Grupo de Saneamento de Bilibiza

# Water for Bilibiza

## Production & Training Centre for Low Cost WASH Solutions L14004

Bilibiza Water Centre © Josha Jansen/Marie-Stella-Maris

**FINAL NARRATIVE REPORT**
**January to December 2016**

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|---|---|
| **PROJECT** | L14004/JJ0315 |
| **L14004 – B & C** | WATER FOR BILIBIZA |
| | Phase 2 & 3 |
| | Natuco and Muaja |
| | Villages |
| | Quissanga District |
| | Mozambique |
| **IMPLEMENTING** | GSB |
| **ORGANISATION** | |
| **PARTNER** | ARRAKIS |
| **TOTAL BUDGET** | € 29,799 |
| **TERM** | May–Dec. 2016 |
| **REPORTING PERIOD** | Year |
| **REPORTING DATE** | 1st December 2016 |

## CONTENTS

# 1. EXECUTIVE SUMMARY

The second and third phases of the **Water for Bilibiza** Project – Production and Training Center for low Cost WASH solutions continued focusing on the use of low cost and locally produced wells, water pumps, household water treatment and the promotion of water for productive use with vegetable gardens. The intervention covered the communities of **Natuco** and **Muaja.**

**The objective** of the project is to increase health and food security of the rural population around Bilibiza by means of low cost water and sanitation products that are produced and maintained with local materials and skills. Additionally the project is contributing to strengthen GSB technical capability, through the establishment of a workshop to promote latrines, drilling tools and Rope pumps and the use of table top water filters.

**Main results**

**GSB became member of the SMART Centre group**
Because of its acquired increased capacity, GSB was found eligible to become a member of the so called SMART Centre group, in 2016.
This is a group of SMART Centres (WASH Training Centres) which demonstrate new WASH technologies (SMARTechs) and train technicians and local private sector in production, quality control business skills etc. More information see www.smartcentregroup.com
As the senior technical advisor of the SMART Centre group, Henk Holtslag made the follow up visit in October 2016 to GSB.

The Centre is now **a reference and knowledge centre** in Bilibiza and other organisations are seeking for the blacksmith services to produce tools such as sprinklers for cashew nut trees and elevated water tanks.

**A new model for O&M has been introduced: From VLOM to FLOM.**
A common problem with Communal rural water supply is the maintenance of the water pumps with the so called VLOM Model (Village Level Operation and Maintenance). Despite promises of communities to maintain the pump, still some 40% of the pumps, also Rope pumps, are not being maintained. GSB is now testing a new model the so called **FLOM model**. (Family Level Operation and Maintenance).

Before they install the pump they look for a family, a pump care taker who is willing to manage the pump. In Bilibiza this now works well. Mrs. Teresa is the pump care taker of a Rope pump that delivers water to some 250 people. People pay 2 US$ cent per bucket and with this Mrs Teresa is paid for her time she is managing the pump and for repairs, oiling the bushings, changing he rope every 3 months etc. This model has now been tested for 1 year and works fine. The pump is well maintained, families are happy because they can get clean water instead of the dirty water from the river and Mrs. Teresa has an income. She is now considering to invest herself in a new pump with the same model.

**Detailed Results**
For this second and third phase the project direct beneficiaries were approx. 1200 people - farmers' clubs members(majority women), households' members and schoolchildren.
Due to spin-off of 500 sold Table top water filters and 22 latrine slabs, another 2700 people benefitted.

The products directly provided by the project were 50 table top water filters, 13 latrines, 6 drilled tube wells with Rope pumps, seeds and other agriculture inputs (watering cans, hoes and axes) and 2 bicycles. The 2 farmers clubs (of approximately 50 people each) have also received continuous practical training in the demonstration fields and this know how has been important to increase their food production and diet diversity.

