

Report about the second mission on the WASH Project

Introduction of innovative and affordable Self-Supply technologies for sustainable improvements in water supply and sanitation in Kenema and Western Rural Districts

Presented by Wolfgang Buchner (EMAS Bolivia)

December 2012

Main targets of the mission

Marketing strategies and marketing start

2 master trainings for improvement of quality in

Grafton and Kenema

Evaluation of Pujehun projects

Annexes:

Participants Grafton

Participants Kenema

Daily report

Some special advices on the emas rain water underground tanks

The emas concept

Difficulties in the scaling-up of decentralized technologies

Introduction

In April/May 2012 the first EMAS mission took place in Pujehun in a WHH post-ware-reconstruction project. Unfortunately this project had problems with big oil palm companies, so the component of decentralized-water-self-supply could not continue. A few months later at a project presentation during an international WHH meeting in Liberia, the expired Pujehun water project was shortly presented and rose interest in Mr. Budunka, the representative of an other WHH-EU Project in Freetown called "Conservation of Western Area Peninsula Forest Reserve (WAPFR) and its Watershed". He hired Mr. Chuma (an extraordinary skilled technician who was already assistant trainer in Pujehun) to give a training in his Freetown area. As this training was very successful the whole concept was going to be introduced in further trainings. Initially a backup training in the Pujehun project was planned after one year but it had to be canceled because of the new situation. EMAS contacted the WAPFOR project and asked if there was some interest for a backup training. They said that therefore was not enough money. So EMAS e.V. took over the whole mission cost of two experts including material and tools. WAPFOR offered the training center, logistics, selected the trainees and paid the food and allowances for the trainees. During this 20 days training Pumps, tanks, sinks a sanitary module, irrigation system with distant pumping was made, the initial quality and system errors repaired and about 15 trainees trained. At that time a WASH project from Adam Smith foundation and UK aid called for proposals of alternative WATSAN options, so WHH / WAPFOR presented this actual self supply project based on the EMAS concept and received the funding. There are two main areas established in the project, one is the Western Peninsula and the other is the Kenema area. During the present mission there were two master trainings, one at Grafton in the Western Peninsula area and the other one in Kenema. The main targets are to improve quality and start with marketing based on services of local technicians.

The organization of rural WASH technicians.

Initially it was thought that each trained person starts with his own micro enterprise, but legal, financial and also human reasons lead us to start, with working groups of three or four members. In Sierra Leone this kind of cooperative enterprise is much easier to constitute than a one man enterprise because of legal matters. On the other side there is no financial possibility to equip 50 individuals with all the basic tools or give to 50 individuals a cheap credit for material and tools. So the only way at this stage is to start the businesses is through working groups. These groups allow the new technicians to engage and show their capacities. Although it will be difficult to maintain at long term those associations because of human behavior. Probably after a certain time some working groups will split, some members will become independent, some members will abandon, other new ones will join and some will reorganize in new groups.

The objectives of a head organization of rural WATSAN technicians

It can be called a cooperative, a society or another name. It has four main targets

- Administrate a subsidy fund for works
- Administrate a credit fund for the new technicians
- Quality and subsidy control in the works
- Meetings, trainings and upgrading, social live among the members
- Job fair, job sharing
- Hardware shop

The subsidy fund for clients (discount fund)

Each working group (cooperative) has a budgeted of a certain amount of money which can be given as discount to the clients. If a client in good economic position is attended, than a small or no subsidy is given. If the working group is interested to get clients in a new area where mostly poor families live, than they can initially give up to 60% of discount. In any case they are free in the decision to give a promotion discount or not. Generally it is always problematic to give discounts because people get accustomed to it and later it will be difficult to charge the real price. But as this discount (subsidy) fund is a limited amount for each group, they will be careful not to spend it thoughtlessly and give as little discount as necessary. When they finished the subsidy fund or they do not need it any more, than the working group should have opened a market with sufficient demand for their products.

