

**Project of providing access to clean and safe drinking water, improving agricultural productivity,
and alleviating poverty: The case of the Mpiana community in the territory of Gandajika
(Democratic Republic of Congo)**

Executive Summary

The ADERC-Canada, a registered Canadian charity organization (WWW.ADERC.ca), has initiated a project to increase the productivity of the Mpiana rural community in the Democratic Republic of Congo (DRC). The project's primary objective is to provide the community with clean and safe drinking water by implementing a deep water well system. The project comprises two phases: the experimental phase and the extension phase.

The experimental phase is set to bring about a lot of positive change in two villages near the ADERC local office. With a comprehensive approach, individuals will be encouraged to participate in the project and make it their own. Technicians will receive training to operate the equipment, and others will be trained to increase awareness of actions related to improving health and agricultural productivity. This phase will significantly improve people's lives, including providing drinking water from deep wells within a three-kilometer radius of their homes. There will also be an increase in agricultural productivity and revenues from an integrated system of agriculture and livestock. Using much better techniques and technology will replace manual tools, such as the hoe and machete, with a two-tire walking-behind tractor. Additionally, this phase will help write technical sheets on the use of machines and technologies, and the skills needed to carry out the new practices in other villages of the Mpiana community. With a cost of US\$100,676, the ADERC has already provided funding for more than 50% of the cost of this phase, in addition to the benevolent work of its members. This phase will provide safe drinking water to about twenty-five thousand (25,000) people.

In the extension phase, we will utilize the knowledge gained in the first phase and employ equipment, human resources, and technical expertise to expand our activities to the remaining seven villages within the community. This expansion will come for US\$279756. This phase will provide safe drinking water to about seventy-five thousand (75,000) additional people.

The social and economic situation faced by the population has necessitated two phases of projects. The residences are located at least 7 km away from the rivers, which means that it takes four hours of a round trip to bring a maximum of 20 liters of water on one's head. Unfortunately, this water is unhealthy and is the source of many sicknesses. Agriculture is the main activity for over ninety percent of the population, and they also practice small livestock farming with goats, chickens, pigs, etc., that are allowed to roam freely in the village. However, the productivity of these activities is very low due to the use of outdated tools and poor soil quality. Furthermore, selling produce in large cities is challenging due to bad roads. Consequently, farmers sell their produce at low prices while buying manufactured products at expensive prices.

This project is expected to bring numerous advantages for farmers. It will enhance their well-being by providing safe water, ultimately leading to better health. Additionally, farmers will have the opportunity to utilize their time properly, as they would not have to spend four hours collecting just 20 liters of water. Moreover, the use of efficient tools and practices will help increase their productivity, enabling them to utilize manures for fertilizing soil. By enhancing their productivity, the family will earn more income, which can be used to finance their children's education and enhance their overall standard of living.

Despite the generous support shown by ADERC-Canada members through donations and loans, there is an imperative need for additional financial backing to guarantee the success of this project. Unfortunately,

very little can be expected from the government of the DRC. For several years, the country has consistently been ranked as one of the six most failed states in the world for decades.

We kindly request your financial assistance.

1. Introduction

In 2020, the “Institut National de Statistiques” (INS) in the Democratic Republic of Congo (DRC) found that sixty percent of the population in the country was living in the rural area (INS, 2021)¹. An average of 64% of all households in the country were practicing agricultural activities, with the lowest number of 6.6% in Kinshasa, the capital and largest city, and the highest number of 91.8% in the province of Sankuru. An important discrepancy in the level of well-being and poverty was observed between rural and urban regions. For example, findings on rural households in the rural communities to those in the urban ones indicate, among other things, the following striking numbers: 30.10% against 90.10% with access to drinking water, only 1% against 45.6% with a television, 34% against 62.40% with a radio, 0.2% against 16.4% with a fridge, 0.55% against 5.2% with a car, 0.3% against 12.4% with a computer, 29.6% against 83.5% with a cell phone, and 1.2% against 16.6% with a bank account.