This Narrative final report presents the total progress made in the completed **phases 2 and 3, for the villages of Natuco and Muaja.**

The Narrative final report for Phase 1, village 1o de Maio can be read at:
http://rsr.akvo.org/media/db/project/2019/document/Narrative%20Final%20Report%20WATSAN%201o%20Maio%20November2015-final.pdf

## 2. RESUMED ACTIVITIES

| VILLAGES NATUCO & MUAJA, DISTRICT OF MELUCO | |
|---|---|
| **Planned** | **Achievements** |
| 1. Table top filters<br>**1.1.** Acquisition of buckets for table top filters<br><br>2.2. Filters use demonstration | <br>50 Table top filters were distributed<br>500 Table top filters sold for individual customers (spin-off)<br>Demonstration sessions took place twice, and on farmers requests some filters were being fixed and 2 training sessions on maintenance were held |
| 3. WATSAN Villages & Schools<br>3.1. Build latrines (13)<br>3.2. Drilled tube wells + Rope pump (4) | <br>13 latrines (+22 additional slabs)<br>4 drilled tube wells + 4 Rope pumps |
| 4. Activities for Farmers Club<br>4.1. Construction of well + Rope pump (2)<br>4.2. Agriculture inputs (seeds, watering cans and hoes)<br>4.3. Training of farmers | <br>2 drilled tube well + 2 Rope pumps<br>Distribution of lettuce, tomato, kale, cabbage, onion and garlic<br>13 trainings monthly sessions, including practice in the demo plots |
| 5. Technical Mission H. Holtslag<br>5.1. Follow up mission H. Holtslag | From 25th February to 5th March, training held for 10 days<br>From 19th- 22nd October, training held for 3 days |

**Table 1:** Resume of achieved results

## 3. DETAILED ACTIVITIES

### 3.1Table top filters

- **<u>Acquisition of buckets for table top filter</u>**

The assembly of the table top water filters has been made easily and the GSB team has already developed great skills on this activity, the filters were distributed for 50 households from Natuco Village and the required repairs for 2 broken tabletop water filter was easily done.

To motivate the farmers' clubs members the table top filters were distributed among their households, and this has also facilitated GSB's monitoring task, because during the gathering with the farmers' club it was possible to have an insight about the filters and also a few households were visited to observe if the table top water filters were in use.

In the beginning of 2016 the local supplier of buckets saw its shop being consumed by a fire, and this meant that the buckets were not available and their cost was slightly increased. Within this year GSB has also managed to sell 500 Table top filters to singulars that are not direct beneficiaries of this project. This activity is a direct spin off result of the project.

- **Filters use demonstration**

The demonstration of the filters was done in 2 phases, first when the project was presented to Natuco community in a general assembly and in the second time when the Table top water filters were distributed among the 50 beneficiaries. The maintenance sessions were held twice also, during some of the practical agriculture trainings held in the demonstration fields.

**Figure 1:** Filter use demonstration and distribution in Natuco

**Figure 2:** Two children using Table top water filters at home

### 3.2 WATSAN Villages & Schools

- **Latrines**

The construction of latrines were done in the primary school of Natuco and in the communities' households. The primary school of Natuco gained 3 toilets – 1 for boys, 1 for girls and 1 for the teachers. These toilets were handed over to the school board and they are the ones responsible for its maintenance. For the community of Natuco 7 vulnerable families were indicated by the local leadership to benefit from the toilets and another 16 households received slabs. In Muaja 3 households benefited of completed toilets and 6 families received slabs. In general the beneficiaries of the improved toilets also came from the farmers' clubs. As a result of the introduction of latrine slabs and the training of local masons in the production, several families now contracted a local mason to build a latrine for themselves.

- **Drilled tube wells + Rope pump**

In some places it was not possible to make drilled tube wells due to the ground conditions, for instance in in the primary schools Natuco there were 3 negative holes. Therefore in Natuco 5 wells were drilled and in Muaja1 for the farmers' club. Two of the wells from Natuco are not operational due to the lack of water in the ground:

| Pump Nr. | Name of owner or caretaker | Total nr of users | Images |
|---|---|---|---|
| **Natuco Village** | | | |
| 1. | Farmers' club Water Committee | 50 farmers and families |  |
| 2. | Mrs. Muanessi Vitor Jamal | 150 users |  |

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| 3. | Mr. Fernando Ncade | 150 users |  |
| 4. | Mr. Jorge Mitilage | 150 users |  |

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|---|---|---|---|
| 5. | Mr. Anlawe Pedro Nussura | 150 users |  |
| **Muaja Village** | | | |
| 6. | Farmers' club Water Committee | 50 families |  |

**Table 2:** ***Data of pumps installed on tube wells in Natuco and Muaja***

- **Tank for children hand washing**

In the beginning of the year the Primary School of Montepuez has benefited from the construction of a water tank for hand washing, this is a SMARTech that has been tested in the school. When it was first handed to the school it was not cleaned regularly, but now it is operational and the only problem was that children steal the cups that are put there. A solution now is to use a strong metal cup with a long handle and holes in the bottom so it cannot be used for other things than handwashing.