Bonus fund for finding for clients

If a working group knows that they receive a certain amount of money from a third person when they have finished a project satisfactorily, in this case the money comes from a subsidy fund of the WASH project, than they are more committed in looking for new clients. They will not only wait until a client comes to them for ordering a work, but they will go now to the potential clients and offer their individual family solutions, in some cases including a little discount which was explained before. After an approved quality control they can apply for this kind of subsidy money. For the WASH project this quality control has the advantage to get all relevant statistic information. This kind of "client finding subsidy" is limited to a certain number of projects or a certain amount of money. The main advantage of this system is that the market does not get spoiled with subsidies. The amount of the "client finding subsidy" can be calculated as a percentage of an average cost according to the specific work.

The fond for credits to the working groups and technicians.

This money is only a loan which the working groups, and further also individual technicians can get form the WASH technicians Organization (sort of cooperative) when they have to pay in advance the whole work they are doing. Also they can spend the loan for basic tools. Especially in the beginning many clients will not trust the new technicians (working groups and also individuals) and only may accept to get a work done when the technicians advance

all costs. The details for a loan have to be established between the working groups and the WASH project.

Hardware shop

For marketing and marked introduction it is necessary that all products can be seen at a easy reachable place, best in the market area where many people pass by. This show place will also sell the components like toilet seats, all components of EMAS pumps, small ferro cement storage tanks, underground tanks for improved hand dug wells, sinks, emas solar heaters, cement, hoses, binding wire, poles for tanks, corrugated sheds for toilets and shower cubicles, valves, taps, all kind of pipe fittings, paint, timber wood for toilets and shower cubicles solvent, bolts etc.

Who runs the show room shop

The shop has to be managed by a technician who can give professional advice like how to assemble the different emas pumps, components like rain water harvesting, individual town water storage and distribution, or which technical option to chose according to the case, some cost estimation etc.

The show room shop can be under responsibility of the professional organization working like a cooperative, it can run like a private enterprise of a technician who exclusively attends the shop, another option is that the organization rents a suitable location at a central place and hires it to a concessionary that runs the shop / showroom. The concessionary has to have enough skills and knowledge of the whole concept of self supply solutions. In the beginning this showroom shop will be the place where clients look for a solution, they need material and a technician. So the shop will be something like a job fair. In this case the job manager as he distributes jobs to the different working groups has to control also quality because otherwise bad work may harm his business. At this stage the only person who could run such a store is Mr. Juma.

With the time, when the technicians have gained good reputation, clients will contact them directly and order works. Perhaps some working groups will start with their own shop, where they get the clients. And distribute the jobs among their members.

The interests and needs of the enterprises

- the need for micro credits for tools an material,
- The need of economic incentive during the starring phase (subsidizing the search for own clients),
- The need for funding some promotion discounts,
- The need for a hardware shop where all necessary materials are available
- A job fair where they are recommended to a client
- Backups and trainings in new products like solar water heaters, well drilling, underground tanks etc.
- Periodically meetings for experience exchange and commercial strategies

The interest at the project side are:

- to collect the statistic information of every work site
- impact control of the project
- quality monitoring of the works,

Quality and subsidy control during the initial phase.

In a marketing system where the labor of young technicians and working groups is temporarily promoted with subsidy, a very strict quality and subsidy control system has to be installed. The quality control aims to ensure that good, useful, long lasting and nice works are given to the clients in order to spread this technology concept to as many families as possible. The working groups freely agree with the client a price which can be subsidized or not. Later they do the work. As soon as the work is handed over to the customer the quality and subsidy controller visits this household. First he checks every technical component to its usefulness, beauty, long lasting and price-cost relation. Then, in case of some subsidy he

asks the client about all the value he paid to the technician (cash money and also agricultural local products). In a subsidized work the labor cost of every technical component should be established, so the quality controller can calculate the complete labor cost. If there are special labor costs like hitting hard stone while digging, than this can be taken in care. In this way excessive labor cost because of slow working can be avoided. In the material cost calculation only basic-need-components can be taken in care luxury items have to pay the owner completely himself. Non qualified labor cost will be taken in care for subsidy when it was agreed so with the technician. Once the total (subsidable) cost is settled than the subsidy amount or percentage rate can be calculated. The subsidy can be established with the client as a fixed amount or as a percentage rate.

