GSB
Grupo Saneamento 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 2015

1. Título do projecto

PROJECT	L14004/JJ0215
L14004	WATER FOR BILIBIZA
	Phase 1
	1º de Maio Village
	Meluco District
	Mozambique
IMPLEMENTING ORGANISATION	GSB
PARTNER	ARRAKIS
TOTAL BUDGET	€ 25,613
TERM	January–Dec. 2015
REPORTING PERIOD	Year
REPORTING DATE	30th November 2015

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1. EXECUTIVE SUMMARY

The Water for Bilibiza Project – Production and Training Center for low Cost WASH solutions is focused on the use of low cost and locally produced wells and water pumps to be used by small communities and by families for Self-supply and some activities for schools.

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.

The expectation is to see this Centre functioning as a training centre to train users in Maintenance, technicians in production and installation and repairs and people of NGOs and Government in the existence and potential of locally produced and new technologies.

The project period is planned from June 2014 to December 2016 and is divided in 2 phases – 1st Phase is "1º de Maio Village", the 2nd Phase is "Natuco Village" For an eventual 3rd Phase the "Muaja Village" has been selected. The necessary funds for phase 3 is not fully available yet. The expected results of the project phase 1 and phase 2 together are:

- 1500 people including school children have access to clean water as a direct result;
- 1000 people (including school children) have access to pit latrines;
- 1000 people have safe water with water filters;
- 3000 people have safe water funded by themselves or other NGOs as project spin off ;
- 40% of the villagers have pit latrines and the examples and Community Led Total Sanitation (CLTS) training, motivates others;
- 100 farmer families have increased income by sales of their products; and
- 2 Water committees functioning

This Narrative final report presents the total progress made in the completed **phase 1, for the village of 1º de Maio.**

At the beginning of the project, the following basic data of the village were obtained. The 1o de Maio Village in the Meluco District has 1802 inhabitants (1000 women

and 802 men), a Primary School with 117 pupils (63 girls and 74 boys) and 8 male teachers. The water, sanitation and hygiene conditions are the same as in the Quissanga District, meaning no latrines and no improved water sources at the schools, so no water for children for drinking or hand washing.

The result of the completed Phase 1 is that the direct beneficiaries were 900 people and 117 School children with access to clean water by means of drilled tube wells with Rope pumps. 200 people have sanitation with household latrines and 117 children have sanitation with school latrines. 500 people have safe water with household water filters table top filters. Another activity was the training of the farmers via the farmers club including conservation farming techniques. In this period and as a Spin off result some 10 Rope pumps were funded and installed by other NGOs delivering safe water to 1000 people. Another result was the establishment of a Training and Production Centre of Low Cost WASH solutions. The financial report of phase 1 (excel sheet), gives the detailed expenditures compared with the budget.

For detailed description of the project see: http://rsr.akvo.org/en/project/2019/

2. RESUMED ACTIVITIES

1º DE MAIO VILLAGE, DISTRICT OF MELUCO	
Planned	**Achievements**
1. Infrastructure Workshop 1.1. Workshop building & equipment	Concluded
2. Table top filters 2.1. Acquisition of buckets for table top filter 2.2. Filters use demonstration	50 table top filters were distributed Demonstration sessions took place twice, and on farmers requests some filters are being fixed and 3 training sessions on maintenance were held
3. WATSAN Villages & Schools 3.1. Build latrines (10) 3.2. Drilled tube wells + rope pump (5) 3.3. Training of 2 water committees (1)	10 latrines (+12 additional slabs) 5 drilled tube wells + 5 rope pumps 2 trainings for WC in June and September 2015
4. Activities for Farmers Club 4.1. Construction of well + rope pump (1)	1 drilled tube well + 1 rope pump
4.2. Agriculture inputs (seeds, watering cans and hoes)	Distribution of lettuce, tomato, kale, cabbage, onion and garlic
4.3. Training of farmers	9 trainings monthly sessions, including practice in the demo plots
5. Technical Mission 5.1. Visit of Henk Holtslag	From 19th-1 stst June, training held for 11 days

