## International Cooperation & Development Project

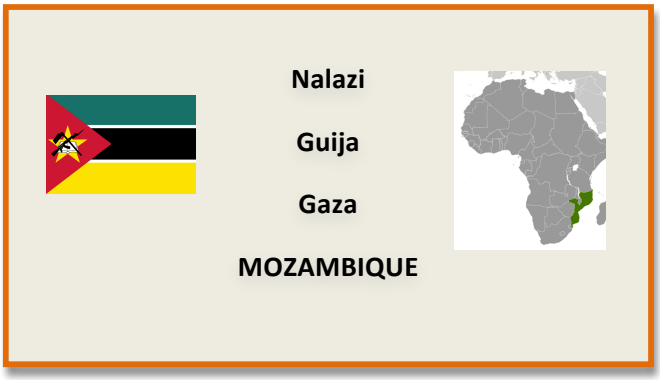
## Sector

## Water and Sanitation

## Human Development

**Title; Improved access to drinking water, in quantity and quality,**

**for 1.000 beneficiaries of the mozambican village called Nalazi.**


Cobertura del suministro nacional de agua y pobreza


Fuente: Mozambique National Human Development Report 2005

| | |
|---|---|
| English site | http://carleslarapm.wix.com/mosambikwaterproject |
| Spanish site | http://carleslarapm.wix.com/uoc-proyecto-agua |

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**Annexes; see Project website ;**
**http://carleslarapm.wix.com/mosambikwaterproject**

## 0.- Preliminary Justification;

Why is it so important to formulate an intervention framed within the "**Water and Sanitation Sector**"?

Access to safe drinking water is a fundamental universal right for the survival of human beings, being a priority to cover their basic necessities, mainly for personal use, like cooking, personal hygiene, amongst others.

Interventions framed within the "**Water and Sanitation Sector**" have multiplying effects, that are extremely positive for beneficiaries, due to the fact, that the access to drinking water, directly improves health, hygiene, thus, allowing to empower general learning conditions in the schools, and finally improving education levels, too.

Moreover, they will contribute to prevent waterborne diseases, like malaria, diarrhea, and combating more efficiently risk of epidemics. It has also a positive and direct impact and over the achievement of the **Millennium Development Goals**;


❖ **MDG 7 "Ensure Environmental Sustainability",**

✓ ***Target 7c*; *"Halve by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation"***

- *The world has met the target of halving the proportion of people without access to improved sources of water, five years ahead of schedule.*
- *Between 1990 and 2012, 2.3 billion people gained access to improved drinking water sources.*
- *Over a quarter of the world's population has gained access to improved sanitation since 1990, yet 1 billion people still resort to open defecation.*
- *The vast majority – 82 % – , of people practicing open defecation now live in middle-income, populous countries.*
- *In 2012, 748 million people remained without access to an improved source of drinking water.*
- *Despite progress, 2.5 billion in developing countries still lack access to improved sanitation facilities.*


❖ **MDG 1 "Eradicate Extreme Poverty and Hunger ",**

✓ ***Target 1A*; *"Halve, between 1990 and 2015, the proportion of people whose income is less than $1.25 a day"***

- The target of reducing extreme poverty rates by half was met five years ahead of the 2015 deadline.
- The global poverty rate at $1.25 a day fell in 2010 to less than half the 1990 rate.
- 700 million fewer people lived in conditions of extreme poverty in 2010 than in 1990.
- However, at the global level 1.2 billion people are still living in extreme poverty.

✓ ***Target 1C*; *"Halve, between 1990 and 2015, the proportion of people who suffer from hunger"***

- The hunger reduction target should be almost met by 2015.
- Globally, about 842 million people, are estimated to be undernourished.
- More than 99 million children under age five are still undernourished and underweight.


❖ **MDG 2 "ACHIEVE UNIVERSAL PRIMARY EDUCATION",**

✓ ***Target 2A*; *"Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling"***

- Enrolment in primary education in developing regions reached 90 % in 2010, up from 82 % in 1999, which means more kids than ever are attending primary school.
- In 2011, 57 million children of primary school age were out of school.
- Even as countries with the toughest challenges have made large strides, progress on primary school enrolment has slowed. One in ten children of primary school age, was still out of school in 2012.
- Gender gaps in youth literacy rates are also narrowing. Globally, 781 million adults and 126 million youth (aged 15 to 24) worldwide lack basic reading and writing skills, and more than 60 % of them are women.


❖ **MDG 4 "REDUCE CHILD MORTALITY",**

✓ ***Target 4A*; "Reduce by two thirds, between 1990 and 2015, the under-five mortality rate"**

- Despite population growth, the number of deaths in children under five worldwide declined from 12.6 million in 1990 to 6.6 million in 2012, which translates into about 17,000 fewer children dying each day.
- Since 2000, measles vaccines have averted over 14 million deaths.
- Despite determined global progress in reducing child deaths, an increasing proportion of child deaths are in sub-Saharan Africa and Southern Asia. Four out of every five deaths of children under age five occur in these regions.
- As the rate of under-five deaths overall declines, the proportion that occurs during the first month after birth is increasing.
- Children born into poverty are almost twice as likely to die before the age of five as those from wealthier families.
- Children of educated mothers—even mothers with only primary schooling—are more likely to survive than children of mothers with no education.


❖ **MDG 5 "IMPROVE MATERNAL HEALTH",**

✓ ***Target 5A*; "Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio"**

- The maternal mortality ratio dropped by 45 per cent between 1990 and 2013, from 380 to 210 deaths per 100,000 live births. All regions have made progress but accelerated interventions are required in order meet the target.
- In Eastern Asia, Northern Africa and Southern Asia, maternal mortality has declined by around two-thirds.
- The proportion of deliveries in developing regions attended by skilled health personnel rose from 56 in 1990 to 68 % in 2012.
- The maternal mortality ratio in developing regions is still 14 times higher than in the developed regions.
- The rural-urban gap in skilled care during childbirth has narrowed.


❖ **MDG 6 "COMBAT HIV/AIDS, MALARIA AND OTHER DISEASES",**

✓ ***Target 6C*; "Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases"**

- Between 2000 and 2012, the substantial expansion of malaria interventions led to a 42 % decline in malaria mortality rates globally.
- In the decade since 2000, 3.3 million deaths from malaria were averted, and the lives of three million young children were saved.
- Thanks to increased funding, more children are sleeping under insecticide-treated bed nets in sub-Saharan Africa.
- Treatment for tuberculosis has saved some 22 million lives between 1995 and 2012.

# 1. GENERAL INFORMATION.

## 1.1. Title of the project.

Title of the Project is defined by the **Specific Objective (SO)** of the intervention.

- **"Improved access to drinking water, in quantity and quality, for 1.000 beneficiaries of the community of the mozambican village called Nalazi.".**

## 1.2. Location of the intervention. Nalazi village , in Mozambique

| Country | Province | District | Village |
|---|---|---|---|
| Mozambique | Gaza | Guija | Nalazi |

i. http://en.wikipedia.org/wiki/Mozambique
ii. http://www.mz.undp.org/content/mozambique/en/home.html
iii. http://en.wikipedia.org/wiki/Gaza_Province
iv. http://www.gaza.gov.mz/

**Mozambique**, situated in Southern Africa, is a country divided in 11 provinces, like **Gaza** province, located 230 km north from the capital **Maputo**. **Maputo** is in the south of the country. **Gaza** province has 11 districts, like **Guija** district which counts with 4 villages, **Canicado** ( main village, with district administration **), Chivonguene, Mubanguene y Nalazi**.

Project intervention is located in **Nalazi** village**.** Technical criteria has been take into consideration, in order to select this option, for instance, lower access to safe drinking water rate. Underground water in this area is struggling from high levels of salinization caused by water ocean filtration and accelerated by climate change. **Nalazi** is located 30 km far from the left bank of Limpopo river.

According to the latest province census**, Nalazi** has 8.636 inhabitants. Nalazi´s inhabitants main activity is traditional survival agriculture in small familiar cultivated plots, specially beans, corn, peanuts, manioc and potatoes.

Vegetation is not diverse in the region, and is dominated by acacia trees, scattered in a semiarid landscape, typical from the Savannah.

## 1.3. Forecasted schedule. ( 12 months , during 2015 ).

- Starting date ; **01st. January 2015.**
- End date ; **31st. December 2015.**

## 1.4. Budget and, applied for capital. Total Budget; 177.040 €

| Donor, financial backer | Contribution in cash ( € ) | Contribution in kind ( € ) | Total ( € ) | % | Remarks |
|---|---|---|---|---|---|
| To apply for (Donor Organization, African Development Bank) | 60.000 € | 0 € | **60.000 €** | 34 % | Costs by activity are listed in document ( 07_Schedule ) |
| **ONGD from the North** | 30.000 € | 0 € | **30.000 €** | 17 % | Expat salary of the NGDO member ; "Engineers of the World" |
| **Local Counterpart** | 30.000 € | 0 € | **30.000 €** | 17 % | Includes , 1/2 of salary (40.000 € ) from Project Manager, as well as, 1/3 of salary ( 30.000 € ) from local engineer |
| **Beneficiaries** | 20.000 € | 20.000 € | **40.000 €** | 23 % | In column "Contribution in cash " corresponds to the contracting of the local manpower for the construction operations In column "Contribution in Kind" corresponds to land cession, from Municipality. |
| **Other** | 11.000 € | 0 € | **11.000 €** | 6 % | Includes, 1/3 of salary (18.000 €) from Health Specialist, as well as , 1/3 of salary (15.000 €) from Community Mobilization Specialist or Facilitator. |
| **Contingency Reserves** | 6.040 € | 0 € | **6.040 €** | 3 % | Project contingency reserves are calculated over 4% from Contribution in Cash. Contingency reserves cover unforeseen costs , only from objectives causes, (increase of inflation, or other kind risks. |
| **TOTAL** | **157.040 €** | **20.000 €** | **177.040 €** | **100 %** | **Total Project Cost; 177.040 €** |

## 1.5. Petitioner Organization; Engineers of the World

**Engineers of the World** is an NGDO from the North, with a clear mission to provide technology for the human development, being specialized in international cooperation and development projects, focusing into the following sectors;

- **Water and Sanitation.**
- **Renewable Energies.**
- **( I C T ) information and communication technologies systems.**

**Engineers of the World**, develop cooperation projects in Sub-saharan Africa and South-America, and cooperates since along time, with many local associations, and NGDO from the South, which play the valued role of local counterparts, for their knowledge and domains of the areas, where the interventions take place.

