (type of behaviors concerned, planned sanctions) on the work sites	No. of outreach carried out	Quarterly	BC, ESP	Throughout the work	Included in the company's offer
	Adoption of a code of conduct on the sites and zero tolerance to Gender Based Violence and any form of mistreatment, abuse and exploitation of children.	<p>Number of cases of violence observed on site</p> <p>Number of complaints about GBV filed</p>	Daily	BC, ESP, PNUD	Throughout the work	Included in the company's offer
	<p>Strict ban on the use of children</p> <p>In the event that incidents of gender-based violence occur</p> <ul style="list-style-type: none"> - Encourage victims to file a complaint, - Anonymous accompaniment of victims in the formulation, filing and throughout the processing of the complaint. 	<p>Presence of underage workers on site</p> <p>Number of cases of GBV on site</p> <p>Number of cases of dismissal</p>	Daily	BC, ESP, DGEF, PNUD	Throughout the work	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	- Setting up, in collaboration with local medical services, a medical and psychological support unit for victims - Dismissal without notice with immediate effect of the offender					
Damage to infrastructure by flooding, landslides, etc.	Avoid installing structures in areas at risk (flooding, earthquake and landslides...) and bury water pipes	Site identification criteria	Once	Technical project team (FTE)	Before the final validation of the feasibility studies	Included in the company's offer
Landscape changes	Ensure the cleanliness and structure of the site (orderly storage of materials and equipment),	Presentation of the status of the sites	Daily	BC, DGEF, ESP	Throughout the work	Included in the company's offer
	Cleaning of the roadways bordering the site of construction in case of soiling,					
	Waste management (installation of closed garbage cans),					
	Proper use of parking areas,					
	Restoration of intervention sites after the work site has been withdrawn, etc.					
Silt and destruction of crops	Water sites as necessary to limit silting of crops Limit clearing to the area required for infrastructure installation.	Cleared area Number of complaints filed	1 time	BC, ESP, DGEF	During the work	Included in the company's offer
	Clearing operations will be carried out without damage to adjacent un-cleared					

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	<p>areas: topsoil is stored within the cleared area and at the edge of the clearing area; trees are felled towards the interior of the area.</p> <p>Sites will be cleared from side to side, or from the center out, to avoid the risk of animal entrapment</p> <p>Mark out the work areas and respect the delimited rights-of-way in order to avoid any intrusion outside the limits of the project site</p>					
Introduction of weeds	Restore vegetation in disturbed areas using native and local endemic species that are well adapted to the environment. Prior to restoration, it would be preferable for the company to give the owner the choice to validate the species to be placed on the site.	Plant species to be afforested	1 time	BC, ESP, City Hall	During the site retreat	Included in the company's offer
Decrease in vegetation cover	Limit clearing to the area required for infrastructure installation. Wherever possible, avoid cutting large trees.	Cleared area	1 time	BC, ESP, DGEF	During the work	Included in the company's offer
	Restore vegetation in cleared areas using native and local endemic species that adapt to the environment. Agree with the owners on the species to be put in place.	Plant species to be afforested	1 time	BC, ESP, City Hall, owner	During the site retreat	Included in the company's offer

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
Social risk	Women will need to be trained in the maintenance of local water management systems, including monitoring of small waterworks and water treatment systems to indicate when they need repair and to prevent inefficiencies in the use of the resource (e.g., leaks) (ensuring that some of the trainers are female).	Number of women trained in water management	1 time	BC, ESP, DGEF	All along the project	Planned in the project
	Ensure compliance with the grievance mechanism process, in particular ensuring that the public is aware of and has access to the GRM.	Number of municipalities controlling GRM	1 time	BC, ESP, DGEF	All along the project	Planned in the project
	Restore work sites using native and local endemic species. Agree with the owners on the species to be put in place.	Number of sites restored	1 time	BC, ESP, DGEF	All along the project	Included in the company's offer
	Inform stakeholders on the status of the project and any changes during the implementation process	Number of stakeholders informed of the progress of the project	1 time	BC, ESP, DGEF	All along the project	Planned in the project
Fire and Emergency Prevention and Management Strategies	No open fires are permitted in the project area	Nb extincteurs sur le site	1 time	BC, ESP	Throughout the work	Included in the company's offer
	Communication equipment and emergency protocols must be established prior to the start of construction activities.	Number of people trained in risk management				

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
	Train all staff in emergency preparedness and response (cover health and safety on site). Work in coordination with the national disaster management office.					
	Check and restock first aid kits					
	Use of personal protective equipment					
Hygiene, health and safety impact on workers and the local population	<p>Make workers aware of the risks associated with the trade</p> <p>Require cleanliness of the site</p> <p>Require the wearing of PPE</p> <p>Ensure that PPE is renewed</p> <p>Prohibit the presence of children on the site</p> <p>Prohibit public access to the site and protect it with markers and signs</p> <p>Maintain all electrical equipment, machinery, vehicles and dangerous machines in good working order and prohibit their use without prior training, competence and authorisation</p>	<p>Number of accidents on site</p> <p>State of cleanliness of the premises</p>	Weekly	BC, ESP	Throughout the work	Included in the company's offer
Operation phase						
Impacts on groundwater reserves	The supply of drinking water could lead to a consequent use of water resources. To sensitize the beneficiary populations on the rational use of water.	Establishment of integrated resource management (IRM) committees	Once	UNDP, CP, DGEF	Throughout the project	Operator financing of the network in its operating budget

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
Poor quality of drinking water	To ensure a continuous monitoring of the quality of the water collected by means of periodic physico-chemical and bacteriological analyses;	Number of analyses performed	Monthly	Operator	Operation phase	Operator financing of the network in its operating budget
	Carry out periodic maintenance of the various network structures (reservoirs, treatment plants, management structures, etc.) and continuous monitoring of the condition of the supply and distribution pipes to be installed (check for leaks, breakages, illicit connections, etc.).	Number of checks carried out	Semester	Operator	During operation	Operator financing of the network in its operating budget
Risk of pillage and/or physical damage associated with liquid chlorine	Provide the technicians in charge of water treatment and potabilization with adequate equipment for their protection and equip them with tools to properly dose chlorine	Tap water quality Number of accidents that occurred	Not planned	Operator	During operation	Operator financing of the network in its operating budget
Non-inclusion of women in training	Encourage women to integrate maintenance work and prioritize it in training. In accordance with the gender action plan, 50% of the participants will be represented by gender.	No. of women trained (%) No. of women technicians No. of awareness-raising activities carried out	1 time and as needed	Project	During operation	Operator financing of the network in its operating budget

