Concept note
DRAFT

1. General information	
Title of the project (describing the technology)	Construction of boreholes for safe water supply with solar pumps and drinkers for animals
Country	Cameroon
Geographical scope (nation, regional, community level)	The project will be implemented at community level in two municipalities located in the Far North Region (Petté and Méri) and in one municipality situated in the Adamawa Region (Mbé).
NDE and or NDA endorsing the project	Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) Mr. Adama Saidou (adsa9@yahoo.com) Director of Sustainable Development Promotion Phone: (237) 74 94 06 36
Applicant	Fonds Spécial d'Equipement et d'Intervention Intercommunale (FEICOM)
Date and versions of the document	28th May 2021, version 2.0

2. Context and action description	
Brief summary of the request	The overall goal of the project is to implement an effective and sustainable management of water resources and improve climate risk management to support socio-economic development and environmental sustainability in the municipalities of Mbé, Méri and Petté in Northern Cameroon. The main objective is to increase access to safe drinking water and to provide safe drinkers for livestock. The project will apply a demand-responsive approach in implementing the following components: i) Provision of new boreholes installed with solar powered water supply systems, and rehabilitation and upgrading of existing water supply facilities. ii) Creation of troughs to supply safe water for livestock. iii) Implementation of capacity building measures for youth and women to learn about water management, solar energy, and the importance to maintain and keep water clean and free of contaminants in order to avoid diseases.
Problem statement and background	In Cameroon, water resources are threatened as a result of climate change, increasing population, and extensive farming and livestock practices, which have led to riverbank degradation, pollution, siltation, eutrophication, and water regime disturbances. Northern Cameroon, where the project's three municipalities are located (Far North region and Adamaoua region), is threatened by extreme water shortage and climate variability. The access rate to drinking water in the three target municipalities is below the 45% national average. Human activities have exacerbated facilitated the shrinking processes of water resources in the region as major catchment areas as well as rivers courses have been modified significantly by human activities. Land use intensification around catchment areas, groundwater extraction, the construction of dams along river courses, rapid population increase, unplanned urbanization and socio-economic development, has led to a poor and unsustainable management of water resources in the region. The shifting of the climatic belts southward is likely to affect hydrological processes such as evapotranspiration, runoff, infiltration, percolation and groundwater flow. An increase in temperatures is likely to raise the rate of potential evapotranspiration but would reduce actual evapotranspiration. This may lead to a drop in the amount of rainfall, with a corresponding reduction in runoff. A 2°C increase in temperature would result in a 21% decrease in the annual runoff. In Northern Cameroon, rivers such as Mayo Tsanaga and Mayo Sara would run dry altogether. This would lead to a reduction in the volume of runoff in the River Benue together with the Logone flowing into Lake Chad. This would be accompanied by a corresponding fall in the level of Lake Chad, which is likely to become almost non-existent by 2060, having been deprived of water by the drying up of feeder streams. Equally, the headwaters of the Benue, such as the Faro, Mayo Deo, Mayo Nial Mayo Farda and Mayo Godi and Mayo Rey, would have runoff characteristics similar to those existing in the northern lowlands today. There would also be a

	substantial reduction in soil moisture and groundwater storage because of reduced infiltration and percolation. Groundwater recharge ability would decrease significantly because of the increase in the length of the dry season. In addition, given the fact that the poorer populations in rural areas are most severely affected by the potential impacts on water resources, the scarcity of financial means and access to information leaves them with low adaptive capacity. UNICEF has been providing support in Northern Cameroon in rural water supply during the past years such as completing the inventory of facilities and introducing a method for keeping this up-to-date; developing technical capacities (particularly for the construction of small piped systems) by mobilizing the private sector, encouraging competition; accelerating the transfer of contracting authority responsibilities to the communes; and increasing staffing levels within the Ministry of Energy and Water (MINÉE) (support to stakeholders, programmatic approach). In addition, the WASH Programme (2018-2020) implemented by UNICEF, and still on-going, has reached the desired outcomes to increase usage of drinking water points and sanitation facilities as well as adoption of good hygiene practices among vulnerable groups in Northern Cameroon, including those affected by emergency situations. UNICEF has been accomplishing this by helping government and the communities to prevent and respond to disease outbreaks. It has also been promoting the use of improved latrines and increase access to safe drinking water and sanitation facilities. Regarding barriers encountered in the region, the water supply and sanitation sector in Cameroon is lagging behind that of many of its economic peer-group countries as, over the last 15 years, funding and hence progress have been sporadic. More recently, the sector has started to regain the trust of development partners (DPs) through the implementation of reforms that have led to improved governance, the start of decentralization, the establishment of sectoral policies and institutional development. In addition, the progress between urban and rural water supply is quite distinct: access rates are increasing in both cases, but the progress is slower in rural areas. The rural water supply sector is less well-structured and is currently largely dependent on eternal donors. In contrast, budget allocations to the urban water supply sector are set to increase significantly once institutional reforms are completed, enabling development partner funding to be absorbed and used more rapidly. Other barriers encountered in the northern regions are the lack of technical capacity to implement this sort of projects as well as the lack of funding to finance them. To sum up, Petté, Mbé and Méri are expected to suffer from increased periods of extreme heat, droughts, and water scarcity, which will impact on the quantity as well as the quality of drinkable water. In this sense, to address these problems, additional drinking boreholes will be constructed in these 3 municipalities, also to avoid the overuse of the existing ones. Using solar pumps instead of pumps run with fossil fuels, avoids the emission of greenhouse gases into the

