The rationality factor: Choosing water sources according to water uses

by Astier Almedom and Christian Odhiambo

Rural water-supply projects often seem to base their technological interventions on the belief that, once installed, the improved water sources will be used to the exclusion of all others. But users perceive their traditional water sources to be just as good — if not better. Now project designers are beginning to ask them why.

THE NEED TO investigate how water and/or sanitation facilities are used is now recognized. A number of suitable research methods have been collated recently[1] and, while several researchers have used them to study water and sanitation-related hygiene behaviour, very few project implementers have tried out these methods for themselves. The need to make them accessible to field-level project staff has prompted an initiative to prepare a field manual.[2] This is being developed through a series of trials involving field-level project staff in the design and execution of hygiene-evaluation studies within their normal project-activity framework. These field studies provide valuable insights into the particular opportunities and constraints that fieldworkers encounter when conducting their own evaluations. They also serve to gauge the level of practical support that is needed. This article reports on some of the main findings of the first field-trial to focus on what determines a group of Kenyan villagers' choice of water source.

The SHEWAS project

The study was conducted in Siaya district, located in the Nyanza province of western Kenya, in collaboration with the Siaya Health Education, Water and Sanitation Project (SHEWAS).[3] The SHEWAS project was implemented through CARE International, which has been active in Siaya district since 1980. Its main aim was to improve the health of the people of the Boro area of Siaya, 85 per cent of whom had no access to clean water.

At the beginning, the project used textbook Participatory Rural Appraisal (PRA) methods;[4] over the first two years, however, work in the field led to modifications to suit local needs and conditions. As a result, PRAV — PRA at the village level — was introduced, which allowed for a more thorough appraisal in a relaxed, less hurried manner. One of the advantages of PRAV was that it allowed village-based volunteers, the Water and Sanitation Educators (WASE), to be more fully involved in the village appraisal, and thereby gain recognition and respect from their peers.

In addition to their PRA training, the SHEWAS project staff were also familiar with the PROWWESS tools for community participation;[5] knowledge which they then passed on to the WASE so that they could take responsibility for administering the health-education component of the project through home visits and informal discussions with their fellow villagers. The WASE now work closely with the village Water and Sanitation Management Committee (WSMC), the overall body governing project implementation.

Questions

Villagers were asked:

- To what extent are the improved water sources introduced by the SHEWAS project used? and
- What factors influence women's choice of water source?

These and other related questions were tackled in an intensive, qualitative investigation of hygiene behaviour and activities among the communities of Kodiere sub-location, in West Alego, Boro Division in Siaya District. As the SHEWAS project activities had been phased out before the study began, it was possible to consult community members without building up further expectations of the project. Project staff explained that the purpose of the study-team's repeated visits was to see how the people were faring now that project activities had ceased.

Methods, techniques, and tools

A combination of participatory methods/tools, and traditional anthropological methods and techniques was used to collect and analyse information. Three critical factors determined the choice of methods, techniques, and tools: the availability of pre-existing participatory materials suitable or adaptable for the purposes of investigating relevant hygiene behaviour and activities associated with water use and sanitation; the capacity of the study-team; and the total time available for the study. The study was conducted between November and December 1993, a time of year when community members, particularly women, were expected to be less busy with agricultural work.