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
Failure to maintain infrastructure	Information/sensitization of the beneficiaries of the project to the necessity of paying the water consumption for the continuity of service and the durability of the infrastructures to be installed	Tariff study co-financed by the government) Number of sensitizations carried out	Once and as needed	Operator, project	During operation	Government co-funding
Waste of water	Sensitization of the beneficiary population of the project for the good valorization of the water by avoiding the waste;	Number of outreach activities carried out	Once and as needed	Operator, IWRM Committee members	During operation	Government co-funding
	Installation of meters for each connection (co-financed by the government)	Number of meters installed	Quarterly			
Production of liquid waste and increase in disease vectors	Encourage beneficiaries to build septic tanks in order to avoid the discharge of domestic wastewater into the environment and to avoid the stagnation of water, which favors the creation of environments conducive to the development of vectors of parasitic or infectious diseases (malaria, etc.)	Number of awareness campaigns carried out	Semester	Technical team of the project	Operation phase	N/A
Gas release by the use of generators	The generator must be used as a last resort. The latter must not be left running after the pumping operation to reduce gas emissions into the air as much as possible.	Status of generators Number of hours in operation per day.	Daily	SONEDE, DGEME	Operation phase	Included in the SONEDE/DGEME operating budget

Unmitigated impacts	Prevention and mitigation measures	Monitoring indicator	Frequency	Person in charge of follow-up	Calendar	Budget
Health and safety impact of employees and users related to equipment operation and maintenance work	Equip employees with protective tools (personal protective equipment (PPE), gauge for the use of liquid chlorine, etc.) Inform the local population of the works to be carried out in the event of maintenance of the equipment and infrastructures in place Maintain a diversion if necessary (indicated by road signs) and inform the population	Nombre des techniciens portant du matériel de sécurité	Monthly	SONEDE, DGEME	Operation phase	Included in the SONEDE/DG EME operating budget
Impacts of climate change, particularly variations in precipitation	Reforest watersheds to allow for rapid groundwater recharge.	Number of plants reforested Type of species reforested	1 time	Project	4th Quarter 2022	Included in the project budget

10 MAIN SOCIO-ECONOMIC BENEFITS OF THE PROJECT

The expected positive health and socio-economic impacts of the project are numerous and represent the very objectives of the project.

During the construction phase, it will improve the income of the local population by creating jobs. These jobs will be temporary for young people through local contracts with the contracting companies, or through income-generating opportunities (restaurant, grocery stores, etc.). Companies should give preference to hiring local labor, especially unskilled labor.

During the operational phase, the following effects are identified in particular:

- Satisfaction of vital needs and improvement of the quality of life of the beneficiary population and reduction of diseases thanks to the access to purified drinking water in sufficient quantity;
- Access to drinking water and reduction of the use of rainwater storage tanks
- Reduction of water-borne diseases (diarrhea, malaria, etc.).
- Reduced drudgery and time for water collection by women and girls, allowing them time to engage in income-generating activities for women and to attend school for girls.

10.1 MEASURES TO ENHANCE THE POSITIVE IMPACTS OF THE PROJECT

The bonus program will consist primarily of:

- Recruitment of unskilled labor for site requirements in the project areas
- To inform and sensitize the beneficiary population of the necessity to pay the fees in order to maintain the network in good condition and to ensure a permanent water quality;
- Periodic analysis of the quality of the distributed water;
- To accompany the drinking water supply project with a sanitary component to guarantee hygiene and quality of life;
- Involve women in water management and/or public awareness activities
- The project will continue to ensure that local people receive regular feedback on how their
- This engagement process will include providing information in a format that is appropriate, understandable and relevant to the women and men of the region, as well as consulting in a culturally appropriate manner. This engagement process will include providing information in a format that is appropriate, understandable and relevant to local women and men, and consulting in a culturally appropriate manner.

Measures to increase positive impacts are presented in Table 12 :

Table N° 12: Presentation of positive impacts

Impact receiver	Positive impact	Bonus measure	Monitoring indicators	Frequency	Responsible for Follow-up	Calendar	Cost in USD
	Job creation	Favor local labor, especially unskilled labor	NB of local workers on the sites	1 time at the beginning of the work and as needed	DGEF, CP	All phases	Included in the company's offer
		Continuous monitoring of the quality of the distributed water by means of analysis	Number of analyses performed	Monthly	DGEME, SONEDE	Operation phase	SONEDE funding in their operating budget

Impact receiver	Positive impact	Bonus measure	Monitoring indicators	Frequency	Responsible for Follow-up	Calendar	Cost in USD
	Reduced drudgery and time for water collection for women and girls	Involve women (30% of women in IWRM committees) in water management and/or public awareness activities	Number of women attending outreach meetings Number of women on the management committee	Quarterly	DGEF, DGEME and project	Operation phase	Project funding during its implementation period and to be determined after the project
	Reduction of waterborne diseases in the region	Supervision and monitoring of the project beneficiaries for an efficient management of the distributed water while avoiding waste, water losses, wastewater discharge in the open air...	Number of people affected by water-related diseases	Quarterly	IWRM Committee	Operation phase	Project funding during its implementation period and to be determined after the project

Impact receiver	Positive impact	Bonus measure	Monitoring indicators	Frequency	Responsible for Follow-up	Calendar	Cost in USD
	Water availability at all times	Sensitization of the beneficiary population for the payment of bills to allow the maintenance of the infrastructures	Number of missions carried out Number of days of water shut-off Outreach Mission Report	Once and as needed	IWRM Committee Operator	During the operation phase	Integrated into outreach missions by the IWRM Committee (see Table 20)

11 INSPECTION OF SITES

During the different phases of the project, the inspection will be carried out by the DGEF and the UNDP. It will assess compliance with the effective application of environmental mitigation measures. More specifically, it will determine, based on the regulations applied, whether these measures are adequate and effectively achieve the environmental and social protection objectives set.

In addition, the inspection will determine the deviation of the application of the measures from the commitments made in the C-ESMP and will specify the specific recommendations and/or sanctions with regard to the deviations observed, the extent of the impact and the environmental and social risks generated by these deviations and the urgency of the intervention to be carried out in order to regularize the situation.

11.1 ENVIRONMENTAL AND SOCIAL COMPLIANCE REPORTS

Table 13 below shows the process for reporting

Table 13: Reporting Framework

Report prepared by	Submitted to	Frequency
Contractor, environmental officer and site engineer	Project Manager, PMU	Monthly
Project Manager, PMU	Project Council	Semi-annually
Project Manager, PMU	UNDP CO	Quarterly

In addition to regular reporting, the Contractor will be required to report any major incident within 36 hours to UNDP. This includes details of any incident or accident related to the implementation of the project, with respect to any incident of an environmental or social nature; and/or the nature of occupational health and safety; and/or the nature of public health and safety.