3 DETAILED ACTIVITIES

3.1 Infrastructure Workshop

- **Workshop building & equipment**

The Workshop for Training and Production on WASH Low Cost Solutions, locally named, "Bilibiza Water Center", was built by the GSB members and masons during 3 months. The Center comprises 1 workshop building and 1 storage room, with floor dimensions of 15 x 16 m. and also comprises a ground water cistern with a capacity of 10.000 l water. In the demonstration field of the centre there now are a demonstrations of a Rope pump on a demo borehole, an underlining system and and a Tube recharge systems for groundwater recharge is installed. The Center is operational now, and is being used to train in production of WASH solutions, mainly Rope pumps and the drilling equipment needed for drilling tube wells that are being constructed in the province of Cabo Delgado.

Bilibiza Water Center is used to support other GSB interventions, financed by other partners. At the moment the Center has produced a total of 42 drilled tube wells + Rope pumps (out of these 12 were for singular households), water structures in coordination with the IABIL (Agrarian school of Bilibiza), assembled 350 table top filters and produced 25 slabs. 70% of these numbers can be considered as Spin off of the Centre and funded from other sources than the project funds. This means that these wells, pumps and filters would not have been sold if this and former ARRAKIS projects would not have been there. The center was also used to address a theoretical and practical training for 40 water and sanitations committees, from 20 villages and 20 primary schools.

Figure1: "Bilibiza Water Center"

Presently the GSB team is using the Center to train in and produce Rope pumps and preparing the tubes for the drilled tube wells. These will be used in the forthcoming GSB projects.

Figure 2: Rope pumps produced in the Bilibiza Water Center

A spin off effect was witnessed with the establishment of this Water Center. A stakeholder (Aga Khan Foundation) that operates in the Quirimbas National Park, was impressed with the concept of the water center and offered a brick machine to the Water Center, to see local people using those bricks and see young people being trained. Aga Khan also funds the activities of IABIL, and through this institution they use to order water structures (such as elevated tanks, dams and water supply system).

Figure 3: Bricks produced with the machine offered to the Bilibiza Water Center

3.2 Table top filters

- **Acquisition of buckets for table top filter**

The acquisition of the buckets for the table top filters took long because there was no availability in the local market, the usual supplier took long and only on March 2015 GSB got the buckets. Also the costs of the buckets, being imported from Tanzania were quite high. During 2 weeks GSB members were busy putting the filters in the buckets. Then they were distributed to the farmers.

- **Filters use demonstration**

The introduction of the filters as well as the project itself was done in coordination with and support by the Administrator of the Muaguide Post. After gathering the community members the GSB team presented the filters to them. Subsequently a lesson regarding the use of the table top filters (which are now called "água saudável"/health water) was given to the people and the club members and their

family received their filters kit. The local community Leader, Mr. Pires Joaquim participated actively in all of these moments.

Figure 4: Filters use demonstration

Figure 5: Community members with their filters

Apart from the 50 farmers club member 3 disabled people from the community received the table top filters and this ceremony counted with the Administrator of the Post (the one in the middle of the picture).

During the monitoring visits held to the village by the GSB team the president of the 1º de Maio Farmers club said that many people are interested in the table top filters and they are admiring the technique of water filtering. Many people were also interested in getting the filter, he says that at the moment he has a list of 10 families who are interested in acquiring the filters. The club organized a list of families that were willing to receive the filter, and in the next informative session about the filters use these families got their table top filter.

For instances the Chief of the Administrative of Muaguide and the headmaster of the local primary school declared that it is worthy to use the table top filters, because the households that are using these filters have not registered cases of diarrea recently. The households that are using the filters have also subscribed the statements regarding the filters use positive impact on their health. To support the households GSB addressed 3 training sessions on how to clean and maintain the filters, in June, September and October.

Figure 6: Two households that are using the table top filters

3.3 WATSAN Villages & Schools

- **Build latrines**

The construction of latrines started in the Primary School of 1º de Maio, where 3 latrines were built – 1 for girls, 1 for boys and 1 for the teachers. These constructions were made by GSB team and also were supported by the teachers and students, who helped in the materials transportation and fetching water when necessary.