Although already low for the whole country compared to many other countries, these figures show the disastrous situation in the Congolese rural communities. It is important to mention that these numbers are averages, and some rural communities are even struggling in much deeper and more desperate situations. It would therefore be legitimate to raise the question of why the government does not intervene to alleviate such a level of poverty and misery. It seems, however necessary to remember that the Democratic Republic of Congo has been ranked for years among the worldwide 10 most fragile or failed countries respectively by the Fund of Peace and the World Population Review. For example, for 2023, the World Population Review (2023)² ranked the DRC in the sixth position in the Country Failed Index, examining 179 countries (1 = the most failed country based on 2022 scores). For its part, the Fund of Peace (2023)³ has ranked DR Congo in the fifth position of the fragile states out of 174 countries examined in 2022 ((1 = the most fragile country based on 2022 scores).

Facing the situation of failure or fragility of the DRC government, rural communities needed more hope and were looking for help from non-profit organizations. To this end, the Association for the Development of the Rural Communities (ADERC-Canada) was created in 2007 and registered in Canada as a charity to help deprived rural communities in the DRC. It aims to develop collective capacity and improve the personal well-being of children, women, and men. To this end, with donations from its members and other donors, ADERC-Canada has provided through its Congolese local representative organization named “Fondation pour le Développement des Communautés Rurales du Congo” (FODERC), among other things:

¹ INS (2021). *Annuaire Statistique RDC 2020*. Institut National de la Statistique. Kinshasa. <https://www.undp.org/fr/drcongo/publications/annuaire-statistique-rdc-2020>. Accessed June 5, 2023

² World Population Review. (2023). Failed States Index 2023. : <https://worldpopulationreview.com/country-rankings/failed-states>. Accessed June14, 2023

A “failed state” is one that “struggles to implement public policies, build effective infrastructure, and protect civil liberties and human rights. Residents of a failed state have little physical security and lack the benefits of stable political and economic systems”.

³ Fund for Peace (2023). Fragile States Index. <https://fragilestatesindex.org/excel/> accessed June 14, 2023

The Fund of Pease uses four criteria categories to determine the state’s vulnerability to conflict or collapse on the basis of the following indicators: human rights, public services, demographic pressures, refugees and internally displaced persons, and security.

a tractor IH 560 diesel, a truck Chevy C30, agricultural literature for farmers, textbooks to teachers in elementary schools, books and teaching equipment to four universities located in Gandajika, Mbujimayi, Kananga, and Kinshasa, construction of washrooms for a Church in the DRC Western province, 3 devices for underground water prospection, and 1 drilling for water well drilling up to 30 meters. Due to the difficulty of finding on the one hand, replacement parts, and locally knowledgeable technicians to maintain a big tractor adequately and, on the other part, the location of underground water at 100 meters, the ADERC-Canada is in the process of buying walking behind (2 tires) tractors and a drilling machine to dig water wells up to 200 meters. But the Association needs more money and has prepared the current project to invite other donors to take part in this endeavor of helping those who cannot fulfill their most basic needs and are left alone without hope to attain their dreams or desires.

In their activities, ADERC-Canada members work on a benevolence basis. All the funds received will be dedicated to the eradication of poverty and the alleviation of sources of sicknesses from bad drinking water. The local population has always participated as manpower in all our projects. The point of departure for this journey will be the Mpiana community in the territory of Gandajika in the province of Lomami at the center of the Democratic Republic of Congo.

We have chosen this community as it represents all the lack observed in the rural areas. This community has never seen an adequate system of drinking water or schools with sustainable materials, as is the case in the neighboring Bakwa Mulumba area. The Belgian colonial system was leaning on catholic churches to spread schooling. Still, it is only recently that two catholic parishes have been established in the Bena Mpiana community (in Bakwa Mfumu Mbinga and Ntita). In addition,, until 1970s, children could study in the Bena Mpiana villages just till the fifth year of elementary school after which they had to go elsewhere to finish their studies. No commercial center existed in this community, and only warehouses for storing cotton were built. Finally, it is worth mentioning that hospitals, important health centers, and maternity were built in the Bean Mpiana community recently. In addition to the executive summary and this introduction, this report will describe the project, present its context, its impact, and means of promotion.

2. Description of the project

As mentioned above, the project has two main components: a) providing drinking, and b) building agricultural capacity. To these components, we add the third consisting in drafting the community development technical sheets on the involvement and knowledge awareness-raising of the population on the project's two parts (See Table 1 & Chart 1 in the appendix).