**Table 3:** Hand washing tank in the Primary School of Montepuez

### 3.3 Activities for Farmers' Clubs

In each of the two villages was established 1 farmers' club, following the traditional concept used at GSB: members volunteered to join the clubs, the management committee was established with the support of GSB but the members (president, vice-president, treasurer, secretary and a regular member) were selected or nominated by the farmers clubs members.

In both farmers' clubs the women are the majority, in Natuco the club has 29 women and in Muaja 34 women. The club of Muaja is led by a woman and in both clubs the treasurers and secretaries are women.

During the practical trainings the farmers' club members were thought to open a bed for vegetable as well as learn to prepare nursery, make transplantation, planting in line and using techniques to improve the irrigation. The GSB extension workers followed up the clubs activities and assisted the farmers to improve their production. In both clubs the beneficiaries were able to save some money to ask GSB to get new improved seeds for them to continue the production. At the moment both fields are still operational.

To ensure that the farmers produce during at least 2/3 of the year the clubs benefited from drilled tube wells.

**Figure 4:** fields where the farmers are producing vegetables

### 3.4 Technical Missions by Henk Holtslag

There were 2 technical missions in 2016. Henk Holtslag was in Bilibiza from 25th February to 5th March for this project. During the first visit he visited many Rope pumps installed by GSB, and he conducted a training focussed in improving the SHIPO drilling by including jetting, and adapting the groundwater recharge systems, as well as in assisting in the construction of a School wash tank for hand washing in a Primary school of Bilibiza.

For the full report of the first mission see:
http://rsr.akvo.org/media/db/project/2019/document/TA%20Mission%20Report%20Holtslag%20May%202016.pdf

An extra follow up mission for done from 19th to 22nd October as a support of the SMART Centre group. For photos see ANNEX I

**Figure 5: Mrs. Teresa an example of the FLOM approach**
One of the Rope pump owners visited by H. Holtslag is the pump pf Mrs. Teresa. She is the pump cate taker and manages the pump. Daily some 200 people or more use water from this pump and pay a few cents per bucket. This payment gives income for Mrs. Teresa and gives funds for repairs. Despite the intensive use of the pump, this pump is in very good order because it is well maintained. Because of the good experiences GSB uses this example of FLOM (Family Level Operation and Maintenance) as a maintenance model example for pumps to be installed for communal water supply in rural areas.

**Figure 6:** Training sessions in Bilibiza

**Figure 7:** The team trained at BWC is in action putting in practice what they have learned.

## 4. DIFFICULTIES AND CHANGES FROM THE PLANNED ACTIVITIES

Some difficulties faced during the project implementation has to do with the accessibility: the roads have poor conditions because of the cyclical floods, and in 2016 with the economic crisis in Mozambique the government did not made any routine repairs of the roads and bridges, and Natuco and Muaja are hinterland villages;
The floods and draughts are cyclical in Mozambique. Floods contribute to wash away rope pumps installed on drilled tube wells and some of the materials of other parts of the wells are lost in the process. For Natuco specifically it took long for GSB to find positive holes due to the soil conditions, therefore the strategy was to include water recharge systems near the positive holes, preventing the wells from drying. But the thing with the water recharge systems is that the beneficiaries do not do the maintenance on the tubes after rain fall. Then the tubes gets full of sand and the water recharge systems do not work and the drilled tube well dries. This leads to the next constraint GSB is facing in some areas, lack of beneficiaries commitment;

The lack of commitment of some beneficiaries. Communities undermine the maintenance and operation of the drilled tube wells, so some wells can have malfunctions or be broken. The beneficiaries do not take the lead and do not communicate with GSB to repair the wells. For Natuco and Muaja which are in the hinterland and not on the main roads were GSB usually passes by, it's difficult to keep GSB presence there and to be available to assist the communities in repairing the wells. For those drilled tube wells that are along the main road GSB is able to assist them and repair the wells, sometimes the solutions needed are so simple.
This also has to do with behaviour change of the managers of the rope pumps, in other places it is hard to find business oriented people, like Mrs. Teresa. People go to their machambas an then do not have interest on checking if the wells and rope pumps are operational. So more awareness campaigns and training are needed to engage these beneficiaries in the project and make them more active.