## 1.6. Local Counterpart; Amurt-Mozambique. www.africa.amurt.net/category/mozambique

**AMURT-Mozambique,** is an African NGDO operating in several countries like Burkina Faso, Burundi, Ghana, Kenya , Malawi, Mozambique, Nigeria, Ruanda , South-Africa and Uganda, with a long experience, and technical capacity to develop and execute cooperation projects, in the affected area.

Main sectors where projects are developed are;

- **Water and Sanitation.**
- **Education.**
- **Gender equity.**
- **Health and Infrastructures.**

**AMURT-Mozambique**, was the first NGDO in Mozambique that attended the victims that suffered the severe floods in Year 2000, by reconstructing roads, bridges and housings in the damaged areas.

**AMURT-Mozambique**, cooperates with numerous cooperation agencies and NGDO from the North, mainly North-Americans as well as Europeans.

## 1.7. Other Stakeholders.

- **Nalazi village,** Local Authorities
- **Guija**, District authorities
- **Gaza**, Province authorities, ( www.gaza.gov.mz )
- Water and Sanitation Ministry, ( www.mpd.gov.mz )

- Education Ministry, ( www.mec.gov.mz )
- Health Ministry, ( www.misau.gov.mz )
- Southern African Development Community Fund; ( www.sadc.int/documents-publications/show/2184 )
- African Development Bank; ( www.afdb.org )
- Other local NGDOs, as well as from the North, that are operating in the region.

**Stakeholder Analysis** is done during the **identification phase** of the Project**, i**dentifying direct beneficiaries, which are the main recipient of the intervention. **Stakeholder Analysis** also identifies other actors who play their role having different levels of power, interest, and influence over the Project.

## Stakeholders Analysis

| Direct Beneficiaries | Indirect Beneficiaries | Neutrals | Ruled out | Detrimental –Potential opponents |
|---|---|---|---|---|
| 1.000 beneficiaries of the Nalazi community, located in Guija District, Gaza Province in Mozambique.<br><br>Mainly, Women and Children (under the age of 5 years). | .- Rest of the members of the Nalazi community.<br><br>.- Neighborhood Council.<br><br>.- Local construction companies.<br><br>.- Local counterpart ( Amurt Mozambique )<br><br>www.africa.amurt.net/category/mozambique<br><br>.- Water Committee<br><br>.- Health center personnel<br><br>.- Schools personnel, (teachers, instructors | .- Local, regional, state authorities<br><br>www.portaldogoverno.gov.mz<br><br>.- Water and Sanitation Ministry<br>www.mpd.gov.mz<br><br>.- Health Ministry<br>www.misau.gov.mz<br><br>.- Education Ministry<br>www.mec.gov.mz<br><br>.- NGDO from the North ( Engineers of the World )<br><br>.- Donor Organization ( African Development Bank )<br>www.afdb.org<br><br>.- Southern African Development Community.<br><br>http://www.sadc.int/<br><br>http://www.sadc.int/documents-publications/show/2184<br><br>.- Other NGDOs from the North and the South, that are actively operating in the region. | Other communities belonging to Guija District.<br><br>like;<br><br>* Vila do Caniçado,<br>* Chivonguene,<br>* Mubanguene. | .- Traditional healers-witch doctors<br><br>In the first stage, these groups may behave against the Project due to the fact that they perceive a loss of prestige, power or influence over the members of the community.<br><br>Consequently, it is important to bring them progressively, and join to the community involvement processes |

## 1.8. Project Summary.

This Project is structured based on a main fundamental, which is to provide access to safe drinking water to the members of the rural community in **Nalazi,** improving their life conditions (nourishment , health, hygiene, … ) as well as, empowering conditions for social and economic development of the community.

Project will alleviate vital conditions of the most vulnerable groups, focusing on women and children, specially those under the age of 5 years, who hold unfortunately the highest mortality rates.

Therefore, this Project is based in 5 **Results** , or outputs as follows;

- **R1**, Drilled well 30 meters deep, to install a water pump with solar photovoltaic panel and two adjoining central water tanks, with capacity of 20.000 Liter each.
- **R2** , Rainwater is properly stored & used during wet season ( from December to March ). 3 tanks are installed to store rainwater collected from the roof of the Primary School Secondary School Health Center).
- **R3** , Four springs repaired and maintained.
- **R4** , Adequate use of water by the Nalazi, community members.
- **R5** , Project is managed correctly following Project Management tools and techniques are adequate

The principle of this Project is to perform a pilot test, to guarantee supply of safe drinking water to 1.000 people, bearing in mind the minimum daily need ( 15 liter / per day / per person). Rainwater will be also stored during wet season to complement underground pumped water from the well.

For success end result, it is of utmost importance to check the efficiency of the installed resources to proof the sustainability of the intervention.

In a second phase, it is intended to implement this Project in other rural communities, providing an universal solution that can be suitable and transportable into other regions.

Though, minor modifications and adjustments, to adapt to the environments and particularities of each region, may be necessary.

Project Management principles will be fundamental for the success of the project, and future ones.

## 2. Background, Context and Project Justification.

Local authorities and experts of the Planning Dept. from the Water and Sanitation Ministry of Mozambique, conduct a status diagnose, based on the main problems and scarcities that members of local rural communities are suffering, in **Gaza Province**.

Thus, a **Problem Analysis-Problem Tree** is designed, in order to draft a chart showing a negative situation finding causes and effects. Main problems that members of the community in **Guija District** are identified, and listed as follows;

- **1.- Safe drinking water scarcity.**
- **2.- Aquifer contamination.**
- **3.- Poor sanitary – health services.**

( For more information, see document " **02_Problem_Analysis**" ).

As a continuation, potential solutions are analyzed and assigned to each identified problem, drawing up an **Objective Analysis**, in order to draft a chart showing Means-Ends relationships, existing in the proposed Project.

This way, identified problems are converted into solutions as follows;

- **1.- Improved Access to safe drinking water, in quantity & quality.**
- **2.- Reduced aquifer contamination.**
- **3.- Improved sanitary & health services.**

(For more information, see document " **03_Objetive_Analysis** " ).

Next, all potential alternatives are listed and evaluated through an **Alternative Analysis**, using qualitative and quantitative criteria through an objective, critical, and constructive approach.

After conducting Alternative Analysis, , resulting decision to design the interventions is focused in **"Improved Access to safe drinking water, in quantity & quality"**. For more information, see documents;

" **04_Qualitative_Alternative_Analysis**".
"**05_Quantitative_Alternative_Analysis** ".

### 2.1. Background and origin of the initiative.

According to UNICEF, more tan 9.000 child die every year in Mozambique, attributable to waterborne diseases, specially malaria, diarrhea, due to, due to safe drinking water scarcity and poor sanitation conditions.

According to UN stats in 2012, around 12 million mozambicans, equivalent to 51% of population, have NO access to safe water, and even in rural areas situation gets worse with 65 % with NO access to safe drinking water.

Moreover, **Gaza Province**, with semiarid tropical climate, suffer effects of a long dry season ( April through November ), while short wet season lasting around 3 months, with frequent torrential rains causing severe floods due to the overflow of the Limpopo river. , thus, destroying the fragile cultivations and eroding soil and damaging environment

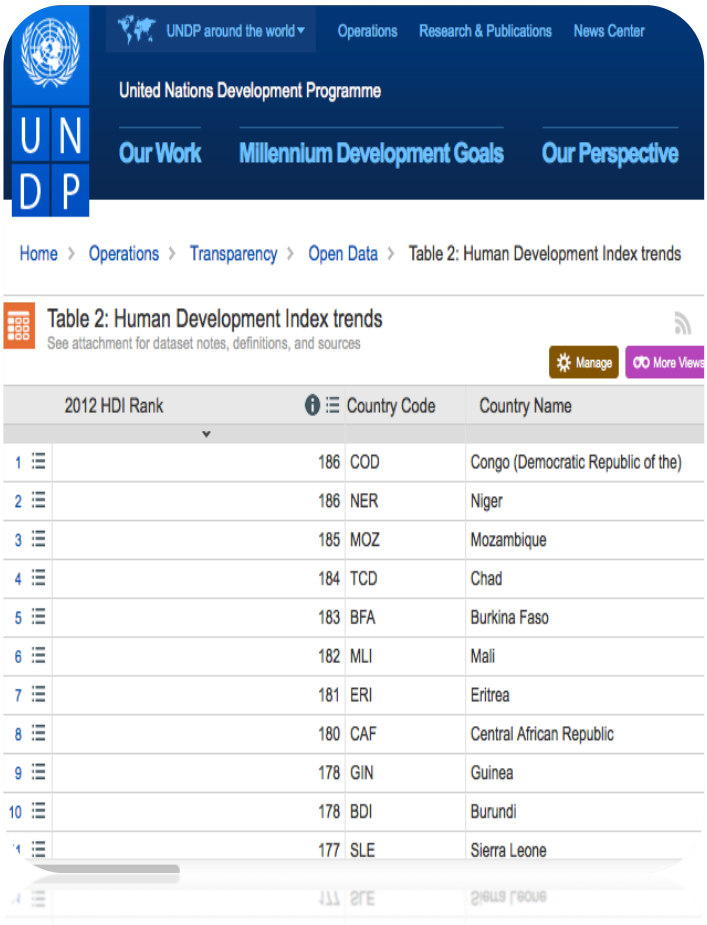
Unfortunately, floods are cyclic repeated, every two or three years, and latest occurred in January 2013, caused more than 150.000 refugees in all the country.