2.1 Project of the provision of drinking water

The principal goal of this part of the project is to provide, the Mpiana community people, with healthy drinking water at a distance of three (3) km or less from their residences using the deep well water system at an affordable cost.

Specifically, this part of the project will:

- a) draw the approach describing the process and method of planning, implementation, monitoring/evaluation (site selection, introduction and management of activities, monitoring/evaluation of activities);
- b) draft a guidebook describing the reliability of the utilization of water supply installations, indicators of the supervising local committee of three persons (“TRISUCO” with the responsibility of the maintenance and management of water supply facility and the responsibility of the population to enhance local resources (natural, human, and financial resources);

- c) identify in a radius of 3 km around each of the 10 villages the location with underground water that could be gotten by the pump;
- d) drill the water well at the place identified and install a water pump using a manual or solar system with a tank;
- e) select three person members of the TRISUCO with the help of the population of the village.

This water provision project will be completed in two phases. The first phase, which we call the phase of experimentation of the process) will be limited to the installation of pumps in 2 villages and at the ADERC's office center: the pump at the office will help to test the agricultural techniques to be spread in different villages, and the pumps in the two villages will be used to develop the techniques sheets and offer the opportunity to train technicians who will proceed with the prospection of the presence of water around the 9 other villages. The second phase will implement and extend the successful activities and approaches developed in the first phase to all the 9 remaining villages of the Mpiana community.

2.2. Project of building and increasing the agricultural capacity

The principal objective of this part of the project is to improve agriculture techniques and diversify agricultural activities to increase the farmers' resources.

Specifically, this part of the project will:

- a) Diversify agricultural activities by encouraging people to practice "an integrated agro-pastoral system" (Tshimanga M.S, 2005: 154-157) that combines farming and livestock activities. In addition to their agriculture produces such as corn, cassava, peas, and peanuts, for example, the farmer will raise in a closed place for example pigs, goats, chickens, and/or honeybees. The association of the two activities will allow not only to increase revenues for each farmer but also to improve one's productivity. For example, livestock manure can be recycled to fertilize agricultural fields, while certain agricultural products can be used to feed livestock.
- b) Organize at least 2 workshops in each village to teach and increase farmers on the best agricultural and livestock practices, use of the land, and the necessity to be members of a saving and credit cooperative.
- c) Raise awareness and encourage farmers to use small 2-wheel tractors (walking behind), either individually or in association with other farmers, that local repair technicians might easily maintain and repair.
- d) Start a local saving and credit cooperative that can help farmers to buy agricultural equipment by credit.
- e) Drill water well and install pumps in the fields of farmers who accept to practice irrigation systems during the dry season to pass from two to three seasonal agriculture,

3. Justification of the current project

During our work with ADERC-Canada in the Democratic Republic of Congo, we came across a troubling situation in the villages of Mpiana. The absence of government presence in the area for several decades has left older individuals without practical solutions, which is concerning. Additionally, accessing the region is also problematic due to poor road conditions, as it can take up to two hours to travel just 25 kilometers. The villagers in this area face challenges when it comes to obtaining clean water. They can either collect water from the river or collect rainwater using straw beds next to their homes. However, due to the risk of sleeping sickness, their homes are located seven kilometers away from the river. Additionally, it only rains between September and May. This means that the villagers have to make a four-hour round trip to the river to collect only 20 liters of water, which they carry on their heads. Alternatively, they can collect rainwater, but this

is often contaminated with droppings from the freely roaming goats, pigs, chickens, and ducks in the area. Unfortunately, the inadequate quality of water is a significant cause of diarrhea diseases, and death in the region (www.healthdata.org/democratic-republic-congo provides further information on this issue).

Since 2008, we have started trying to dig deep water wells to provide people with healthy drinkable water. To this end, we bought from the USA a drilling rig Bore Master Zx-1000 with accessories from www.Hydra-jet.com and a water pump for 30 meters deep well from www.simplepump.com. Relying on a visual prospection, we dug three wells without finding water. This was a disappointing waste of money in the region as, despite the free workforce from villagers, each well necessitated 200 liters of diesel and 200 liters of gas in a region where each liter costs US\$2-3. Years later, we bought the Chinese-made DDC-8 (ADMT-1) water detector using land electrical resistivity. But it did not work properly. We then purchased two German-made water detector devices: an OKM Geoseeker (www.okmdetectors.com) and the GER Detect Fresh Result-1.