The other 2 latrines were constructed in the houses of 2 vulnerable people chosen by the villagers, mainly the farmers' club members. They are now using these latrines and many villagers are also interested in getting latrines of their own. To answer the request from the community 1 latrine was built in the house of the Community Leader, 1 in a small market and the other 4 in the houses of 4 members of the farmers' club. During the construction of these latrines, community people also learnt how to produce the slabs, 12 demonstration slabs were produced and offered to a number of the trainings participants.

- **Drilled tube wells + Rope pump**

Next to the Primary School of 1º de Maio one tube well for water provision for the school was constructed. The process of manual drilling of this well took very long, and it succeeded only after trying in 2 places.

The other 4 drilled tube wells were opened for village consumption next to their fields. The opening of these wells was facilitated because the GSB team involved on this was using the new techniques learnt in the late technical training, see section 3.5.

Pump Nr.	Address	Name of owner or caretaker	Total nr of people using water	Images
1	1º de MaioPrimary School	Water Committee	117 (children)	
2	1º Maio Village	Mrs. Lurdes Sebastião, is managing	ca 150	
3	1º Maio Village	Mr. Antarige Chengo	ca 150	
4	1º Maio Village	Mrs. Mr. Anli Sualé	ca 150	

5	1º Maio Village, next to a producti on field	Mrs. Ngamo Omar	ca 150	
6	At Farmers Club field	Mrs. Atija (she uses a safe deposit box to collect the money)	Ca 300	
Total				

Table.. Data of pumps installed on tube wells

- **<u>Training of 2 Water Committees</u>**

One water committee for the Primary School of 1º de Maio in May 2015 and the one for the village (including the farmers' club) was established in June 2015, and the first training of these committees were held in June 2015 and the last in September 2015. During the trainings issues were discussed like: how they would like to manage the drilled tube wells and latrines, who could be responsible for the maintenance and how the school and the community could be organized or make arrangements for the acquisition of spare parts for the maintenance. Each committees has 5 members and 2 of them are responsible for the maintenance of the facilities (1 for the latrines and the other for the wells).

Long term maintenance guarantee.

To ensure the maintenance of the rope pumps, on one hand GSB avails itself to assist the communities, whenever it is necessary and if major costs are involved the community is informed about the need of making contributions. On the other hand the water committees, mainly those from the villages were trained and the single person managing each of the wells is charging the community a symbolic amount and part of the funds gathered from this is saved to be used for maintenance purposes (GSB proposed them that at least 20% on a monthly basis is used for this purpose, or even to buy airtime and contact GSB members or prepare a meal to one of the GSB members who goes and fix the wells and pumps when needed). Now GSB witnesses that many issues are being solved locally without asking for GSB assistance, for instance, they are using palm oil to lubricate the rope pumps, and when needed they replace the rope themselves and just ask GSB to buy the rope and other spare parts, meaning that they are saving on transportation costs (because they know Bachir goes regularly to Pemba, they ask for the spare parts and he

doesn't even need to go to the village, they make an appointment at 19 de Outro bus stop, give him the money and receive the spare parts).

Prevention measures for the pumps not to be washed away with new floods. From the last years flood experience, GSB has recommended the villagers to put a stake with high marks, so they know when the water has reached dangerous levels and it's time to remove the pumps and put them secure to reinstallation when the flood season is ended. This has been done only in the farmers club drilled tube well and GSB will keep mobilizing the beneficiaries to do this.

- **Production of Jatropha Soap**

As part of promoting personal hygiene, GSB has also promoted one training on the production of Jatropha soap. GSB gathered a group of 15 women and taught them how to make an artisanal soap out of jatropha and showed them how they could use it to protect themselves, specially treat their children from tinea, mycosis and other fungi bacteria and itching. Meaning that now the knowledge is there and they can use the jatropha seeds which have no buyers now to have a safe product to protect their health.

Figure 7 Artisanal Jatropha soap production

3.4 **Activities for Farmers Club**

One farmers club has been established and it has 50 members (23 are women). The GSB work to set up this club was witnessed and supported by the Administrator of the Muaguide Post, Mr. Pires Joaquim.

