

cl

A SOCIO-ECONOMIC SURVEY OF THE EL-GENEINA WATER PROJECT

824 SDDA 90

REPORT BY BRIAN MATHEW MA. AMIAGRÉ.

March 1990



(above: photograph of an El-Geneina water kiosk)

Page:	Contents:	
2	INTRODUCTION	LIBRARY
3	SURVEY METHODOLOGY	INTERNATIONAL REFERENCE CENTRE
3	AREAS INVOLVED	FOR COMMUNITY WATER SUPPLY AND
5	DAILY PER CAPITA WATER CONSUMPTION	SANITATION (IRC)
6	ECONOMIC ANALYSIS	
7	WATER KIOSKS: THE NEED FOR LONGER OPENING HOURS AND MORE?	
9	WATER VENDORS (including cost-benefit analysis of a water vendor)	
11	WATER COMMITTEES	
12	BIBLIOGRAPHY	
13	APPENDIX (including example of questionnaire / checklist used)	

LIBRARY, INTERNATIONAL REFERENCE
CENTRE FOR COMMUNITY WATER SUPPLY
AND SANITATION (IRC)
P.O. Box 93190, 2509 AD The Hague
Tel. (070) 814911 ext. 141/142

RN: 7305

LO: 824 SD 90

↓
Southern Darfur

INTRODUCTION

The Nyala / El-Geneina water project is financed by the Royal Netherlands Government AID programme DGIS and the Government of the Republic of the Sudan. The project is administered by the National Urban Water Corporation (N.U.W.C) with consultant and logistical support from Euroconsult. Nyala and El-Geneina are two towns in the province of Darfur, West Sudan. El-Geneina where this survey took place has a population of around 90,000.

While preparing the proposal for a more detailed social survey of the Nyala / El-Geneina water project I ran a small socio-economic survey of my own. The reason for this was to gain a fuller understanding of the issues involved and thus to have greater effectiveness in targeting the main survey. The results of this mini-survey are however interesting and I believe worth sharing. This report includes the results of the survey with some analysis and comment.

The Projects aim has been to improve water supplies to the urban populations of Nyala and El-Geneina. This has been done: firstly by improving the physical infrastructure, installing new pipes, pumps, generators, wells etc. and secondly by conducting a programme of institutional development, to ensure that the management and staff able to run the new equipment and systems on a sustainable long term basis. The principle method of expanding access to safe water supplies has been to construct water kiosks (see photo p1), where people can purchase water, the resulting revenues pay 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 kiosk community to form the kiosk committees, these then selected a male guard and a female minder to run each kiosk on a day to day basis.

This report attempts to analyse some of the socio-economic impact which the project has had; comparing the area in El-Geneina where the water kiosks are operating, with Ardamatta, a suburb where water kiosks are still under construction and not yet functioning.

SURVEY METHODOLOGY

The survey comprised an interview/questionnaire which was carried out with women householders in El-Geneina and Ardamatta (sample questionnaire in appendix). The total number of women interviewed was 30 the number of people living in the households they represented 245, about 1% of the target population. Permission to carry out the interviews was obtained from area Sheiks, and where necessary husbands. Households were chosen in a random manner with the intention of covering spatially as much of the areas involved as possible.

AREAS INVOLVED

1) El-Geneina Kiosk Area

Interviews were taken in the area around the 9 operating water kiosks in the town. The water kiosks have been operating since March 1989. Mechanical problems and fuel shortages have however affected supply from time to time. The kiosks were completely out of action during much of September and October 1989.

2) Ardamatta

A suburb of El-Geneina, Ardamatta was chosen as the control or comparison area. At present its only sources of water are the traditional wells which are situated in and around the Wadi Kaja. Work is underway in Ardamatta and new water kiosks should be functioning later this year (1990).

(Photograph of women drawing water from an unprotected well in the Wadi Kaja)



There are two interference factors which affect the validity of a direct comparison between these two areas:

a) Ardamatta is much closer to the old traditional water sources in the wadi than is the kiosk area in El-Geneina. This is important to consider as 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. SDE2.30 / 100 litres in Ardamatta as compared with SDE5.60 in El-Geneina.

b) 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.