With the help of a local expert in water prospection, we found water at two places at the respective depth of 85 meters and 100 meters in one village. At this depth, the ADERC's rig was useless. To dig and install the pumps on these sites, a local company quoted US\$32,592 and US\$35,542, including respectively US\$16,750 and \$19,000 just for drilling. We felt that this quote was excessive and, anyway, beyond our budget. Thereafter, we explored if we could buy our equipment to carry out the work with the help of villagers. We found a drilling rig able to dig a 220 meters depth water well at the cost of US\$25,000 FOB at the Port of Matadi in DR Congo. This will necessitate additional costs for local transportation and duties. But the machine could serve later for providing water to other villages, not only in Bena Mpiana but in other communities as well.

In addition to the provision of drinking water, it is obvious that the population is very poor and lives in very bad conditions. Many are not able to support the studies of their children. They are generally farmers and cannot gain much from agriculture. It is possible to improve their productivity and their conditions of living. But as observed years ago by the International Fund for Agricultural Development (IFAD, 2007)⁴. "Empowering rural people is an essential first step to eradicate poverty". This observation is consistent with the recommendation of the conference on the development of Kasai-Oriental when participants suggested considering the targeted population as being the first responsible for its development and involving it as much as possible in all the steps of the process (Tshimanga M.S, 2005)⁵.

In order to achieve our project goals, it is imperative that we secure additional funding. The financial resources of ADERC's members alone are insufficient for our needs.

4. Context

4.1 Location and administrative divisions

The Mpiana community is one of the 9 communities of the sector of Tshiyamba in the territory of Gandajika (also spelled Ngandajika). This territory is one of the five territories of the province of Lomami, which is itself a former district of the former large province of Kasai-Oriental (Eastern Kasai that used to be one of the then eleven provinces in DR Congo), but became one of the three provinces originating from the

⁴ IFAD. 2007. Dimensions of Rural Poverty. <http://ruralpovertyportal.org/english/topics/index.htm> accessed October May. 2007

⁵ Tshimanga M.S. op. cit

subdivision of the former province of Kasai-Oriental in the 2006's new constitution⁶ that divided DR Congo into 26 provinces. Gandajika city, the territory's capital with the same name, is located approximately 95 km away in the southeast of the town of Mbujimayi, the capital of the new province of Kasai-Oriental, with the closest airport. It is 135 Km away from Kabinda city, the capital of the newly created Lomami province, and 65 Km from the railroad line through the Lulu territory, located in the city of Luputa. Gandajika city is at an average altitude of 780 meters, 6°45' South latitude and 23°57' longitudinal East longitude. The whole territory covers 5,726 square km and had 778,576 inhabitants in 2005 (Tshibuabua, Tshibamba and Tshimanga, 2005)⁷. The territory of Gandajika is subdivided into 6 territorial entities: Baluba Shankadi sector, Bena Kalambayi chiefdom sector, Bakwa Mulumba chiefdom sector, Gandajika sector, Tshiyamba sector, and the city of Gandajika. In addition to Mpiana community, the sector of Tshiyamba has 8 other communities, namely: Kafumbu, Kanyana, Kaseki, Luanga, Mande Masengu, Mpiana-Mukala, Nsana, and Mande Mbaya (See Map 1 in the appendix).

The community of Mpiana is located along the road N2 linking Gandajika to Mbujimayi. It includes the following 11 villages: Bakwa Mbiya, Bena Dihumba, Bakwa Tshiabila, Bena Kayembe, Bakwa Mfumu, Bena Munganda, Bena Ntita, Bakwa Muala, Bena Kalala and Bena Tshibondobondo. According to the DRSP study (2005)⁸, the village is the social unit considered the basic socio-economic development structure.