The form of organization (Cooperative?)

Each member should be able to emplace his colleague.

- Quality and subsidy control of the works in the communities.
- Administration of the two funds (subsidy fund, bonus system for client finding) and loans for material and tools.
- Training, backups, publicity, relations with partners
- Running a kind of job centre

Quality and subsidy control of the works in the communities.

This person has the target to control the physical quality of the works, if subsidy is transparent, He checks cost- quality relation and real labor cost. If a work is not properly done, he can stop releasing money of the funds. As he knows the economic situation of each working group, he also helps to recover depth in case the working groups owe to the organization's intern banking system. The quality controller has to be an excellent technician with administrative skills.

Administration of the two funds (subsidy fund and technician's fund).

As the technicians (working groups) in the beginning of their new professional live do not receive much confidence from their clients, so they have to advance in some projects expenses in order to get the job. They will need money not only for the material but also for their tools and labor cost. The professional organization runs a kind of mini bank, only for its members, where they can borrow money for tools and material. To run this mini bank needs an accountant. He has to control all the subsidy accounts of each working group and balance depth in case there are loans.

2 master trainings for improvement of quality in Grafting and Kenema

Those 2 master trainings aimed to improve quality of the technicians. With the quality stands and falls the whole concept. It was important not only to improve quality of the components but to introduce a sort of empathy or commitment to the trainees, to do things good, long lasting, nice and quickly. Working speed played a role although the quality was first. It is not easy to make from peasants or masons in a few 10 days trainings qualified skilled workers in self supply systems. Not all will be able to do their job properly, we can be glad if we reach an average of 30 %

The Kenema training run much better than the training at Grafting. The Grafting trainees had far more difficulties in making the pumps and other components than the trainees in Kenema. Why this was so might lay in the selection of people.

Components of the training in Grafting

- 4 times exercising the quantity pump
- Improving quality of already made cement components like tanks, sinks and toilet seats
- building the standard pump made of pipe fittings,
- 1 building a VIP toilet with deep pit including wooden toilet seat and cover
- Emptying the high toilet
- Theoretical training in water hygiene

- Improving working tools like a charcoal cooker for pup making
- A hand grinder with wooden disk
- Cement works like sinks, small ferro cement tanks toilet seats

Components of the training in Kenema

- 2 times exercising the quantity pump and improving quality in all existing pumps
- Improving quality of already made cement components like tanks, sinks and toilet seats
- building the standard pump made of pipe fittings,
- Building 1 solar water heater (emas scheme) and its connection
- Building 1 town water storage tank 1500 l and its connection to the existing sanitary components in the household like kitchen sink, wash basin and shower
- Theoretical training in water hygiene, iron problematic, heavy metals in water
- Bacteriological analysis

Recommendations

- Install only pump parts which are approved
- No practicing and training on hand pumps without the presence of a trainer who really knows how to make good quality pumps.
- For private rain water harvestings use better standard pumps made of pipe sockets so water cannot be pumped out too fast and may remain longer. That does not mean that the quantity pump is an option
- Cement poles should be offered as an option instead of wood sticks because they last longer and there is less danger of collapse.
- Pump handles with PVC T-pieces should be offered as a cheaper option to the all steel welded handles.
- A plastic shower cubicle with 4 wood sticks does not corrode, it should be also offered as an option. Some tests should be done before using local material.