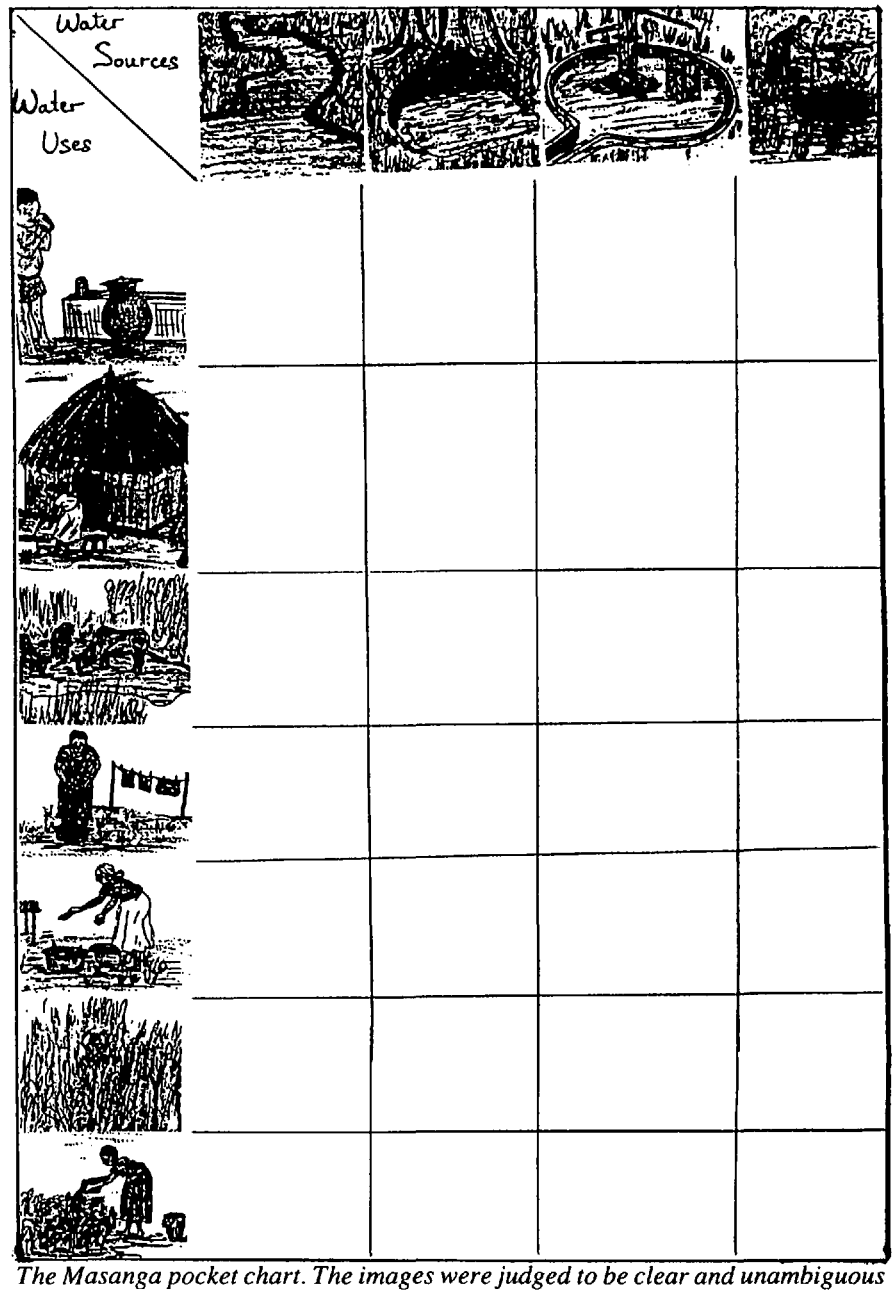
The methods and tools used for investigating a wide range of behaviour and activities associated with water use included 'initial exploration', an adaptation of the PRA 'transect' or systematic walkabout concept, and the 'pocket chart' (a PROWWESS tool). Initial exploration involved the study-team strolling through the villages, stopping for informal chats with local people, and visiting a few homes, water sources, and other relevant sites. The 'pocket chart' consisted of a set of drawings representing variables such as all the known, accessible water sources; and the various ways in which water was used. These pictures were inserted in the pockets of a chart made of canvas and transparent polythene material. Colour-coded voting cards were used to identify the voter's gender. The pocket-chart exercise was conducted with a group of enthusiastic community members who had the time to come to attend a meeting — constituting a self-selected sample.

The drawings were passed among the participants, and discussed fully until a

consensus was reached as to what the pictures represented. This was done to ascertain that the variables were defined clearly and unambiguously at the outset. For example, everyone had to agree that the first (horizontal) picture represented 'the river', not 'the bush'. Similarly, everyone had to agree that the first (vertical) picture represented 'drinking'. The participants were asked whether they wanted to add any more variables in case there were water sources and water uses that had not been included. Only one addition was suggested under water uses: 'watering the vegetable garden', a common activity 'when the sun is hot', that is, in the dry season. The artist, a full-time member of the study-team, sketched a picture, and it was added to the chart before voting began.

In order to cross-check the data gathered by participatory methods and tools such as the pocket chart, direct observation and informal open-ended interviewing were applied to a selected number of mothers/carers of young children, who were visited in their homes. This group was selected on the assumption that there would be a greater variety of hygiene-related behaviour and activities to observe in homes with young children.

Table 1 provides a summary of the methods/tools and materials used, the number of community members who participated, and the time taken for each activity.



The Masanga pocket chart. The images were judged to be clear and unambiguous after being drawn to the villagers' specifications.