Figure 8: Mr. Pires Joaquim, the Chief of the administrative Post of Muaguide talking in the project launch

After the project presentation the establishment of the farmers club was started and the management committee was democratically elected. Then a visit to the fields took place and future places for the demonstration fields and establishment of nurseries were identified. GSB presented its work it undertook in the communities of Nancaramo, Nicuita and Ngewe, where this same kind of project was implemented.

Figure 9: GSB is presenting it's activities to the community

In general the village has plenty of space for the horticulture and the farmers were willing to participate in this program. Regarding sanitation and hygiene the GSB team could notice the insufficiency of sanitation, no latrines for the families or even the tables for plates to dry after being washed, consumption of non-drinkable water and defecation in open sky.

However this village had traces of GSB past intervention back to 2007 under the FACT program, and it was possible to find an horticulture field that still showed signs of use as well as it respective well with hand Rope pump that provided water, although in few quantities. There was also an Afridev water pump installed on a machine drilled tube well installed by the government (which costs approximately U$D7000), but was not working.

Picture 10: A water hole opened by FACT/ADPP in 2007 (*on the left*) and a broken Afridev water pump (*right*). This water hole is not only being used for the horticulture field irrigation, but even to get water for drinking.

The first activity of the club was the establishment of the nurseries, where they sowed white and red onion, tomato, pepper, lettuce, cabbage and Chinese cabbage and Portuguese kale. In the beginning the nurseries were not protected against chicken, but soon as they saw this risk they prepared a fence and they are thinking of establish these plot as a definitive nursery for future vegetable gardens.

Figure 11: The nursery for the vegetable demonstration plot

Figure 12: Part of the 1º de Maio Farmers Club members

Figure 13: An established vegetable garden, in the initial phase

In practice 34 members are very active at the moment and are betting on growing vegetables. They have harvested and are already selling their products in the local market or along the first national road (N1).

Figure 14: Farmers taking care of their vegetable garden

Figure 15: Farmers in the local market selling their kale

- **<u>Construction of well + Rope pump</u>**

One drilled tube well was installed for this farmers club and it is being useful, although it does not cover the needs of many of the farmers that are now considering the possibility of using part of their incomes from the sale of the vegetables to buy the material for the opening of another well. The area that is being prepared for the vegetable growing is very big and water availability may be a problem in the future. Nevertheless the field is next to a water source and the water is available during the year (the peasants says that there 2 wells in the vicinities), there might be water scarcity from August to October. Therefore one more drilled water hole will be installed, to ensure that the water is always available, mainly since August when the cultures water need is high.

This is one of the issues they expect to discuss in December when they open their common safe box, where they put part of their incomes from the vegetables sale. They will just request for GSB expertise to open the well.

Figure 16: A drilled tube well and Rope pump installed for the vegetable garden

- **Agriculture inputs and Training of farmers**

In terms of agriculture inputs the farmers have received watering cans, some kg of white and red onion, tomato, pepper, lettuce, cabbage and Chinese cabbage and Portuguese kale.

Apart from this material support the farmers were working with a GSB team member (kind of agricultural rural extension worker) who accompanied them since the establishment of the nurseries, the flower beds and monitored the growing of the vegetables, as well as the production of the organic compost. The training topic was mainly on conservative agriculture, the farmers learnt how to measure the spacing among the plants, how to use a rope for this measuring, how to intercalate cultures, etc.

3.5 Technical Mission

- **Visit of Henk Holtslag**

In May advisor Henk Holtslag went for 11 days to visit the project and to give follow up training to GSB and 12 local artisans, both welders and well diggers (of which 3 women). The training, which was for 90% practical) included manual drilling with the so called Mzuzu drill method which is a combination of a Soil punch and a bailer. The soil conditions in Bilibiza and the project area vary from pure sand near rivers to clay and hard soils with gravel and rock in the higher areas. GSB will now investigate where this manual drilling is possible. Also training was given in improving the quality of the Rope pumps, its installation on both hand dug wells and tube wells and the combination with groundwater recharge with the so called Tube recharge system. The training was given in the newly build workshop in Bilibiza. Henk also visited schools and families who received water filters. It was interesting to see that the school did not use the filters anymore, but the families did.