	atmosphere, and therefore contributes to combating climate change. Furthermore, this project will help reduce the problem of diseases caused by the ingestion of contaminated water because a monitoring system for the water quality will be established and boreholes will be protected from the contamination by pathogens. In addition, a capacity building process specific for youth and women will be implemented so they learn about water management, solar energy, and the importance to maintain and keep water clean and free of contaminants in order to avoid diseases.
Potential for replication and scaling up at national, regional scale	This project is considered to be highly replicable and can be scale up at national and/or regional scale, for several reasons outlined below: - This project is aligned with the Nationally Determined Contribution to the Paris Agreement and with the National Plan for Adaptation to Climate Change in Cameroon (PNACCC, 2015) and it supports the objectives of Cameroon's National Development Strategy (SND30, 2020), which is the second phase of the "Vision Plan for 2035" issued by the Cameroonian government in 2009. One of the goals of Cameroon's Vision 2035 is to raise rural drinking water and sanitation access rates, therefore, this project ensures the accomplishment of the targets which are contributing to adapt to the effect of climate change. - All municipalities in Cameroon will be affected by climate change significantly, where water scarcity and water stress will affect its population and social and economic development and therefore this project can potentially be implemented in other municipalities in Cameroon that will need to address these problems. - The technical requirements, which are connected to the regulatory and social conditions in Cameroon, will be very similar in all the municipalities where it could potentially be implemented, hence the project could be replicated these areas without requiring significant changes. - The capacity building process for local authorities, technical staff, youth, and women can easily be replicated in the other municipalities, and future municipalities can learn from the experience of this project. - The methodology and results of the project will be analyzed and monitored in detail, so the successes, best practices, and recommendations for future potential replications of the project will be documented and available to other municipalities.
Theory of change / Project description	The main economic sector focus of this project is the water sector, and other relevant sectors are the agriculture and farming sector as well as the energy sector. The project aims to respond to the following theory of change: if water resources are managed in a sustainable and integrated way, if livelihoods are diversified and more resilient, and local governance is strengthened, becoming more equitable, accountable and participatory, and offering quality climate services, the resilience of ecosystems and communities will be improved. Quality of and access to water is a fundamental contributor to public health. And water management is an important task to ensure access and quality of water, in particular in the face of climate change and declining water resources. This

project aims at increasing both, the access to and the quality of water, of the 3 communities so they can more effectively adapt to climate change.

In addition, increasing the capacity of the population to manage water effectively or maintain the solar pumps is key to decrease their vulnerability. Since exposure to climate events like droughts can only be eluded by migration, it is crucial to increase the communities' adaptive capacity and allow the population to become more robust towards extreme weather events and the scarcity of water resources.

The overall objective of the project is to design and implement the installation of the solar water pumps and drinking troughs, as well as to implement a capacity building process for the local population to manage and maintain these installations.

The methodology proposed is as follows:

The selection of sites for the new water boreholes and those to be rehabilitated and upgraded will be undertaken by the local government authorities and the selected project implementation agency (PIA), in consultations with the communities and external experts, if necessary, and done on the basis of technical and socio-economic guidelines. The main criteria used for the selection of villages to benefit from new facilities are as follows:

i) Population > 1,000 people
ii) Previously installed water supply systems well maintained
iii) Willingness of villagers to provide land for the borehole, solar panel and tank area
iv) Lack of safe water for livestock and farmers
v) Villages that are not more than 1.5 km apart are clustered and supplied from one system.

Villages to benefit from upgrading be based on:

i) Communities that experienced rapid population growth, since the systems were installed, and the systems can no longer meet the water demands of the population
ii) Poor water quality
iii) Deep water table that limits the ability of the hand pumps to lift water

A pre-feasibility and system design study will be done locally to identify and determine specifically how many new boreholes to construct, how many current boreholes to rehabilitate and how many drinking troughs to construct, and where, and to define the most suitable and efficient system features.

The drilling contract for tube wells, borehole materials, pipes and fittings, solar systems, tanks and other necessary materials for the project will be procured at an early stage of implementation and all the related construction as well as material supply will preferably be done by local labor.

