The International Training for the construction of the Calabash Tanks (Vibuyu Tanks)

4th—19th February 2019 at Lukozi in Lushoto District, Tanga, Tanzania


The Organisers:

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COWSO Lukozi, office at Market Place.

Placing the prefab constructed roof on top of the Calabash tank in Malindi village
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Abbreviations:
Chamavita = is an abbreviation in Swahili, it means: Foundation for Rural Development in Tanga Region. Chamavita is the Local NGO executing the Rural Water Supply projects by Gravity Systems in Lushoto and Korogwe Districts.
COWSO = Community Owned Water Supply Organisation. Is responsible for the Operation and Maintenance in one specific rural water supply project/area. In our case it is Lukozi water supply project.
DED = District Executive Director of Lushoto District.
DRC = Democratic Republic of Congo, or Congo DR.
DWE = District Water Engineer
SPOT Tanzania = Stichting Plattelands Ontwikkeling in Tanga, Tanzania, Foundation for Rural Development in Tanga, Tanzania, established in the Netherlands.
TARUWAS Trust = Tanga Rural Water Supply Service Trust, is established in Lushoto town and is set up to support the operation and maintenance for the rural water supply.
Vibuyu = Is the plural of Calabash in Swahili language, that is why it is introduced in Tanzania as Vibuyu tanks.
1.0 Introduction

The training was a success, **16 masons and 3 Coordinator** got well trained, during this training. As practical learning, they completed 16 new Calabash tanks, situated in Lukozi village itself and five other villages in the direct surrounding: Malindi, Maringo, Mgwashi, Mnadani and Viti. This report reports the training which took place during a period of 15 days (from the 4th up to the 19th of February 2019 inclusive). TARUWAS Trust and the Lukozi COWSO were host to this training. The report will highlight significant learning points. The trainers were two form Guinea Bissau, two from Congo DR and two from the Netherlands. The trainees were 13 local Tanzanian masons (from which 6 had a little experience in the construction of the Calabash tanks, and 7 had no experience from before). The five trainees from abroad (two from Kenya, two from Mexico and one from Malawi), two had little experience and 3 no experience. The Chief trainers from Netherlands and the local Coordinator from TARUWAS Trust formed the trainings management team.

The Coordinator of TARUWAS, John Nshunju, did the logistic concerning the immigration information, prepared invitation letters to all foreign participants and sent these to the Government authorities in Lushoto District for their travel approval and stay in Tanzania for 3 weeks.

To have trainees (local Tanzanian masons) participating in the training, invitation letters were sent to all active COWSO’s in Lukozi area, after selection we had 9 masons by this action. The other 4 were known masons by TARUWAS and Chamavita. One was proposed by the DWE Office. In total 14 from Lushoto Tanzania.

The foreign trainers, masons and future coordinators (except one): 8 in total were all organised by “Clean Water – Healthy Village”. The last person from Malawi was organised by the Dutch NGO “Het Goede Doel” (which means: The good Course).

This Calabash tank training is subsidized importantly by **the Louisa Foundation**, based in the Netherlands. Thank you much, without your support this training would not have been possible.

The finance of this training was organized by:

- SPOTT based in the Netherlands.
- Clean Water – Healthy Village (Friends Holten – Bedanda) based in the Netherlands.

For the start of the training, Officials of Lushoto District were invited at the opening and closing ceremony. Present were: the District Executive Director, the Government Governor, the District Water Engineer, Village leaders and Board members from Lukozi COWSO. From the media were present: the local radio from Lushoto, National TV: ITV, and some journalists from different Magazines.

During the training several trainees asked about the rounding from bottom to wall, wall thickness, manhole lid dimensions, etc. That’s why a list is made and became Annex 7. At the end of the training tools and coffee wire remained, they are all described and put in a list as Annex 8.
1.1 Back Ground Information

1.1.1 History:

In April 2017 three persons from Lushoto district in Tanzania were trained in this technology, the training took place in Buba town of Guinea Bissau (West Africa). From May 2017 up to August 2018 34 tanks were constructed in Lushoto district. 3 Tanks are subsidized for 90% to get pilot demonstration tanks, 29 tanks are constructed on base of 50% self paid and 50% subsidized and 2 tanks were built on base of 100% self paid (these tanks are in Kwekangaga). Next to the 3 persons trained in Guinea Bissau, six masons are trained in Lushoto during the construction of these tanks, these masons were assisting the two trained in Guinea Bissau.