Findings

The implications for water-use patterns were unequivocal. It was clear that women chose their water source according to what they intended to use the water for. The factors that influenced those choices included water *'quality'* as perceived and defined by community members; the *distance* from the home/convenience; and the *quantity* of water available.

Water quality was defined by the women in terms of certain attributes such as feel, taste, and smell. For example, water from traditional (unprotected) sources was perceived to be 'soft' and, therefore, good for washing clothes as it lathered quickly and did not 'waste soap'. This water was also perceived to be better for making tea, and for cooking, compared to (chlorinated) water from protected sources. 'Salty' water from the protected source was perceived to be 'good/clean' for drinking, however, despite its hardness and less agreeable smell when compared to the 'soft' water from traditional sources such as the open well and a pond.

In addition to drinking, cooking, and tea-making, water was used for washing clothes, a labour-intensive task that was mostly performed at or near the (traditional) water source as the volume of water required, together with the time and effort that would be expended by women and children hauling the laundry back and forth, makes it a sensible option.

The findings show that women chose 'clean' sources when fetching water for drinking. Drinking-water was then normally stored in a special pot with a cover, and kept in the living quarters; while water for other uses, such as cooking and washing utensils, was kept in the kitchen area, often uncovered. It was observed that some women put two cups on top of the water-pot — one for drawing water from the pot, and the other for drinking, following the WASE teachings about drinking-water handling. In most cases, however, only one cup was to be seen on top of the water-pot.

Review

The ability of the community, to analyse and interpret the information is well-illustrated by the pocket-chart exercise. When the study-team announced the voting results, summarized in Table 2, the participants reviewed and discussed the figures. Out of a total of 20 participants (17 women and 3 men), the majority, 15 women, had indicated that they fetched water for drinking from a handpump. This was because they perceived that water to be clean, and the source was convenient — most of them lived near the borehole. When it came to fetching water for other uses, however, the handpump was far less popular. It is clear, therefore, that these women use rational decision-making skills when

Table 1. Investigative and analytical methods, techniques, and tools.

Method/Tool	*Materials used*	*No. of participants/study sample*	*Time taken*
Initial exploration	Note-books and pens.	A random number of the inhabitants of Haudinga and Masanga villages who happened to be at the water sources visited, walking along the footpaths, and/or in the few homesteads visited.	2-3 hours in each village.
Mapping	Flip Charts, pencils, erasers, marker pens, note-books and pens.	19 self-selected community members (15 women + 4 men) in Haudinga. 21 self-selected community members (19 women + 3 men) in Masanga.	2-3 hours in each village.
Three-pile sorting	Pictures (2 sets), note-books and pens.	24 self-selected community members (21 women + 3 men) in Masanga. 22 self-selected community members (17 women + 5 men) in Haudinga.	1-2 hours in each village.
Pocket Chart	A piece of canvas material (1 metre square) with polythene pockets sewn on; pictures depicting different variables to go in pockets along the top row and down the first column; cards to cover pockets, small voting cards (colour-coded to identify voters' gender); note-books and pens.	20 self-selected community members (17 women + 3 men) in Masanga.	4 hours and 30 minutes.
Direct Observation	Note-books and pens.	16 homesteads in Masanga and 18 homesteads in Haudinga selected on the basis of presence of under-fives.	Up to 8 hours (over 2 days) in each village.
Informal open-ended interviews	Note-books and pens.	17 selected mothers/carers of children under five in Haudinga and 17 of the same in Masanga.	

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The review session allowed participants to confirm and/or question the votes: one young man questioned the validity of the figure relating to the use of handpumped water for watering the vegetable garden. He stated that he did not believe that the six women were telling the truth. 'How do these women manage to have enough of that water to use for watering their garden?' he asked. Others agreed with him, as they knew that, on any one day, each household was allowed to collect only two buckets of water from the handpump. The women discussed this question before one explained that they were using water from the handpump for other purposes, such as washing utensils, before 'throwing it out on the garden'. A simple case of water recycling, and an example of the rational management of a scarce resource.