The solar pumps should be easy-to-use and low maintenance to ensure acceptance and long-lasting benefits of the pumps. Each pump consists of four

	solar modules at the top of the drill tower that power a small electric motor, which moves the lever of a simple mechanical siphon pump. Maintenance of the pumps and wells can be done by members of the local communities after undergoing a short training. Water is available from the holding tank even when the sun goes down. The rugged design of the pump will be tailored to operation in the region. The only maintenance it will need is an occasional gasket change, and it will not grind to a halt immediately if sand gets into the works. In terms of capacity building and training, the project seeks to strengthen local government and the community, and most vulnerable groups dealing with water and sanitation services provision. Community level structures will be strengthened in planning and implementation, operation and maintenance and monitoring of water. The activities included in this project are: (i) Support to short-term training of staff to strengthen the water supply and sanitation management functions (ii) Provision of office equipment and operational vehicles (iii) Coordination in daily operation and maintenance activities, and facilitation of allocation of resources (iv) Provision of instructions for proper use of the water facilities and preparation of rules on water use (v) Conflict resolution related to use of water supply facilities (vi) Assuring access to the support services for operation and maintenance to be provided by the public and private sectors Capacity building will be carried out in different stages and different target population. The preliminary proposal is: - Capacity building for youth to learn about water management and solar energy, as well as to improve sanitation and hygiene practices. At least 5 workshops per municipality during the implementation of the project. - Capacity building for women to learn about water management and solar energy, as well as to improve sanitation and hygiene practices and to strengthen their decision-making role and technical skills training related to the project in order to empower them. At least 5 workshops per municipality during the implementation of the project. - Additionally, capacity building for local authorities (municipal technicians and elected officials) will be provided in order to ensure the correct and sustainable water supply management, as well as on gender-sensitive development and social inclusion. At least 1 session per month in each municipality during the first 6 months of the project, in total 6 sessions). The table below outlines the main activities of the project to be implemented. An initial diagnosis and pre-feasibility study will be carried out before the project takes place to define the number of boreholes and solar pumping systems more specifically to be implemented, as well as amounts/units of other materials outlined below, so they are sized according to the expected purposes of each of the boreholes. The feasibility of adoption of solar pumping system in this project can be justified by the strong request by the communities, its wide spread in Cameroon and other countries throughout the Sahel region, experiences of other donors in

supporting application of the system, consistency with development plans, advantage of costs for initial investment, operation and replacement compared with manual pumps and an established structure of maintenance services for the solar pumping system through participation of local staff/enterprises in the maintenance activities in addition to the communities.

Outline of the project		Units
Initial study	A pre-feasibility study will be carried out to define the specific number of boreholes and solar pumping systems to be implemented in each municipality, so they are sized according to the expected purposes of each of these boreholes.	-
Facilities*	Construction of piped water supply facilities with solar pumping system. Conversion of diesel generators/ manual pumps to solar pumping system of the existing water supply facilities	- Mbé: 10 new boreholes, 17 wells~~boreholes~~ to be rehabilitated. - Petté: 2 new boreholes and 25 wells~~boreholes~~ to be rehabilitated. - Méri: 6 new boreholes and 16 wells~~boreholes~~ to be rehabilitated.
	Construction of cattle troughs	1 per new borehole
Equipment	Procurement of supporting vehicles for construction works: • Pick-up truck • 4WD station wagon Procurement of equipment for operation and maintenance: • Motorbike • Computer	
Training	Support for strengthening operation and maintenance system: • Community mobilization / sensitization • Hygiene education • Capacity building for operation and maintenance • Facilitation of maintenance contract conclusions	
	Groundwater development: • Borehole drilling technologies • Geophysical survey technologies • Monitoring of groundwater development • Repair and maintenance of drilling equipment	

* The number of boreholes to be created and rehabilitated indicated here have been provided by Help Community as a result of own estimations they have carried out. The values indicated here are expected to strengthen the supply of drinking water, increasing the rate of access to drinking water in the 3 municipalities.

The water from the boreholes and wells will be used mainly for household consumption and livestock that depends entirely on it during the dry season. The general estimations have been calculated in the three municipalities as follows:

	- Méri: The number of households estimated in 2021 are around 11.000 with an average of about 10 people. A pumped borehole (4-6 inches) with a depth between 40 and 80 meters has an average flow rate around 30 m^3/hour. The average adult in the Northern regions consumes around 100 l/day. For a total consumption of 1000l per household gives 11.000 m3 in total for all households. The average daily flow of the borehole is 744m^3/day. In the case of the existing wells, the average pump flow is 1,24m^3/hour considering a depth between 10 and 80 meters. Therefore, using this reasoning and considering the existing functioning wells and boreholes, it is estimated to build 6 new boreholes and rehabilitate 16 non-functioning wells to allow the 100% water coverage of the municipality. - Petté: Using the same approximation as explained above, in Petté there are around 6,850 households, therefore, it is estimated that the water needs will be covered by 2 new boreholes and 25 rehabilitated non-functioning wells. - Mbé: Using the same approximation as explained above, in Petté there are around 6,877 households, therefore, it is estimated that the water needs will be covered by 10 new boreholes and 17 rehabilitated non-functioning wells. Nonetheless, the pre-feasibility study will help determine the adequate and final number of boreholes to be created and rehabilitated, as well as the solar pumping systems, according to the water demand in each municipality for population, livestock, irrigation, and other uses. Gender aspects will be considered throughout the project: regarding the capacity building process, vulnerable groups such as women, and youth, will receive training regarding the technical aspects of construction and maintenance of the boreholes and solar pumps as well as regarding water management and to improve sanitation and hygiene practices, with the end goal to strengthen their decision-making role and technical skills training related to the project in order to empower them. By including them and asking them to engage in this project we are ensuring the full and effective participation of women in decision-making processes, which enables them to act as agents of change, with climate change related actions subsequently benefiting from the insights, knowledge, and other resources that they bring to bear in crafting effective and sustainable solutions for adapting to and mitigating climate change impacts. Furthermore, the provision of adequate and safe water within reasonable distance from households will free up time for girls and women, e.g. for attending school and income generating activities.
Anticipated products / impacts to be delivered / results	The quantified key results expected from the implementation of the project are outlined below, even though they might change slightly after the initial diagnosis and pre-feasibility studies are carried out: - Provision of 18 new drilled boreholes (6-8-inch diameter), supplying piped water to medium-large size rural communities (with greater than

	1,000 people) and installation of stand-alone solar powered pumping units, elevated water tanks, distribution network and public stand-taps. - Rehabilitation and upgrading of 58 water supply facilities such as wells to solar powered pumping units, elevated water tanks, a distribution network, and public stand-taps. - Provision of at least 18 cattle troughs in delimitated areas for livestock - 16 capacity building sessions / workshops - At least 9 new jobs created related to construction, maintenance and reparation of boreholes, pumps, pipelines and troughs. The adaptation benefits and positive impacts as a result of the implementation of this project include: - Improved health of communities through access to safe drinking water. - Provision of adequate and safe water within reasonable distance from households will free up time for girls and women and might result in increased school attendance and in an increase of income generating activities. - Availability of water as envisaged in this project will be coupled with hygiene awareness and training and this will result in minimization of water borne illnesses. - The project will also create jobs and this will inject money into the local economy for the duration of the construction. The project would also create a number of permanent jobs, i.e. the security guards theft and damage of the solar pumps. On the other hand, the approximate emission reductions as a result of the installment of one solar pump could be of 2.2 $kgCO_2$/day, assuming the installment of four solar panels per borehole with a total power of 1,500 W and 6 hours/day in operation. The project will increase the resilience of at least a third of the total population of each municipality (approximately 48,000 direct beneficiaries, 300 inhabitants per well/borehole constructed or rehabilitated) which include: - Direct beneficiaries due to the new and rehabilitated access to clean water (approximately 300 beneficiaries/inhabitants per borehole/well). These direct beneficiaries are considered the direct users of the new and rehabilitated boreholes installed. - Direct beneficiaries of the capacity building sessions in each municipality (at least 25 assistants in total in all workshops carried out per municipality). - Direct beneficiaries of the new jobs created in each municipality (at least 9 new jobs). In addition, there will be 90,000 indirect beneficiaries, which are the sum of the rest of the inhabitants of the three municipalities, that are considered indirect beneficiaries of the project as a result of the decreasing stress and pollution on existing water wells/boreholes. As mentioned before, the project will adopt a gender-sensitive approach and will ensure that women participate in and benefit from the project intervention. Gender co-benefits are anticipated as a result of the provision of adequate and safe water within reasonable distance from homes, which will free up time for