In addition, according to late studies from geologists experts, it has been observed an advance of saline underground filtration from the Indic Ocean, caused by climate change, which has a negative impact with the biodiversity and fragile ecosystems, and reducing drastically the availability of safe drinking water in the region.

## 2.2. Local Context.

Project is developed in a regions with severe scarcity in access to safe drinking water and poor sanitation conditions.

It is selected a small rural community in **Mozambique**, in the village of **Nalazi** ( 8.636 inhabitants, according to the latest province census ). **Nalazi** is located in **Guija** District, **Gaza** Province, about 230 km north from the capital of the country, **Maputo**.




| | 2012 HDI Rank | Country Code | Country Name |
|---|---|---|---|
| 1 | 186 | COD | Congo (Democratic Republic of the) |
| 2 | 186 | NER | Niger |
| 3 | 185 | MOZ | Mozambique |
| 4 | 184 | TCD | Chad |
| 5 | 183 | BFA | Burkina Faso |
| 6 | 182 | MLI | Mali |
| 7 | 181 | ERI | Eritrea |
| 8 | 180 | CAF | Central African Republic |
| 9 | 178 | GIN | Guinea |
| 10 | 178 | BDI | Burundi |
| 11 | 177 | SLE | Sierra Leone |

**Mozambique** is the third poorest countries in the world, only after **D.R. Congo** and **Niger**, according to the "**HDI-human Development Index**", issued by UNDP in 2012".

Poverty rates indicate that , 60 % of the mozambican population live in poor conditions with less than 1,25 $ per day, and 82% with less than 2,50 $.

As a matter of fact, life expectancy at birth, is one of the world lowest, being only 49 years, and hardly 3 doctors for 100.000 inhabitants.

Population is very young, where 43 % of the populations is 15 year old or younger.

70 % of mozabicans, live in rural communities whose main activity is traditional survival agriculture in small familiar cultivated plots ( 1 hectares ), specially beans, corn, peanuts, manioc and potatoes.

According to local authorities calculations, most of the rural population ( 71 % ) gets water from wells through manual pumps, and 18 % from water ponds, that still kept the water after the wet season.

**Limpopo** river 30 km far from **Nalazi,** and unfortunately, there are no more nearer water flows in the region.

In relation to the access to sanitation, it is even worsen the situation, due to the fact that, 21 % mozambicans have access to basic sanitation, and in the rural areas , only 10,7 %, use basic latrines with very maintenance, thus, increasing risk to contaminate underground , and increasing probability to expand waterborne diseases.

It is reported by the authorities, than in the north of **Guija District,** where **Nalazi** is placed, there are only 110 operative well from a total of 150.

Long dry season runs out lots of wells and forcing the member of communities (usually women), to walk longer distances (average 4 km. ) , to access to still running water springs, but not avoiding standing in a queue for longer time.

In fact, conflicts arise often, between the members of the communities, mainly due to the use of water, (normally domestic use, or feeding the cattle, or cultivate small familiar allotments).

In spite of the efforts made by the local authorities and the communities, springs conservation conditions are clearly insufficient, due to the fact that manual pumps ( "***Afridev" type*** ) require from regular maintenance and lack of resources is a big inconvenient to find spare parts in local markets.

## 2.3. Project Justification.

Proposed intervention considers the installation of a number of resources ;

- 1 main pump.
- 2 main water tanks.
- 3 rainwater tanks.
- 1 water supply net straight through the springs.

that will ensure ( according to the **UN** mandatories) , a minimum flow rate of safe drinking water ( 15 liters / person / day ), and meeting the quality standards established by the **WHO-World Health Organization**.

According to the **WHO,** water should not be in any case, further than 1.000 meter, or equivalent to one hour distance from the family housing.

In a second step, after checking the efficiency of the intervention, it is foreseen to progressively increase water available quantity into ( 50 liters / person / day ).

Project pretends to introduce an innovative water pump concept, with the aim to contribute into better life and health conditions of isolated rural communities, focusing into the most vulnerable members, like women and children.

Gender equity, educational and environmental approaches will be taken into consideration.

Moreover, as principle, with more water available, it is more feasible to recover alternative productive activities, that will contribute to the human development and sustainability of the community like;

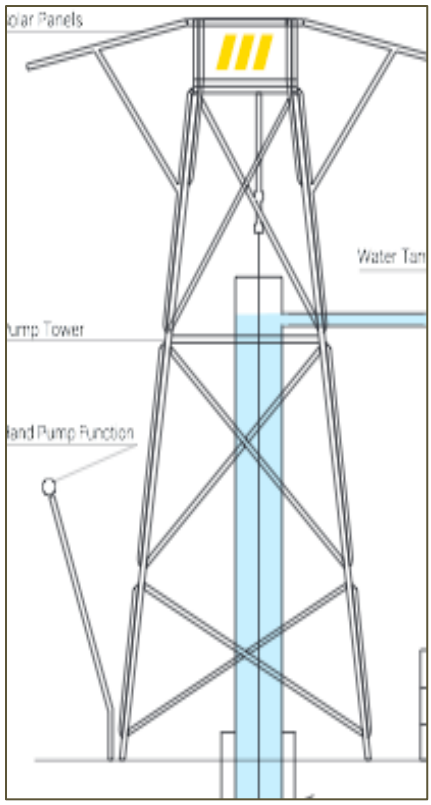
- Improve productivity of familiar allotments, dedicated to cultivation of beans, corn, peanuts, manioc and potatoes.
- Recover domestic livestock care (goats, sheep, guinea hens…), that were left over decades due to the permanent lack of resources.

Project also considers empowering small local repair workshops, so that components can be locally produced, in order to reduce operative costs and at the same, vitalize local economy.

It is fundamental to incorporate sustainable resources alongside with innovative aspects providing competitive advantages. It is also crucial that the technology is easily accepted, understood and maintained, by the community, generating a sense of ownership between the beneficiaries.

In this sense, role played by the Water Committee is essential. Members of the Water Committees are elected as a result of community involvement processes. Educative workshops that teach and promote best practices in the use and conservation of resources are also fundamental. These events will take place in the schools, health center, or in neighbor meetings.

Main equipment are consisting in, one pump with 4 solar photovoltaic panels with 85 watts power, connected to two main reinforced tanks with 20.000 liter capacity each, being water distributed by gravity, through the constructed water supply net of 3.000 meter long to the four water access points or springs located in the village ;




- 1 in health center.
- 1 in primary school.
- 1 in secondary school.
- 1 in center of the village.

From the technical perspective, main element of the Project is a water pump operating with full autonomy with the aid of photovoltaic solar pump.

Pump can work with solar energy, even with cloudy weather, as well as during the night, by using a manual pumping unit ( similar concept as traditional hand pump ).

It is optional to install an accessorial engine, which stores accumulated energy during the daylight in batteries. This concept has not been included in the scope of this Project.

Feasibility studies have been done to proof, under economical and technical criteria, that pumping system using solar panels is more sustainable that other traditional pumping systems.

(For more information, see document " **09_Technical_Justification** " ).

Main advantages from selected system are;

- Simple installation.
- Internal O-rings and bushings are resistant to the piston friction.
- Components are resistant to corrosion.
- Low maintenance costs.
- Solar energy source is inexhaustible and sustainable.
- It is not necessary sunny day to be working. It can work with presence of clouds.
- It allows to feed and fill two contiguous tanks, with no interruptions.
- Time of the beneficiaries is liberated. No need to be pumping manually anymore.. This is very important factor ¡!
- Optionally, pump can manually operate, ( for instance during the nighttime).

It is planned to install 3 stainless rainwater tanks to store water during wet season. Rainwater is captured from leaning roofs, from the primary and secondary schools ( both with a capacity of 2.000 liters) and one in the health center with a capacity of 4.000 liters)

Main pump activated by solar energy is pumping safe drinking water at flow rate of 20 liter per minute, from 30 meter deep being equivalent to 15.000 liters per day, which attends minimum demand for 1.000 beneficiaries.

Optimal location to install drill the well and install the pump, will be decided upon a geological study on the area, and it will be preferably placed in an elevated hill and easy drilling soil.

Underground water is found at 30 meter deep, and is coming from the aquifer recharged by Limpopo river, around 30 km west.

Once pumped up the water is stored in two reinforced concrete tanks with 20.000 liters each, built-up in a elevated platform, , so that water is further conducted by gravity through water supply net to the 4 water access point located in the village.

