The Plastic Revolution?

Sally Sutton

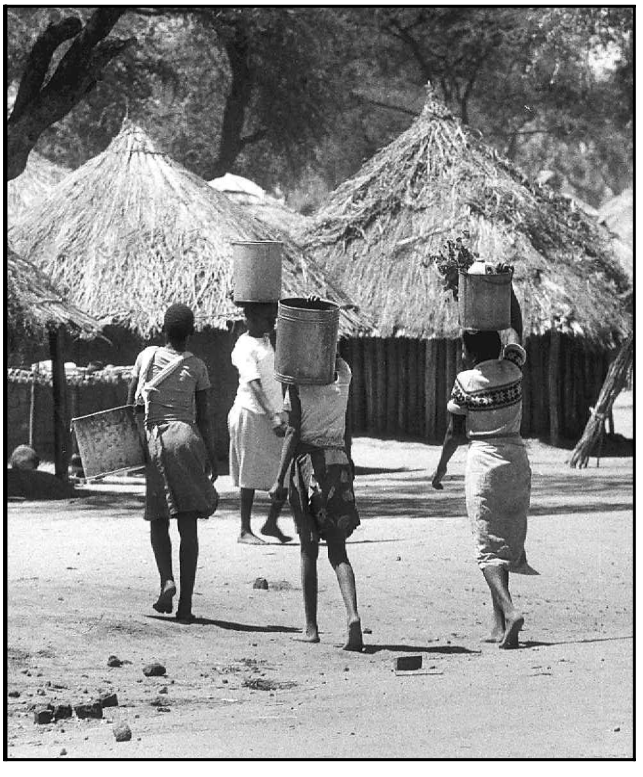
Cheap, durable sealed water carrying devices have become available all over Africa in the last few years. What are the implications of this change for rural Zambia?

Travelling in Ethiopia, Moçambique and Zambia during the past year, the bright flash of yellow 20 litre cooking oil containers is a common sight in far-flung rural areas. These were rare or non-existent in the early 1990s in the poorer rural areas of southern Africa, although apparently used more widely in the better-off parts of Kenya over a longer period.

'At a price of little more than a (US) dollar, safe carriage and storage of water is easily achieved'.

At a price of little more than a (US) dollar, safe carriage and storage of water is easily achieved. This has the potential for considerable impact on water availability and quality at household level and is an innovation brought about by, and affordable to consumers. Previously, water storage was expensive and sometimes in breakable containers. Carriage (largely the tiring task of women) was wasteful with much water slopping out of open buckets and basins before reaching the house, and water was prone to contamination (especially where leaves and plastic bags were floated to reduce water movement and spillage).

The burden of water carrying falls to the women for their ability to not lose their dignity



Bror Karlsson/Panos Pictures

Gender in water carriage

Studies have shown that little change occurs in water use by reducing distance to water from 1000 to 100 metres, in terms of volumes used. The justification in decreasing the distance to supply is usually more in the limited reduction in time and energy expenditure by women and girls, on whom the main burden of water carrying falls.

The burden can, however, also be reduced in other cheaper and more sustainable ways.

Only women and girls can carry water on their heads without loss of dignity. This has been one of many reasons why women have remained the main carriers of water in much of rural Africa. Open bowls and buckets are the easiest to be carried on the head. In one village in Zambia, where water consumption was regularly monitored and buckets and bowls were the norm, volumes carried dropped by two-thirds when the local traditional healer prescribed a ban on carrying water above shoulder-height, to cure an outbreak of dysentery. The difficulty of carrying buckets and vessels by hand rather than on the head made them collect less water and return to the nearer, less safe sources to reduce carrying time.