Evaluation of some works realized about 2 years ago in Pujehun District

During the evaluation and monitoring trip to Pujehun we visited the communities Gbeze and the WHH regional Office in Pujehun where in May 2011 EMAS realized two trainings with each 10 days of duration. Later we moved to the community Baoma where 5 shared rain water harvesting systems were made. Finally we visited one of the trainee's house where he installed also as rain water harvesting system for his family as a practical part of the training. In Gbeze a rain water harvesting with a 8000 liter underground tank and a pumping system from an improved hand dug well was installed during training two years ago. The rain water system was used by all the community and was emptied about one week before we arrived. The whole system was in good conditions. The pumping system from the swamp was not in good conditions, two pumps had little defects, the pedal and the hoses were taken away and stored in the chief's house. When we asked one of the ex participants about that faulty components he said, that he cannot touch community property.

We found that here as well as in Baoma there was a lack of ownership and no added value installed. Under added value we understand, that using an EMAS pump which expels water directly with pressure there should be also a shower cubicle and a sink for hand and dish washing. So people get dependent to the benefits of the pump, they will appreciate it much more and maintain it.

In Baoma were 5 rain water systems installed, the work was quite well executed beside a few mistakes. The main problem is, that they are shared systems and each tank supplies some neighbor families around. Everyone takes out as much water as possible thinking that if he does not do this, the neighbor will do it. So the rain water only lasts during the rainy season. Because of lack of ownership normally no one has authority to chase the neighbor's children away when they are playing with the pump. All material and qualified labor cost were for free. Only the digging and some non qualified labor had to do the family group.

No added value like shower cubicles or kitchen sinks, therefore no interest in repairing the pump.

The executers within a project without vision and understanding of the concept

The executers were “technicians” who participated in a 10 days basic training, without any further accompany. A planned back up training never took place because of important changes within the project. The project in Pujehun is focused on reconstruction of infrastructure which includes water wells. Therefore they were looking for cheaper pump options than the very expensive Indian Mark 2 pump. They saw only the low cost of an EMAS pump as an emplacement for the Indian Mark 2. without considering its completely different context like added value, ownership, status, etc. This simply could not work. During the first training in May 2011 it was not possible to convince Caroline Wegner, project manager in Pujehun, to install an added value like a shower cubicle in Gbeze and even in their own house at Pujehun office they permanently rejected the idea of added value, arguing that this is a project of basic needs and that is why they cannot support any luxury like a shower cubicle or a kitchen sink. Also the belief that communal sharing is more important than individual property was nearly impossible to break.

What can be done now? I

In reality it will be very difficult to repair the damage and reach now sufficient commitment of the owners to make the systems running properly. Private property and added value has to be introduced to these projects. Private property in order to reach a responsible conserving of the stored water during dry season and the maintenance of the system. Added value in order to increase the interest for the maintenance of the pump. The pump is important for good water quality, although in decentralized systems the danger of epidemics is much less than in a communal open shaft well without pump even if the family pulls out the water with a bucket.

Each household should have its own rain water system including added value components. To get an ownership they have to pay cash money for it, only labor is not enough. If the material costs will be subsidized by a certain percentage can be discussed. A problem may rise when some families refuse to make its own catchment and pay for it with cash money because they want everything for free like in so many other public charity systems.

Technical Defects:

The underground tank in the Office was sealed too much, what means that not enough air entered into the tank. So there were some anaerobic processes in the water which gave it a slightly unpleasant taste. This problem can be solved making holes into the plastic plug on the top of the cement cover. So air can circulate between the fly screen of the overflow pipe and the plug on the top.

In one underground cistern at Baoma the overflow pipe was too deep so dirty surface water could enter into the cistern during a heavy rain. This defect should be repaired as soon as possible

In Baoma all textile filters were removed, people said that they washed them and later they disappeared.

most of the washers were made of a conveyor belt. They had not much textile plays and in order to get enough strength the rubber profile was left on the washer. Pure rubber has a much higher friction than the wet textile fibers so it happened that while pushing the handle down it slipped softly but while lifting the opposite happened, the rubber ring nearly stuck on the cylinder pipe and this force made jump the washer over its holder.