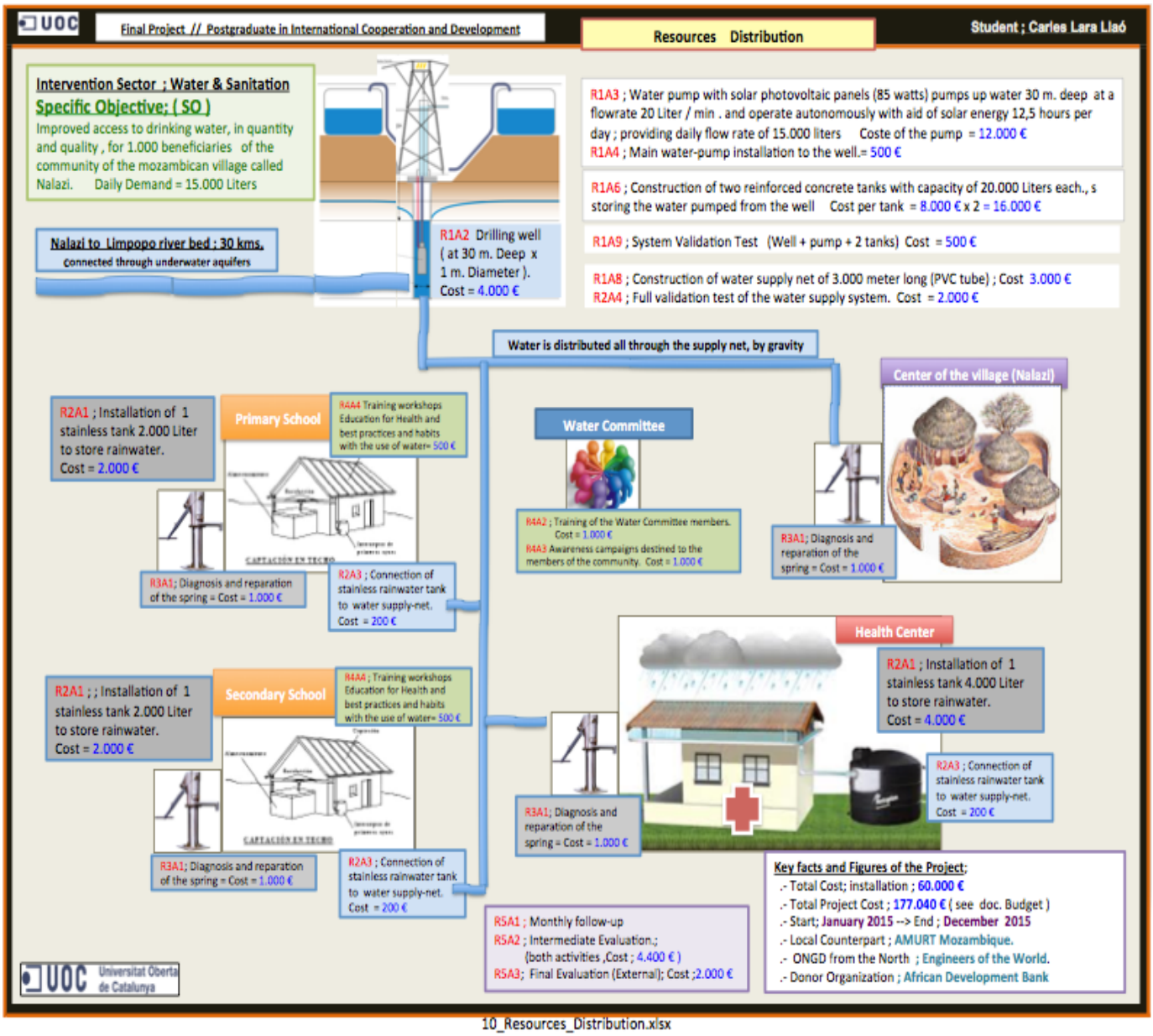
Alternatively, water can be also stored in three stainless rainwater tanks installed in the schools and the health center.

In future, water supply net can be extended and optimized with special flow rate regulating valves, and build up intermediate tanks and additional water access points.

However, this is not included in the scope of this Project.

A brief description of the resources distribution is shown in the following picture.

(For more detail, see document " **10_Resources_Distribution**" ).




10_Resources_Distribution.xlsx

It is not intended to replace traditional water hand-pumping systems, or windmills, which with the adequate maintenance and supervision of Water Committee are still valid, rather than complementing them with and alternative sustainable and self-managed solution by the community, with the aid of expertise of local counterpart (**AMURT Mozambique**)

As a conclusion, as it is defined and declared by the Specific Objective (SO ) of the Project, it is intended that installed resources will provide safe drinking water for 1.000 direct beneficiaries ( mainly women and children ) contributing to their human development , in a sustainable way during all the year.

Other indirect beneficiaries will profit from the intervention, too.

# 3. Beneficiaries and other Stakeholders .

## 3.1. Direct Beneficiaries.

Main direct beneficiaries of the intervention are the women in **Nalazi,** because they normally have to walk long distances investing long time, to collect water from far springs for the use of the rest of the family.

In one hand, after installed new pumping unit and repaired springs, women can invest more time to educate their sons and daughters, and naturally improving their health, cause they do not need to carry heavy water buckets on their backs or on top of their heads**. Overall Objective (OO)** of the Project is indicating this reality. As a consequence, they will have more time available for other productive activities, like cultivating small allotments, or create traditional handicrafts, that can be sold in local markets. With additional income, women will improve their Independence and their self-esteem will improve.

On the other hand, children, due to they are more vulnerable, especially those under the age of 5 years, will reduce risk to get waterborne diseases like, malaria, diarrhea, and others.

As a direct effect, children will be healthier, and will be able to attend more regularly to school, especially girls that register higher, scholar absenteeism, being worsen during menstruation and thus suffering more marginalization.

Gender discrimination is visualized in illiteracy rates, where in Mozambique, 58 % men are illiterate compared to 73% of women , according to National Statistics in 2007.

## 3.2. Indirect Beneficiaries.

**.- Rest of the members of the community of Nalazi.** There are, 8.636 inhabitants registered in **Nalazi**, which means that there will be around 7.636 indirect beneficiaries, that will get some positive influence from the Project, due to the fact that life conditions will improve, like health, nourishment, education social economical and development, of the whole community in **Nalazi.**

**.- Neighborhood Council.** Role played by neighborhood council is fundamental for a successful intervention. Neighbors will participate in involvement community processes, in order to identify main problems , and giving their opinions , suggestions, and also complaints.

Neighbors can also participate in Project activities like construction works, being contracted by local companies, to dig the ditches for the water supply net, or helping to bring the pipes, and other materials. These works will be rewarded and Project has budgeted 20.000 € , in cash for this purpose.

Pertinence and sense of ownership of the Project and consequently its resources will be better achieved, by following with these group activities.

On the other hand, role played by women, inside neighborhood councils is greater, as they can dispose of more time to participate in decision making processes that affect the whole of the community

**.- Farmworkers Union.** They defend interests of the local farmworkers, especially on all those issues about rights to work and own the land, This Union organize meetings at local and regional level. They are also federated at national level with other unions from other provinces, although improvements in strategies alignment and common objectives agreement, is still in need of debating and implementation.

**.- Local construction companies .** Construction contractors that receive the contract though a bidding process. It will be required that members of the community are also contracted to carry out works involved in the construction of the infrastructure.

These companies shall have the technical capacity and operative expertise and know-how to execute the works, for instance, drilling a well 30 meter deep with 1 meter diameter, as well as construct two reinforced concrete tanks with a capacity of 20.000 liters each, or digging a ditch to allocate water supply net, with PVC pipe tube, 3.000 meter long.

**.- Local Counterpart ( Amurt Mozambique )** See ítem **1.6.** www.africa.amurt.net/category/mozambique

Local counterpart playing a key role, in order to plan and execute all activities planned in the Project Schedule.

They will provide assistance to the Water Committee members, offering advice, in any issue may require technical expertise.

They will be responsible of the bidding processes, and select the best contractors. They also cooperate with the technicians from the Ministry, by preparing geologic studies, as well soil preparation, to drill the well in the best possible location.

**.- Water Committee .** Water Committee is formed by 6 members ( 3 men and 3 women ) , being organized in three groups of two persons, and distributing roles and responsibilities as follows;

1. **Springs, pumps, and well maintenance**. They will have the responsibility to supervise and assure the right working conditions of the equipment. They are prepared to make small reparations.
2. **Administration management**. They have responsibility to claim payments of the monthly rates from users. Small spare parts like, screws, or-rings, bushings, and tools inventory and buying when needed are also under their charge.
3. **Awareness campaigns;** in the use of equipment. Teaching good practices in the uses of water, and education for heath, promoting healthy hygiene behaviors.

Water Committee members, are named for 6 moths with a rotating election system.

Training plan is in place to train future members and recycle the present and past ones.

It is intended with these practices to guarantee the sustainability of the equipment, and strength the sense of ownership of the intervention all through the members of the community.

**.- Health Center personnel**

They provide expertise advise in the heath context (health center), teaching best practices in the use of safe drinking water, and hygiene habits. Unfortunately, they have very limited resources, but the installation of a rainwater tank with capacity of 4.000 liter will improve the general conditions of the health center.

**.- Schools personnel, teachers, instructors.**

They provide expertise advise in the education context (primary and secondary schools), teaching best practices in the use of safe drinking water, and hygiene habits. manejo de agua e higiene personal. Unfortunately, they have very limited resources, but the installation of 2 rainwater tanks , with capacity of 2.000 liter each will improve the general conditions of the primary and secondary schools.

**.- Multidisciplinary Project Team.**

**Project Team is formed by;**

- Project Manager ; coordinates the members of the team, and review and approve the monitoring reports.
- Local engineer provided by the local counterpart, ( **AMURT-Mozambique** ).
- Specialist in health.
- Specialist in Community Mobilization.
- Expatriate NGDO from the North, with technical background or postgraduate in cooperation and development.