After an evaluation it became clear that several tanks need improvements, as:

- The outlet pipe on which the tap is fixed, is very long, so it has a risk people will use it as a step up to reach the top of the tank, after that leakage around the tap will occur. So this pipe should be much shorter. It should be prevented to use the tap as a step up.
- The distance in between the tap and the ground level, should be big enough to locate a bucket, approximately 35cm.
• The overflow should have an elbow downwards to prevent sunlight comes in the tank, and the length of the overflow external pipe of the tank should not be more than 15cm.

• The rounding from bottom to vertical wall should be really round (as a circle) in this case the peak forces will not concentrate on the line of the floor – wall connection, but will be well absorbed/intercepted over the rounding and the risk for leakage in the connection area (change of bottom and wall is very small. 

• The location of the constructed tank is a bit far from the catchment possibility of rain water from a roof. 

• The gutter in which the water is to be caught and led to the tank, was missing too many times. This gutter should be promoted. Or any other rainwater catchment area/system.

1.1.2 The objectives of the training

a) for Tanzania:
   • To improve the tank construction in Lushoto, so that shortcomings as described above will not any more occur in the future
   • To increase the number of well qualified masons for this tank construction.
   • To combine the recent experience of the tank construction with this new training.
   • The long term goal of this project also aims at creating employment of youths engaging water supply.
   • To offer a well qualified tank of 5,000 liters, which will be affordable for the average village family.

b) International:
   • To start cooperation between East and Central African countries, so that knowledge and skill in this tank construction will be exchanged in the future. On the level of the trainers we used the skill and knowledge of the two trainers from DRC.
   • Next to Tanzanians, masons from Malawi, Kenya and Mexico participated in this training. That means that the skill and knowledge of this tank construction will be available in three other countries.

The list of Participants is given in Annex 2. Annex 3 gives the training team set up, every trainer had 5 trainees.

2.0 Training program

2.1 Venue of the training: Lukozi CCM hall was chosen as meeting centre for the training. Each morning after breakfast there was a briefing for the total group: 2 supervisors, 4 trainers, 4 coordinators and 16 trainees, in total 26 participants. We had discussions/remarks about the past and explanations for the coming days. All to exchange experience and to improve knowledge and skills.

2.2 Participants

After the morning briefings the training was continued in practical tank construction. We had 4 teams, each team 1 trainer and 5 trainees. For the participating masons the experience in Calabash tank construction in the past was different, we had masons with some experience and no experience.
the ones with experience were equally distributed over the 4 teams. Annex 1 showed the different construction stadia through pictures. Annex 4 gives a list of the 16 locations where tanks are constructed. The beneficiaries contributed 180,000.00 Tshs as local contribution to the construction costs. That is 30% of the total construction costs of the calabash tank, estimated to be 600,000.00 Tshs (inclusive supervision cost).

2.3 Training set up

2.3.1 Phase I (seven days)

The 1st training cycle of 7 days started on the 5th of February 2019. In this phase trainers had to transfer knowledge and skill to all the trainees.

At the start of this 1st phase the list of necessary improvements, described in chapter 1.1 was explained in the morning briefing on 05-02-19 and on paper handed over to all participants. This list was the concentration point and was highlighted in the first part of the training. We noticed that this attention was very helpful and improved the quality of the tanks, and the knowledge and skills of the masons.

Every team trained on 2 locations. For an efficient time use it is necessary to do the construction stadia in turn on these two locations. Only then you can construct two tanks in 6 up to 7 days. When one part of construction is drying one should continue on the 2nd location for the 2nd tank. During phase I we manage to construct 7 tanks ready and 1 tank ready for 75%. Not getting ready 8 tanks for 100% was due to transport difficulties, the car was not always on time for the two teams having the 2 locations far from each other. We have evaluated this difficulty at the end of the 1st training phase and appointed a separate person for the logistics to get the transport planning improved.