	girls and women, and may result in increased girls' attendance in schools, and increased income for women as they will be able to use this time for income generating activities. Furthermore, a strong emphasis will be placed on subsistence farmers and women throughout the project. Due to the creation of troughs, the project will also integrate smallholder farmers and farming communities in water resources management and increase their resilience to climate change effects. This project will ensure sustainability over time as a result of several actions, including: - The solar panelled pumps will reduce dependence on the availability and costs of fossil fuels and thus will ensure the boreholes continue to be used for years without risking the lack of a non-renewable fuel. - A local committee in each municipality will be responsible of the implementation and supervision of the project. Also, the committee will ensure the continuation of the project over time once solar pumps are installed and troughs come into operation. - Thanks to workshops and training sessions, local communities will be capable of carrying out most maintenance tasks themselves and, thus, they will not depend on external service providers. - Quality water control will be carried out frequently. If water quality declines, measures will be adopted to mitigate this issue and revert the situation. - Interviews and surveys will be carried out with pump users to check whether pumps are functioning correctly, and facilities are well managed.
Applicant abilities	FEICOM is a public administrative establishment that was created by law No 74/23 of 5th December 1974. The main purpose of creation was to organize local councils in the country. Even though it was created in 1974, it started operating in 1977 and has since then undergone evolutions so as to adapt to changes of the institutional context. It has therefore seen into modernizing its functioning structures in order to adequately meet the needs of local councils. In this regard, the Government of Cameroon has entrusted this organisation the mission of mutual assistance among local councils through solidarity contributions, cash advances and the financing of investment projects. Another major stake of the establishment is to ensure formalization and objectivity of its assistance mechanisms in order to promote equity and transparency. The organisation has financed many council projects in all parts in the ten regions of the country. Furthermore, FEICOM will have the collaboration and support of Help Community during the development of the project. Help Community is a Cameroonian non-governmental organization that works on the protection of environment and climate change resilience to fight alleviate poverty among the most disadvantaged in order to promote sustainable development within municipalities nationally and in the countries of Sub-Saharan Africa. Thus, it is positioned as the development unit of communal project ideas included in the Municipality Development Plan (PCD) developed by the National Program for Participatory Development (PNDP), and the funding research platform of the

	Municipalities by setting up frameworks of consultation and discussion between town halls of Cameroon and the foreign structures. This operation is carried out by direct support to the development of social and economic projects registered in the PCD, by the endowment of tools to promote the potential of the municipalities, by providing them free web platform, documentaries for the promotion of their image and the provision of effective tools to facilitate exchanges with foreign municipalities, businesses, and goods of other development actors. With Help Community's large experience with municipalities in Cameroon, and since it has been the local proponent of the project "*Conducting a diagnosis of vulnerability to climate change and the development of an energy and climate action plan in the municipalities of Méri, Mbé and Petté*", FEICOM and Help Community, in close contact with the 3 municipal councils, will implement a tendering process to find the most adequate PIA to act as the project manager to undertake the project.
Implementation arrangements	FEICOM will search, with the collaboration of local governments and Help Community, a PIA which will be the main entity responsible to oversee and coordinate the project implementation in the three municipalities. The selection procedure will be carried out through a public tender. The selected PIA will promote strong involvement of the municipalities in the orientation and monitoring of the implementation of the project through the municipal councils and a project management committee; it will also involve local and national public procurement and execution mechanisms when necessary, in order to induce ownership of the project by local, regional and national institutions. The selected PIA will subcontract if necessary technical or other services in order to ensure the successful implementation of the project, while respecting the public procurement procedures in force in Cameroon and/or accepted by the donor. The PIA will also assist in the creation of a water management committee in each municipality in order to enable the local supervision of the project and the reporting of the operations and management of the water facilities. As one of the first actions of the project FEICOM, the PIA and the 3 local governments will define a supervisory committee within the project that will be in charge of the successful implementation of the project, and which will regularly meet to monitor the progress and results of the project. At least, one person of each entity will take part of this committee. In addition, a project management unit/committee will be created in each of the local government's to locally supervise the project implementation and evolution. Help Community, in collaboration with the local government and the PIA, will be in charge of organizing the capacity building sessions so the local community can sustain the project in the future with the least external assistance and help as possible. The national government will provide additional support if necessary, through the intervention of the services of the following sector ministries: Ministry of Mines, Water and Energy (MINEE), Ministry of Nature Protection, Environment

	and Sustainable Development - MINEPDED, Ministries in charge of public procurement regulation, etc.
Risk management	Some risks that could arise during or after the implementation of the project are outlined below: - Water depletion is a potential risk as a result of the creation of the new boreholes and rehabilitation of existing ones. Having solar pumps where there is no need to pay for any fuel could increase the risk of water depletion in the region and endanger the water supply and availability for the community. In order to mitigate this risk, water management committees will be created in each municipality, with assistance of the PIA, to enable the local supervision of the project, water supply/availability, as well as water quality, and the reporting of the operations and management of the water facilities. Aquifer management and protection will be ensured through detailed pumping tests analysis, and furthermore, the potential introduction of a user fee could be assessed for further mitigation of this risk. - Lack of repair and maintenance due to poor ownership by beneficiaries. The involvement of beneficiaries right from project preparation, the organization of water point management committees, and the budgeting of maintenance costs by councils could mitigate this risk. - Weak institutional capacity: this major risk of weak institutional and implementation capacity is mitigated by, firstly, having an external PIA managing the project, and also creating a project management committee in each of the local government, to assist in its implementation and management, and secondly, to support training at the various levels of implementation. - Community resistance to adopt safe hygiene practices: There is a risk of delayed response to improved hygiene promotion. In mitigation, the project will deliver hygiene promotion services (good hand washing, proper use of improved latrines etc.) that bring about sustained behavior changes. It will also finance and promote a continuous education strategy which can be funded by the government after the end of the project. In addition, other potential environmental and social impacts resulting from the solar water supply project could include: the creation and expansion of burrow pits (excavations to source building material and to build foundations), which will result in dust, soil erosion of the excavated topsoil, noise pollution, which is inevitable during construction of boreholes, loss of vegetation and encroachment of alien invasive species, air pollution, disruption of water supply where upgrading is being done, water pollution and poor management of water around water points, increased subsistence farming which could in turn lead to use of fertilizer and also increased sedimentation, visual intrusion which will arise from the erection of service reservoir tanks on hills and with regard to abstraction points in the upstream areas, lowering of the underground water table and possibility of affecting other users by reducing their borehole yield, over-abstraction and groundwater depletion. Mitigation of negative impacts listed above will include among others limiting the amount of bare soil to avoid erosion and silt transport during high intensity rainfall events. Where practical, the excavated topsoil will be stored for reuse. In