Project Team, will report to the Project Manager, and will also provide support to the Water Committee members.

### 3.3. Neutrals.

**.- Local, regional, state authorities.** Local authorities, particularly **Nalazi** municipality, do not have the necessary resources to cover minimum needs of safe drinking water of the members of the community.

It is important that they participate and promote the Project, specially giving the licenses or not delaying papers, like work permissions, and others, …

They can provide contributions in kind like, land transfers, which are duly noted in the Budget of the Project.

Comunal spaces, can be left over the members of the community for meetings of the Water Committee, Neighbor Council or organize workshops to promote Project activities.

**Guija** District and **Gaza** Province authorities, will coordinate follow-up activities, providing expert advisor from the technicians f the Water and Sanitation Ministry. Studies, surveys, and stats will be also conducted, to gather data for indicators.

**.- Water and Sanitation Ministry.** www.mpd.gov.mz

They have the responsibility to legislate in Water and Sanitation sector. Technician of the Water and Sanitation Ministry review all documents of the Project, validating and providing licensee and legality.

However, excess of bureaucracy in Mozambique may become an inconvenient, causing delays for the Project.

According to the international ranking issued by "**Doing Business**" Organization, **Mozambique** is placed in position Rank 139 out of 189 countries, when compared offering facilities to start a business activity or project in the country;

- http://www.doingbusiness.org/data/exploreeconomies/mozambique/

**.- Health Ministry .** www.misau.gov.mz

It is a data source, in relation to the means of verification, when monitoring and reporting project indicators, results, specific (SO) and overall objectives (OO).

Multidisciplinary team has an expert in health, that will be normally provided by the Health Ministry, or any other competent authority in health issues at regional level.

**.- Education Ministry.** www.mec.gov.mz

It is a data source, in relation to the means of verification, when monitoring and reporting project indicators, results, specific (SO) and overall objectives (OO)

They prepare and approve teaching program, including best practices guides in the use of water and hygiene habits in the schools and housing.

Children become, in effective instructors of the learned knowledge to their relatives at home, including all those topics related to the use of water.

Education Ministry is also issuing reports and stats in relation to education level, illiteracy, and attendance at schools,

**.- NGDO from the North ( Engineers of the World ) ;** See ítem **1.5.**

Expatriate from the NGDO, will contribute to the intervention, as a member of the Project Team, offering expertise and technical capacity, and being the communication channel with the members of the NGDO from the North.

His tasks will be closely coordinated with the engineer from the Local Counterpart, who usually has much moe experience and domain in the region. He will also participate in community involvement processes, providing assistance to the technician in community mobilization processes.

**.- Donor Organization ( African Development Bank ).** **www.afdb.org/en**

Donor Organization is the financing mechanism to contribute in cash to finance all budgeted resources. Normally, the moneys are budgeted in lines or sectors ( for instance, "Water and Sanitation program" ) at national or even at international level.

Specific funds are created to collect the moneys or loans from other donors.

For instance, UNDP. **http://www.undp-alm.org/projects/sccf-cwdcc-mozambique**

Donor can provide direct financial aid or loans to the mozambican government, In order to execute the program, and in any case, terms of reference of the Project will be provided to the donor to evaluate feasibility and approve the budget.

It is mandatory to conduct an ex-post evaluation to check the result of the Project, and collect lessons learned useful and valuable for future projects.

**.-Southern African Development Community, Fund .** www.sadc.int

It is a development fund, formed by several south African countries.

Mozambique is member, and has a regional program dedicated to the development of water and sanitation projects, providing complementary funding solutions. http://www.sadc.int/documents-publications/show/2184

**.- Other NGDOs from the North and the South, that are actively operating in the region.**

There are many other local or international NGDOs operating in **Guija District,** These NGDOs develop projects in several development projects, like health, education, human rights, equity gender, …) It is highly recommended to draw a map with all these organizations, and identify synergies, share resources , or just information about local context , that may be useful for the project.

### 3.4. Ruled out.

**.- Other communities belonging to Guija District; Vila de Caniçado, Chivonguene, Mubanguene**.

These communities will be probably considered for future interventions.

### 3.5. Detrimental –Potential opponents.

**.- Traditional healers-witch doctors;** In the first stage, these groups may behave against the Project due to the fact that they perceive a loss of prestige, power or influence over the members of the community.

Consequently, it is important to bring them slowly but progressively, and join to the community involvement processes.

## 4. Project Logical Framework.

1) If **pre-conditions** happen, then a **Budget** is in place and **Resources** are placed to execute **Activities**.
2) If **Activities** are done, then **Assumptions** may take place or not, but in any case, they are out of competence of the intervention, and then **Results** are achieved.
3) If the **Results** are achieved then, the **Assumptions** are aligned with them, and **Specific Objective (SO**) is met.
4) Once achieved **the Specific Objective (SO),** together with the fulfillment of the aligned **Assumptions**, will significantly contribute to the achievement of the **Overall Objective (OO).**

Following this vertical Intervention Logic , a **Project Logical Framework Matrix** ( **PLFM** ) is configured.

(For more information, see document " **06_PLFM_Project_Logical_Framework_Matrix**" ).

### 4.1. Overall Objective ( OO ). Reduced infant mortality, ( under 5 years ) and reduced impact of the severe water-borne diseases, between the most vulnerable population groups, in the mozambican village of Nalazi. ( 4.088 women older than 5 years and 1.549 children under the age of 5 years ).

**(OO ), Indicators ;**

1) After 3 years, upon the end of the Project, infant mortality is reduced in 2/3 (under the age of 5 years).
2) After 3 years, upon the end of the Project, mother mortality during the birth, is reduced in ¾.
3) After 2 years, water-borne diseases are reduced in 50 %, between the most vulnerable groups, as well as, 75% after 4 years.

**(OO), Means of Verification;**

- Yearly statistics, issued by the Health Ministry.

### 4.2. Specific Objective ( SO ). Improved access to safe drinking water, in quantity and quality, for 1.000 beneficiaries of the community of the mozambican village called Nalazi.

**(SO), Indicators;**

1) At the end of the Project (December 2015), 80 % of the 1.000 direct beneficiaries, have direct access to drinking water, in quantity (15 liter / day / person) & quality, according to the standards defined by WHO (World Heath Organization)
2) 6 months after Project completion, 100% of the direct beneficiaries have direct access to drinking water.

**(SO), Means of Verification;**

- Project team report, issued with gathered information from surveys made with families about domestic habits and uses of water. Number of families surveyed will be representative from the community group.

## 4.3. Results.

**.- Result (R1) Drilled well 30 meters deep, to install a water pump with solar photovoltaic panel and two adjoining central water tanks.**

**.- (R1) Indicators ;**

1) Well is drilled, by month 06 (2015).
2) By month 07 (2015), Water-pump with photovoltaic solar panels is connected to the well and pumping water at a flow rate of 20 Liter / minute.
3) By month 05 (2015), first water tank with capacity of 20.000 Liters, is built-up next to the well.
4) By month 07 (2015), second water tanks with capacity of 20.000 Liters, is built-up next to the well.
5) By month 10 (2015), water supply net is built-up 3.000 meters long, connecting water source (well), to the 4 springs installed in the village;

   - 1 in primary school,
   - 1 in secondary school,
   - 1 in health center,
   - 1 in the center of the village of **Nalazi**.

**.- (R1) Means of Verification;**

- Follow-up construction Works, Technical Reports.
- Technical follow-up report, by local counterpart , (AMURT- Mozambique).
- Construction close-up report.
- Schedule.
- Photographs.

**.- Result (R2) Rainwater is properly stored & used during wet season (from December to March).**

**Three tanks are installed to store rainwater collected from the roof of the Primary School , Secondary School, and Health Center.**

**Tanks from both schools have a capacity of 2.000 Liters each.**

**Tank from the Health Center has a capacity of 4.000 Liters.**

**.- (R2) Indicators ;**

1) By month 10 (2015) , three tanks that store rainwater collected from the roofs are installed

   .- in primary school. - in secondary school .- in health center.

2) By month 11 (2015), rainwater tanks are connected to the water-supply net , that is to be constructed no later than month 10 (2015).
3) By month 11 (2015), a full validation test is to be carried out to check the water supply system. From the start point 30 meter deep in the well position, to the 4 springs which are the end-user access to drinking water point.

   Test to check water quality will be done according to WHO standards.

**.- (R2) Means of Verification;**

- Follow-up construction Works, Technical Reports.
- Technical follow-up report, by local counterpart, (AMURT- Mozambique).
- Construction close-up report.
- Schedule.
- Photographs.
- Water chemical analysis certificate.

**.- Result (R3) Four springs repaired and maintained.**

**.- (R3) Indicators ;**

1) During first trimester (2015) 4 springs are repaired.

   These are located in;

   .- the primary school .- the secondary school .- the health center .- the center of the village.

**.- (R3) Means of Verification;**

- Technical Reports. Technical follow-up report, by local counterpart, (AMURT- Mozambique).
- Plumber working sheet.
- Schedule.
- Photographs.

**.- Result (R4) Adequate use of water by the Nalazi, community members.**

**.- (R4) Indicators ;**

1) After 1 year, upon the end of the Project, 40 % of the members of the community conduct daily hygienic practices at home.

   After 2 years, 80%.

   After 3 years, 100%.

2) Members of the Water Committee are elected and duly trained, are following up best practices and defined protocols
3) During first semester (2015), 50% of the students have followed a training course as part of the Ministerial Program of Education for Health. 100%, by the end of the Project, (December 2015).