When a significant incident occurs, UNDP shall implement a stop work order until an investigation is conducted and all corrective measures are put in place to prevent further damage.

Contractors should minimize the impact that may result from construction activities and implement mitigation measures to prevent damage and nuisance to local communities and the environment. Remedial measures should also be implemented effectively during the construction phase.

11.2 Contractual relationships

The contractor should ensure minimal negative impact on the natural and social environment and implement the mitigation measures and management plans detailed in the ESMP.

- Comply with relevant legislation governing social and environmental safeguards and SES, including impact on human health.
- Undertake work within contractual requirements and other conditions.
- Assign one or more qualified and competent representatives to the site and participate in joint site inspections undertaken by the UMP, UNDP CO and responsible parties.
- If the ESMP is amended, the UMP should immediately review the changes and, as a result, incorporate and update the ESMP to ensure compliance.
- Comply with the recommendations made by UNDP and local government officials during their visit.
- Ensure regular monitoring of environmental and social compliance.
- Maintain a record of all instructions, incidents and actions taken.
- Provide a compliance report to the PMU and the UNDP CO when requirements arise.
- Document grievances and recommend corrective action.

Failure to comply with the above would be treated seriously in accordance with the laws of the country and the contractual terms.

11.3 Legal reports

The following measures will be implemented:

- All environmental licenses and permits are complied with in accordance with legislative requirements.
- All instructions to contractors shall be in writing with the time frame for compliance and the consequences if deferred.
- Construction activities must comply with environmental and social requirements.

12 CAPACITY BUILDING AND TRAINING

12.1 TRAINING FOR NETWORK MANAGERS AND OPERATORS

The effectiveness of the consideration of environmental and social issues in the implementation of activities will be achieved through the training of key technical staff involved in the validation, follow-up and monitoring of the implementation of identified mitigation measures. This training will benefit the following beneficiaries:

- The technical agents of the DGEF who will be responsible for monitoring the implementation of the various measures indicated in the ESMP within the framework of this study, particularly for the execution phase of the project activities;
- The members of the future management committee of the network who will take charge of the management of the water system to be installed.

12.2 AWARENESS PROGRAM FOR PROJECT BENEFICIARIES

The outreach program for project beneficiaries will be established throughout the project implementation period.

This program will be carried out by the IWRM committees, in association with local associations and NGOs, and co-supervised by the DGEF and DGEME.

The main theme of this mission will be the drinking water supply sector and the natural and social environment.

The sensitizations will touch various fields, mainly the care and maintenance of the infrastructures to be installed, the management and preservation of water resources, the adoption of hygiene and sanitation rules, the empowerment of the beneficiaries of the project for the respect of the infrastructures to be installed within the framework of the project and to avoid the illicit exploitation of water and the promotion of gender equality/equity, the payment of the invoices to ensure the maintenance and the perpetuation of the infrastructures to be installed. In accordance with the gender action plan, 30 to 50% of the participants will be women.

12.3 TRAINING FOR CONTRACT WORKERS

The company is responsible for ensuring that its employees and subcontractors are aware of the contractual environmental and social requirements to be met during the term of the contract.

All site personnel will attend an orientation that covers health, safety, environmental and customary requirements.

13 GRIEVANCE MECHANISM

The implementation of project activities may negatively affect, directly or indirectly, the beneficiary population. In this sense, a grievance mechanism is developed within the framework of the project to allow any person affected by the project activities to file a complaint.

It is already in place at the municipal level. It will be operational at the village level before the start of works.

The purpose of the proposed mechanism is to:

- Be a legitimate process to build trust between stakeholder groups and reassure them that their concerns will be assessed in a fair and transparent manner;
- To be accessible to all affected persons, and to provide adequate assistance to those who may have faced barriers to expressing their concerns in the past;
- Provide clear and known procedures at each step of the Grievance Mechanism process and specify the types of outcomes that individuals and groups can expect;
- To ensure fair treatment of all individuals and groups involved through a consistent and formal approach that is fair, informed and respectful of complaints and/or concerns;
- To provide a transparent process, keeping aggrieved individuals/groups informed of the progress of their complaints, the information used in the assessment of their complaints, and the information about the mechanisms that will be used to remedy their complaints;
- To allow for regular learning from experience and improvements to the Grievance Mechanism. Through ongoing evaluation, lessons learned can help reduce potential complaints and grievances.

14 BUDGET FOR THE IMPLEMENTATION OF THE ESMP

The total ESMP budget for the project to create water supply systems for domestic use on the island of Ngazidja is **US\$37500**. This budget is part of the implementation of the ESMF activities. This cost is broken down as shown in Table 14 Table below.

Table 14: Estimated ESMP Costs³ to be borne by the Project

Designation	Cost (USD)	Observation
Social and administrative approach	1000	Incorporated into the company's budget during the preparation of the tender document
Hazard and risk management	3500	IDEM
Approaches to addressing gender-based violence	2500	IDEM
Various environmental measures	7000	IDEM
Waste management	8000	IDEM
Rehabilitation of the site	12500	IDEM
Environmental monitoring mission by the administration	3000	Incorporated into the overall budget for the implementation of ESMF activities
TOTAL	37500	

³ Please note that the boreholes are not included in the ESMP budget, but in the budget of the Drilling ESMP.

Appendix 1: Minutes of Consultation Meetings



Date : 04/02/2020	Objet : Information/Sensibilisation
PROCES VERBAL	

L'an deux mille vingt et le quatrième jour du mois de février, s'est tenu dans la place publique du village de Mkazi, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

- *Début réunion : 10h00mn*
- *Fin de la réunion 12h00mn*
- *Président : Expert chargé de la communication*
- *Secrétaire : Farid Hassane ahmed*
- *Participants : Voir la liste de présence*

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et les objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

La réunion a démarré à 10h00 heures par un mot de bienvenu du Maire de la commune de Bambao yadjou M. Zainoudine Ahamada en remerciant les participants pour leur mobilisation. Dans son propos, il a insisté sur l'importance du projet pour sa commune qui rencontre des difficultés liées à l'accès à l'eau potable. Il appelle toutes les couches sociales à la solidarité des actions entreprises par ce projet.

Il s'en est suivi d'une présentation de l'équipe sur les objectifs et les résultats attendus du projet.

Les participants ont réagi suite à la présentation qui a été faite. Ces derniers ont porté sur :

- Rôle des autorités locales dans l'exécution des travaux
- Collaborations des parties prenantes
- Les localités qui seront approvisionnées en eau potable
- La question liée au prix de l'eau
- Des prières de bénédiction pour la réussite du projet

Le chef du village a salué et a remercié l'initiative du gouvernement comorien et son partenaire financier. Ce projet prend en compte nos priorités en matière de développement d'infrastructures et va contribuer au plan de développement local et l'amélioration du cadre de vie sociale. Nos localités sont prêtes à collaborer pour la bonne réalisation du projet. Pour les mesures d'accompagnement, on s'engage à vous faciliter de votre intégration pour l'intérêt général.

