

## Under-estimated potential of traditional water sources?

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THE INTERNATIONAL WATER and Sanitation Decade of the 1980's raised the profile of water supply and sanitation, but also established donor dependency and standards of technology unrelated to local resources. Even with increasing community participation and training, results in Zambia and many neighbouring countries are seldom truly sustainable.

In Zambia the number of rural people without access to conventionally 'protected' water supplies (around 4 million) remains roughly the same as twenty years ago, despite enormous donor inputs. After years of ignoring the potential of local resources, beliefs and skills, and only looking to replace them, it is time to take a closer look at the potential these have to offer.

A three year research project, funded by DFID, is being undertaken in four provinces of Zambia, and is now six months old. It is designed to look at whether improvement and replication of existing traditional sources can have an impact and how this compares with the impact and costs of conventional technical solutions (especially shallow lined wells with bucket and windlass) which have been widely constructed in the country.

### Strategy

The research is being undertaken principally by personnel from the Ministry of Health and Department of Water Affairs. It is co-ordinated in Zambia by the national organisation (NWASHE) for training district administration in rural water supply, sanitation and health education planning, monitoring and maintenance. NWASHE also play a major part in the development of policies and production of information on RWSS.

The major part played by government staff ensures that they are involved in designing surveys, collecting and analysing data. This both builds research capacity and enables them, where necessary, to change their attitude to technologies as a result of their own findings, rather than simply presenting them with conclusions, which may be less convincing. Donor RWSS projects and Peace Corps are also taking part in the research.

Initial inventories of over 1500 traditional sources (mainly scoopholes, unlined wells and springs) is being followed by qualitative in-depth studies (QIDS) and base-line surveys of selected communities.

The inventory was designed to familiarise all parties with the types of sources, improvements that people have made, and the problems they find. It is also proving a useful planning tool both for the research project and for

participating rural health centres. It covers such aspects as:

- Type of source
- Depth/flow of water
- Water quality
- Number of users
- Distance to houses
- Date of excavation / improvements
- Improvements made
- Ownership / management of source
- Costs of excavation / improvement

Education received on;

- Latrine building
- Hand washing
- Care of source
- Reliability of supply
- Potential sources of contamination
- Uses of water from source

In contrast, QIDS will be limited to two or three communities per district, and will particularly look at cultural differences in attitudes and beliefs relating to water, hygiene and sanitation. The results will be used to help design baseline surveys and establish culturally relevant hygiene promotion.

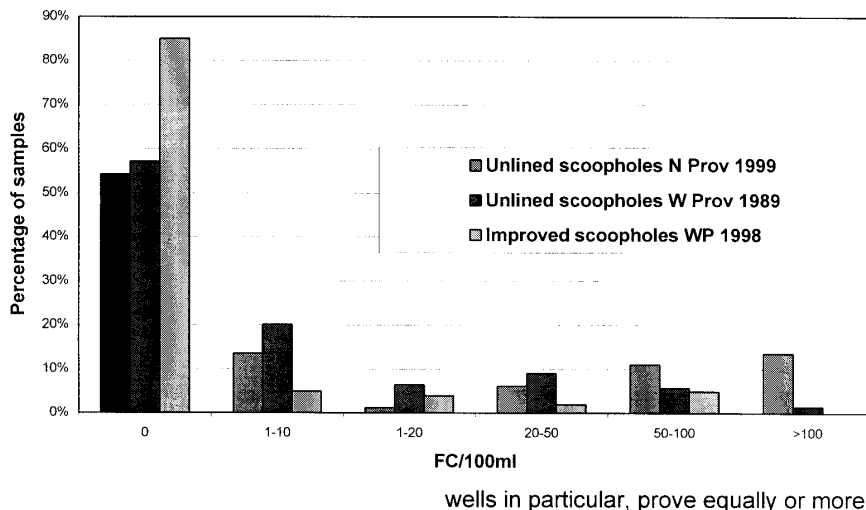
For instance, it would appear that the practices of one group of people, the Losis, leads to very little contamination of water during collection and storage. These aspects could therefore be omitted from hygiene promotion discussion within the group, but the beliefs involved may be discussed with other groups to see whether similar values and practices could be adopted by them.

The study phase will be followed in the second year by pilot projects. These range from the purely technical to testing the need for subsidies at community level and/or to extension workers. During this period information will also be collected and methodologies tested on motivation and hygiene promotion, so that manuals and materials for extension workers can be produced in the final year.

Throughout, dialogue is being maintained with policy makers and politicians so that the findings can be incorporated into plans, budgets and national strategies within the sector, as soon as possible, if the results indicate that the approach is justified.

### Results to date

Preliminary analysis of data suggests that traditional sources are not as unreliable and polluted as those promoting higher technologies would like to paint them. However this



**Figure 1. Water quality in improved and unimproved scoopholes 550 samples**

tends to be how they are represented, in order to build demand for the installations that engineers and politicians deem 'safe'.

Especially in areas of low population density, traditional sources can provide reliable and safe water supplies particularly with very low cost improvements to the source itself and/or to its management.

In over half of all traditional sources, faecal coliform counts are below 10/100ml. For scoopholes, with water within one or two metres of the surface, two-thirds to three quarters of all sources have less than 10FC/100ml. This proportion can be increased, and gross contamination apparently reduced almost to zero by very minor improvements costing less than US\$ 50 (see Fig 1). This compares well with protected shallow wells, and at a fraction of the cost(1). So far, these improvements are simply those developed by each community during discussion of perceived problems and their solutions. Their understanding of risks and causes of contamination is good, and it seems that lack of action relates more to a) not focusing on this particular problem, with so many others facing them in their daily lives and b) raised expectations of higher technology solutions which cannot be fulfilled.