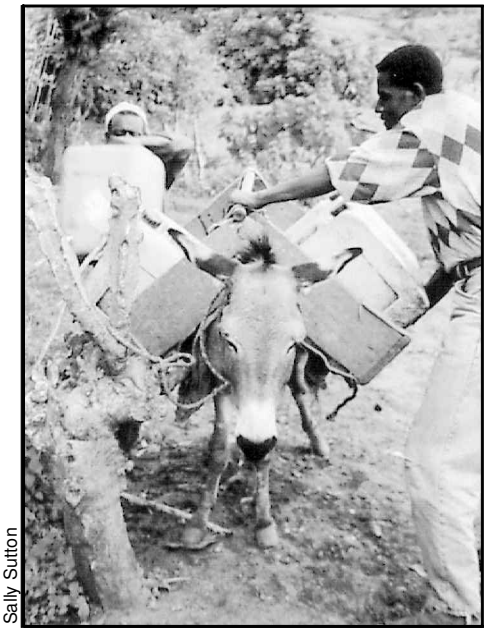
Screw-top jerrycans with handles, however, can comfortably be carried by hand, or more importantly, by the ever-

Sally Sutton

Zambia in the mid-1980s saw only a handful of plastic bottles - buckets and bowls were the norm

increasing number of bicycles, wheelbarrows or donkeys or ox carts. Promotion of these methods not only increases the amount that can be carried per trip, but it generally also shifts the role of water carrier from women/girls to men/boys. The latter tend to be in charge of mechanised and animal transport in many cultures and even where they are not, the shift to transported water relieves women of the hardship of carrying 20kg loads up steep slopes and for prolonged periods.

In four Zambian villages in Western Province, where water utilisation has been monitored in 1988-1991 and in 1999, the gradual change in collection vessels has led to an increase in the amount of water carried per trip, ranging from 6-80%. However this change, rather than leading to equally significant increases in the amount of water used, appears to have led more to a decrease in the number of trips made. The proportion of water carried by adult males has increased by a factor of two to ten, and it appears that boys even in their late teens are prepared to carry water, which was previously regarded as undignified. Males in four monitored villages now commonly carry around one third of all water collected for household use.



Sally Sutton

Signs of the times - men in Ethiopia collect water in jerry cans using donkeys for transportation

Water storage

Previously water storage used to be:

- With a separate container for drinking and washing water
- Often scooped out (where it was easier than tipping the container)
- Spasmodically covered and usually of easy access to small children

This was more expensive and led to greater risks of contamination.

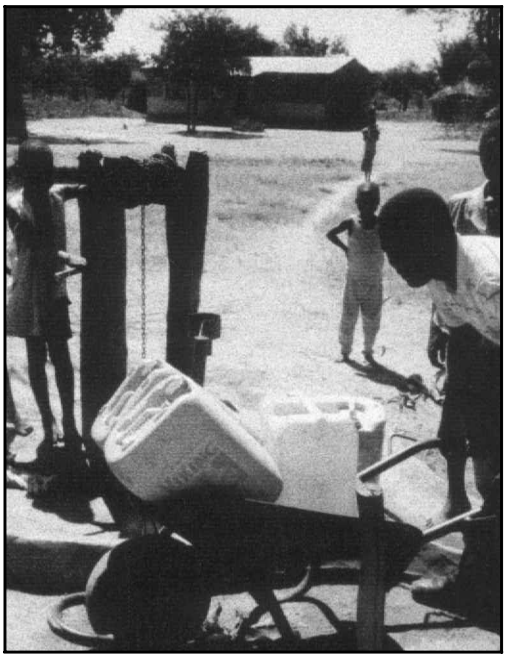
In screw-top plastic containers there is no need for separate vessels for water for different purposes. Water can only be poured out, not scooped, reducing the potential for contamination. If small children are likely to cause a problem, the tightly screwed-down lid can usually deter all but the most determined. Additionally, it does not matter if water cannot be stored indoors, as dirt cannot be blown in, or the contents spill out, if the container is overturned. However once contaminated, they are considerably more difficult to clean.

Such containers are now widely sold second-hand, being those in which cooking oil is imported or bulk transported. Their cost is approximately one third of that for a reasonably strong 10-15 litre metal bucket, and they tend to last well. Previously 2.5 (and more rarely 5) litre oil bottles were used, and often preferred for drinking water. They were easily carried by small children, or as an additional load by women carrying larger containers on their heads, but they did little overall to add to volumes available at the house. The larger 20 litre versions have, however, more recently become widely available to most parts of countries such as Zambia and Moçambique, whilst 2.5 and 5 litres are now so commonplace that they may be cut open and used as fairly short-lived buckets. As a result, the use of traditional gourds and clay pots has reduced dramatically, although clay pots are still valued for their ability to keep water cooler. In addition vessels used for storage are now more frequently used also for collection.