<table>
<tr><td></td><td>order to retain the natural vegetation cover, individual trees of conservation importance that are within the proposed project area will be marked and avoided during vegetation clearing. Clearing of old mature trees will be avoided and re-vegetation will be done to ensure indigenous species are not dominated by alien species. Construction areas will be cordoned off to ensure safety of the passer-by; noise pollution will be controlled by working during working hours only and using appropriately maintained machinery with emissions below 85 decibels. Disruption of water supply during upgrading will be managed through communication and giving adequate prior notice. Visual impacts will be minimized by careful siting, landscaping and planting of vegetation around the developments. Aquifer contamination will be prevented by siting the sanitation facilities away from shallow aquifers.</td></tr>
<tr><td>Monitoring, reporting and evaluation</td><td>A monitoring/evaluation mechanism will be set up to monitor and measure the results obtained throughout the project as well as its targets and impact on beneficiaries. The PIA will be in charge of monitoring and evaluating the results of the project, and it will do so in collaboration with FEICOM, the local governments, and Help Community. The contribution of the National Statistics Institute (INS) will be sought at the project commencement and completion to study the project’s main monitoring indicators.
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<tr><th>Objectives</th><th>Indicator</th></tr>
<tr><td>Health and hygiene conditions of the target population are improved</td><td>Incidence of water borne/related diseases at the target sites decrease</td></tr>
<tr><td>Time and labor inputs for water fetching decrease, especially for women and children</td><td>Water fetching hours decrease at the target sites compared with before the project</td></tr>
<tr><td rowspan="3">The community members at the target sites can use safe water in a sustainable manner</td><td>The water quality at all target sites meets the Cameroon’s standard for drinking water throughout the year</td></tr>
<tr><td>35 l/person/day of water is supplied from the constructed water supply facilities at all target sites throughout the year</td></tr>
<tr><td>The constructed facilities are operational throughout the year</td></tr>
<tr><th>Outputs</th><th>Indicator</th></tr>
<tr><td rowspan="4">Water supply facilities are constructed at all target villages that meet criteria both in water quality and quantity</td><td>New solar water supply facilities constructed at each municipality</td></tr>
<tr><td>Solar pumping systems installed at the existing water supply facilities.</td></tr>
<tr><td>Drinking troughs for livestock constructed</td></tr>
<tr><td>Quality and served quantity of water from the constructed facilities</td></tr>
<tr><td rowspan="3">The community-based operation and maintenance system of the constructed water supply facilities is established at the target sites</td><td>Community members at all target sites complete training on daily operation and maintenance of the facilities.</td></tr>
<tr><td>Project manager at all target sites produce operation plans of the water facilities including internal regulations and financial report.</td></tr>
<tr><td>All target villages conclude maintenance contracts with a private service provider and declaration of commitment</td></tr>
<tr><td rowspan="3">The community members firmly understand importance and ways of safe and efficient use of water from the constructed facilities</td><td>Compared with before the project, water usage from unhygienic water sources decreases.</td></tr>
<tr><td>Compared with before the project, differential usage of water sources are practiced depending on purposes.</td></tr>
<tr><td>Compared with before the project, practice of appropriate hygiene behavior of the residents increase in terms of water source protection, proper treatment of drinking water and hand washing</td></tr>
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	Monitoring and supervisory system of operation and maintenance activities conducted by Help Community and the private service providers are reinforced at the public sector, i.e. local authorities	Effectiveness of capacity building activities, collection and payment of operation and maintenance fund and measures taken at breakdowns of the facilities are monitored and records are compiled by local authority	

3. Implementation plan

Expected timeframe

The project will be implemented over a period of 24 months upon conclusion of the grant aid.

