Evaluating Distribution Strategies for Ceramic Filters in Kenya and Bolivia

Introduction
Four project sites were chosen in Kenya and in Bolivia for ceramic filter marketing trials. 300 households at each site received trainings through household visits and community training events, and surveys were done at baseline and after 11 months. Household information was collected with quantitative questionnaires, while qualitative information and sales records were gathered from sales staff.

Kenya
Area 1: (Thika) Promotion – NGO, Sales – Water Utility & Local Entrepreneurs: The Community Water Project (CWP) operating committee organized the distribution and sale of ceramic filters, and sold 51 filters at 17.4 USD apiece.

Area 2: (Thika) Promotion & Sales – Community Health Workers (CHWs): CHWs of the official public health system handled community education and sold 40 filters for 17.4 USD each.

Area 3: (Mwala) Promotion & Sales – Community-based Organisations (CBOs): Two CBOs were trained to educate the community, and to sell chlorine products and ceramic filters. At the midterm evaluation, no filters had been sold, so the sales price was lowered from 18.5 USD to the subsidized price of 9.8 USD. The CBO with prior sales experience successfully sold 11 filters and chlorination products, while the other CBO without such experience did not sell any filters and hardly sold any chlorine.

Area 4: (Mwala) Promotion & Sales – NGO Promoters: NGO Promoters managed marketing and sales but, since the community demanded products for free from the NGO, they stopped selling them. At the midterm evaluation, only 1 filter had been sold for 18.5 USD. After lowering the price to 9.8 USD, 26 filters were sold.

Bolivia
Area 1: (Valle Hermoso) Promotion & Sales – CBO: A women’s group with prior sales experience handled the promotion and sale of the filters, and 114 filters were sold for 30 USD each (See Photo 1). However, they sold filters in an area larger than the intervention site, and only 12 filters could be found at the site.

Area 2: (Villa Granado) Promotion & Sales – NGO Promoters: Community education and product sales were handled by NGO Promoters, who conducted three visits per household. They sold two filters for 31 USD apiece.

Area 3: (Arbieto) Promotion & Sales – CHWs: Health Centre employees and health workers were responsible for promotion and sales; however, they were not motivated and no filters were sold.

Area 4: (Villa Tunari) Promotion – NGO, Sales – Water Utility: A NGO Promoter did the promotion and chlorine product sales through household visits. Ceramic filters were sold through JASAP, a community-based enterprise that manages the local water supply. Customers received filters on credit and paid for them in three payment instalments that were added to their water bills. 46 filters were sold for 31 USD each.

Use of HWTS Products before and after the Intervention in Kenya
In Kenya, the frequent use (defined as using the method often to always) of household water treatment (filtration or chlorination, excluding boiling) increased by an average of 27.6 % to 53.7 % in all intervention areas. A significant increase in the availability of chlorine was observed in Mwala District, which is more agricultural than Thika District (27.3 % in Area 3 and 10.3 % in Area 4). In Areas 1 and 2 of Thika, there was a decrease in the availability of chlorine products in the households, but more people said they would be boiling the water. 5 % of the households in Area 1 and 10 % in Area 2 switched to using a ceramic filter, while only very few ceramic filters were used in Areas 3 and 4.

Use of HWTS Products before and after the Intervention in Bolivia
In Bolivia, 88.5 % (69.1 % at baseline) of the households stated that they boil their water. Figure 1 below presents data on the use of HWTS, excluding boiling (as the use of this method could not be verified in the households). Statistical analysis showed that a large number of households said that they would boil water; however, it is questionable whether this was carried out in practice. Also, frequent household water treatment increased by 21.2 % to 40.2 % (filtration, chlorination, solar water disinfection, and bottled water, excluding boiling). Ceramic

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**Figure 1:** HWTS use before and after the intervention in Kenya and Bolivia.
filter use increased by an average of 76% in all intervention areas – and by 16% in Area 4, Villa Tunari. The average use of bottled water (20 litre gallons) increased by 76% to 25.5%. Chlorination and Solar Disinfection were only marginally used at baseline and after the intervention.