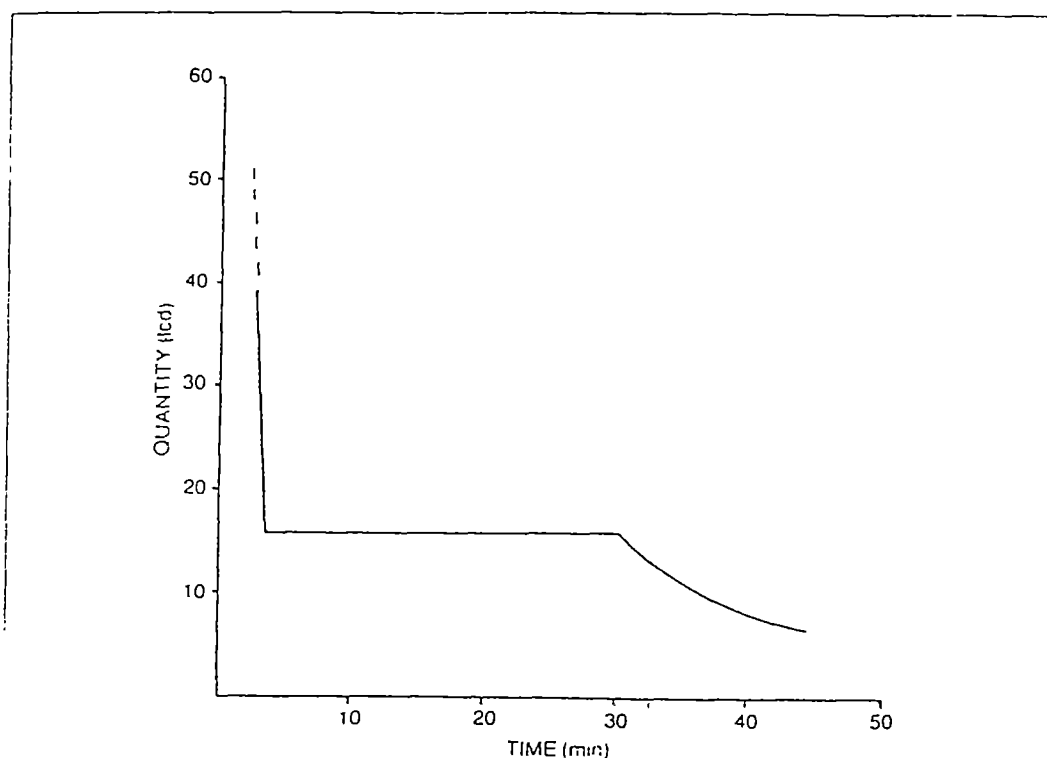


DAILY PER CAPITA WATER CONSUMPTION

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

These results show no significant difference in water consumption between the two survey areas. In health benefit terms this is important to consider, since the increased quantity of water used is more often associated with benefits in Health than is improved quality of water(1), which the project has most certainly provided from the new water kiosks. However as work in Mozambique(2) has shown, the quantity of water used per capita is related to how far it has to be carried. This relationship is shown graphically as a shallow curve 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 (see graph below). (Source Cairncross 1987. pp.31 ref 3)





ECONOMIC ANALYSIS

The Survey attempted to gain some economic data concerning the amount of money spent by households on water and the proportion this represented as income.

AREA	water source	Sd£/Month/Capita	% of income
El-Geneina	water kiosk only	2.95	3.8
El-Geneina	kiosk and vendor	5.05	7.9
Ardamatta	vendor	20.7	17.5
Ardamatta	Well and Vendor	7.39	13.6

ANALYSIS AND COMMENT:

The result shows quite clearly the economic advantage for households situated within using distance of the new water kiosks. This is so even when comparing the position of people who use both water kiosks and water vendors over those who use vendors and traditional wells. The straight benefit for the kiosk user in the kiosk area over the vender user in Ardamatta is Sd£ 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 Sd£ 0.00625/ litre from the kiosks