Un cadre du nom d'Abderemane Ismael, a saisi l'occasion pour montrer son engouement et l'espoir suscité par le projet. Il a insisté sur l'implication de la jeunesse de la commune sur les différentes phases de réalisations. Toutefois, nous connaissons un fort taux des jeunes

chômeurs dans la commune, ainsi, nous demandons de favoriser le recrutement local lors de la réalisation des travaux. On aurait cependant voulu savoir aussi le système de tarification qui sera appliqué après que les ouvrages soient installés.

La représentante des organisations féminines Mme Hadidja Omar, a saisi l'occasion pour rappeler aux membres ici présents des difficultés liées à l'accès à l'eau. Elle insiste sur la rareté des précipitations ces dernières années. Elle a sollicité de continuer à leur impliquer tout au long des activités. Toutefois, nous prions que le projet en question se réalise dans les meilleurs des conditions et que ça n'exclut aucune catégorie sociale.

Le communicant du projet a pris le temps de répondre aux préoccupations des participants :

- Les localités qui vont bénéficier de l'alimentation en eau potable sont : Mvouni, Mkazi, Mavingouni, Tsidjé, Mirontsi, Salimani, Sahara, Maouéni, Sambambodoni, Dimadjou, Dzahani II, Ouellah, Sima, Dzahadjou, Bahani, Sambankouni, Vanadjou, Mhandani, VounaMbadani, Zipvandani, Batsa, Milembeni et Ntsoudjini
- Pour la commune et les villages, il s'agit de jouer le rôle de facilitateur dans toutes les étapes de mise en œuvre du projet.
- Pour la question de la tarification, une étude sur la tarification de l'eau est prévue pour répondre et proposer un prix qui prendra à la fois les enjeux techniques, économiques, environnementaux et sociaux.

Au terme des contributions, Monsieur le Maire a remercié les participants et s'est réjoui de la participation des populations à la rencontre. Sachant que nous sommes en pleine période de célébration des grands mariages, notre temps est très limité pour rester longuement à la réunion.

Des bénédictions ont été faites par le notable suivi d'un rafraichissement de la part des communautés.



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Liste de présence : *Information / Sensibilisation*

Date : *21/09/2020*
 Ile autonome de : *Njazidja*
 Région : *Bambas*
 Village : *KRAGI*

Nom et prénom	Fonction	Coordonnées	Signature
Zainaidine Ibrahim	Maire	3343030/4869797	<i>[Signature]</i>
Abderemane Ismael	cons. commu	3337519/4327519	<i>[Signature]</i>
Mad Ali Said	1 ^{er} adjoint	3348320/4348320	<i>[Signature]</i>
Mariamna Mmadi	3 ^e adjoint		<i>[Signature]</i>
Soilakou Mohamed	Sec. technique	437 50 58	<i>[Signature]</i>
Amina ALP Boing	ASS	429 1624/3345283	<i>[Signature]</i>
Mohamed Saadi	Volontaire civ	43407 50	<i>[Signature]</i>
Kotomoina Mohamed	Ad. Soign	358 11 12 462 13 52	<i>[Signature]</i>
Chamusa Youssouf	Ad. Soign	459 95 75	<i>[Signature]</i>
Adouada Abdour	Coop. med	333 03 444 313999	<i>[Signature]</i>
Fatima Said		332 09 14 A.S.C	<i>[Signature]</i>
Mariamna Ibrahim	A. Coop. medical	423 55 07	<i>[Signature]</i>
Mariamna Mmadi	Adjointe Maire	334 13 01	<i>[Signature]</i>
Fahima Thourassi	Pharmacien	423 86 30	<i>[Signature]</i>
Hachim ABDULFATAHOU	Nutritionniste	459 97 08	<i>[Signature]</i>
ABDEREMANE YOUSRA	conseillère	323 78 70	<i>[Signature]</i>
Atadidja Omar	Prof. de Math	334 88 04	<i>[Signature]</i>
Fatima Souli	A.S.C	433 75 12	<i>[Signature]</i>
Mohamed Ali	cultivateur	327 80 07	<i>[Signature]</i>
Fatoumata ALI	boulangère	332 43 49	<i>[Signature]</i>
Rama Adouada			<i>[Signature]</i>
Kalathoumi Ali	Commerçante	469 24 80	<i>[Signature]</i>
FARID HASSANE	Expert Hygiène	334 03 00	<i>[Signature]</i>
Assodilati MOUNINI	Communiat	2481095	<i>[Signature]</i>



Date : 03/02/2020	Objet : Information/Sensibilisation
PROCES VERBAL	

L'an deux mille vingt et le troisième jour du mois de février, s'est tenu à la place publique du village de Ntsinimwachongo, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

Début : 09h30

Fin : 10h15

Président : Assadillah Moumine (Chargé de la communication)

Secrétaire : Farid Hassane Ahmed (expert hydrogéologue)

Participants : voir liste de présence

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et les objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

La réunion a été facilitée par les autorités locales.

Comme à l'accoutumé, la réunion a commencé par un mot de bienvenu du Maire de la commune M. Mohamed Ibrahim Ali. Dans son allocution, il a remercié les personnes qui ont aménagé leurs efforts pour concrétiser ce projet. Pour lui, la réussite de ce projet constitue la base pour le développement socio-économique des communautés. Il a fait appel à tout un chacun de s'unir au projet afin que ce dernier puisse atteindre les objectifs fixés.

Par la suite, le chargé de la communication du projet a procédé à la présentation du projet, notamment sur les objectifs, les résultats attendus et la couverture du projet au niveau des trois îles.

Viennent après, les réactions de l'assistance. Ces dernières ont porté sur :

- Qu'est ce qui est attendu des communes pour faciliter les activités sur le terrain.
- La gestion de l'ensemble du réseau AEP
- Des prières de bénédiction pour la réussite du projet ;

Parmi les intervenants, la représentante de l'association féminine a pris un temps pour montrer la souffrance des femmes, surtout des jeunes filles à se procurer de l'eau pendant la saison sèche. Pour elle, ce projet constitue une aubaine pour l'amélioration des conditions de vie de la femme en particulier.

Le chef de village de la localité de Makorani a exprimé ses vœux et la joie d'être parmi les localités qui vont bénéficier du projet d'alimentation en eau potable. Il a pris l'engagement au nom son village, faire tout ce qui es à son pouvoir pour faciliter les travaux. Il a ensuite fait un rappelle des épisodes de sécheresse marqués par la difficulté de trouver des sources d'approvisionnement en eau potable.