Back to the training teams, in all teams the working atmosphere remained well and the trainees were satisfied that their knowledge and skills improved a lot during this training week. They felt competent to realize the 2nd phase more independent.

2.3.2 Phase II (seven days)

The 2nd training cycle started on the 13th of February 2019. In this training each team of 5 trainees were working independent and guided/advised on a distance by the trainers.

The 2nd week of training went well, trainees worked quite independent in a good cooperation and the tanks came out to be of good quality.

The outcome of the learning points on which we start this training was as follows:

1. The outlet pipe now is 15cm long with 2 sockets for better stitch friction in the wall, pipe material is from IPS, a plastic material without rust problems. The tap is just outside the tank wall. Above the tap is a concrete nose constructed so that step up risk is prevented.

2. The level difference from tap to ground level has a minimum of 35cm, so that a bucket can be placed under the tap.

3. All overflows have an elbow, the mosquito wire is tightened in the socket connection of pipe and elbow.
4. The tanks have circle round connection areas from bottom to wall, this point got really extra attention in the training and the masons now how to realize it.
5. All tanks are constructed near roofs, so rain water catchment by gutter construction can be realized.
6. From the 16 tanks constructed during training time of 04th up to 19th February ’19 towards preparing to install gutters, the following outcome of the check on the 27th and the 28th of March ’19 is:
   a. Locations with no gutter and no plans yet to install: 3 (19%).
   b. Locations with plans but not yet gutters bought: 5 (31%)
   c. Locations one already bought the gutters but not yet installed: 2 (12%)
   d. Locations which has installed and connected the gutters: 6 (38%)
   So during these construction the good thing to install gutters improved.

Necessary transport organisation within the different training locations improved as learnt from the 1st phase. Still location distances in two team cases were a bit difficult. Two tanks could not be completely finished, after the closing ceremony 6 trainees finished these two tanks in the afternoon of the 19th of February 2019.

3.0 Finances:
The budget to be used was based on the cost estimation done by SPOT Tanzania in October 2018. This budget was used as base for the donation request to donors. The big part of the budget was meant to be spent in Tanzania and a smaller part was meant to finance two trainers from Guinea Bissau. This part is paid by SPOTT from the Netherlands. TARUWAS received a copy of this budget in October 2018. This budget was part of the project document for the Calabash Training. Also Chamavita (as Sister NGO from TARUWAS) got a copy of the complete project document for the Calabash Training. In end January 2019, TARUWAS made an indicative budget for the expenditure in Tanzania, it was well elaborated and functioned as a good guidance in the daily spending during the training period of 15 days in Lukozi.

3.1 Income
The finance to cover the training cost were recorded as follows
• Funds received in TARUWAS Trust account 41610008020 = 25,700,000.00
• Money receive in cash from 16 calabash owners = 2,880,000.00
   **Total income** = 28,580,000.00

3.2 Expenditure
According to the expenditure schedule total expenditure in Tanzania is = 28,724,700.00
Income - expenditure = 28,580,000.00 - 28,724,700.00 = -144,700.00

In the Netherlands the costs for the two Guinea trainers is paid, that is in total 3,005.—Euro’s. For all the expenses done in Tanzania, for the group foreigners, SPOTT received 1,731.—Euro’s.
More detailed accounting of all the income and expenditure is given in the financial report, being annex 6.
4.0 Closing the training.

19th February 2019 was the last day of the training. The morning was used for a Closing ceremony. Some foreign participants had to travel to Dar es Salaam in the afternoon. For local masons, there were two tanks which needed final touches before they depart.