4.2 Socio-economic situation

The community of Mpiana had the highest number of populations in the sector of Tshiyamba, with 8,813 inhabitants out of 34,709 persons in all 9 communities of the sector Tshiyamba in 1990 (Tshibangu Muteba, 1998)⁹. In recent years, there are no reliable demographic statistics of the community, but the annual average rate of growth of the population in DR Congo was 3.6% (the rate, however, changes each year) and the population of the DRC has passed, according to the estimations, from 35,987,541 in 1990 to 102,072,050 people¹⁰, meaning an increase of 183.6316324%. On the basis of these figures, if the population of Mpiana had grown in the same proportions, everything else staying equal, it would therefore roughly be estimated, in 2023, at the number of 24,996 inhabitants out of 98,446 inhabitants in the Tshiyamba sector.

The agriculture is the main occupation of the population in the community. A few people practice hunting and fishing as a secondary activity. But wild animals and fishes are now rare due to bad practices used in the past. Villages take the form of adobe huts built of sticks and covered with thatch, often laid out along the roadside. Very few are made of bricks and covered with sheet metal. ADERC's attempt to manufacture compressed earth bricks using a hydraulic press was not pursued due to the high cost of fuel (US\$2-3/liter) and the low purchasing power of the population.

Generally, inhabited areas are not close to drinking water sources (often located 7-10 km away from villages), nor to good soils due to Tsetse flies, transmitters of sleeping sickness, along riversides. Women

⁶ All studies cited and published before 2007 include Lomami in Kasai-Oriental. Studies published after 2007 exclude Lomami from Kasai-Oriental as it became a separate province.

⁷ Jean-Marie Tshimanga D.S., Symphorien Tshibamba L », and Joseph Tshimanga. 2005. . Mutualité des ressortissants du territoire de Gandajika MUKA. Mbujimayi.

⁸ DRSP. 2005. *Monographie de la Province du Kasai-Oriental (DRaft 4)*. Document de Stratégie de Réduction de la Pauvreté intérimaire. Ministère du Plan. DR Congo. Kinshasa

⁹ Tshibangu Mutebab Shambuyi. 1998. *Introduction à l'histoire des Bena Mpiana*. Mémoire de Licence. Institut Supérieur Pédagogique. Mbujimayi.

¹⁰ Source: <https://worldpopulationreview.com/countries/dr-congo-population>, accessed 2023 June the 24th.

have to transport water on their heads (generally 20 liters) taken from the running rivers (so not necessarily healthy) to the village. The round trip for this activity can take 4 hours (estimation of 15 minutes of walk per km). In the “Atlas 2017” (N.E.V.A, 2018)¹¹ describing the access to drinking water, hygiene and sanitation for rural and sub-urban communities in the Democratic Republic of the Congo, it is mentioned (page 14) that out of all the nationwide population living in rural areas, only 32.2% (but just 13.1% in the Lomami province that is of interest in the current project) has access to drinking water and only 17% (0.2% in Lomami province) has access to basic sanitation.

However, in rural areas, almost all households own their homes. But most of the population (60% according to DSRP, 2005) live in an unsanitary environment, with toilets that do not meet minimum hygiene standards.

The basis of the diet in the villages is plant-based. Livestock and poultry are not only used for food but also for social purposes, as they are given as gifts to honor weddings and other commitments. The DSRP survey (2005) found that 75% of rural households ate maize paste (fufu) with cassava husks daily. The nutritional value of the food ration consumed per capita per day was 1826.92 calories instead of the 2300 calories recommended by the Food and Agriculture Organization of the United Nations (FAO).

According to DSRP (2005), with regard to the education system, the enrolment rate in the former province of Kasai-Oriental was 53% for elementary school and 23% for secondary school in 2005, while the wastage rate was 42% overall and 48% for girls. These figures at the provincial level certainly encompass an even worse situation in rural areas such as the community of Mpiana. In 2005, the territory of Gandajika had 102 elementary schools and 27 high schools. (Tshibuabua D.S. et al. 2005)¹². According to Tshibuabua et al. (2005) and DSRP (2005), several schools in the Bena Mpiana community were in an advanced state of disrepair. Some pupils studied under trees, and those with adobe buildings needed benches to sit on. School supplies are short, and sometimes even the teachers need instruction manuals for the subjects being taught. An exception to this situation can be found in a few schools built in five villages by a non-profit organization, “Projet Ditunga” (PRODI) run by a Catholic priest. According to the DSRP (2005), the low level of school enrolment in general, and that of girls in particular, can be explained by a variety of reasons, including parental poverty, early marriage of girls, low customs discouraging girls' education, and unequal treatment of boys and girls.