Pour le chef du village de Kandzilé, la question de l'eau doit être notre priorité, car l'eau potable est un des éléments fondamentaux de l'épanouissement de la population et de l'amélioration du cadre de vie des plus vulnérables.



Pour le chargé de communication du projet, « ce projet est une initiative du gouvernement comorien avec l'appui financier du fond vert pour le climat (GCF) et le Programme des Nations Unies pour le Développement (PNUD). Le projet va durer 8 ans et se décline en 3 composantes principales : (i) cadre institutionnel, réglementaire et politique pour la gestion et la réduction des risques climatiques pour l'approvisionnement en eau, (ii) la gouvernance et la gestion intégrée des ressources en eau et (iii) le renforcement de la résilience au climat du réseau d'infrastructures d'approvisionnement en eau potable. Nous appelons à l'ensemble des communes à nous accompagner comme dans leur habitude à la réussite de ce projet.



Maire de la commune de
NGOUENGOE
MOHAMMED
ELAHIMA ALI

UNION DES COMORES

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Liste de présence : *Information / scribelyata*

Date : *03/02/2020*

Ile autonome de : *Njazidja*

Région : *Mbadjini*

Village : *Tsinimoichongo*

Nom et prénom	Fonction	Coordonnées	Signature
<i>Abdoumamadou Bayar</i>	<i>PNUD</i>	<i>371 66 96</i>	<i>[Signature]</i>
<i>Mohamad tbiakimbi</i>	<i>Maire</i>	<i>339 66 35</i>	<i>[Signature]</i>
<i>Hamamada Djafim</i>	<i>chef de village</i>	<i>343 49 66</i>	<i>[Signature]</i>
<i>Mmadikani</i>	<i>Mindradou</i>	<i>337 50 31</i>	<i>[Signature]</i>
<i>Mssouf</i>	<i>Tsinimoichongo</i>	<i>360 37 70</i>	<i>[Signature]</i>
<i>Echata Hamenda</i>	<i>Dembani</i>	<i>331 50 50</i>	<i>[Signature]</i>
<i>Youssef Mmadi</i>	<i>Dembani</i>	<i>349 55 90</i>	<i>[Signature]</i>
<i>Abduwaikim</i>	<i>Dembani</i>	<i>333 57 79</i>	<i>[Signature]</i>
<i>Mouhammad Mhazim Mhazim</i>	<i>Mhazim</i>	<i>372 30 79</i>	<i>[Signature]</i>
<i>Hme Prince</i>	<i>Mhazim</i>	<i>331 99 14</i>	<i>[Signature]</i>
FARID HASSANE	<i>Expert Hydre</i>	<i>336 03 00</i>	<i>[Signature]</i>
<i>Amadillah Hamane</i>	<i>communicant</i>	<i>343 10 98</i>	<i>[Signature]</i>
<i>Amalaine</i>	<i>Enregistreur</i>	<i>371 19 00</i>	<i>[Signature]</i>
<i>Mohamed salam</i>	<i>Notable</i>	<i>419 13 13</i>	<i>[Signature]</i>
<i>Mfahaya Kani</i>	<i>Notable</i>	<i>430 74 01</i>	<i>[Signature]</i>



Date : 02/02/2020	Objet : Information/Sensibilisation
PROCES VERBAL	

L'an deux mille vingt et le deuxième jour du mois de février, s'est tenu dans la place publique du village de Mdjoiezi, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

- *Début réunion : 15h30mn*
- *Fin de la réunion 17h00mn*
- *Président : Le coordinateur du projet*
- *Secrétaire : Farid Hassane ahmed*
- *Participants : Voir la liste de présence*

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et des objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

Elle a commencé par un mot de bienvenu du Maire de la commune de Djoumoipanga (Nahouza Mohamed). Dans son propos, le Maire a salué la présence de tous les représentants des différents villages de la commune pour leur mobilisation. Il a insisté de l'importance du projet pour l'arrondissement qui rencontre des difficultés liées à l'eau potable et réitère sa volonté à accompagner l'équipe du projet dans la réalisation des travaux.

Par la suite, le coordinateur du projet a procédé à la présentation du projet, notamment sur les objectifs, les résultats attendus et la couverture du projet au niveau des trois îles.

Viennent après, les réactions de l'assistance. Ces dernières ont porté sur :

- Le rôle des autorités locales sur les activités de terrain
- La réfection des tranchées et des pistes
- La gestion de ses ouvrages
- Des prières de bénédiction pour la réussite du projet

Les interventions des participants :

Pour le chef du village de Mdjoiezi, il a tout d'abord remercié l'équipe projet de cette volonté d'informer les communautés bénéficiaires du projet. Selon lui, bien que le projet suscite beaucoup d'espoir, mais sollicite des éclaircissements sur le rôle et la place de la commune dans la gestion de ses infrastructures et aussi des réfections des tranchées et pistes qui seront affectées par l'ouverture des tranchées.

La représentante de la gence féminine a remercié le gouvernement comorien et son partenaire financier et tous ceux qui ont contribué à la consolidation de ce projet. Elle a ensuite rappelé au public par ces propos : « Nous les femmes comoriennes, sommes au centre de la problématique de l'eau, par ce que c'est nous dans la majeure partie des cas, faisons usage pour les besoins domestiques. Beaucoup d'entre nous ont des initiatives entrepreneuriales, mais l'accès à l'eau reste le frein pour se relancer. Vous pouvez tout de même constater que beaucoup de femmes se donnent à la culture du maraichage mais le résultat est sans succès au vu des problèmes d'eau due à la rareté de la pluie ces dernières années ».

D'autres interventions des cadres des différentes localités ont salué l'initiative prise par le gouvernement pour ce projet. Ils rappellent aussi que la communauté doit faire preuve de patience et de collaboration. Nous devons avoir un œil sur l'entreprise qui sera recrutée, pour qu'ensemble, veillons à la bonne réalisation de ses ouvrages.

Le coordinateur du projet a pris le temps de répondre aux préoccupations des participants :

- Pour les autorités locales, c'est de jouer le rôle de facilitateur sur tous les enjeux du projet.
- Pour la gestion des infrastructures, le code de l'eau est clair dans son article 63 qui stipule que c'est à la commune de confier le service public de l'eau à la société nationale chargée de la distribution de l'eau.
- La réfection des tranchées sera prise en compte dans les études et des entreprises qui seront recrutées à cet effet.