cost of water for one month from the water kiosks = Sd£ 27.75

WATER VENDOR AVERAGE MONTHLY HOUSEHOLD WATER BILL

18.5 litres per person per day

8 members of the household

cost of water Sdf 0.056/ litre from the water vendors

cost of water for one month from the water vendors Sdf 248.64

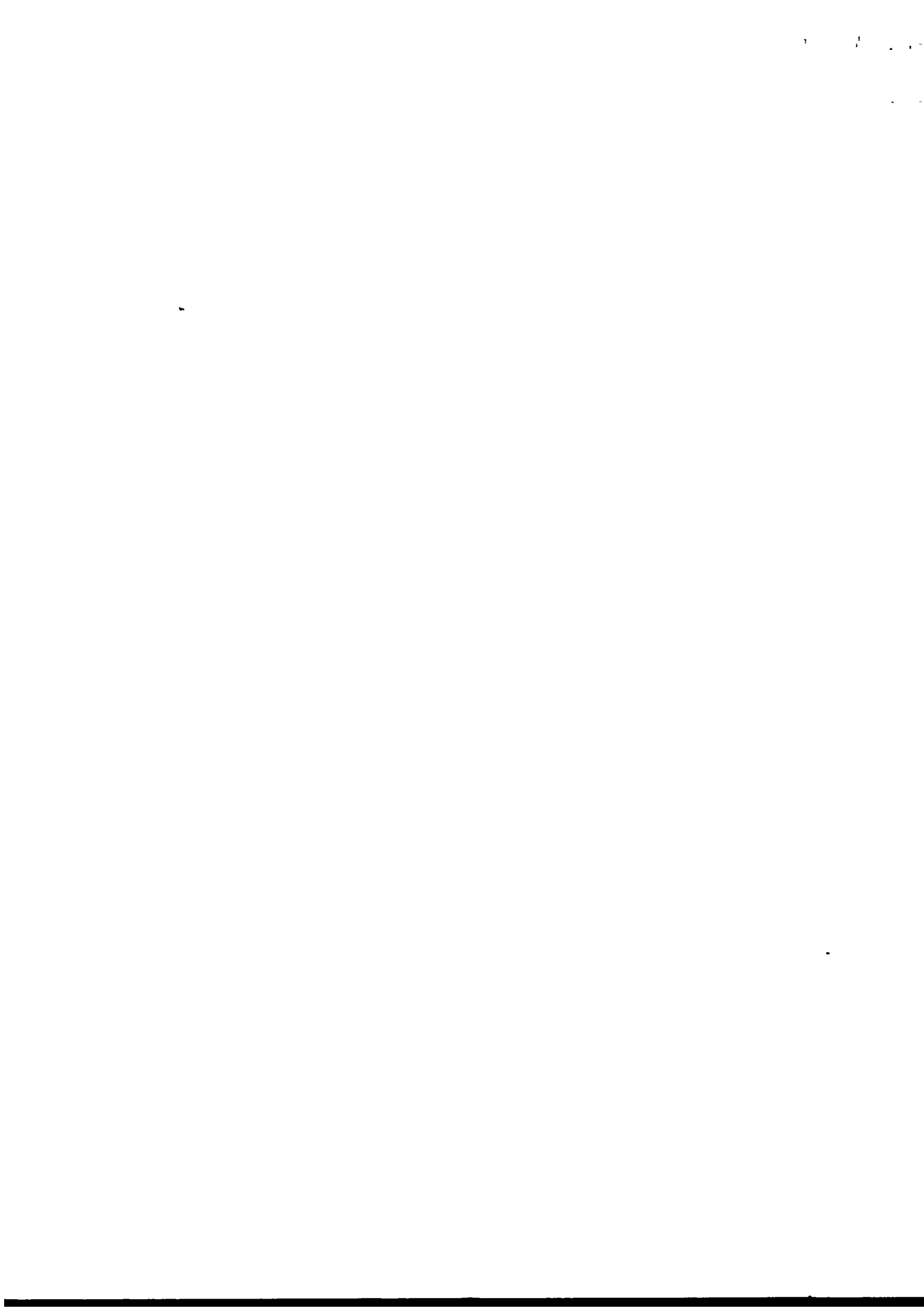
The potential monthly saving for average households in the kiosk area is Sdf 220.89. Taking the survey figure for average family income in the kiosk area of Sdf 713.30 this represents a saving from 34% of average family income spent on water to just under 4%. This is obviously a very real benefit to the people who are using the water kiosks.

WATER KIOSKS: THE NEED FOR LONGER OPENING HOURS AND MORE?

This now brings us on to another issue which came out of the survey: why do people who live in kiosk areas still use other sources of water? Of the female householders in the kiosk area, 40% claimed to use the water kiosks only, 33% claimed to use vendors as well as the kiosks, and 13% 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 has not been working recently due to pressure problems) and one old woman had a broken hand and could not carry water from the kiosks.