**.- (R4) Means of Verification;**

- Report issued by Project Team, upon a formal survey.
- Reports issued by the Water Committee members, and supervised by the technician of the local counterpart.
- Reports issued by the teachers of the Primary and Secondary school. Attendance to class of children register.

**.- Result (R5) Project is managed correctly following Project Management tools and techniques are adequate.**

**.- (R5) Indicators ;**

1) Monthly follow-up reports are submitted.
2) By month 07 (2015), it is carried out an intermediate evaluation.
3) By month 12 (2015), final close-up report is submitted.

**.- (R5) Means of Verification;**

- Report issued by multidisciplinary Project team.
- Intermediate evaluation report
- Close-up evaluation report, issued by specialized Consulting Company.

## 4.4. Activities.

**.- Result (R1) Drilled well 30 meters deep, to install a water pump with solar photovoltaic panel and two adjoining central water tanks.**

**R1.A1. Bid for drilling well process to constructors**.

*According to the Schedule;*

by month 01 (2015), constructor is selected following bidding process, to drill the well.

**R1.A2. Drilling well ( at 30 m. Deep x 1 m. Diameter).**

*According to the Schedule;*

by month 02 (2015), Works for drilling the well are initiated, and will be completed no later than month 06 (2015).

**R1.A3. Issue of purchase order to supplier for water-pump with photovoltaic panels (85 watts).**

*According to the Schedule;*

by month 01 (2015), it is issued a purchase order to the supplier of the water-pump with solar photovoltaic panels, with 85 watts power. The pump will be delivered no later than month 05 (2015).

**R1.A4. Main water-pump installation to the well.**

*According to the Schedule*;

by month 06 (2015), Works to install the water-pump to the well are initiated, and will be completed no later than month 07 (2015).

**R1.A5. Bid construction of two reinforced concrete tanks with capacity of 20.000 Liters each.**

**(***According to the Schedule*; by month 03(2015), constructor is selected following bidding process, to construct two reinforced concrete tanks with capacity of 20.000 Liters each.

**R1.A6. Construction of two reinforced concrete tanks with capacity of 20.000 Liters each.**

*According to the Schedule*;

by month 04 (2015), construction works to build-up first concrete tank are initiated, and will be completed no later than month 05 (2015), and

by month 06 (2015), construction works to build-up second concrete tank are initiated, and will be completed no later than month 07 (2015).

**R1.A7. Bid construction of water supply net of 3.000 meter long.**

*According to the Schedule*;

by month 07(2015), constructor is selected following bidding process, to construct water supply net of 3.000 meter long.

**R1.A8. Construction of water supply net of 3.000 meter long (PVC tube).**

*According to the Schedule*;

by month 07 (2015), construction works to construct water supply net of 3.000 meter long with PVC tube , are initiated, and will be completed no later than month 10 (2015),

**R1.A9. Full test to check the water supply system, (only the pump with two contiguous central tanks).**

*According to the Schedule*;

by month 11 (2015) Full test to check the water supply system (only the pump with two contiguous central tanks) , will be done.

**.- Result (R2) Rainwater is properly stored & used during wet season (from December to March).**

**Three tanks are installed to store rainwater collected from the roof of the Primary School , Secondary School, and Health Center.**

**Tanks from both schools have a capacity of 2.000 Liters each.**

**Tank from the Health Center has a capacity of 4.000 Liters.**

**R2.A1. Bid of installation of three stainless rainwater tanks..**

*According to the Schedule*;

by month 07 (2015), three rainwater stainless tanks supplier is selected following bidding process, to supply and install the tanks next to the roofs of the two schools and the health center.

**R2.A2. Installation of the three stainless rainwater tanks.( 2 with 2.000 liters capacity and 1 with 4.000 liters capacity ).**

*According to the Schedule*;

by month 08 (2015), Works to install three rainwater stainless tanks are initiated, and will be completed no later than month 10 (2015). ( Rainwater tanks must be operative before the start of the wet season , which starts in December ).

**R2.A3. Connection of the three stainless rainwater tanks to the water supply-net. Water supply-net is to be completed by month 10 (2015).**

*According to the Schedule*;

by month 11 (2015), three rainwater stainless tanks are connected to the water supply-net, net that will be will be completed no later than month 10 (2015).

**R2.A4. Full validation test of the water supply system. (From the start point 30 meter deep in the well position, to the 4 springs which are the end-user access to drinking water point).**

*According to the Schedule*;

by month 11 (2015), Full validation test of the water supply system, will be carried out.

(From the start point 30 meter deep in the well position, to the 4 springs which are the end-user access to drinking water point).

Test to check water quality will be done according to WHO standards.

**.- Result (R3) Four springs repaired and maintained.**

**R3.A1. Diagnosis and reparation of the 4 springs of the community and further predictive maintenance.**

*According to the Schedule*;

During first trimester (2015), diagnosis and reparation of the 4 springs are realized.

Once repaired, springs will be included in the maintenance plan that will be responsibility of the Water Committee

This activity is of utmost importance to cope with the urgent water necessities of the community, and will be highly prioritized and completed at the very early stage of the Project.

**.- Result (R4) Adequate use of water by the Nalazi, community members.**

**R4.A1. Election of the Water Committee members..**

*According to the Schedule*;

During months 01 y 02 (2015), it is completed the Water Committee members election process.

**R4.A2. Training of the Water Committee members..**

*According to the Schedule*;

During months 02 and 04 (2015), it is done the training process of the Water Committee members.

Training is given by a technician of the local counterpart, with expertise in WASH ( Local Counterpart is ; AMURT-Mozambique).

**R4.A3. Awareness campaigns destined to the members of the community.** .

*According to the Schedule*;

After completing the process of training of the members of the Water Committee, it is established an awareness campaigns plan focusing in the use of the water and best practices in relation to daily habits of hygiene and advises to spare water at home.

Campaigns are to be initiated in month 05 ( 2015 ), and after on a weekly basis with families and after calling for neighborhood council to promote community involvement processes.

**R4.A4. Training workshops Education for Health and best practices and habits with the use of water in the schools.**.

*According to the Schedule*;

Training workshops are to be initiated in month 06 ( 2015 ), teaching best practices contents, in relation to daily habits of hygiene and advises in the schools.

Children will be transferring this knowledge and values at home , for the good of their relatives.

Content of this training workshops, will be specifically prepared in topics for Education for Health, and will be permanently done in both schools, as part of their regular educational programs.

**R4.A5. Community involvement Diagnose. In Spanish is called ; "Diagnostico comunitario participativo"**

*According to the Schedule*;

By months 01 , 06 y 12 , on a yearly basis, community involvement processes will be organizes, through workshops , councils to review the effects and results of the intervention and detect potential problems of the planned activities, and applying lessons learned principles.

Meetings will be organized by the community leaders , with the aid of a facilitator (specialist in community mobilization) , and will count with the participation of , neighbors, local authorities, technician of the local counterpart, and member of the NGDO from the North.

**.- Result (R5) Project is managed correctly following Project Management tools and techniques are adequate.**

**R5.A1. Monthly follow-up.**

*According to the Schedule*; Monthly follow-up reports , will be submitted for monitoring the indicators of the Project

**R5.A2. Intermediate Evaluation.**

*According to the Schedule*; By month 07 (2015) , an intermediate evaluation is submitted.

**R5.A3. Final Evaluation (External).**

*According to the Schedule*; By month 12 (2015) , a final evaluation report to audit the Project is submitted, by an external consulting company.

## 4.5. External Factors.

- Economic conditions do not get worse, maintaining national growth previsions ( 5 % PIB min. ) given by then mozambican government.

- Torrential rains are limited to the wet season, during December to March, occasionally causing severe floods. Works to start drilling the well planned at the beginning of the Project is scheduled in February 2015.

- In case of nature disasters, mitigation risks action will take place, as part of the contingency plan. It is a possible to consider a delay, to wait till the end of the torrential rains and protect the installations already constructed at such point.