The Lushoto District Commissioner was represented by Mr. Nicodemas Mwikozi Tambo. Mr. Nicodemas Mwikozi Tambo did the closing ceremony. He thanked the organisers: SPOT Tanzania, TARUWAS Trust and Lukozi COWSO for organising this international Calabash Training and for the good looking tanks constructed. He called upon the masons to share the knowledge to the surrounding communities and to uphold the construction quality of the Calabash tank. For promotion purpose, the event was covered by local radio Utume Fm, National covering (ITV) and the National News papers: Uhuru and Mzalendo.

Mr. Mwikozi Tambo handed over the certificates to all the participants:

- trainers were awarded in an Appreciation Certificate
- trainees were awarded in a Completion Certificate

Copies of the two Certificates are shown in Annex 5.

5.0 Way forward

It was agreed:

1. That we should start the Calabash construction (after this training) as soon as possible, because the masons are still in the construction skill and that should not age too much.

2. The first 3 month we concentrate on the construction possibilities of 100% paid by customers. In case the number of requests is very low, we can reconsider this policy and subsidize the requests for 25 or 50%. That decision will be taken on the 1st of July 2019.

6.0 Conclusions from the training:

1. The preparing of having enough Calabash tanks to be constructed went well:
   a. Tools, sand, and cement for the construction of the tanks was on time on the different locations.
   b. Plastic sheets for the different purposes was several times difficult or too late.
   c. The clay blocks (is responsibility of the beneficiary) for the moulds, were not always on the place at the start of the construction, that gives a direct delay.
   d. Not all future tank owners were present during the construction, caused difficulties in:
      i. Water availability for the construction.
      ii. Which soil is available for the bottom mould.
      iii. Necessary information about the desirable tank location on the yard.
      iv. Also in these cases the clay blocks for the moulds where not yet (too less) present.

2. The reinforcement strength of the bottom concrete to done by chicken wire or coffee wire is in doubt.

3. Being trainer and doing the logistics for four teams was too difficult. A logistic manager without training responsibilities works better. That we realized for the 2nd week of training.
4. It became clear that long distances in between two locations to be covered by one team complicates the time schedule for that team. Especially when one car has two duties: lunch food service and team mobility. Coming from one work location to the second took too much time. In the second week this improved.

5. As group and team leaders we succeeded to overcome all these difficulties described above. The work spirit remained positive.

6. The beneficiaries, i.e. the future tank owners are all satisfied with their new tanks for rain water catchment.

7. Knowledge and skill on the Calabash training improved a lot for the mason technicians

7.0 Recommendations:
1. Next time a planning of the plastic sheet use should be improved:
   a. The use of the plastic sheet in the Tanzanian situation is different from the Calabash Construction Manual because in other countries the bags of the cement can be easy reused as a layer on which the pre-fab roof can be constructed, that is not the case in Tanzania.
   b. From i) we should decide how much plastic sheet we need.
   c. In the Manual is prescribed to cover the complete tank after finishing. If so we need to explain the location owner, so that no sheet is already taken before the construction team can cover the tank.

2. Next time before construction/training starts all points in conclusion 1c and 1d should be checked and organised with the beneficiary before the first day of construction starts.

3. The type of bottom reinforcement, this should be analysed and decided.

4. From conclusion 3 and 4 it is clear that at the start transport logistic in travel needs of each team and lunch food service for each team was difficult. Especially when a group is big and circumstances are somehow complicate, logistics need extra attention! Next time the two points of necessary transport and food should function independent, as we did in the second part of the training.
Annex 1: **Pictures of the construction** stadia in sequence. The stadia are: bottom, prefab roof, internal wall layers, roof placement, outside wall inclusive reinforcement.

![Pictures above: Measurement of the bottom dimensions, the first clay block layer for the bottom mould and putting in the soil for the round bottom mould.](image)

Continuation and finishing of the bottom mould.

Bottom: Putting in the plastic and the reinforcement of wire on the first layer of cement, after that the second layer of cement.
The wall mould on top of the bottom mould, the start (left) and finishing (right). Under the plastic is the prefabricated roof, the plastic is for protection against the sun heat.

The mould for the prefab roof construction: round, starting with soil, final layer sand. The middle top 20cm higher than the rim.