The implementation schedule once the grant aid is achieved will be as follows:

1) Creation of the supervisory board committee with FEICOM and local governments in collaboration with Help Community. Initial meetings (Month 1)
2) Initial feasibility studies / assessments (Months 2-6)
3) Tender document preparation and tender contractor contract (Months 2-7)
4) External consultant agreement (Months 7-9)
5) Procurement of materials and equipment (Months 10-11)
6) Construction of water supply facilities and drinking throughs and installment of solar pumps (Months 11-22)
7) Handover of the facilities (Month 23)
8) Monitoring of the facilities management by local community (Months 23-24)
9) Capacity building process (transversal, during all the stages of the project)

Estimated cost of the project (with breakdown)

The estimated total cost of the project will be: **8,178,600 USD**

Breakdown of the costs:

- Each new borehole created has the following approximate associated costs (the final cost of each borehole will depend on the depth and the diameter of the drilling):

Work	Cost (USD)
Technical studies prior to the works (geotechnical, topographical)	1,650
Material and work equipment	14,500
Installation of the site	9,000
Preparatory work (soil, vegetation)	3,100
Construction and protection of the pond	270,000
Construction of canals	22,250
Construction of cattle troughs	12,100
Protective fence	8,100
Solar pump equipment	1,500
Fitting out of the site (trees, bench, litter bins, signage)	10,500
Total cost per new borehole	**352,700**
Total cost of 18 new boreholes	**352,700 x 18 = 6,348,600**

- Cost of rehabilitation of existing boreholes:

Total cost per rehabilitated borehole	10,000 USD
Total cost of 58 rehabilitated boreholes	**10,000 x 58 = 580,000 USD**

	In addition to the cost of the new boreholes constructed and the cost of rehabilitating the existing boreholes, the following costs have been included in the final cost of the project: • Capacity building: it has been estimated to be around 3% of the total cost of the project: **200,000 USD**. • Maintenance & Operation costs: it has been estimated to be around 5% of the total cost of the project per year: **700,000 USD** (350,000 * 2 years) • Project Management: it has been estimated to be around 5% of the total cost of the project: **350,000 USD.** After the project is implemented, the creation of "local borehole management committees" will enable local communities to manage the boreholes and solar pumps responsibly and adequately with funds from each local government. The operational costs estimations have been calculated considering that the implementation of project requires additional teams and fixed costs such as: - Staff salaries - Experts' fees if necessary - Office and teaching equipment - Mission expenses - Transportation - Catering for meetings This is an initial estimate of the costs. In the feasibility study carried out before the implementation of the project, the costs will be updated and more detailed when necessary.
Financing structure	In addition to the financing obtained from this fund, alternative financing instruments and co-financing will be explored in order to ensure the successful implementation of the project and its sustainability in the future. Firstly, some funding shall be provided by the FEICOM (e.g. 20%), and additional funding from Programme National de Développement Participatif (PNDP) will be considered to benefit more from funding from FFU (Fonds fiduciaire d'urgence de l'Union européenne) and HIMO (Haute Intensité de Main d'Œuvre), which strongly participate in solving problems at the local level in the Sudano-Sahelian area. Furthermore, other financing and co-financing mechanisms will be assessed by FEICOM, Help Community and the local governments prior to the start of the project, including microcredits, crowdsourcing or direct types of instruments such as innovative use of public budgets, such as pooling funding from different government departments or making use of previously untapped sources such as the public health budget.

4. External partners and factors	
Key stakeholders	Fonds Spécial d'Equipement et d'Intervention Intercommunale (FEICOM) Role: applicant and potential co-financing entity. Assisting in the drafting of the tendering documents to select the PIA together with the 3 beneficiary municipality councils.
	Municipality councils of Mbé, Petté and Méri Role: beneficiaries of the project and potentially supervising the activities at their own municipalities. Providing context specific information, the drafting of the tendering documents to select the PIA together with FEICOM.
	NGO Help Community Role: Project collaborator and technical assistance related to the capacity building process at the 3 municipalities.
	Project implementation agency (PIA) Role: project manager. Agency designated to manage, implement and supervise the project for the 3 municipalities.
	Ministry of Water and Energy (MINEE), Ministry of Environment, Protection of Nature and Sustainable Development (MINEPDED) Role: provision of assistance and support (regulatory framework).
	Ministry of Public Procurement Role: provision of assistance and support (Public Procurement Commission)
Alignment with national priorities	The project is aligned with the main strategic documents of the country in terms of climate change adaptation, mitigation and natural resources management, as described here below: - Cameroon's NDC: By improving water supply facilities and local people resilience to climate change while also reducing their greenhouse gas emissions, the project is aligned with Cameroon's NDC. The Water sector is amongst Cameroon's priorities for both mitigation and adaptation. Cameroon intends through its NDC to reduce the carbon footprint of its development without slowing its growth, by favoring mitigation options with high co-benefits; strengthen the country's resilience to climate change; bring coherence to its sectoral policies and reinforce its mechanism and implementation tools to facilitate the achievement of these objectives; and mobilize for this purpose all relevant means: financing, technology transfer and capacity building. These objectives will be supported by the project. - PNACCC: By aiming to increase the resilience to climate change of vulnerable populations the project directly contributes to the visions of the PNACCC. The project is also supporting all four strategic objectives of the PNACC that are as follows: (i) improving knowledge on climate