## 4.6. Assumptions / Pre-conditions .

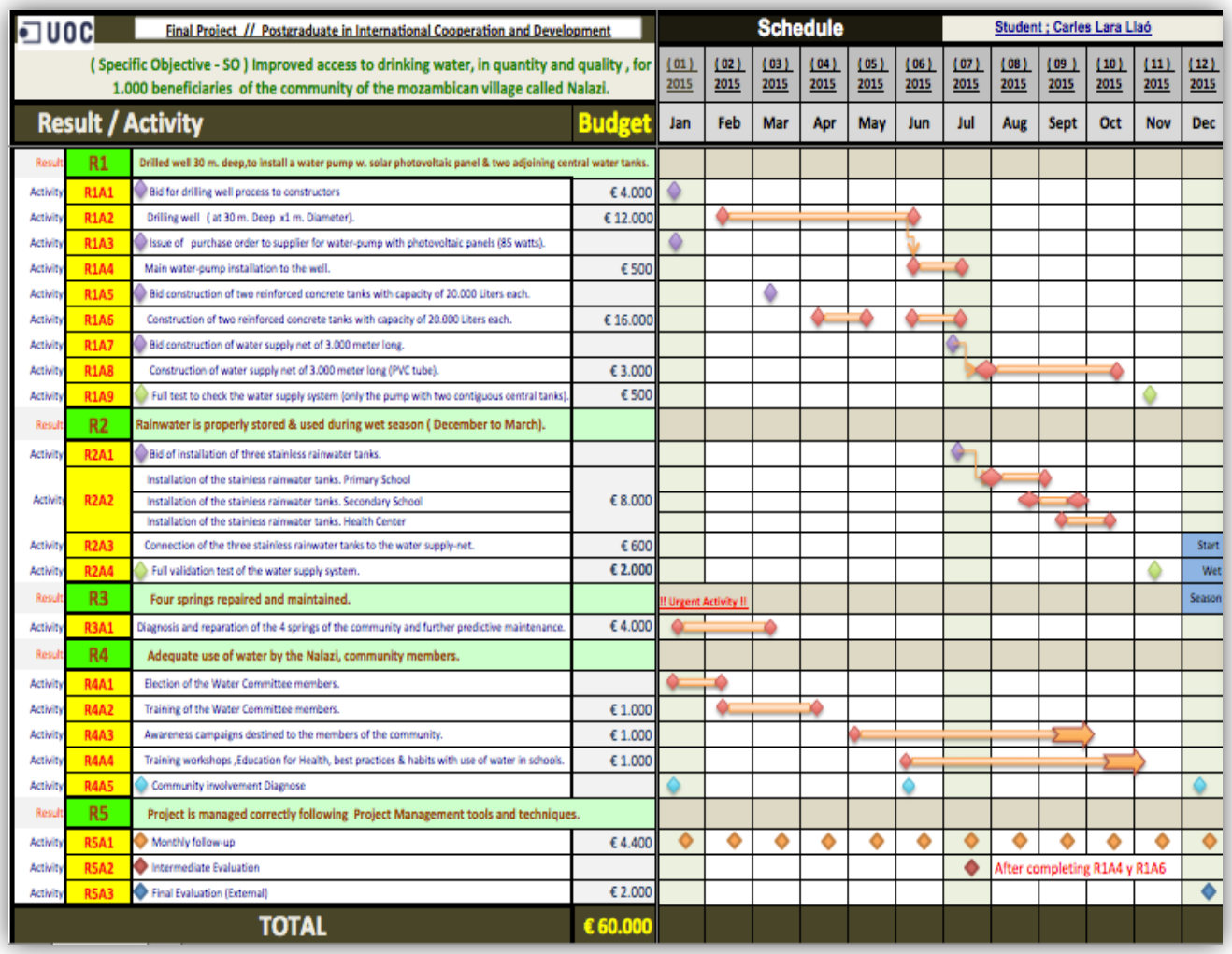
- Beneficiaries keep considering health issues as a priority.
- Local authorities keep the interest to support the intervention, for instance, conceding without delays, construction licenses.
- Community leaders and neighborhood council are participating from the activities.
- Construction Materials are available in local markets at reasonable prices.
- Activities and responsibilities are assigned by and for the Water Committee, are accepted by the members of the community.
- Men group, accept the possibility of playing new roles and perform activities designated by the intervention.
- There are local constructing companies with technical capacity to carry out the scheduled works.

## 5. Schedule.

Total duration of the Project is **12 months**.

- Starting date ; **01st. January 2015.**
- End date ; **31st. December 2015.**

( For further detailed information , see planned activities in document, " ***07_Schedule.xls*** " ).



UOC — Final Project // Postgraduate in International Cooperation and Development

( Specific Objective - SO ) Improved access to drinking water, in quantity and quality , for 1.000 beneficiaries of the community of the mozambican village called Nalazi.

Schedule — Student ; Carles Lara Llaó

| Result / Activity | | | Budget |
|---|---|---|---|
| Result | R1 | Drilled well 30 m. deep,to install a water pump w. solar photovoltaic panel & two adjoining central water tanks. | |
| Activity | R1A1 | Bid for drilling well process to constructors | € 4.000 |
| Activity | R1A2 | Drilling well ( at 30 m. Deep x1 m. Diameter). | € 12.000 |
| Activity | R1A3 | Issue of purchase order to supplier for water-pump with photovoltaic panels (85 watts). | |
| Activity | R1A4 | Main water-pump installation to the well. | € 500 |
| Activity | R1A5 | Bid construction of two reinforced concrete tanks with capacity of 20.000 Liters each. | |
| Activity | R1A6 | Construction of two reinforced concrete tanks with capacity of 20.000 Liters each. | € 16.000 |
| Activity | R1A7 | Bid construction of water supply net of 3.000 meter long. | |
| Activity | R1A8 | Construction of water supply net of 3.000 meter long (PVC tube). | € 3.000 |
| Activity | R1A9 | Full test to check the water supply system (only the pump with two contiguous central tanks). | € 500 |
| Result | R2 | Rainwater is properly stored & used during wet season ( December to March). | |
| Activity | R2A1 | Bid of installation of three stainless rainwater tanks. | |
| Activity | R2A2 | Installation of the stainless rainwater tanks. Primary School<br>Installation of the stainless rainwater tanks. Secondary School<br>Installation of the stainless rainwater tanks. Health Center | € 8.000 |
| Activity | R2A3 | Connection of the three stainless rainwater tanks to the water supply-net. | € 600 |
| Activity | R2A4 | Full validation test of the water supply system. | € 2.000 |
| Result | R3 | Four springs repaired and maintained. | |
| Activity | R3A1 | Diagnosis and reparation of the 4 springs of the community and further predictive maintenance. | € 4.000 |
| Result | R4 | Adequate use of water by the Nalazi, community members. | |
| Activity | R4A1 | Election of the Water Committee members. | |
| Activity | R4A2 | Training of the Water Committee members. | € 1.000 |
| Activity | R4A3 | Awareness campaigns destined to the members of the community. | € 1.000 |
| Activity | R4A4 | Training workshops ,Education for Health, best practices & habits with use of water in schools. | € 1.000 |
| Activity | R4A5 | Community involvement Diagnose | |
| Result | R5 | Project is managed correctly following Project Management tools and techniques. | |
| Activity | R5A1 | Monthly follow-up | € 4.400 |
| Activity | R5A2 | Intermediate Evaluation | |
| Activity | R5A3 | Final Evaluation (External) | € 2.000 |
| | TOTAL | | € 60.000 |

(01) 2015 Jan · (02) 2015 Feb · (03) 2015 Mar · (04) 2015 Apr · (05) 2015 May · (06) 2015 Jun · (07) 2015 Jul · (08) 2015 Aug · (09) 2015 Sept · (10) 2015 Oct · (11) 2015 Nov · (12) 2015 Dec

!! Urgent Activity !!

After completing R1A4 y R1A6

Start · Wet · Season

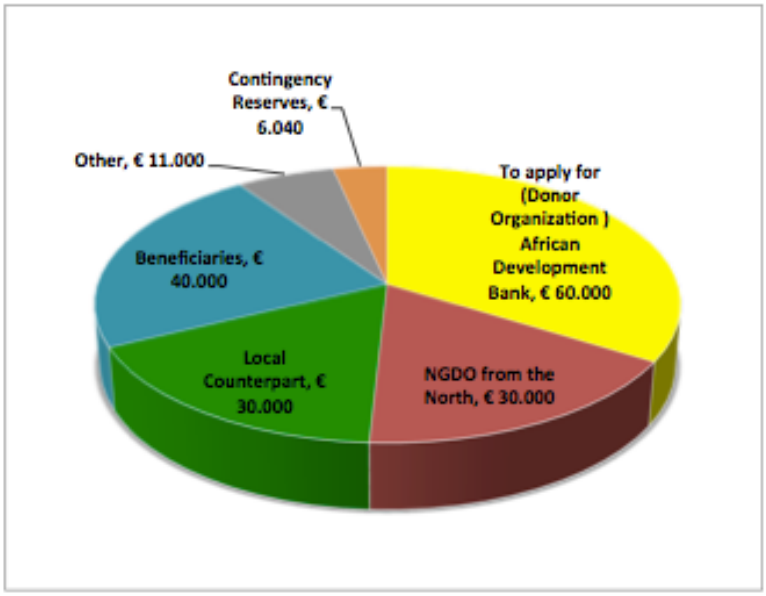
# 6. Resources and Budget.

## 6.1. Budget

Document with detailed Budget headings and lines is prepared, by financing organization and classified in contribution in cash (**"157.040 €"**) and contribution in kind ("**20.000 €**").

Total Project Budget is "**177.040 €** "

| Donor, Financial backer | Cost | % |
|---|---|---|
| To apply for (Donor Organization ) African Development Bank | € 60.000 | 34% |
| NGDO from the North | € 30.000 | 17% |
| Local Counterpart | € 30.000 | 17% |
| Beneficiaries | € 40.000 | 23% |
| Other | € 11.000 | 6% |
| Contingency Reserves | € 6.040 | 3% |
| TOTAL | € 177.040 | 100% |




- (For more information, see document (**08_Budget**)).

## 6.2. Human Resources

Multidisciplinary Project Team is formed by the following members ;

**Technician, in International Cooperation and Development ( expatriate from NGDO of the North )**

- It is planned to contract a technician, expert in International Cooperation and Development Projects, that belongs to the NGDO of the North, called "**Engineers of the World**".
- Contract duration is **12 months**, fulltime, on site, realizing coordination and monitoring tasks.
- He will report to the Project Manager and to the direction staff of the NGDO of the North.
- Salary is **30.000 €**, including life insurance against accidents, diseases, robbery, and other risks.