The roof, last cement layer with reinforcement, the finishing touch and the manhole lid finishing.
Wet sand layer put on the inside of the block wall mould.

The internal cement layers, in total 4 layers should be put on.

On the left side the last internal layer, on the right the finishing.

To put the prefabricated roof on its place.
After the location of the prefab roof: the removal of the mould blocks, the cleaning of the outside and the location of the reinforcement the iron wire.

Third picture: detail of the bottom side, you see the secured chicken wire of the bottom.

Finishing the outside of the tank: the final layer on the outside and the construction of the nose, the reinforcement of the nose above the tap to protect the tap, the finishing of the roof inclusive roof – wall connection.

Two of the 16 made Calabash (Vibuyu) tanks made during the international training.
## Annex 2: Participants

<table>
<thead>
<tr>
<th>SN</th>
<th>NAME OF PARTICIPANT</th>
<th>VILLAGE</th>
<th>NATIONALITY</th>
<th>STATUS</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Paul Akkerman</td>
<td></td>
<td>Netherlands</td>
<td>Chief trainer</td>
<td>Clean water Healthy village. Netherlands +31683980700</td>
</tr>
<tr>
<td>2</td>
<td>Kees Kempenaar</td>
<td></td>
<td>Netherlands</td>
<td>Trainer Organiser</td>
<td>SPOTT Tanzania</td>
</tr>
<tr>
<td>3</td>
<td>John Nshunju</td>
<td></td>
<td>Tanzania</td>
<td>Coordinator</td>
<td>Taruwas Trust +255655592242</td>
</tr>
<tr>
<td>4</td>
<td>Eng. Roger Mbumbu</td>
<td></td>
<td>DRC</td>
<td>Trainer</td>
<td>+243854892921</td>
</tr>
<tr>
<td>5</td>
<td>Jean Jacques Ndumbi</td>
<td></td>
<td>DRC</td>
<td>Trainer</td>
<td>+243821144521</td>
</tr>
<tr>
<td>6</td>
<td>Iaia Landsasai</td>
<td>Buba</td>
<td>Guinea Bissau</td>
<td>Trainer</td>
<td>Clean water healthy village. Guinea Bissau +245966405526</td>
</tr>
<tr>
<td>7</td>
<td>Julio na Honta</td>
<td>Buba</td>
<td>Guinea Bissau</td>
<td>Trainer</td>
<td>Clean water healthy village. Guinea Bissau +245966797447</td>
</tr>
<tr>
<td>8</td>
<td>Saulos Jali</td>
<td>Malawi</td>
<td>Coordinator/Trainee</td>
<td>'Het Goede Doel' in Malawi.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Alfred Tobiko</td>
<td>Kenya</td>
<td>Mason/Trainee</td>
<td>+254729141416</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Josepk Koech</td>
<td>Kenya</td>
<td>Mason/Trainee</td>
<td>+254796591471</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>David Vulgas</td>
<td>Mexico</td>
<td>Coordinator/Trainee</td>
<td></td>
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<tr>
<td>12</td>
<td>Sergio</td>
<td></td>
<td>Coordinator/Trainee</td>
<td></td>
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</tbody>
</table>

From number 13 up to 25 all are Tanzanian citizens.

Number 13 up to 18 inclusive have little experience in Calabash tank construction, before this training.

<table>
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<tr>
<th>SN</th>
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<th>STATUS</th>
<th>Organisation</th>
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<tr>
<td>13</td>
<td>Mussa Hoza</td>
<td>Lushoto-Dochi</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550679144816</td>
</tr>
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<td>14</td>
<td>Issa Hassani</td>
<td>Kwa-Dindira</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550665298348</td>
</tr>
<tr>
<td>15</td>
<td>Daniel Mhonda</td>
<td>Lushoto-Dochi</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550682917461</td>
</tr>
<tr>
<td>16</td>
<td>Yusuphu Omari</td>
<td>Lushoto-Dochi</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550685170799</td>
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<td>17</td>
<td>Aloyce Frenki</td>
<td>Ndabwa</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+255071277914</td>
</tr>
<tr>
<td>18</td>
<td>Rashidi Ally</td>
<td>Maringo Juu</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+255062551813</td>
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</table>

From no. 19 up to 25 are well experienced masons, but it was the 1st time to construct Calabash tanks.

