Socio-economic aspects of water selling

by Brian Mathew

A survey compares the service delivered and the cost of water between two areas, one with new water kiosks, the other still relying on the traditional wells.

THE AIM OF the Nyala/El-Geneina project in Darfur, West Sudan, has been to improve water supplies to the urban populations of Nyala and El-Geneina. This has been done by improving the physical infrastructure, installing new pipes, pumps, generators, wells, etc., and by conducting a programme of institutional development, to ensure that management and staff are able to run the new equipment and systems on a sustainable basis. The principal method of expanding access to safe water supplies has been to construct water kiosks (stalls where water is extracted and sold) with the resulting revenues paying for the costs of the service. A strong emphasis has been put on involving the communities in the management of their kiosks. Three women and three men were elected by each community to form the kiosk committees, which then selected a male guard and a female minder to run each kiosk on a day-to-day basis.

The survey used an interview/questionnaire and was carried out among women householders to compare El-Geneina, where the water kiosks are operating, with Ardamatta, a suburb where kiosks are still under construction. The total number of women interviewed was 30, and the number of people living in the households they represented 245, about one per cent of the target population. Permission to carry out the interviews was obtained from area sheikhs and, where necessary, husbands. Households were chosen in a random manner with the intention of covering as much of the areas involved as possible.

In El-Geneina, interviews took place in the area around the nine water kiosks in the town, which have been operating since March 1989. Mechanical problems and fuel shortages have affected supply from time to time, indeed the kiosks were completely out of action during much of September and October 1989. Ardamatta, a suburb of El-Geneina, was chosen as the control or comparison area. At the time of writing its only sources of water are the traditional wells situated in and around the Wadi Kaja. Work is underway in Ardamatta, and new water kiosks should be functioning later in the year.

There are two interference factors which affect the validity of a direct comparison between these two areas. Ardamatta is much closer to the old traditional water sources in the *wadi* than is the kiosk area in El-Geneina, thus water takes less time to fetch from the traditional sources and, subsequently, water vendors (who chiefly use these traditional sources) charge less for water in Ardamatta than they do in El-Geneina (S£2.30/100 litres in Ardamatta as compared with S£5.60 in El-Geneina). Ardamatta also contains a high proportion of military personnel and their families, and since military personnel in Sudan are now paid above average wages, this may have some impact on the results.

These results in Table 1 show no significant difference in water consumption between the two survey areas. In health benefit terms an increase in the quantity of water used is more often associated with benefits in health than is improved quality of water, which the project has most certainly provided from the new water kiosks. As work in Mozambique has shown, however,

There are often long queues at the kiosks. In the afternoon it can take an hour or more to get two jerry cans filled.

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Table 1. Daily per capita water consumption

Area	*Water source*	*Litres/capita/day*
El-Geneina	Water kiosk only	19.2
El-Geneina	Kiosk and vendor	18.2
Ardamatta	Vendor	18.4
Ardamatta	Well and vendor	18.2
Average daily per capita water consumption		18.5

Table 2. Percentage of income spent on water

Area	*Water source*	*S£/month/capita*	*% of income*
El-Geneina	Water kiosk only	2.95	3.8
El-Geneina	Kiosk and vendor	5.05	7.9
Ardamatta	Vendor	20.70	17.5
Ardamatta	Well and vendor	7.39	13.6

the quantity of water used per capita is related to how far it has to be carried. This relationship is one in which water consumption remains largely the same until the point of collection is actually within the compound or house, when it often more than quadruples.[2]

Economic analysis

The survey asked householders how much money they spent on water, and the proportion this represented of their income.

The results in Table 2 show quite clearly the economic advantage for households within using distance of the new water kiosks. This is so even when comparing people who use both water kiosks and water vendors with those who use vendors and traditional wells. The straight benefit for the kiosk user in the kiosk area over the vendor user in Ardamatta is S£17.75 per month per person.

Taking into account the difference in cost between using water vendors in Ardamatta and El-Geneina, and calculating the costs that kiosk area residents would have to pay for their water if they were using only water vendors (as was the case for the majority prior to the intervention of the project), the saving which results is substantial, in the order of a factor of ten.

Water kiosk — average monthly household water bill

18.5 litres per person per day
8 members of the household
Cost of water S£0.00625/litre from the kiosks
Cost of water for one month from the water kiosks = S£27.75

Water vendor — average monthly household water bill

18.5 litres per person per day
8 members of the household
Cost of water S£0.056/litre from the water vendors
Cost of water for one month from the water vendors = S£248.64

The potential monthly saving for average households in the kiosk area is S£220.89. Taking the survey figure for average family income in the kiosk area of S£713.30 this means that an average family is spending 4 per cent of their income on water instead of 34 per cent — a very big saving.