**Project Manager, ( staff member of the Local Counterpart, AMURT Mozambique )**

- He will be spending half of his time, leading and conducting Project
- Project Manager is a member of the staff, from the local counterpart, "**AMURT_Mozambique"**, and will work most of his time, on site, but also dedicating around 40 % of his time to look for support for the Project, like getting additional funds from the regional or state administration, which will mean to travel quiet often to the capital of **Mozambique, Maputo**.
- It is required Engineering Bachelor, with 5 years experience, in planning, executing development projects, with experience in Logical Framework Approach methodologies.
- Salary cost attributable to the Project is **20.000 €.**

**Local Engineer, ( staff member of the Local Counterpart, AMURT Mozambique )**

- Develop and monitor Project Tasks defined in the Schedule Document, spending around 1/3 of his or her time, on site.
- He will report to the Project Manager.
- It is required Engineering Bachelor, with 3 years experience, in planning, executing development projects, with experience in Logical Framework Approach methodologies.
- Salary cost attributable to the Project is **10.000 €.**

**Technician in, Health Sector, ( staff member of the Health Ministry )**

- Educate members of the Water Committee as well as, personnel of the health center, teaching best practices with the use of water and hygiene. Cooperate organizing workshops in schools.
- Gather data for national statistics in waterborne diseases. Data is used in year reports issued by the Health Ministry.
- He or she will spend 1/3 of his or her time, on site.
- Salary cost attributable to the Project is **6.000 €.**

**Technician in, Community Mobilization ( staff member of the Education Ministry )**

- Leading participation, and motivating members of the community and giving advise to the member of Water Committee.
- Organize and conduct neighborhood councils, playing role as facilitator during community involvement diagnose processes.
- He or she will spend 1/3 of his or her time, on site.
- Salary cost attributable to the Project is **5.000 €.**

Finally a Budget line is assigned ( **20.000 € ) ,** to contract manpower from the community , to realize operative tasks planned in the Schedule, like , drilling the well, build-up tanks, or digging ditches for the water-supply net.

With regards to the human resources selection processes, it will be prioritized to contract members of the community, with experience will be an asset. Empathy and teamwork ability will be valued.

It will be prioritized to contract women when the same skills are demonstrated for the same job position.

### 6.3. Material Resources

Main material resources are;

- Land allotment to drill the well, install the water-pump and build-up two main tanks. Land belong to **Nalazi** municipality and is transferred for the Project use for free. Land value is **20.000 €** , and it is considered as a contribution in kind, as defined in Budget document.
- Water-pump with photovoltaic solar pump, with 85 Watt power.
- 3 stainless rainwater tanks.
- Construction material to build 2 reinforced concrete tanks.
- Construction material to dig a water-supply net 3.000 meter long. ( with PVC piping)
- Educational material used in awareness campaigns, and workshops for best practices of water use.
- Spares for maintenance of the water pump. It is budgeted from second year, onwards, **400 €** for spares (like, O-rings, bushings, nuts, basic tools, and others. ) See document "**09_Technical_Justification**".

## 7. Management and Responsibilities.

### 7.1. Local Counterpart // NGDO from the North // authorities // other organizations

- Local Counterpart; **AMURT-Mozambique,** http://www.africa.amurt.net/category/mozambique/

- NGDO from the North; **Engineers of the World**

- Other organizations;
    - **Local, regional, state authorities, Water and Sanitation Ministry, Health Ministry, Education Ministry,**
    - **Donor organization ( African Development Bank ) ,**
    - **Southern African Development Community Fund,**
    - **Other NGDO from the North or the South that are operating in the area,**
    - **Neighborhood Council,**
    - **Farmworkers Union,**
    - **Local construction companies.**
    - **Any other with direct or indirect implication with the Project.**

### 7.2. Contributions and Roles

*** Local Counterpart; AMURT-Mozambique**; is providing one Project Manager, "Senior Engineer" ( half time) and one "Junior Engineer", ( one third of its time ) to manage the Project execution and monitoring. Contribution of the local counterpart is essential for the success of the intervention, and it is of utmost importance that counterpart is technically capable to manage the Project. Experience, knowledge and domain of the context is fundamental.

*** NGDO from the North, Engineers of the World**; is providing a technician in International Cooperation and Development, , full time, as expatriate , will also be cooperating with the Project Team.

*** Nalazi municipality;** Transfer land allotment to construct the infrastructure, and provide institutional support to the Project.

*** Health and Education Ministries**; provide technicians in Health, and Community mobilization, respectively.

## 8. Feasibility Analysis.

### 8.1. Sociocultural feasibility

Interventions framed in the Water and Sanitation sector, does not foresee, at first sight, sociocultural conflicts, neither for direct beneficiaries nor the rest of the members of the community. It is therefore highly recommend, to involve, all members of the community from the very beginning planning phases, (identification and design). Thus, role played by the Local Counterpart staff and Water Committee members is fundamental for the success of the Project.

### 8.2. Supporting Policies

Support of all institutions will be permanent during and after Project End.

Participation involvement from technicians of the **Water and Sanitation Ministry**, as well as, experts from the **Southern African Development Community**, will contribute to the sustainability of the Project after the end of project.

In the event that additional action to maintain the installations in good condition is required, experts will provide experience and necessary knowhow, evaluating if additional funding is needed, or in the event that special action (like full refurbishment), may take place to guarantee the water supply for the beneficiaries.

## 8.3. Institutional Capacity

Local counterpart, **AMURT-Mozambique**, has technical capacity and required knowhow to undertake the project, as well as, with long years experience in water and sanitation sector.

Projects have been developed in Mozambique and other African countries. **AMURT** has delegations in the following countries; Burkina Faso, Burundi, Ghana, Kenya, Malawi, Mozambique, Nigeria, Ruanda, South-Africa and Uganda, being one of the best partners in the region, for future interventions.

## 8.4. Economic Viability

Planned activities will improve general life conditions of the members of the **Nalazi community.**

During first year, it is not considered to recover investments or maintenance costs from the beneficiaries, due to the fact most of them have only 1,5 $ per day ¡! ). Ongoing review will be conducted in following years.

Bearing in mind this situation, investment is financed be the donor organization, (**African Development Bank**), and complementary contributions from the **Southern African Development Community Fund.**

After resources installation, sustainability is checked, then, it is foreseen to recover maintenance costs upon third year through implement of water fee with social benefit and will be managed by the Water Committee.

## 8.5. Technology

Technical studies are realized to identify pros and cons, comparing different pumping systems.

For further information, see document "**09_Technical_Justification** ").

Beneficiaries are duly trained for the optimum use care and maintenance of the resources. Equipment design process has considered that provided technologies are understood, accepted, and easily maintained by the users.

Spare parts are designed with simplicity, so that they can be produced in local workshops and/or sourced in local markets at reasonable costs and prices.

### 8.6. Gender perspective

Gender perspective, has been considered when formulating the Project, all across design, planning and executing phases, prioritizing any activity that is orientated to improve life conditions of women and children.

It is of utmost importance to join women to the social activity of the community, and convert them into key role players in decision making processes. This is only possible, due to the fact that they will get more time for themselves, instead of having to invest large time to collect water from distant springs.

Now, they can recover capacity for doing other activities like educating their sons and daughters, or even other productive activities that will permit increase their incomes. As a natural process, self-esteem of women will be progressively improved.

### 8.7. Environmental perspective

Gender perspective, has been considered when formulating the Project, all across design, planning and executing phases, using sustainable technologies, like use of solar energy to aid the water pump to pump up the water out from the well.

No fuel is used that may generate waste or other substances, that may contaminate the underground.
Installation of rainwater tanks is optimizing the available natural resources, and caring about environmental.

## 9. Monitoring and Evaluation.

Follow-up system is in place to guarantee the adequate management of the Project.
Monitoring is handled by the members of the multidisciplinary project team, which will contribute with valuable expertized contributions. NGDO from the north, will also implement its own project management through expatriate that is working full time on site.

### 9.1. Monitoring tools

Monthly reports updating technical and economic indicators are issued. Project Manager is responsible to coordinate the preparation of reports with the cooperation of all members of the multidisciplinary project team.

By the end of month 07, an intermediate evaluation is conducted, in order to review and validate activities checking Project status.

It is planned a review on site in **Nalazi**, by technicians of **Water and Sanitation Ministry**, and members of Donor Organization ( **African Development Bank** ). Key milestones to meet Schedule, are actually planned by month 07, when activity **R1A4** (Pump installation at the well localization), and **R1A6** ( Build-up two reinforced concrete water tanks with capacity of 20.000 liters each ).

By the end of month 12, it is planned an EX-POST evaluation that will be conducted by an external specialized consulting company agreed with the Donor.

## 10. Multiplier effects.

Any intervention in water and sanitation projects, for its own nature has inherent multiplier effects, due to the fact that positive impacts are generated, especially in health, education, equity gender, environment, and others.

On the other hand, as mentioned in the Project summary, installed resources will be tested and its efficiency and viability checked. At a second stage, it is intended to implement the same concept to other rural communities, so that this technical solution can be extended to other regions or countries.

Some adjustments may be required to adapt the concept to the region particularities.

## 11. Forecasted transference procedure.

Resources will be properly managed by community members, especially key role by members of Water Committee is played.

Municipality will supervise protocols, trough special signature of a service provider agreement with the local counterpart, that will be providing technical capacity and advise to the members of the community. Agreement will be renewed yearly.

NGDO of the north, will realize review visits, to check on site the advance of the activities.

If necessary, additional funds will be provided Water and Sanitation Ministry, to cover reparations due to extraordinary breakdowns, like breakage of water supply net, or damages caused by floods.

## 12. Annexes.

Finally, please note list of annexes as follows;

- 01_Stakeholder_Analysis
- 02_Problem_Analysis
- 03_Objective_Analysis
- 04_Qualitative_Alternatives_Analysis
- 05_Quantitative_Alternatives_Analysis
- 06_PLFM_Project_Logical_Framework_Matrix
- 07_Schedule
- 08_Budget
- 09_Technical_Justification
- 10_Resources_Distribution