Making choices

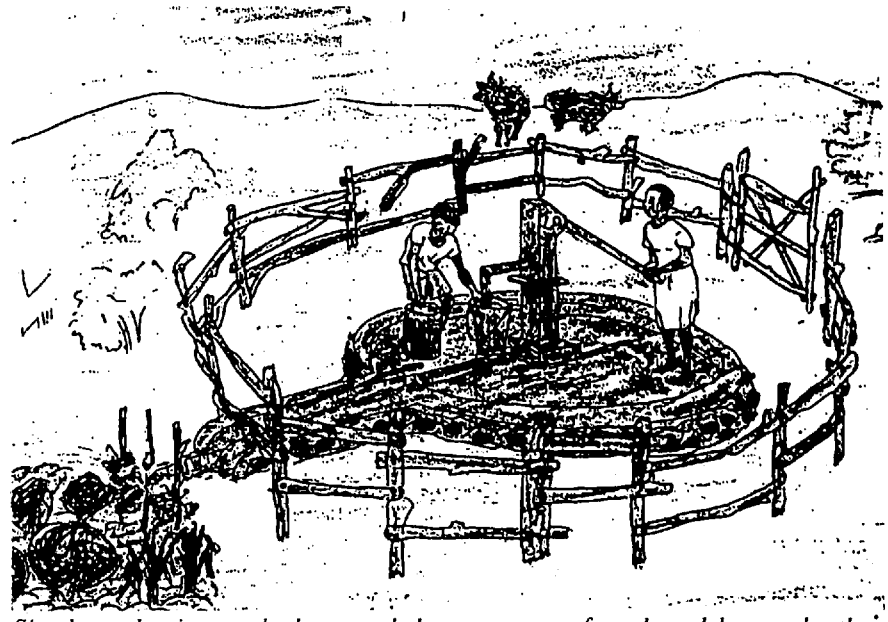
The question of why community members continue to use traditional water sources, even after protected sources have been introduced, is a complex

one. The reasons may include perceived water quality, distance/convenience, and the quantity required, or a combination of these. In the case of Masanga village, where the pocket-chart exercise was conducted, the borehole fitted with a handpump did not yield enough water to satisfy all the community's requirements. The handpump was open for only a few hours a day, and the water rationed, in order to allow time for recharging. Women would leave their buckets in the queue until opening time. The women's discriminate use of other (unprotected) sources to supplement their water, therefore is, reasonable.

The question of protecting traditional water sources is also complex. The location of the water source, and the reliability of its yield, are important factors to consider. In the case of the areas served by the SHEWAS project, existing water sources are often seasonal and, therefore, not worth protecting. Those that are not seasonal may be located on privately owned land, as is the case with the open well in Masanga. As this is not communal property, villagers find it problematic to accept responsibility for the use and maintenance of the water source, once protected.

Another important factor in relation to the location of a water source, is the nearness of a latrine(s). In the case of the Masanga open well, the pit that was being dug for a new latrine — only about 10 metres away from the old latrine — ended up as a well! In other places, the project staff have found that community members find it difficult to request a neighbour to demolish a latrine in order to protect a water source. In most cases, the existing latrine is all he or she can afford, and its building was a result of considerable personal effort.

Design and cost issues are other significant factors in any decision to protect traditional water sources. For example, it can be more complicated and costly to protect a large pond or a dam than it is to provide a protected borehole. The case of protecting springs, where they exist, may be more straightforward: 16 per cent of all community waterpoints constructed by the SHEWAS project are protected springs.



Simple evaluation methods proved that women preferred, and knew why they preferred, the protected water source.

Regarding the practice of washing clothes at the water source, it may be feasible to introduce washing slabs near these sources, making sure that the used water drains away from the source. Water-borne infections such as schistosomiasis are not common in the study site, so washing clothes with water from unprotected sources is not considered to pose a health hazard.

In conclusion, the Siaya hygiene evaluation study has succeeded in 'breaking the ice' between academic researchers and project staff at the field-level. The study provided a useful insight into the practical applicability of jointly executed investigative and analytical methods.

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Astier Almedom is a Research Fellow in the Department of Epidemiology and Population Sciences at the London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK. Christian Odhiambo is Training Officer for the Ndhiwa Health Education, Water and Sanitation (NDHEWAS) Project; and formerly Field Officer of the Siaya Health Education, Water and Sanitation (SHEWAS) Project, Kenya.

Table 2. Results of the 'Pocket Chart' exercise in Masanga.

Water uses	*Water sources*				
	River	*Pond*	*Protected well with handpump*	*Open well*	*Total (votes)*
Drinking	(1)	(1)	15	(1)	18
Cooking	3	(1) 4	6	—	14
Watering animals	(2) 10	(1) 7	—	—	20
Washing clothes	7 (1)	5 (2)	4	1	20
Washing dishes	(1) 6	3 (1)	5 (1)	1	20
Bathing	5 (1)	5	6 (1)	1	19
Watering the (vegetable) garden	4	(2) 6	6	1	19

Key: (men); women.