**Factors influencing frequent HWTS use and the purchase of ceramic water filters**

For Kenya and Bolivia, logistic regressions were calculated for the outcome variables “Frequent use of household water treatment, excluding boiling” and “Filter available in the household”. The factors included in all the regressions were: turbidity of water; if a promotion was received; whether information came from the health centre, a CBO, a Promoter, a shop owner, a community health worker, a community meeting, or through other sources; if the promotion was helpful; if the promotion changed behaviour; if the user likes the method; the importance of treating drinking water; the percentage of neighbours using HWTS; beliefs about whether untreated water is good or bad for one’s health; money available per week; and willingness to pay for ceramic filters (See Photo 2).

**Frequent use of HWTS**

In Kenya, the factors significantly related to the frequent use of HWTS were: if the household perceived the promotion as helpful (Odds Ratio (OR): 4.4; Confidence Interval (CI): 1.3–14.7), if the household liked the method used most (OR: 2.1; CI: 1.8–2.5), if neighbours used HWTS (OR: 1.8; CI: 1.6–2.0), if they thought it important to treat drinking water (OR: 1.6; CI: 1.4–1.9) and if they stated a high willingness to pay for ceramic filters (OR: 1.3; CI: 1.1–1.6). Also significantly related, but with an odds ratio of less than 0.5 were if information was provided through the health centre or mass media and if the household stated that the promotion changed behaviour. In addition, the turbidity of the water correlated with HWTS use (OR: 0.4; CI: 0.3–0.7). (Model $\chi^2(19) = 440.1; p = 0.000$; Cox and Snell $R^2 = 0.25$; Nagelkerke $R^2 = 0.33$).

In Bolivia, promotion activities significantly influenced the frequent use of HWTS: if information was provided through a CBO (OR: 2.4; CI: 1.1–5.3), a Promoter (OR: 4.7; CI: 2.2–10.4) or the mass media (OR: 0.4; CI: 0.1–1.0) and if the promotion changed behaviour. In addition, the turbidity of the water was related to the purchase of ceramic filters (OR: 0.4; CI: 0.3–0.7). (Model $\chi^2(19) = 70.1; p = 0.000$; Cox and Snell $R^2 = 0.08$; Nagelkerke $R^2 = 0.12$).

**Filters Available in Households**

In Kenya, household visits by CHWs (OR: 3.4; CI: 1.7–6.7), if people liked the filters (OR: 2.4; CI: 1.6–3.7), if they stated a high willingness to pay for ceramic filters (OR: 2.4; CI: 1.7–3.3) and the amount of money available per week (OR: 0.4; CI: 1.1–1.7) influenced the purchase of ceramic filters. (Model $\chi^2(19) = 142.86; p = 0.000$; Cox and Snell $R^2 = 0.09$; Nagelkerke $R^2 = 0.27$).

In Bolivia, ceramic filter purchases were most strongly influenced by the turbidity of the water (OR: 3.9; CI: 2.1–6.9), if they liked the filter (OR: 1.6; CI: 1.0–2.5), by risk awareness (if they think it is bad for their health to drink untreated water, OR: 0.5; CI: 0.3–0.9), and by a high willingness to pay for ceramic filters (OR: 1.3; CI: 1.1–1.4). (Model $\chi^2(18) = 91.1; p = 0.000$; Cox and Snell $R^2 = 0.12$; Nagelkerke $R^2 = 0.24$).

**Conclusion**

The sale of ceramic filters through community-based enterprises responsible for the water supply worked well in Kenya and Bolivia. These enterprises already provide a basic service and are well suited to distribute higher priced products since they can easily collect payments by adding instalments to water bills. In both countries, the opportunity to pay by instalment was an important element that facilitated product sales.

The marketing trials showed that CBOs with marketing and sales experience successfully distributed and sold HWTS products. Collaborations with groups lacking in sales motivation and skills, however, were not successful. NGO Promoters proved to be effective at raising awareness and at providing information about water treatment, but were not productive at selling products. They generally lack marketing skills, and customers commonly expected that NGO representatives give them the products for free. In addition, the logistic regressions concerning the frequent use of HWTS and the purchase of ceramic filters revealed that information dissemination and training activities by Promoters, CBOs or Health Workers that directly reach individual households are very important to promote the purchase and use of HWTS products, especially when complemented with information disseminated through mass media. The economic status of the households in Kenya significantly influenced the purchase of higher priced products, such as ceramic filters.

The results also indicated areas to address in future marketing studies that influenced the purchase and use of HWTS products. These include: social norms (how many neighbours are using a method), risk awareness of the dangers of drinking unsafe drinking water, and emotional factors, i.e., liking a HWTS method.

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