The reasons given for using other water sources were:

- 1) When the water kiosks were not working. This happens on Fridays (the weekend), and more seriously when the fuel, for the generators supplying electricity to the pumps, has run out, or when there is a technical problem.
- 2) When there was a long que at the kiosks. People do not like waiting for water and this encourages them to look to other sources. Early users of the kiosks can usually get their water within 15 minutes, later when queues have



built up it can take an hour or more to get two jerry cans filled with water. 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 takes between 1.5 minutes 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 each hour 2,400 litres of water, or enough for about 130 people. Over four hours it will supply enough water for 520 people. Obviously doubling the opening hours would double the potential amount of water available.

Until now the restrictions on the time the kiosks have been open have been due to:

- a) fuel: El-Geneina N.U.W.C. suffer from continual fuel shortages.
- b) time: the production well for the kiosks is also used to supply the old town system.
- c) Pressure: to prevent pressure build up in the pipes while water is pumped directly into the system it has been desirable that while the water kiosks were open they were being used constantly.
- d) Breakdowns: a reliable system of providing spare parts for the equipment other than through project infrastructure has not yet been worked out.

Optimistic notes to this are that:

- 1) A fuel storage is being arranged for El-Geneina N.U.W.C.
- 2) 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.
- 3) 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.

Other reasons for continuing to use other sources include the difficulty of transporting the water back to the home. For old and ill people this can be a serious problem as in the case of the old woman with the broken hand. However, while the kiosks are functioning some water vendors do use water from the kiosks rather than go to the wadi. This is to be encouraged especially when the opening times at the kiosks are extended. Already it has been seen that some water vendors using the water kiosks have dropped their prices, this is because they are able to make shorter trips and thus more of them. If the hours of opening are significantly extended it will encourage more water vendors to use the kiosks to fill up from.

There is a need however for the N.U.W.C. management to keep a continual eye on these matters to ensure that:

- 1) maximum access is afforded to women collecting water for their own homes,
- 2) that 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.

WATER VENDORS

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 for those that 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 have a donkey powered water delivery service for those that require it, and thus important to encourage the donkey vendors rather than discourage them.

One of the negative suggestions that I have heard is that the water prices for water delivered by vendors should be controlled, this I believe is wrong. The current rate is set by the free market and it is related closely to the real costs incurred by the vendors. If the government set a rate it is highly 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.