Water kiosks

So why do people who live in kiosk areas still use other sources of water? Of the female householders in the kiosk area, 40 per cent used the water kiosks only, 33 per cent used vendors as well as the kiosks, and 13 per cent used their own donkeys to collect water from traditional wells as well as using the water kiosks. Two respondents claimed not to use the kiosks at all; one was from Kiosk 7 area (Kiosk 7 had not been working recently because of pressure problems), and one old woman had a broken hand and could not carry water from the kiosks.

People used other water sources when the water kiosks were not working. This happens on Fridays (the weekend), and when the fuel has run out or when there is a technical problem. They also used other sources when there was a long queue at the kiosks, as they did not like waiting for water. Early users of the kiosks can usually get their

water within 15 minutes, but later when queues have built up it can take an hour or more to get two jerry cans filled. This is not simply a matter of coming early, as most women need to make several trips a day to collect water from the kiosks and so cannot avoid the queuing. The solution here would appear to be to keep the water kiosks open longer — at present they are open for just four hours per day. It might also be necessary to build more water kiosks.

Filling each jerry can take between 1.5 and 6 minutes depending on the kiosk and the pressure in the pipes. Thus a kiosk, which has all eight taps running at a rate of 4 minutes per 20-litre jerry can, will supply 2400 litres of water per hour each, or enough for about 130 people. Over four hours it will supply enough water for 520 people. Doubling the opening hours would double the potential amount of water available.

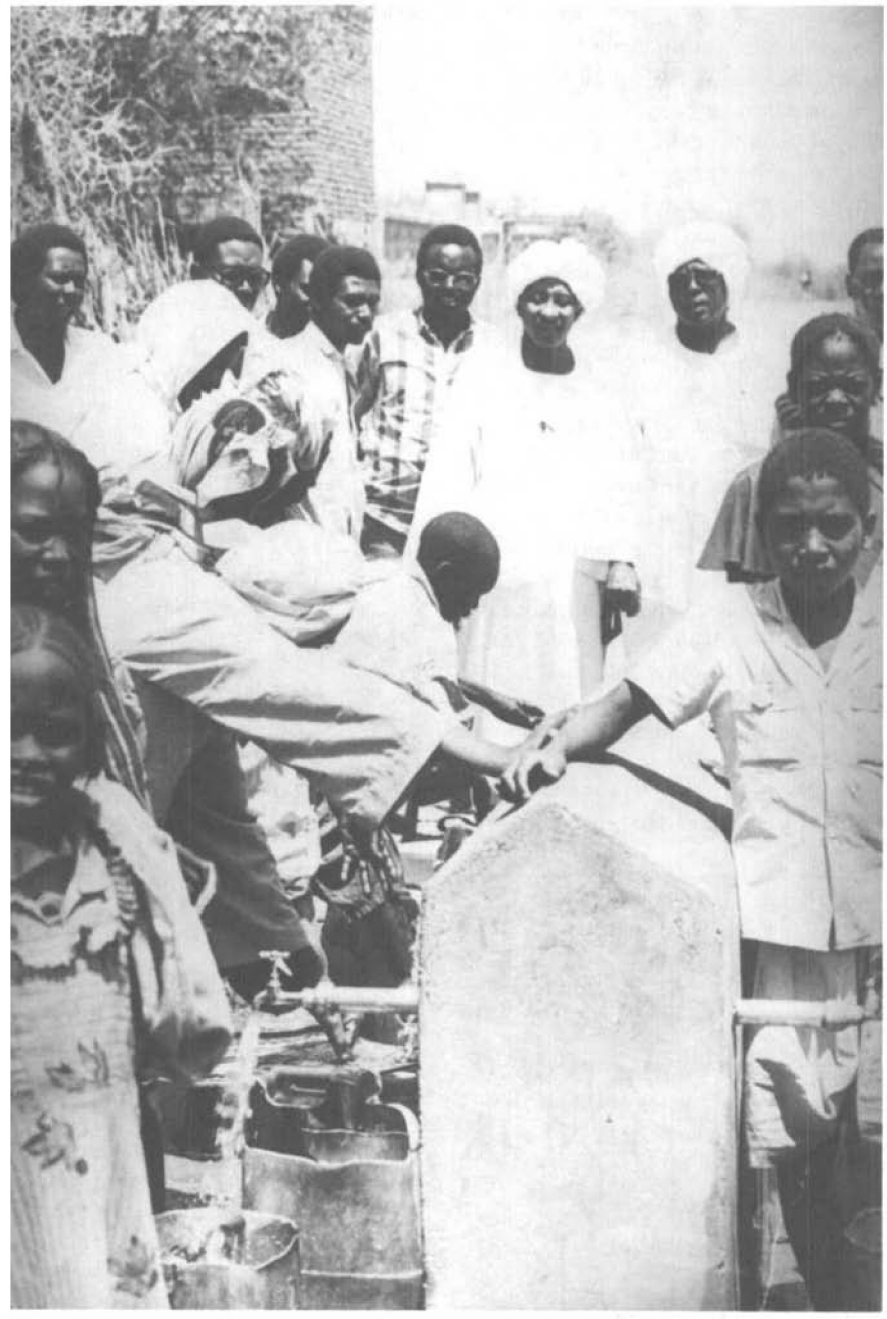
The kiosk's opening hours have been restricted because:

- El-Geneina National Urban Water Corporation (NUWC) suffers from continual fuel shortages.
- The production well for the kiosks is also used to supply the old town system.
- Preventing pressure build-up in the pipes while water is pumped directly into the system has been desirable so while the water kiosks were open they were being used constantly.
- A reliable system of providing spare parts for the equipment other than through project infrastructure has not yet been worked out.

Steps are being taken to improve this situation. Optimistic notes to this are that:

- A fuel supply is being arranged for El-Geneina NUWC.
- As new wells come into production, the need to switch off the kiosk supply so that water can be pumped to the town will cease.
- The tank at the main well site for the kiosks is virtually completed and once in operation will help provide even pressure to the system throughout the day.

The difficulty of transporting water back to the home is another reason people use other sources. For old and ill people this can be a serious problem, as in the case of the old woman with the broken hand.



If the committees doubled the opening hours it would mean better service for both individuals and water vendors.

Water vendors

Some water vendors use water from the kiosks rather than going to the *wadi*. This is to be encouraged, especially when the opening times at the kiosks are extended. Already some water vendors using the water kiosks have dropped their prices because they are able to make shorter trips and thus more of them. If the opening hours are extended it will encourage more water vendors to use the kiosks.

The NUWC management must, however, ensure that:

- maximum access is afforded to women collecting water for their own homes; and
- there is equal access among vendors to the kiosks. In the past some vendors have cornered not only the market but also the supply. A suggestion that separate water kiosks be constructed for the vendors, using hoses to facilitate filling the leather water bags, should also be considered.

The issue of the water vendors is important, as they are one of the main suppliers of water to El-Geneina and in times of fuel shortage and breakdown they are the only suppliers of water to the town. They provide a vital service, which the water project should in no way threaten other than by providing fair competition.

The role of water vendors as suppliers to the old and the ill, and to those who do not have the time to carry water, is also important to

consider. There is no way in the foreseeable future that each and every house in El-Geneina will get its own tap, however desirable this might be; in practice it simply is not a possibility (unless of course someone was to strike oil in the surrounding hills!). This being the case it is surely preferable to support a donkey-powered water delivery service for those that require it.

It has also been suggested that the prices for water delivered by vendors should be controlled, but this is wrong. The current rate is set by the free market and is related closely to the real costs incurred by the vendors. If the government sets a rate it is unlikely that the rate would be fair to the vendors, and it might well result in the end of the service. The following cost-benefit analysis of a donkey vendor from Ardamatta illustrates the economic position of the vendors.

Donkey vendor cost-benefit analysis

(using current prices throughout and assuming a ten-year useful life)

Donkey vendor costs	S£
Cost of purchasing donkey	700
Leather water bags (new one every 3 months)	10 000
Food (S£10/day)	36 500
Operator wages (S£10/day)	36 500
Water-well use charge (S£1/day)	3 600
Total costs	87 300

Donkey vendor income	S£
15 productive trips per/day (@ S£2)	109 500
Income minus costs over ten years	22 200
Monthly profit	S£185

The finances of a water vendor in El-Geneina differ slightly — generally more money is charged per bag of water, because the deliveries are to areas further from the *wadi* and fewer trips are made.

Discussions with the respondents revealed that most people in the kiosk area know who their committee members are, but said that the committees did not do very much, and it seemed that the men met occasionally to discuss problems, but not the women. When problems did develop the NUWC was not responsive to the committees. These comments are a bit sad but not altogether unexpected, as the NUWC in El-Geneina did not have a qualified engineer or manager, let alone anyone to deal with customer services. As part of the institutional development of the project such a department is to be formed and part of its role will be to liaise with the committees and keep them active. The community fund derived from a small percentage of the water charges has not yet been implemented; once a proper customer services department is in operation it should be possible to revive this, and with it the lagging enthusiasm of the committee members.

The kiosks supply clean water, but only community management will ensure their continued operation.

References

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