

# Household Water Treatment and Safe Storage Implementation Case Study: Biosand Filters

AQUA CLARA INTERNATIONAL

## Introduction

Aqua Clara International (ACI) is a non-profit NGO headquartered in the USA and operating in Kenya. They are focused on empowering communities to meet their own needs by using a partnership-based, entrepreneurial model. The goal of ACI is a completely locally-driven and sustainable program that involves partnership between schools, their surrounding communities and ACI. All partners work together to sensitize the area in the use and adoption of different types of beneficial technologies, including biosand filters, rainwater harvesting, sanitation, and household high-yield gardens.

ACI developed a biosand filter using a plastic container for the filter body in 2007 and have received training and follow-up support from CAWST. As of August 2011, ACI has implemented more than 1,800 biosand filters in Kenya. Currently, their project consists of two main areas in rural communities around the towns of Kisii and Eldoret.

## Creating Demand

ACI raises awareness and creates demand for the biosand filter and other products, through schools, Community Development Entrepreneurs (CDEs), and Community Health Promoters (CHPs). These 2 key roles have different functions. The CDE operates a small ACI business and is responsible for social marketing, constructing and selling water, hygiene and sanitation (WASH) products to end users; whereas the CHP is mainly responsible for education, oversight and follow-up with the end users.

Each small business, run by a CDE, is based at a rural school. Primary schools are selected through an application process after initial meetings called by the local district education officer. Interested schools submit application forms to ACI and go



Demonstration ACI Filter in Kisii, Kenya (2011)

through a selection process. ACI selects 1 school per sub-location so that the CDEs have different markets for the various ACI products. The first level of ACI products consists of 3 WASH products: biosand filters, two types of safe water storage containers, and hand washing containers.

CDEs are identified through the school and ACI interviews each candidate to select the best individual for the position. These individuals are not paid a salary, but receive a small profit from each of the items sold. They drive the success of their business.

School launches are held to kick-off the local business. Local chiefs, neighbors, clubs, parents of the students, and other stakeholders are all invited by the school. The launch is participatory to engage the public and help them understand the filter and why it's important. It also serves as a public endorsement of the CDE and their

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work by ACI. CDEs can take orders for filters starting at the launch. CDEs receive a financial incentive from ACI for monthly sales that exceed 5 filters.

During the launch, local ACI staff explain how the program works, introduce the CDE, CHP and school representative, and discuss how the biosand filter works. All the participants then work together to prepare sand and gravel for a demonstration filter installation.

CHPs are women recruited from the local community to help promote good WASH practice alongside the products for sale. One of the main roles of the CHPs is to make household visits 30-60 days after purchase of the biosand filters to check on construction standards, end user knowledge of filter use and safe water storage. They also use this opportunity to train on simple hygiene and sanitation improvements.

Some of their awareness and education materials were prepared by ACI themselves, while others were provided by CAWST and UNICEF.

## Supplying Products and Services

ACI staff manage the supply chain of the materials for biosand filter production and arrange transportation of the materials to the schools.

The school acts as a “neutral zone” and local partner for the business in the community. Schools provide the following:

- Safe place for the materials – away from animals and secure from theft
- A demonstration site for the ACI products that is open to the local community
- A timetable for care and maintenance of all of the ACI products used in the school
- School representative and students in the Water & Hygiene Club to care for and maintain all the ACI products
- Support for the Water & Hygiene Clubs e.g. a room to meet and the School Representative for oversight

The plastic filter body is a locally available, 75 liter container commonly used in Kenya

for rainwater harvesting and water storage. ACI's management of the supply chain enables them to negotiate with Kenyan suppliers so that the cost of the filter is as low as possible for the end user. This is also true for the safe water storage and hand washing containers.

Most raw materials for the filters are found in the project areas; however, filtration sand is sieved at a centralized source in Nakuru and transported by truck to the project areas. ACI is considering washing the sand in Nakuru, to further improve quality control.

Biosand filters are priced at 1070 Kenyan Shillings [KES] (US\$12). 820 KES (US\$9) is the material cost of the filter and the CDE receives a profit of 250 KES (US\$3). Safe water storage containers are also for sale from the CDE for 350 KES, for which they receive 20 KES profit. 80% of households that purchase a filter also purchase a safe water storage container.

Filters are constructed and installed by the CDE. CDEs are given the tools and materials necessary for their first 20-25 filters. As they sell each filter, they repay 820KES back into a material resupply account. Once they have sold their first batch of filters, the money collected is used to order the next batch of filters.