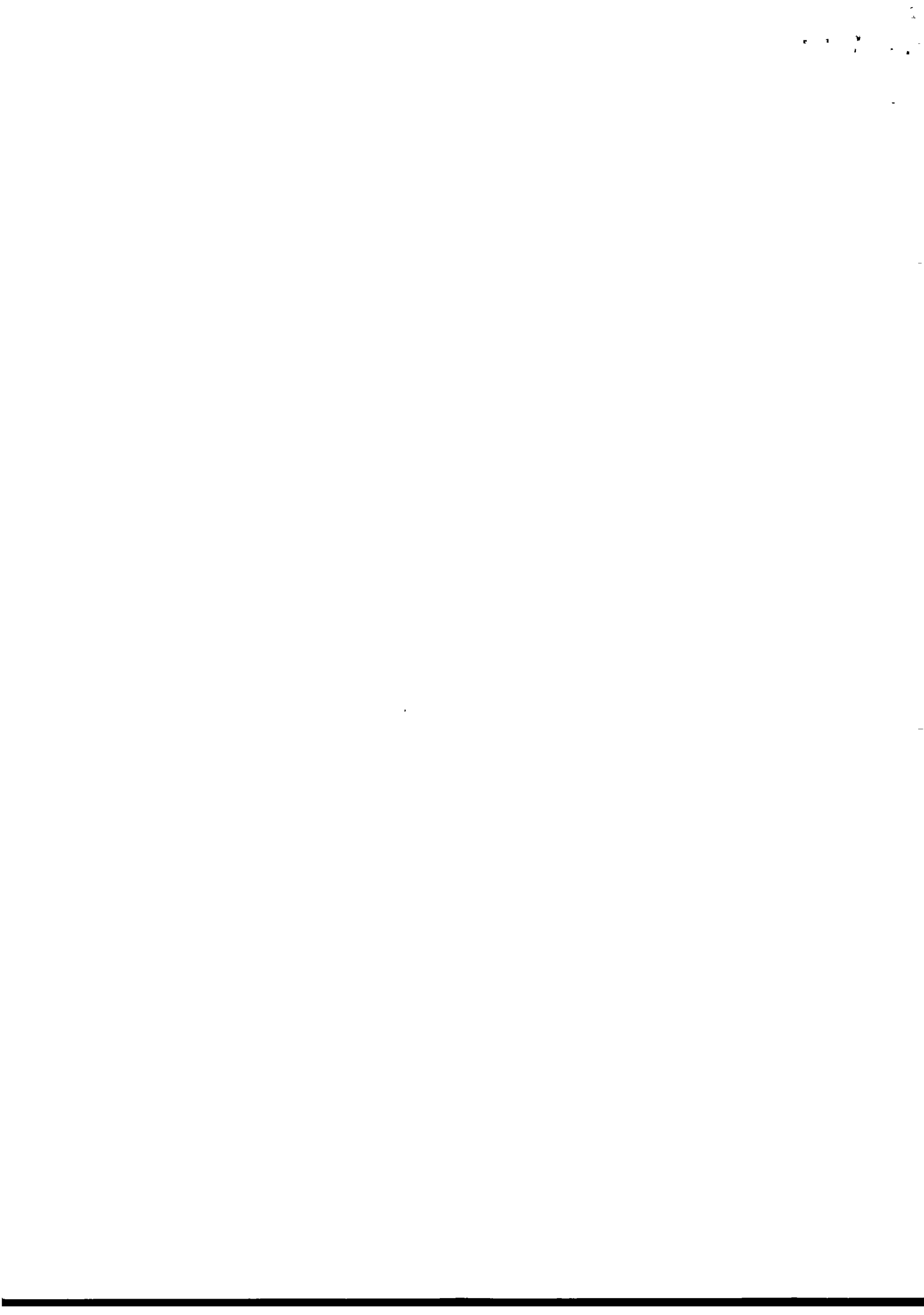
DONKEY VENDOR COST-BENEFIT ANALYSIS

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

Donkey vendor costs:	Sd£
cost of purchasing donkey	700
Leather water bags(new one every 3 months)	10,000
Food (Sd£10/day)	36,500
Operator wages (Sd£10/day)	36,500
Water well use charge (Sd£1/day)	<u>3,600</u>
TOTAL COSTS	87,300
Donkey vendor benefits	Sd£
15 productive trips per/day (@ Sd£2)	
TOTAL BENEFITS	109,500
BENEFITS MINUS COSTS OVER TEN YEARS =	22,200

This works out as a monthly profit of Sd£ 185.

The economics of a water vender in El-Geneina differs slightly where generally



more money is charged per bag of water, because the deliveries are to areas further from the wadi and fewer trips are made.

WATER COMMITTEES

In discussions with the respondents we found that most people in the kiosk area did know who their committee members were. However a general comment was 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 N.U.W.C. was not responsive to the committees. These comments are a bit sad but not altogether unexpected, as the N.U.W.C. in El-Geneina did not have a qualified engineer or manager, let alone any one to deal with customer services. As part of the institutional development 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 properly working customer services department is in operation it should be possible to revive this, and with it the lagging enthusiasm of the committee members.

BIBLIOGRAPHY

- 1) Esrey S.A., Habict J.P. : "Epidemiological Evidence for Health Benefits from Improved Water and Sanitation in Developing Countries". Epidemiological Reviews Vol.8 1986 Johns Hopkins University School of Hygiene and Public Health USA. pp 116 - 128

- 2) Cairncross S.: "The Benefits of Water Supply". Developing World Water II (ed. J. Pickford) Grosvenor Press, London. 1987. pp 30 - 34

- 3) Cairncross S., Cliff J.L.: "Water use and health in Mueda, Mozambique". Transactions of the Royal Society of Tropical Medicine and Hygiene (1987) 81, pp 51 - 54

APPENDIX

Example of questionnaire / checklist used

FAMILY DATA

Name of Mother/s

Name of Husband

No. of Children in the house

No. of other Dependents

Family Jobs:

Total Monthly Income:

WHERE DOES THE WATER COME FROM? (tick)

Vendor

Well

Kiosk

Distance to source?

No. of trips per day?

is a donkey used?

if not who carries the water?

WATER QUANTITY AND COST SECTION

quantity of water used?

cost of water?

Other topics/comments: names of committee members etc.