	change in Cameroon (through capacity building training), (ii) inform, educate and mobilize the Cameroonian population to adapt to climate change (through the importance to keep good water quality), (iii) reduce vulnerability to climate change in the main sectors and agro-ecological zones of the country (through intervention in Sahel agroecological zone); and (iv) integrated adaptation to climate change into strategies and national sectoral policies (through the overall objective of the project). - Cameroon's Vision 2035: One of the goals of Cameroon's Vision 2035 is to raise rural drinking water and sanitation access rates, therefore, this project ensures the accomplishment of the targets which are related to the effect of climate change. The project is also aligned with this vision, in particular through the promotion of empowerment and economic opportunities (jobs created) for local communities and in particular young women and men. - National Gender Policy 2011-2020 promotes an impartial and egalitarian society for women and men in order to ensure a sustainable development. The proposed project is aligned to two objectives of the strategy, namely: "ensure equal rights and opportunities to men and women regarding access and control of resources", and "create favorable conditions for equal participation of women and men in development activities". - National Action Plan for Youth Employment (2016-2020). One of the components of the project is aligned to the following strategic orientations of the National Action Plan for Youth Employment: (i) matching employment and training, (ii) promotion of youth decent employment.
Reference documents (NDC, NAP, etc)	Nationally Determined Contribution of Cameroon (NDC) – 2016 (pages 4 – 9) Plan National d'Adaptation aux Changements Climatiques du Cameroun – 2015 (pages 59 – 63, 104) Cameroun Vision 2035 – 2009 (pages 16, 36, 45, 56) National Gender Policy - 2010 (pages 12 – 32) National Action Plan for Youth Employment – 2015 (pages 10 – 25)
Gender	In this geographical area, women and girls are traditionally responsible for fetching water used for cooking, washing, cleaning and drinking in the household. Often, they go long distances getting water for the home which affects the time available for other activities like school attendance, income generating activities etc. The often absence or unconducive sanitary facilities in schools and other public places affect the dignity of the woman folk and so reduce their interest in services provided in such places. The access rate to drinking water in the 3 target municipalities is below the 47% national average. The primary school completion rate is 23%, standing at 36% in urban areas and 10% in rural areas. Women and youth are particularly concerned, since fetching water is 70% the responsibility of the women and children in rural areas. Furthermore, situation analysis reveals the following: (i) the available infrastructure (connections to gravity-based networks) does not create jobs (water point management) for women

	(ii) the population attaches no importance to water quality (iii) poverty remains very high in the project area The project will ensure that gender issues are well mainstreamed in all its activities. This will be demonstrated in a balanced representation of both male and females in project activities and in provision of water supply and sanitation facilities that are convenient to women and girls especially. Women and the girls in the Northern Cameroon, like in most regional member countries, disproportionately bear more of the consequences of poor water supply and sanitation because they are traditionally responsible for fetching water for household use. They are also less represented at decision making levels across all sectors. During community mobilization and training, the Project will ensure that there is at least 50% women participation and representation. The project will also implement training targeting women to equip them to participate effectively in activities and workshops, including taking up leadership positions. Their security, privacy, dignity and health conditions are expected to improve through provision of ergonomic water and sanitary facilities in schools, marketplaces and households. Provision of adequate facilities will lead to increased school attendance and income. All these will culminate in socio-economic empowerment of women thereby improving their living conditions. The project is expected to impact positively on female gender in several ways – income, health, education and politically: • Increased Income: About 90% and 70% of economically active women and men respectively are involved in rural agriculture in Far North Region and Adamawa Region. With the safe water provided under the project, majority of these women will have 'freed time' from the fetching of water and attending to sick children (due to water related diseases) for use in their farms and or other economic activities. Some of the women will also serve as laborers and petty food vendors during the constructions and borehole drillings thus improving their income. • Political Empowerment: Given the commitment of the project to promoting gender equality and women empowerment, it is anticipated that women would become more politically empowered and relevant in the communities through active participation in workshops and activities including decision making pertaining to development planning and management in the communities. • Health: The high maternal mortality ratio of 529 per 100,000 live births in the country has been linked to poverty (>60%), illiteracy (in rural areas only 30% of women are literate) and poor quality of health services. The project is expected to improve on this through reduction in malaria, diarrhea and other water-related diseases incidence as well as freeing of the health burden on women attending to their sick children and family members in hospitals. Increased female literacy rates arising from improved school attendance and survival rates will bring about a decrease in earlier pregnancies and better self-care before, during and after childbirths. • Education: The availability of water in households through the project will eliminate the burden of spending hours fetching water therefore freeing time for the girl-child school attendance.