Throughout the Gandajika territory, the DSRP (2005) counted 1 referral hospital, 23 health centers, 22 dispensaries, and 21 maternity units. The referral hospital was located in the city of Gandajika, while the other medical units were scattered throughout the area. On its side, Tshibuabua et al. (2005) counted 2 hospitals in the city of Ganadajika, 35 health centers, and some small medical units throughout the territory of Gandajika. In the Bena Mpiana community, there are only medical centers or dispensaries in certain villages. Nurses run these units and are occasionally visited by a general practitioner. Furthermore, the work is carried out in difficult conditions, without adequate equipment for effective disease detection and treatment.

The most frequent illnesses (with at least 3,000 sufferers) inventoried by the medical services and mentioned in the DSRP (2005) study for the whole former province of Kasai-Oriental are: simple diarrhea

¹¹ N.E.V.A. 2018. *Atlas 2017 : accès à l'eau potable, l'hygiène et l'assainissement pour les communautés rurales et périurbaines de la République Démocratique du Congo*. Programme National École et Village Assainis. : Ministère de la Santé Publique (MSP) et Ministère de l'Enseignement Primaire, Secondaire et Professionnel (MEPSP). Kinshasa. <https://reliefweb.int/report/democratic-republic-congo/atlas-2017-acc-s-l-eau-potable-l-hygi-ne-et-l-assainissement-pour>. Accessed on June 5, 2023.

¹² Tshibuabua et al. op.cit.

(44,376), respiratory infections (43,493), anemia (32,972), typhoid fever (31,623), schistosomiasis (23,668), STDs (1,4852), malaria (14,530), measles (6,903), amoebas (6,013), protein-energy malnutrition (3,882), blood pressure (3,488) and bloody diarrhea (3,100). It is interesting to notice on this list the high number of patients with sicknesses related to bad drinking water, and hygienic and settling conditions.

The roads linking the community of Mpiana to other surrounding regions and major centers such as the cities of Mbujimayi and Gandajika for the sale of agricultural produce or the supply of manufactured goods could be better, especially in the Lomami province. For example, it took us two hours with a Ford F350 diesel truck to cover a distance of 25 km between a village in Mpiana and the city of Gandajika. Due to this situation, farmers find it difficult to take their produce to larger centers, and many vehicle owners want to avoid taking the risk, and if they do, they charge dearly. Often, farmers resort to the services of bicycle transporters called “moustrangeurs”. These bicycle transporters put 200kgs or more on the bikes and push them on foot for 2 days to Mbujimayi, for example. In return, they demand 50% of the income from the sale of the merchandise. To these costs must be added the costs of payment at the stations, one located between Lomami province and what is now Kasai Oriental province, and the second at the bridge leading to Mbujimayi.

Often, farmers sell their produce in the local markets. In Mpiana, there is now only one market in the village of Bena Kayemba. The other closest markets are in the city of Gandajika and the Bakwa Mulumba sector. The largest close city with more population is Mbujimayi.

5. Impact of the project

The direct impact of the project will be an increase in productivity and, consequently the revenues of farmers. Another impact will be improving the quality of life and health as the farmers will move from the painful use of rudimentary tools such as the hoe and machete and will also drink healthy water and avoid sicknesses. With higher revenues, the farmers will have more money to support the education of their children beyond the elementary level that is supported by the government for the recent 3 years. Also, with the water in a radius of 3 km from the houses, ladies will be relieved from walking 4 hours per day to bring only 20 liters of water for the family. In addition, people will progressively discover and appreciate the benefits of working together in relatively small groups to benefit the community. This will lead to the creation of cooperatives that are of great importance for communities whose members have limited resources. Finally, the increase of revenues and the acquisition of knowledge in new agricultural practices will increase self-confidence in the population and reduce conflicts. The success of this project will have an effective imitation in other communities in the territory of Gandajika and beyond.