Au terme des contributions, Monsieur le Maire a remercié les participants et s'est réjoui de la participation des populations à la rencontre. Elle promet l'adhésion et l'appropriation du projet par la commune pour qu'elle se réalise dans les bonnes conditions. Des bénédictions et une prière ont été faites par les notables présents, suivis d'un rafraichissement organisé par la communauté.

LA COMMUNE


NAHOUSA MOHAMED BACARI

UNION DES COMORES

Unité - Solidarité- Développement



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Au service des peuples et des nations

Liste de présence : *Information / sensibilisation*

Date : *08/09/2020*
 Ile autonome de : *Njazidja*
 Région : *Hambou*
 Village : *Hadjizi*

Nom et prénom	Fonction	Coordonnées	Signature
NAHOUSA Mohamed BACARI	M A I R E	358 80 37	<i>Na Houza</i>
MOHAMED A. MBORE	1 ^{er} adj. maire	333 53 73	<i>MBORE</i>
MOHAMED ALI	S.G. Maire	336 28 63	<i>ALI</i>
Badawi Saïd Omas	CAD	338 47 08	<i>Badawi</i>
Abdoul BAK	chef	335 16 45	<i>BAK</i>
HOUSSEINI ABDOU SOLIHI	ASSISTANT	321 10 7 96	<i>SOLIHI</i>
Moumouni Neudhrak	RDS	356 51 68	<i>Neudhrak</i>
TISSA IBRAHIMA	adjoint maire	446 73 23 / 338 73 23	<i>TISSA</i>
FAYZA ROHANE	Secrétaire de Bureau	443 23 23	<i>FAYZA</i>
Abdoulchik Mohamed	Proche	325-110 88	<i>Abdoulchik</i>
ABDULHASSAN	Proche	335 10 88	<i>ABDULHASSAN</i>
HASSANI MZE	NOTABLE	339 22 15	<i>HASSANI</i>
Moumine MOHAMED	OFFICIER	332 16 80	<i>Moumine</i>
Bahati Soule			<i>Bahati</i>
Said Hachim davis	COMERCE	334-70-03	<i>Said</i>
SOLIHI HAMANI	CHEF D'ARRONDISSEMENT	320 14 25	<i>SOLIHI</i>
Djamila Salih	tarabouche	34 76 70 02	<i>Djamila</i>
Echata Yousof	3 ^e Adjointe Maire	380 10 53	<i>Echata</i>
MOUSSA TISSA	Proche de l'arrondissement	335 40 37	<i>MOUSSA</i>
SOLIHI YOUSOUF	CHEF d'ARRONDISSEMENT	327 92 49	<i>SOLIHI</i>
Nassim Mohamed	Commis	350 49 56	<i>Nassim</i>
ALI HASSANI	chef de village	345 44 09	<i>ALI</i>
M ^{re} Faridie Tadjiri	chef de village	337 04 23	<i>Faridie</i>
FARID HASSAN	Expert Hydro	374 03 00	<i>FARID</i>
Abderrahmane Mohamed	CH. Projet	323 89 82	<i>Abderrahmane</i>
Abdourahmanou BACAR	BACAR	371 66 96	<i>Abdourahmanou</i>



Date : 10/02/2020	Objet : Information/Sensibilisation
PROCES VERBAL	

L'an deux mille vingt et le dixième jour du mois de février, s'est tenu dans la place publique du village de Chezani, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

- *Début réunion : 10h00mn*
- *Fin de la réunion 12h00mn*
- *Président : Farid Hassane Ahmed (Expert hydrogéologue)*
- *Secrétaire : Le chargé de communication*
- *Participants : Voir la liste de présence*

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et des objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

La séance a été ouverte par Monsieur Nakib Ali Soilihi, Maire de la commune, qui a souhaité la bienvenue aux présents et les a remercié d'avoir répondu à l'invitation de l'équipe projet du PNUD et consacré un peu de leurs temps pour discuter du projet, donner leurs avis, faire part de leurs préoccupations. Il a fait une brève présentation du contexte du projet qui s'insère dans le cadre d'un ambitieux programme. Il a ajouté que la consultation a été prévue et organisée conformément aux procédures du PNUD et que les différents commentaires et avis de participants seront pris en considération dans le rapport final du projet. Monsieur le Maire a ensuite cédé la parole au chargé de communication pour une présentation du projet et de ses différentes composantes.

Viennent après, les réactions de l'assistance. Ces dernières ont porté sur :

- Le rôle des autorités locales sur les activités de terrain
- Les mesures sanitaires pour assurer un approvisionnement en eau potable
- Les bornes de prise d'eau
- Des prières de bénédiction pour la réussite du projet

Les interventions des participants :

Le Secrétaire Générale de la commune à tout d'abord remercier les participants d'avoir répondu à l'appelle et à l'équipe du projet de leur avoir donné la chance d'exprimer un peu leurs préoccupations sur ce projet. Pour lui la question de qualité de l'eau est primordiale au vu des problèmes sanitaires auxquels le pays est confronté. IL suggère que les infrastructures qui seront mises en place répondent au mieux aux normes sanitaires pour le bien être de tout le monde.

Farid Hassane Ahmed (Expert hydrogéologue du projet), a saisi l'occasion pour répondre en précisant que, la question liée à la potabilité de l'eau est bien en compte et que les technologies de traitement de l'eau seront utilisées pour assurer un approvisionnement en eau de qualité.

Pour la représentante de la gente féminine, la question était de savoir s'il est prévu dans le projet des mesures en terme d'infrastructures pour faciliter les ménages notamment la construction des bornes public de prise d'eau dans les villages.

L'expert hydrogéologue du projet a précisé que les bornes de prise d'eau publique sont prévues dans les travaux pour faciliter à ceux qui n'ont pas assez de moyens à avoir accès à l'eau potable.

Le chargé de communication du projet a précisé aussi ce qui attendons des instances communautaires au cours de l'exécution des travaux. La commune ainsi que les villages qui la constituent, doivent jouer le rôle de facilitateur à l'échelle locale, et aussi de veiller à ce que les travaux se déroulent dans les normes dans l'intérêt de tout le monde.

A la fin de la séance, le président a fait une récapitulation des questions importantes soulevées et a informé les présents que des leurs suggestions et les commentaires, seront précisées dans le compte rendu de la réunion et prises en considération dans le rapport final. Il est à signaler que les habitants se sont montrés en faveur du projet pour une collaboration avec l'entreprise des travaux. Le président a ajouté que le rapport tiendra compte des remarques soulevées. Le président a clôturé la séance en remerciant les présents pour leurs contributions et leur participation active aux discussions. Comme à l'accoutumé, des bénédictions et une prière ont été faites par les notables présents, suivis d'un rafraichissement organisé par la communauté.