Water consumption

In looking at water consumption in households with water sources within a distance of about a kilometre, surveys in Zambia, carried out by the DFID-funded RITS project (Research into the Improvement of Traditional Sources), tend to show that per capita consumption is more closely related to the storage capacity available at the house (positive correlation, see figure 1) and the size of the household (negative correlation to the number of members) in the Northern Province. Distance to the source, in a preliminary survey of 70 households, did not appear to be related to volumes of water collected, but further information remains to be processed.

The RITS project also found a high reluctance to store water overnight, for fear of contamination (generally from the spirit world, not from conventional dirt). Water left over in the evening is used for washing, watering plants, or may even be thrown away. It is not yet known whether the ability to seal the stored water could change this practice. Storage overnight would both reduce faecal coliform levels (through natural die-off) and ensure the availability of water for washing after early morning defecation. At present it



Unlike the old-style water carrier, jerry cans allow a whole Zambian community to be involved

appears that the need to collect freshwater for this purpose may be a significant factor in the contamination of both 'protected' and 'unprotected' water sources, as people are usually unable to wash their hands before the first collection of the day.

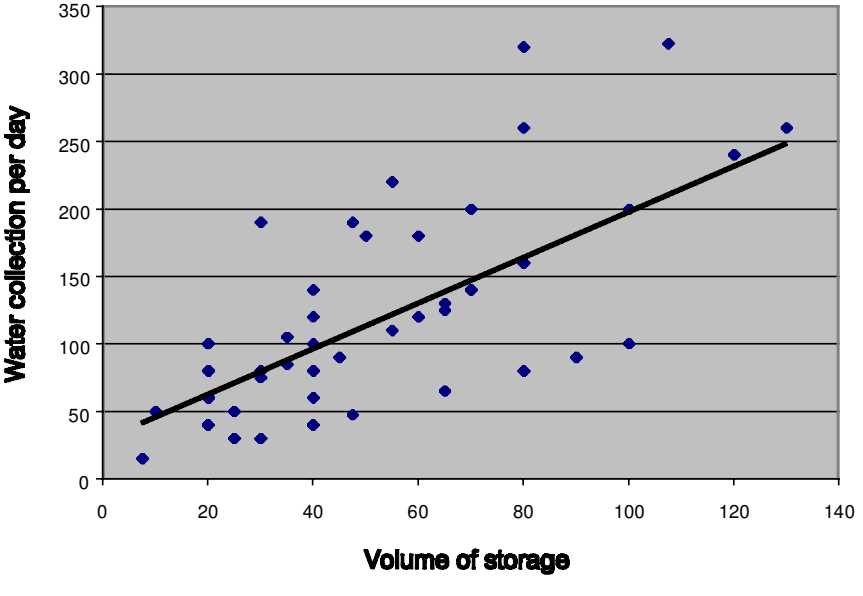
Wider availability of a range of durable, closed water containers is occurring naturally. Promotion of its positive effects, as a sign of progress or status, may have considerable influence on water use and collection practices in rural areas. It has the potential to encourage the provision of greater quantities of safer water in the home and the reduction of the burden of water collection on women. This is achieved not so much by reducing the load, but by the use of animal power and mechanised transport, and by spreading the load more widely through all sections of the community, particularly with an increased contribution from men and boys. In addition the distance water is transported appears to be reduced by decreasing the number of trips, more water being carried per trip, but the total volume used remaining much the same. There would appear generally, to have been little effect so far of health education on encouraging greater water use, with most people still preferring to bathe and wash in rivers and streams further from the home.

References

Curtis, .V (1986) *Women and the Transport of Water,* IT Publications, London.

Cairncross, S. in Pickford, J. (ed) (1987) *The Benefits of Water Supply. In Developing World Water II* Grosvenor Press, London.

Figure 1: Water collection (litres) and household container capacity



about the author

Sally Sutton is a consultant on rural water supply and sanitation projects, especially on project formulation and evaluation, for a variety of bi-lateral and multi-lateral donors and NGOs. She is also a research fellow at Keele University, School of Earth Sciences and Geography. Sally can be contacted via email at sally@ssutton.fsbusiness.co.uk