<table>
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<tr>
<td>19</td>
<td>Simoni Stephano</td>
<td>Nkundei</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550678918954</td>
</tr>
<tr>
<td>20</td>
<td>Djulias Msizilo</td>
<td>Goka (Rangwi)</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550782303380</td>
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<tr>
<td>21</td>
<td>Stephano Kingasine</td>
<td>Milemileni</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550678240441</td>
</tr>
<tr>
<td>22</td>
<td>Silasi Lucas</td>
<td>Mazinde-Ngua</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550652320512</td>
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<tr>
<td>23</td>
<td>Severine Singano</td>
<td>Mazinde-Ngua</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
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<tr>
<td>24</td>
<td>Zuberi Zaniel</td>
<td>Mamboleo</td>
<td>Tanzania</td>
<td>Mason/Trainee</td>
<td>+2550716117236</td>
</tr>
<tr>
<td>25</td>
<td>Ramadhani Semambo</td>
<td>Hambalawe (Rangwi)</td>
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<td>+2550659103931</td>
</tr>
<tr>
<td>26</td>
<td>Amandus Shirima</td>
<td>Lushoto</td>
<td>Tanzania</td>
<td>Coordinator/Trainee</td>
<td>Lushoto DWE Office +2550719781070</td>
</tr>
</tbody>
</table>
Annex 3: The training teams:

**a) in the period 05-02 up to 12-02 2019 inclusive.**

1st Team, Trainer John Nshunju (Tanzania)
Trainees:
1. Musa Hozza
2. Aloici Frenki
3. Silas Lukas
4. David Vargas
5. Sergio Rodriguez

3rd Team, Trainer Iaia Ilandsasai (Guinea Bissau)
Trainees:
1. Joseph Koech
2. Saimon Stefano
3. Ramadani Samamba
4. Djulihas Timilai
5. Saulos Jali

2nd Team, Trainer Julio na Honta (Guinea Bissau)
Trainees:
1. Alfred Tobiko
2. Rashidi Ali
3. Stephano Kingsasine
4. Sevelin Singano
5. Daniel Mhonda

4th Team, Trainer Roger Mbumbu (D.R. Congo)
Trainees:
1. Jean Jaques Ndumbi
2. Issa Hassani Kussaga
3. Zuberi Zianiari
4. Yusuphu Omari
5. Daniel Mhonda

b) in the period 13-02 up to 19-02 2019 inclusive.

1st Team, Trainer Julio na Honta (Guinea Bissau)
Trainees:
1. Musa Hozza
2. Daniel Mhonda
3. Issa Hassan Kussaga
4. Sergio Rodriguez
5. David Vargas

2nd Team, Trainer Jean Jaques Ndumbi (D.R. Congo)
Trainees:
1. John Nshunju
2. Daniel Mhonda
3. Yusuphu Omari
4. Joseph Koech
5. Djulihas Timilai

The trainers and trainees in front of the CCM meeting hall in Lukozi. The meeting point of the training.
3rd Team, Trainer Iaia Iandsasai (Guinea Bissau)
Trainees:
1. Aloice Frenki
2. Zuberi Zianiari
3. Amandus Shirima
4. Rashidi Ali
5. Stephano Kinsasi.