LA COMMUNE



BACARI HASSANI
2ème Adjoint au Maire

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Liste de présence : Information / sensibilisation

Date : 10/09/2020
Ile autonome de : Ngazidja
Région : Mboikou
Village : Chigani

Nom et prénom	Fonction	Coordonnées	Signature
CHAKIRA ALI MMANI	SB Commune	323 51 28	
Bahia ALI ABDOU	Agent	332 1336	
Asmed Ali Abdou	Régisseur	337 87 05 / 437 87 05	
Aboucaria Karani	Secrétaire à l'état civil	474 43 91	
Fatima Mohamed Fadhili	officier	338 41 51 ou 438 41 51	
YOUSSEU F. KASSIM	Secrétaire	431-10-19	
IMZEMBARA ALI	secrétaire	431-33.22	
Sadjabou Mchanga	Secrétaire	477-36-12	
Fatima Ali Moussini	Agent	336 91 36	
NAKIB ALI SOULHI	Maire	320 41 12	
LIACUM CHAKIR MOUSSA	Point Recale	369 99 88	
Mohamed Ali	Conseiller	337 39 48	
Mohamed Mohamed	chef	362-47-82	
SAID ATHOUFANI	chef	338 38 95	
HASSANI MASKATI	Agent	434 77 63	
Cadafi elhalo	Agent	423 81 30	
IBRAHIM MOHAMED	Agent	433 67 87	
Ben kad Simza	Conseiller	454 96 21	
DURANGO ALI	agent conseillère	449-05-71	
Fatima Aboucaria Idi Fachi	Agent conseillère	439 61 79 ou 339 61 79	
Ali Abulaha	chef	455 17 50	
Saïd Moungie	Conseiller	379.06.66	
FARIS HASSANI	Expat Mycho	334 03 00	
Assadilla MOUMINI	Commune	2432073	



Date : 06/02/2020

Objet : Information/Sensibilisation

PROCES VERBAL

L'an deux mille vingt et le sixième jour du mois de février, s'est tenu dans la place publique du village de Koimbani, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

Début : 09h30

Fin : 10h15

Président : Coordinateur national du projet

Secrétaire : Expert communiquant

Participants : voir liste de présence

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et les objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

Comme à l'accoutumé, la réunion a commencé par un mot de bienvenu par le premier Adjoint au Maire M. Ibrahim Omar. Dans son allocution, il a remercié les personnes les reprenant des localités et des différentes couches sociales présentes. Pour lui, la réussite de ce projet constitue la base pour le développement socio-économique des communautés. Il a fait appel à tout un chacun de s'unir au projet afin que ce dernier puisse atteindre les objectifs fixés. Par la suite, il y a eu une présentation des objectifs du projet par le coordinateur.

Viennent après, les réactions de l'assistance. Ces dernières ont porté sur :

- Des prières de bénédiction pour la réussite du projet ;
- Qu'est ce qui est attendu des communes pour faciliter les activités sur le terrain.
- La gestion de l'ensemble du réseau AEP

Parmi les intervenants, la représentante de l'association féminine Nasmati Youssouf régisseur à la mairie, a pris la parole pour montrer la souffrance de la femme, des jeunes filles à se procurer de l'eau pendant la saison sèche. Les travaux doivent commencer en urgence au vu des conditions actuelles. Elle rappelle que la région de Oichili est parmi les régions les plus sèches des Comores avec des épisodes de sécheresse très longue. Nos communautés de la région Oichili, sommes impactées de voir l'eau couler dans les robinets.

Le chef de village de la localité de Koimbani (Mtrenguweni Hamadi), remercie le gouvernement comorien et de ses partenaires financiers de porter de telles initiatives en faveur de la population vulnérable et contribuer à endiguer les phénomènes liés à la rareté de l'eau. Pour lui, Moroni ne devrait pas être seulement au centre d'intérêt des politiques en matière d'approvisionnement en eau, mais de continuer dans cette perspective à s'approcher des communautés qui sont dans le besoin.

Un agriculteur a pris la parole pour trouver des réponses sur ses préoccupations en matière d'irrigation tout en soulignant le dur labeur des paysans pour trouver de l'eau pour leur culture.



Pour le coordinateur du projet, « ce projet est une initiative du gouvernement comorien avec l'appui financier du fond vert pour le climat (GCF) et le Programme des Nations Unies pour le Développement (PNUD). Le projet va durer 8 ans et se décline en 3 composantes principales : (i) cadre institutionnel, réglementaire et politique pour la gestion et la réduction des risques climatiques pour l'approvisionnement en eau, (ii) la gouvernance et la gestion intégrée des ressources en eau et (iii) le renforcement de la résilience au climat du réseau d'infrastructures d'approvisionnement en eau potable. Evidement notre projet à un volet sur l'agriculture surtout en ce concerne l'irrigation.

LA COMMUNE

Mme Zaoudjati SANDI
Maire

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Liste de présence : Information / sensibilisation

Date : 06/09/2020
Île autonome de : Ngazidya
Région : Oichili
Village : Kombari

Nom et prénom	Fonction	Coordonnées	Signature
1 Mohamed Hamidou	Administrateur	334 45 62	[Signature]
2 Mohammed Mfomer	Menuisier	326 61 35	[Signature]
3 Hassanati Abdou	Couturière	342 60 73	[Signature]
4 Hachim SAADI	Cultivateur	325 36 73	[Signature]
5 Saïd Mohamed	TOPHIB	332 60 67	[Signature]
6 Mohamed Abdou	Chef de Sima	355 53 92	[Signature]
7 Ibrahim Omar	1er Adjoint	331 36 19	[Signature]
8 Ahmed Smitchi	Enseignant	334 62 52	[Signature]
9 Bastien Mohamed	Enseignant	332 80 34	[Signature]
10 Hassani Msa	Chef Kombari	445 85 36	[Signature]
11 Nizardine Mohamed Himel		441 64 20	[Signature]
12 DAÏFIRI MACHIDI	SIG Marine	337 64 41	[Signature]
13 Smitchi Amadi	Notable	335 61 00	[Signature]
14 Ahamada Adam	3 ^e Ad. main	322 23 72	[Signature]
15 Ahamada MAHAMOUD	SIG Préfecture	332 26 38	[Signature]
16 Ibrahim Mehinda	chef de village	343 07 61	[Signature]
17 Nasrati Youssouf	Régisseuse Mairie	320 97 32	[Signature]
18 Mtenqweni Hamadi	Chef Kombari	323 35 02	[Signature]
19 Abdoul Adnani IBRAHIM	Coms. Municipal	433 83 38	[Signature]
20 Touhidou Ali	S. F. C.	344 57 68	[Signature]
21 Abdou Mvao Ngazi	Chef de Poste	323 59 81	[Signature]
22 Ahmed Houdjani	Bouvier	351 57 04	[Signature]
23 ISSIMAEEL MADI	Préfet Oichili	334 71 45	[Signature]
24 Sitti Amadi	Spité Sauvagerie		[Signature]
25. Madilite Noumin	Commun. Cat.	323 20 95	[Signature]
26. Abderehmane Mohamed	Ad. Projet	323 89 82	[Signature]
Abdourahmanou Bacar		371 66 26	[Signature]



Date : 05/02/2020	Objet : Information/Sensibilisation
PROCES VERBAL	

L'an deux mille vingt et le cinquième jour du mois de février, s'est tenu dans la place publique du village de Diboini, une réunion d'information et de sensibilisation des activités du projet « Assurer un approvisionnement en eau résilient aux changements climatiques aux Comores ».