Another problem in 2016 was the strong inflation of 50% or more of national currency. This caused increase of prices of all imported materials like tools, cement, fuel etc.

## 5. LESSONS AND GOOD PRACTICES FROM THE INTERVENTION

The most important lessons and good practices are the community participation in the project implementation, adoption of savings and improvements in the nutrition habits.

The villages' leaders or community leaders welcome the installation of wells and famers clubs. In case of drilling they control the work which is being done in the construction sites and observe if there is not stealing or selling the materials, they provide places (mainly their homes) for materials and equipment's' storage. The community members usually provide place for the construction workers sleep, they offer meals and drinking water, they are also very active in assisting the project

team in the identification of sites for the opening of wells, and assist with digging or transporting materials. The pupils/students and teachers from the beneficiary schools are very active, they assist with the transportation of sand, stones and bricks, they are also collaborative in showing the best places to fetch water or get the quality stone needed for the construction.

The local authorities support the project implementation;
*Serviços Distritais de Saúde, Mulher e Ação Social (DPS)* has promised to take part of the trainings to address some talks regarding health and sanitation;
*Serviços Distritais de Educação, Juventude e Tecnologia (DPEC)* representatives use to visit the construction sites, the target schools are opened and enthusiastic, welcoming the improved latrines, the pupils and teachers are active and involved in the construction activities;
*Serviços Distritais de Planeamento e Infraestrutura (DPOPH)* has visited the construction sites and made technical recommendations regarding the construction quality, namely the improvement of plastering techniques.

In terms of savings practice, the farmers club are putting in a common box 30% from the revenues of the vegetable sale. This was a consensual agreement from the GSB proposal, as in the other clubs established in the previous years the farmers use their incomes and in the next season they did not have money to buy seeds.

Regarding nutrition habits, the farmers are now eating vegetables in addition to maize and cassava. The women use to have gatherings to exchange recipes on how to better cook the vegetables.

# ANNEX 1: Photos Bilibiza. Visit Henk Holtslag October 2016

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| The GSB SMART Centre in Bilibiza. Workshop plus office. Note the new rainwater harvesting tank | To capture rain water and infiltrate it in the ground, GSB made a large Tube recharge system of 8000 liter near the workshop |
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| During the visit some technologies were improved like the Soil punch to make wells | The Soil punch was reinforced to reduced breakage |
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| A new drill bit for the SHIPO drill system with Tungsten bits. | Still some problems in the production of Rope pumps but quality is improving |

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| This is one of the two large 80 m long dams made by GSB to create a large artificial lake. This work was funded by the Japanese embassy | This dam is made 3 km from the GSB office nearby the ADPP school. Water will be used for irrigation managed by Farmers clubs in Bilibiza |
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| The River along Bilibiza that was full in February is now completely dry | Families from Bilibiza still find some water in so called scoop holes in the river |
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| Bachir standing at one of the 7 Rope pumps that were completely washed away by the huge floods in 2015 | GSB is planning to repair the Wind mill ( wind rope pump) installed in Bilibiza in 2006 |

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| A machine drilled borehole near the Rope pump. The depth is 60 meters but the water at that depth is salt!!! This is part of a 0.5 mln $ project for piped water in Bilibiza. | The pump of Mrs. Teresa is OK. The FLOM model works. She sells water at 2 Cents/bucket). This is for pump repairs, some income and she saves money for a new pump. |
|  |  |
| She also made a small garden near the pump and sold vegetables in the last 4 months. She now has money for a 2nd well and pump | The school wash tank made in February 2016 is working. However the cups that are hanging on the rim were taken away by children |
|  |  |
| Now a cup with a long handle is used and kept inside during the night. | Well driller Juma in Bilibiza, has more income from well drilling and builds a new house.!!A sign of economic development in Bilibiza. |