4th Team, Trainer Roger Mbumbu (D.R. Congo)
Trainees:
1. Alfred Tobiko
2. Saimoni Stefano
3. Ramadani Samamba
4. Silias Lukas
5. Seveline Singano

Annex 4: Beneficiaries, the Tank Owners

<table>
<thead>
<tr>
<th>NAME</th>
<th>LOCATION</th>
<th>NAME</th>
<th>LOCATION</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Denis Sheshe</td>
<td>Malindi village</td>
<td>10. Ustadhi Shusha</td>
<td>Lukozi</td>
<td>Mukotoni</td>
</tr>
<tr>
<td>3. Maawa Islamic Centre</td>
<td>Malindi village</td>
<td>11. Christopher Saidi</td>
<td>Maringo</td>
<td>Maringo</td>
</tr>
<tr>
<td>5. Abdi Kajia</td>
<td>Mgwashi Chini</td>
<td>13. Mwalimu Ombase</td>
<td>Lukozi, Mosque in the</td>
<td>Lukozi</td>
</tr>
<tr>
<td>7. Zakaria Ayubu</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Ashokee</td>
<td></td>
<td>15. Abeid Ikera</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16. Alliashimu Yusuphu</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mrs. Ashokee tapping water from her new Calabash tank
Annex 5: Certificates.

Two certificates, above for the trainees, under for the trainers.
Annex 6: Financial Report Calabash Tank training from 4\textsuperscript{th} – 19\textsuperscript{th} of February 2019.

### Income:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Transfer of 10,000 Euro for the exchange rate of 1 Euro to 2,570 Tshs</td>
<td>25,700,000.—</td>
</tr>
<tr>
<td>b) Local contribution for the Calabash, 30% of investment: 16x180,000</td>
<td>2,880,000.—</td>
</tr>
<tr>
<td>total income</td>
<td>28,580,000.—</td>
</tr>
</tbody>
</table>

### Expenditures

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) All Costs Material</td>
<td></td>
</tr>
<tr>
<td>ii) Foreigners</td>
<td></td>
</tr>
<tr>
<td>iii) For SPOTT</td>
<td></td>
</tr>
<tr>
<td>a) buying and transport of sand, unit price 120,000 Tshs</td>
<td>1,920,000</td>
</tr>
<tr>
<td>b) buying construction materials and tools for 4 training teams</td>
<td></td>
</tr>
<tr>
<td>18 receipts to be shown</td>
<td>6,050,200</td>
</tr>
<tr>
<td>c) allowance/payments to TARUWAS board</td>
<td>577,000</td>
</tr>
<tr>
<td>d) guest of honour allowances, radio and TV</td>
<td>395,000</td>
</tr>
<tr>
<td>e) Meals foreigners from before training (I)</td>
<td>256,500</td>
</tr>
<tr>
<td>f) Accommodation foreigners from before training</td>
<td>860,000</td>
</tr>
<tr>
<td>g) Transport Lushoto – Lukozi vice versa (I)</td>
<td></td>
</tr>
<tr>
<td>• Participant except Mexicans</td>
<td>190,000</td>
</tr>
<tr>
<td>• Mexicans</td>
<td>100,000</td>
</tr>
<tr>
<td>h) Accommodating foreign during training</td>
<td></td>
</tr>
<tr>
<td>• Foreign participants except Mexican</td>
<td>2,000,000</td>
</tr>
<tr>
<td>• Mexicans</td>
<td>450,000</td>
</tr>
<tr>
<td>i) Allowances for foreign (II)</td>
<td>1,599,000</td>
</tr>
<tr>
<td>j) Allowances Tz</td>
<td>1,890,000</td>
</tr>
<tr>
<td>k) Meals</td>
<td></td>
</tr>
<tr>
<td>• Foreign (II)</td>
<td>1,496,560</td>
</tr>
<tr>
<td>• Tz</td>
<td>3,096,440</td>
</tr>
<tr>
<td>l) allowances – payment Coordinator Nshunju, Kisoka and Ally</td>
<td>1,840,000</td>
</tr>
<tr>
<td>m) billboard making</td>
<td>40,000</td>
</tr>
<tr>
<td>n) hiring small lorry (II)</td>
<td>3,000,000</td>
</tr>
<tr>
<td>o) hiring motorbike</td>
<td>300,000</td>
</tr>
<tr>
<td>p) stationary</td>
<td>99,000</td>
</tr>
<tr>
<td>q) travel Congo – DSM - Lushoto</td>
<td>100,000</td>
</tr>
<tr>
<td>r) Accommodation Tz Masons, John en Kisoka</td>
<td>2,445,000</td>
</tr>
<tr>
<td>Totals</td>
<td>28,704,700 6,762,060 2,312,779</td>
</tr>
</tbody>
</table>