- Début réunion : 12h30mn
- Fin de la réunion 14h00mn
- Président : Le coordinateur national du projet
- Secrétaire : Farid Hassane ahmed
- Participants : Voir la liste de présence

La réunion avait pour objectif : d'informer la population locale sur les activités prévues dans le cadre du projet et les objectifs à atteindre. Mais aussi de recueillir leur opinion sur le projet.

Elle a commencé par un mot de bienvenu du Maire de la commune de Hamanvou (Ahamada Mdroimana). Dans son propos, le Maire a salué la présence de tous les représentants des différents villages de la commune pour leur mobilisation. Il a insisté sur l'importance du projet pour la commune, qui rencontre des difficultés liées à l'accès à l'eau potable et pour l'irrigation, et réitère sa volonté à accompagner l'équipe du projet dans la réalisation des travaux.

Le coordinateur du projet a procédé à la présentation du projet en matière d'irrigation et d'alimentation en eau potable, notamment sur les objectifs, les résultats attendus.

Viennent après, les réactions de l'assistance. Ces dernières ont porté sur :

- Le rôle des autorités locales sur les activités de terrain
- La qualité de l'eau sur les aspects liés à la santé
- Des prières de bénédiction pour la réussite du projet

Suite à la présentation, les participants sont intervenus :

Pour le chef du village de Bwenidi, il a tout d'abord remercié l'équipe projet de cette volonté de venir informer les communautés de ce projet. Pour lui, bien que le projet suscite beaucoup d'espoir, mais des questions méritent d'être éclairci, notamment sur le rôle et la place de

la communes dans la gestion des ses infrastructures. Il précise et rappelle aussi que la région de Hamanvou est un des plus grandes zones agricoles du pays. Il est crucial que le projet pense à proposer des activités qui aideront à promouvoir l'agriculture.

Pour la représentante de la gente féminine Mme Fatima Ibrahim a remercié le gouvernement comorien et son partenaire financier et tous ceux qui ont contribué à la consolidation de ce projet. Elle a ensuite rappelé au public par ces propos : « Nous les femmes comoriennes sommes au centre de la problématique de l'eau, par ce que c'est nous dans la majeure partie des cas, faisons usages pour les besoins domestiques. Beaucoup d'entre nous ont des initiatives en termes d'entrepreneuriat, mais l'accès à l'eau reste un frein pour se relancer. Vous pouvez tout de même constater que beaucoup de femmes se donnent à la culture du maraîchage mais le résultat est sans succès au vu des problèmes d'eau lié à la rareté de la pluie ces dernières années ».

D'autres interventions des cadres des différentes localités ont salué l'initiative prise par le gouvernement pour ce projet. Ils rappellent aussi que la communauté doit faire preuve de patience et de collaboration. Nous devons avoir un œil sur l'entreprise qui sera recruté pour qu'ensemble veillons à la bonne réalisation de ses ouvrages.

Le ccoordonateur national du projet a pris le temps de répondre aux préoccupations des participants :

- Les autorités locales, c'est être le facilitateur sur tous les enjeux du projet.
- Pour la gestion des infrastructures, le code de l'eau est clair dans son article 63 qui stipule que c'est à la commune qui confie le service public de l'eau à la société nationale chargée de la distribution de l'eau.
- La réfection des tranchées sera prise en compte dans les études et des entreprise qui seront recrutés à cet effet.

Au terme des contributions, Monsieur le Maire a remercié les participants et s'est réjoui de la participation des populations à la rencontre. Elle promet l'adhésion et l'appropriation du projet par la commune pour sa réalisation dans les bonnes conditions. Des bénédictions et une prière ont été faites par les notables présents, suivis d'un rafraîchissement organisé par la communauté.



AHAMADA MROIMANA Ibrahim
Maire de Hamanvou

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Liste de présence : Informations / Sensibilisation

Date : 05/09/2020
Ile autonome de : Ngazidja
Région : Etrandra Hamarou
Village : Debani

Nom et prénom	Fonction	Coordonnées	Signature
AHAMADA MROIMANA IBRAHIM	MAIRE HAMAROU	4465915 / 3815915	[Signature]
FACUZIA ALI	MENAGERE	359 88 28	[Signature]
FATIMA IBRAHIM	AGENT MAIRIE	339 55 97	[Signature]
HASSAN MMADI FOUNDI	SG Nourie	339 47 93	[Signature]
Mohamed Chambou	Agnt maire	322 69 96 / Mbalemi	[Signature]
Saandia Ahamada	Autonome	324 32 28 / Mbalemi	[Signature]
Faouzi BOLKAY	Menagere	439 47 93 Bitaou	[Signature]
Moumaechayoussouf	Menagere	228 15 12	[Signature]
LATUFA BOINA		032-54-85	[Signature]
NADIM ZBOUR	secrétaire	335-66-06	[Signature]
Moumaechayoussouf	officier	333 14 88	[Signature]
Saadia Youssouf	Secrétaire	343 16 08 / Mbambani	[Signature]
Nassima Njoumei	Etudiante	324 00 42 / Mbambani	[Signature]
Noumbi ALI	chef Bitaou		[Signature]
Mmodi ALI	chef Mbougou	327 5069	[Signature]
Mhodjou ALI	chef Boemidi		[Signature]
Sama Youssouf	Conseiller	333 68 26	[Signature]
Mmodi Founi	Cultivateur		[Signature]
ALI BACAR	Conseiller	324 13 69	[Signature]
Ahamada Abdou	336 47 79 conseiller		[Signature]
Mariata Bacar	Menagere		[Signature]
Saanda Bacar	Menagere		[Signature]
Ibrohim Youssouf	Conseiller	431 0266	[Signature]
FARIS HASSANE	Expert Hygiene	334 03 00	[Signature]
Abderahmou Mohamed	CI Proj	323 89 62	[Signature]