Figure 17: Each training day started with one hour of theory. The rest was hands on training.

The training was an added value to the GSB team, that now has a specific group for drilling wells – Mr. Biche, Mr. Mussá and Mr. Domingos are the drillers, Mr. Venâncio is the blacksmith and Mr. Juma Eduardo is their team leader – and they are supervised by Mr. Bachir Afonso, that also certify the quality of the drilled tube wells.

During the training the GSB team could gain more comprehension on the opening and use of water recharges, which are systems that can store 10 to 500 m3/year of rainwater in the ground and are applied near wells that dry up so they have water all year round.

Figure 18: Practical sessions held during the technical training

In this training the trainees did not receive any certificate. They will get a certificate only when they proof they can make good quality. So for drilling this means they produce at least 20 drilled tube wells or 20 Rope pumps of good quality. This will be examined by Mr. Bachir and in a next visit of Mr. Henk Holtslag.

3.6 Visit from Marie-Stella-Maris Foundation

Representatives from the Dutch Marie-Stella-Maris Foundation came to Mozambique to visit the projects financially supported by this Foundation, in the District of Meluco, Village of 1º de Maio (and District of Quissanga, Village of Natuco and Nacoja). Mrs. Josha Jansen (Coordinator of Humanitarian Projects) and Mrs. Robin de Puy were interested in getting to know the Foundation support was being addressed to improve the access to clean and safe drinking water. Mrs. Jansen was particularly focused on the project implementation – number of households using latrines, table top filters and how people were able to pay for these services and continue with its benefits, even when the project was completed. Mrs. Robin de Puy was taking plenty of pictures to document the work supported by the Foundation – the drilled tube wells, improved latrines, table top filters and vegetable gardens. They were also able to see how people use the rivers for almost everything: bathing, washing, defecation, playing, animal also drink there. The Pictures will be used on

the website of MSM and some pictures may be send to a Photo contest. See: http://marie-stella-maris-foundation.org/en/projects/project-bilibiza-mozambique

Figurwe19: Stella Maris Foundation representatives visiting the project site

4 DIFFICULTIES AND CHANGES FROM THE PLANNED ACTIVITIES

The main difficulties faced during the project implementation has to do with the accessibility: the roads have poor conditions because of the floods in January 2014. Some bridges are still broken and some places are not reachable by car. This means that the construction team mobilization takes longer, and the workload is heavy, because the materials sometimes need to be transported by human force to the construction site, so more people than planned are needed in the transportation activity.

The water scarcity in the ground: In some of the target areas indicated for the wells there is no - or very limited water. Soils are dry, even after 5m of perforation the water is not found. Now the strategy adopted by the project team is to combine wells with ground water recharges, the so called Tube recharge systems to ensure that in the next years the content of water in the subsurface is maximum. This water stored in the water table can recharge the hand dug wells and or hand drilled bore holes.

In terms of changes from the initial project plan, there was only one during this reporting period: the site of project implementation "1º de Maio Village in the District of Quissanga", was changed for another one "1º de Maio Village in the District of Meluco". The reason for change has to do with the accessibility to the former place, which was not reachable by car, the only small bridge (made of local materials) available was broken in the last rainy season and it would be very difficult for the project team to reach this place and implement the activities[1].

[1]In the Project plan the foreseen 1º de Maio Village was from Quissanga District, but in late February after 2 hard incursions (due to the road conditions, damaged bridges and no car accessibility, the major course/way was completed on 3 hours foot walk – the late rains or floods damaged the roads and small bridges and there is no clue of when these roads will be accessible) the GSB team opted for the 1º de Maio Village of Meluco District.

Fortunately GSB has work experience with this "1º de Maio Village". In 2007 this village was one of the sites for jatropha promotion project financed by FACT and coordinated by Arrakis.

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 initiative, they control the work which is being done in the construction sites and observe if the working team 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 use to offer meals and drinking water, they are also very active in assisting the project team in the identification of better sites for the opening of wells, when needed they assist with digging or material transportation. 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. Now, they plan to open the safe in December 2015, after the last harvest of the year. But, they are also now discussing the possibility of opening a bank account to put the savings as well as formally registering their club as an association

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.