The CDE is also responsible for training the end user on how to use the filter, how to store treated water safely, and how to identify when the swirl and dump (maintenance) needs to take place. The CDE will also return to teach the user how to do the swirl and dump for the first time. The sales contract between ACI and the CDE clearly stipulates that 50KES of their 250KES profit is for this purpose. The user will contact the CDE when they think the maintenance needs to be done.

Households are expected to pay for their filter, participate in sand washing for their filter with the CDE, and transport all the materials to their homes from the school.

The community health promoters (CHPs) that have been recruited by ACI help to educate the filter users, deliver training to the school students, and monitor filter use in the homes. ACI selects women to be CHPs

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because they have better access to the women in the households and collect more honest responses.

CHPs are chosen based on the following criteria:

- Must be a resident of the local community
- Enthusiasm and interest in WASH education in the community
- Mobility – ability and willingness to visit different homes
- Good command of spoken and written English

CHPs are not ACI staff, but receive stipends for conducting specific program activities, such as follow-up visits and school education sessions with the Water & Hygiene Clubs. Each CHP supports the work of 1-2 CDEs. The number of visits that they make each month is determined by the productivity of the CDE, thus they have a financial incentive to promote the CDEs work in their area.

CHPs receive field kits that have the following materials: ruler, notebook, binder, 1 liter container, ACI brochure, 3 PHAST games, CAWST WASH posters, CAWST HWTS posters, Prescription for Health DVD, and ACI's biosand filter manual. They are also provided with bags, t-shirts and lanyards to increase their credibility in the community. Items are added to this kit on a regular basis. CHPs are also provided with a biosand filter for their own home so they understand how to use and maintain the filters and be a good role model for their community.

## Monitoring and Improvement

ACI uses the CHPs as their primary method of monitoring the biosand filters. They have established a follow-up visit schedule:

- 1<sup>st</sup> visit – 1-2 months after installation
- 2<sup>nd</sup> visit – 12 months after installation
- 3<sup>rd</sup> visit – 24 months after installation

At a monthly meeting, CHPs receive the sales orders from the CDEs for the previous month. These are the households they must visit in the next month, provide follow-up support to and complete a questionnaire

which is then submitted to ACI staff. The promoter receives a stipend of 100KES for each follow-up visit conducted.

The monitoring information is used later by the program staff to help determine what should be implemented next.

ACI's model is reaching the poorest of the poor who earn less than \$2/day. In a monitoring survey completed in 2010, the survey estimated reported household income of biosand filter users to be less than \$1/person/day. They have learned that if a product is marketed well with a good distribution mechanism, people are willing to pay the full hard cost of a filter.

## Building Human Capacity

ACI is committed to capacity building within their staff and at the community level. They see this as one of the best ways to ensure the long-term sustainability of the project.

ACI project managers have received training from CAWST on Community Health Promotion for WASH and Low Cost Sanitation to further build their skills and knowledge to implement their program.

Initially, CHPs and CDEs participate in a 5-day training workshop. The training content includes the basics of water, hygiene and sanitation, how the filter works, filter construction, filter operation and maintenance, and basic filter troubleshooting. There is a strong emphasis on safe water storage as well as how to train the end user on all of the above. CHPs are trained on how to conduct basic filter tests and household surveys while CDEs are trained on basic social marketing techniques and record keeping. This forms the basis for CHPs and CDEs to begin working as part of the project. Additional training is provided at each of the monthly meetings.

ACI project managers deliver refresher training to CDEs as needed. They use the information from their monitoring program to help them identify common problems and areas that need additional training.

CHPs have monthly meetings where training is an integral part of the agenda. They review lesson plans with the project

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manager for the sessions to be delivered at the schools in the next month. Project managers also provide refresher training based on monitoring data during the monthly meetings.

End user training is done by the CDE at installation and during each of the follow-up visits by the CHP. The CDE provides the training on filter maintenance once it has been requested by the household.

Currently, CHPs are teaching end users filter use, maintenance, safe water storage, and hand washing at critical times. ACI plans to expand this content. They recognize this is also a good way to introduce sanitation improvements and options for low cost sanitation.

CHPs are also working to build the capacity of students at the schools where the CDE businesses are based. CHPs deliver twice monthly education sessions with the Water & Hygiene Clubs and school

representatives. This strengthens their local partnership with the school and community.

## Program Financing

ACI subsidizes their staff costs as well as education and follow-up to the users and schools. The end users pay the complete hard cost of the filter and safe storage container.

ACI receives funding for education and project management through a variety of sources, including individuals, foundations and corporations.

## References

Rumpsa, C. Personal communication, August 2011.

Rumpsa, S. Personal communication, August 2011.

## Further Information

Aqua Clara International:  
<http://aquaclara.org/>

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CAWST, Centre for Affordable Water and Sanitation Technology  
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*Wellness through Water.... Empowering People Globally*  
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