6. Promotion of the project

We plan to post a brief video on the website www.Aderc.ca, inviting individuals who are interested in helping rural communities in need to improve their well-being and health. PRODI's three agents will visit various villages to encourage beneficiaries to embrace this project. We want to emphasize that there are three ways to intervene in rural areas: providing solutions to the group without their involvement, asking the group to develop its own solutions, or partnering with the group to find the best solution using external knowledge and experience. The last option is the most effective way to assist people, as their participation and ownership of the project are crucial. Therefore, in addition to workshops and visits, PRODI will broadcast weekly segments on the radio to encourage community involvement. Moreover, we will approach international financial organizations interested in rural development to participate in this project. If they agree, we will acknowledge their support on each site that benefits from their assistance. Finally, we will seek support from Congolese administrative authorities, at least in the security sector.

APPENDIX

Table 1: Inputs necessary for the implantation of the project

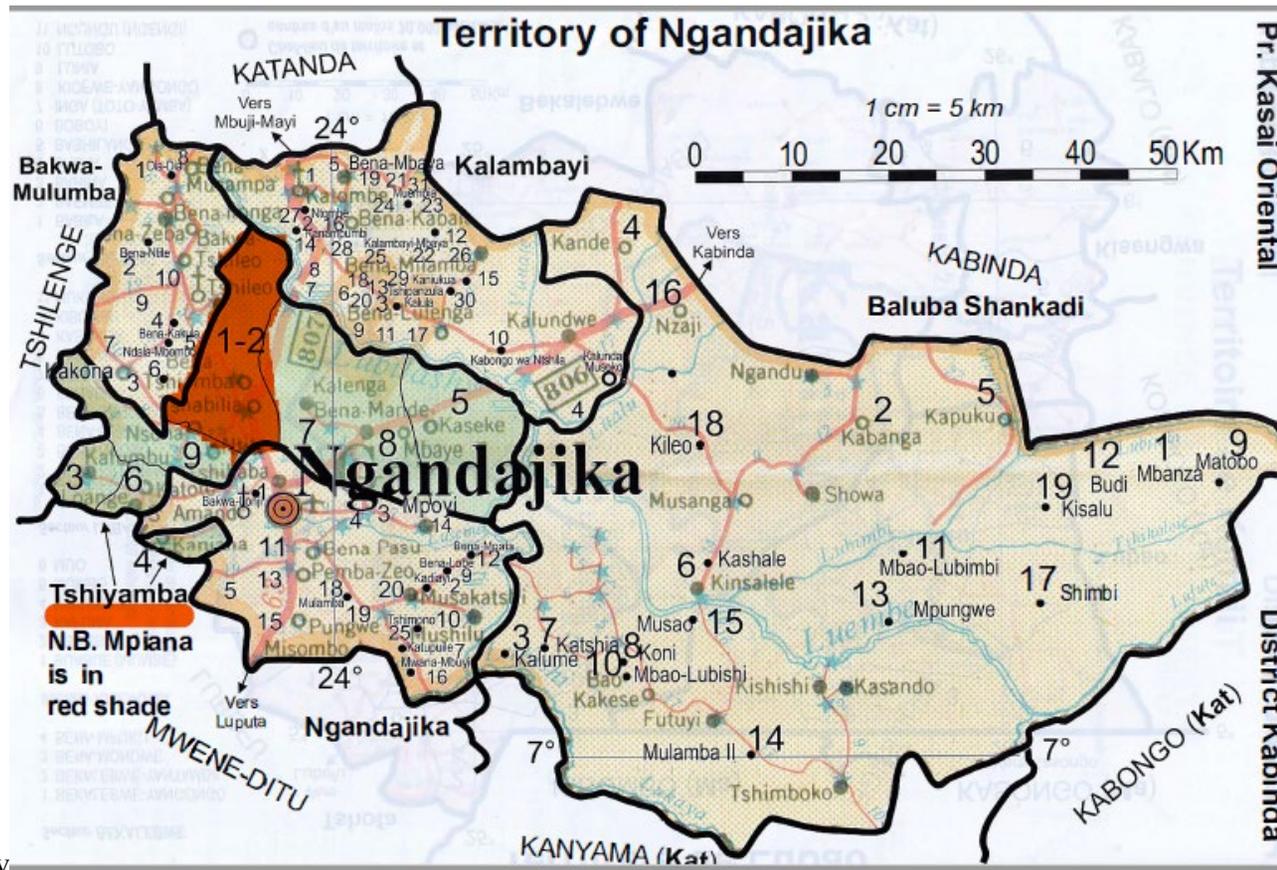
Activity	Price/Unit	Quantity	Total	
<i>A. Experimentation phase</i>				
1. Drilling rig & accessories (price+duties+local transportation)	US\$43160	1	US\$43160	Purchase in process
2. Walking behind tractors and 4 accessories (price, duties, transp.	US\$7334	2	US\$1468	Purchase in process
3. Electric pumps	US\$1142	2	US\$2284	Purchase in process
4. Cable for electric pumps & other accessories for 2 pumps (x4)	US\$3279	1	US\$3279	Purchase in process
4. Solar panels for electric pumps (2 sets)	US\$920	2	US\$1840	Purchase in process
5. Manual pumps & accessories (Simple pumps)	US\$2836	2	US\$5672	Purchase in process
6. Pipes (20 pipes/well give 80 pipes)	US\$111	80	US\$8880	Purchase in process
7. Honey behaves (2 sets)	US\$200	2	US\$400	Purchase in process
8. Sunflower seeds	US\$50		US\$50	Purchase in process
9. Solar panels & batteries for local office	US\$12900	1	US\$12900	Purchase in process
10. Solar panels & batteries for office in Mbujimayi	US\$20075		US\$20075	Purchase in process
11. Workshops for technical sheets' preparation	US\$300		US\$300	
12. Training of technicians for prospection & drilling	US\$400		US\$400	
13. Radio sketches for diffusion of new practices (1 radio sketch/week)	US\$30	52	US\$1560	
14. Diesel for well drilling and field tilling	US\$3	600	US\$1800	
15. Pig shelter building	US\$1000	1	US\$1000	
16. Security cameras for the office in Mbujimayi	US\$668	1	US\$668	Purchase in process
17. Television screen for security in the office in Mbujimayi	US\$300	1	US\$300	
18. Printer	US\$200	1	US\$200	
19. Water tank for electric pumps (price +transport to MJM)	US\$1000	2	US\$2000	
20. Miscellaneous (e.g. gravel, cement, sheets, etc...)	US\$400		US\$400	
21. Total			\$121836	
22. To be purchased			\$7960	
23. Partially or totally purchased			113876	