It is not just quality which is improved. Accessibility is improved by increasing reliability, allowing year-round abstraction from one source, rather than having to move to further sources as those near the valley or dambo edge dry up. It is also improved by the surrounding of the source being cleaner and easier to reach without stepping in mud.

Traditional sources, and private wells in particular, prove equally or more reliable than conventional protected shallow wells in most districts. This is largely a result of the former being the products of local skills, decision-making, materials and equipment, which the latter are not. Thus users can easily work on the source or organise for someone else to do so, when it becomes necessary, or when further

improvements are decided upon (as these are generally regarded as step by step process). Another great advantage is that such sources are generally easily replicable.

Around half of all rural communities drink from scoopholes. There are cultural differences in how people use such sources. Quality is best where people bail out the water several times a day, where user numbers are high, and where it is not accepted practice to put the carrying vessel into the water.

Users' perception of problems of the source appear to relate less to distance than to difficulties of drawing water (see Fig 2). The lack of good buckets and reliable rope are more frequently cited as problems, suggesting that perhaps increasing the volumes of water used may depend more on the lifting device than on the siting of the source. Significantly, over 90 per cent of the problems identified by users could be solved by communities from resources they have at their disposal. Mbala district, where gross contamination was commonest, was also the district where users noted the lack of rules and consequent dirtiness around the source as a major problem. This suggests that at least sometimes, hygiene promotion may be demand driven, especially where people compare present and past standards of conduct.

The problems identified suggest that a forum for discussing problems and solutions may be a simple low cost input which would help to bring about change. Even as a result of brief discussions during the inventory, follow-up visits showed that some communities had taken action to solve some of the problems they identified, but which had remained un-addressed for a long time (eg. fencing to keep out animals).

## Conclusions

Initial studies of existing traditional sources suggest that they should not be dismissed equally widely in different

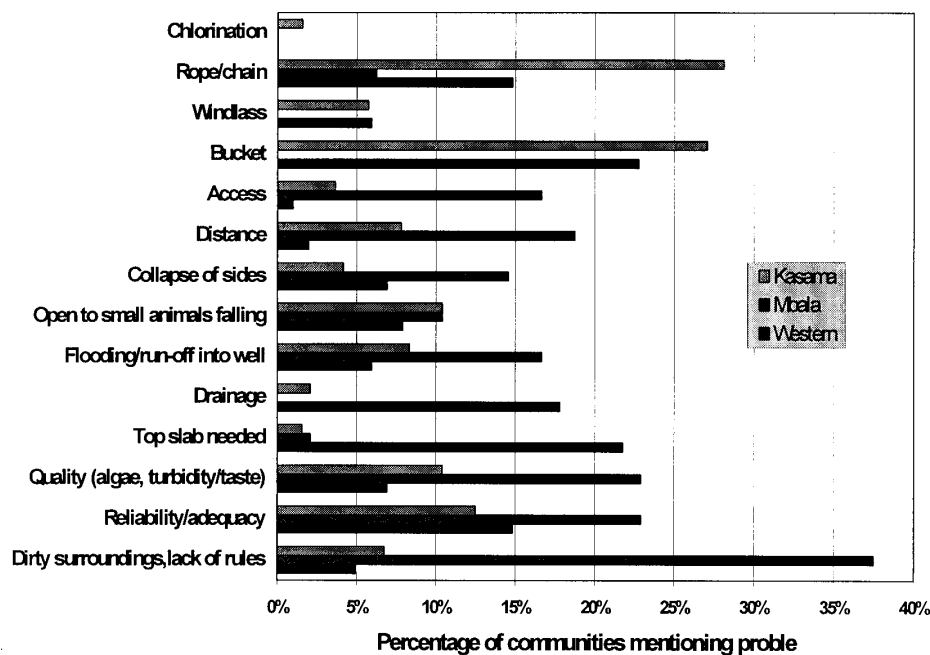


Figure 2. Traditional water source problems perceived by user

physical and cultural environments. Whilst water quantity is acknowledged to be more important than quality(2), the latter appears to be quite easily and significantly improved with small (hardware and software) inputs.

An indirect but significant benefit is that this removes much justification for health personnel to blame the water source for outbreaks of cholera /diarrhoea/ dysentery and forces them to look more closely at behavioural practices which are causing far greater risks. At present in Zambia at least, health education programmes still give a much higher profile to quality of water supply than to quantity and risk behaviours in the home. Greater knowledge of sources and adoption of improvements may help to swing the balance in the other direction.

Availability can also be increased in terms of source reliability, and if lined or unlined family wells are promoted, volumes of water used throughout the year may also be increased. Introduction of some 'foreign' technologies which address the problems identified by users, but which they are unable to solve, may be justified (eg. lifting devices such as rope pumps, or construction methods which reduce risks of collapse).

The need for, and affordability of, standardised solutions such as the Zimbabwe family wells will also be assessed. However differences in rural economy and of government responsibility for communal supplies may mean that such solutions are not equally suitable despite the proximity of the two countries.

The question arises as to whether the promotion of higher technologies for a few people is suppressing the initiative of others to solve some of their own problems. Communities frequently mention that their preferred option is a conventional protected source. However this requires

very high subsidy and few will benefit from it in their lifetime. At present construction of so-called protected sources is not even keeping pace with rural population growth.

It is therefore perhaps important to include lower technical options in planning rural water supplies wherever these are feasible, and so retaining the main part of scarce financial resources for those areas where such solutions are not possible or situations where they can have little or no impact. Low technology low input promotion of improvement is especially relevant to small, poorer and more mobile communities for which larger technological steps are less sustainable, and therefore often tend to have only short term impact.

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