From the costs in Tanzania:

- Paid by de Gevulde Waterkruik: column ii – iii: 4,449,281 Tshs = 1,731 Euro’s
- Total to be paid by SPOTT is (i+iii) – ii is 24,255,419 Tshs = 9,438 Euro’s
- Total Costs in Tanzania is in Euro’s is 11,169 Euro

Costs paid in the Netherlands:

- By SPOTT the costs to pay two Trainers from Guinea Bissau: 3,005 Euro’s Costs
- Received from de Gevulde Waterkruik and pre-financed by SPOTT in Tanzania, column (ii) – (iii) being 1,731 Euro’s
- Remaining 3,005-1,731=1,274 Euro’s for SPOTT to pay de Gevulde Waterkruik.

Summary Total expenditure SPOTT being (9,438 + 1,274) 10,712

Original Budget 12,416

Surplus/credit balance 1,704 Euro
Annex 7: Important items in the Construction Process of the Calabash/Vibuyu tank.

1. The circle rounding of the bottom. The change from bottom to vertical wall should be round as a circle (football). This can be achieved by making a hollow shape in the sand/soil part of the bottom mould. This is important because the forces of the water are much better spread. Less strong peak force.

   Cross section of the bottom mould

   ![Cross section of the bottom mould](image)

   In case the bottom mould is 40cm high, the distance between the direct straight line and the mould circle is ca. **11.4 cm**. One can put a straight piece of wood to measure/estimate it.

   ![a good round bottom mould](image)

2. The thickness of the wall cement layers should be:
   - a. 1\textsuperscript{st} layer on the wet sand 1 cm, should not be heavy, risk of falling is higher.
   - b. 2\textsuperscript{nd} layer, 1 up to 1.5 cm
   - c. 3\textsuperscript{rd} layer, 1 up to 1.5 cm
   - d. 4\textsuperscript{th} layer, 1 up 1.5
   - e. The 5\textsuperscript{th} outside layer covering the reinforcement of iron wire should be at least 1.5cm.
   - f. Total wall thickness is 5.5 up to 7cm thickness.

3. The control of the thickness can happen by a thin branch/stick

4. Manhole lid. The lid should be made on the spot in the manhole. Not independently separate. This to be sure it fits always and no sunlight can enter the tank.

5. The position of the manhole lid should be marked, so that it can always be positioned on the same place.

6. Dimensions/thicknesses of the manhole lid. The part inside in the hole should be as thin as possible for weight decreasing.

   **Manhole lid part in the hole** (a) 1.5 cm thickness, above on the rim (b) 3cm thickness.

   ![Manhole lid part in the hole](image)

7. The overflow should always have a elbow, for prevention of entering sunlight. Next to it the pipe of the overflow should not be longer than 15cm from the outside wall, just to prevent naughty children hanging on it.

Kees Kempenaar
25\textsuperscript{th} of March 2019.
Annex 8: List of tools, remaining from the international training of Calabash tank construction from the 4th - 19th February 2019 inclusive at Lukozi, Tanzania.

<table>
<thead>
<tr>
<th>Sn</th>
<th>Type of equipment</th>
<th>Total bought</th>
<th>Used / lost</th>
<th>balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>wheelbarrow</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Spades (Chepe)</td>
<td>7</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Square pipe 2”x 6f</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Trowel (kijiko)</td>
<td>5</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Float plate (Pasi)</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Hammer</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Hack saw frames</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Tin cutter scissors</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Pincers</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Panga</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Carpenter saw (msumen wa mbao)</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Roller brush</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>13</td>
<td>Spirit level</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Paint brush</td>
<td>9</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>Tape measure</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>Coffee wire</td>
<td>25</td>
<td>1m</td>
<td>24m</td>
</tr>
</tbody>
</table>