<i>B. Extension phase</i>				
1. Walking behind tractors & accessories (2 sets per village)	US\$7334	18	\$132012	
2. Electric Pumps for water wells	US\$1142	9	\$82224	
3. Cable for electric pumps & accessories (2 per pump)	US\$1640	9	\$14760	
4. Solar panels (set of 2 per pump)) for electric pumps	US\$920	9	\$8280	
5. Pipes for deep well	US\$2220	9	\$19980	
6. Honey behave (2 sets/village)	US\$200	9	\$1800	
7. Sunflower seeds	US\$50	9	\$450	
8. Workshops for technical skills	US\$150	9	\$1350	
9. Diesel for well drilling	US\$900	9	\$8100	
10. Water tanks for pumps	US\$1000	9	\$9000	
11. Miscellaneous	US\$200	9	\$1800	
<i>Total</i>			\$279756	
General Total for the 2 phases			US\$401592	

Chart 1: Project implementation chart

Activity	Year 2023		Milestone	Year 2024				Milestone
	3 rd qtr	4 th qtr		1 st qtr	2 nd qtr	3 rd qtr	4 th qtr	
Purchase of equipment (drilling, pipes, etc.)			Receipts					
Drilling & pump installation (center & 2 villages)			Pumps					
Technical sheets writing & workshops in 2 villages			Field work					
Initiation to improve livestock & agricultural practices in the 2 villages & the center			Field work & radio sketch					
Installation of solar panels & security			Receipts					
Development of the plan, video, and fundraising for the second phase								
Purchase of equipment (pipes & pumps) for the second phase								Receipts
Drilling & pump installation in the other villages								Field works
Initiation & workshops in the other villages								Field work & radio sketches

Map 1: Territory of Ngandajika



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