



The Water Kiosks of Kibera

A comprehensive study into the business of providing water in a sprawling informal settlement in Nairobi, Kenya sheds light on the challenges and opportunities of helping poor people access improved water and sanitation services

East and Southern Africa Region

Introduction

This *Field Note* highlights findings of a study on public water points - commonly known as "water kiosks" - carried out in Kibera an informal settlement in Nairobi, Kenya.

The study was commissioned by the UNDP-World Bank Regional Water and Sanitation Group for East and Southern Africa (RWSG-ESA), as part of technical assistance to the Nairobi City Council's (NCC) Water and Sewerage Department (WSD). This assistance supported the preparation and implementation of the Kibera Water Distribution Infilling Component (KWDIC).

The KWDIC is a component of the Third Nairobi Water Supply Project (TNWSP) aimed at developing and testing community-based options for improving water supply in Kibera.

The TNWSP is being implemented by the NCC with funding from the World Bank, African Development Bank and other donors. Among other activities, it includes the development of a dam, treatment and storage works, expansion of the water distribution network, desludging of sew-

erage treatment ponds and rehabilitation of sewer lines.

The water kiosk study focused on the business of delivering water to consumers in Kibera. It complements information gathered through a Rapid Needs Assessment (see separate *Field Note*) conducted by RWSG-ESA.

Background

With an estimated population of 500,000, the Kibera informal settlement is home to a quarter of the population of the City of Nairobi. The settlement covers an area of about 250 hectares which works out to a density of 2,000 people per hectare. This makes Kibera one of the most densely populated informal settlements in sub-Saharan Africa.

One of the key problems facing the Kibera community is inadequate infrastructure compounded by lack of a clear policy framework and effective programs for meeting the needs of the residents of informal settlements. Poor water supply and sanitation are among the most serious infrastructural problems.



Water kiosk attached to a house

Water kiosks, which in mid 1997 accounted for 64 per cent of the 1,014 water connections registered with the NCC in Kibera, are the principal outlets through which the NCC makes water available to consumers. A random sample of 63 kiosks representing about 10 percent of the total (651), formed the basis for the study.

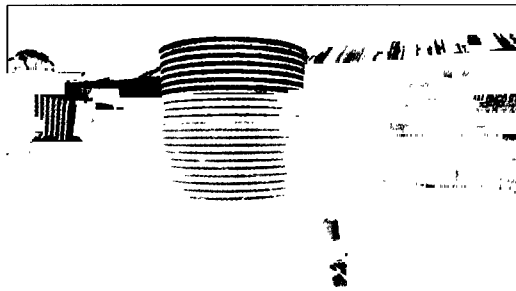
The study gathered and analysed data on various aspects of the business of providing water to Kibera residents. It also examined the character of water services in terms of regularity, adequacy, care and cost to the consumer.

Information generated by the study forms an important basis for developing strategies that will lead to improved water services in Kibera.

SUMMARY OF FINDINGS

Characteristics of Water Kiosks

Water kiosks are predominantly owned by individuals resident in Kibera who are both vendor and end user of the kiosks. Registered kiosks are authorized to sell water by obtaining a license from WSD. Many of the kiosks are operated as family enterprises along-side other small scale businesses and serve a dual role - as a source of income, and source of water for domestic use. Although almost all kiosks (98 percent) are owned by individuals, a number of such kiosks are operated by self help and other community groups.



Water kiosk with a storage tank

Other main features documented in the study include:

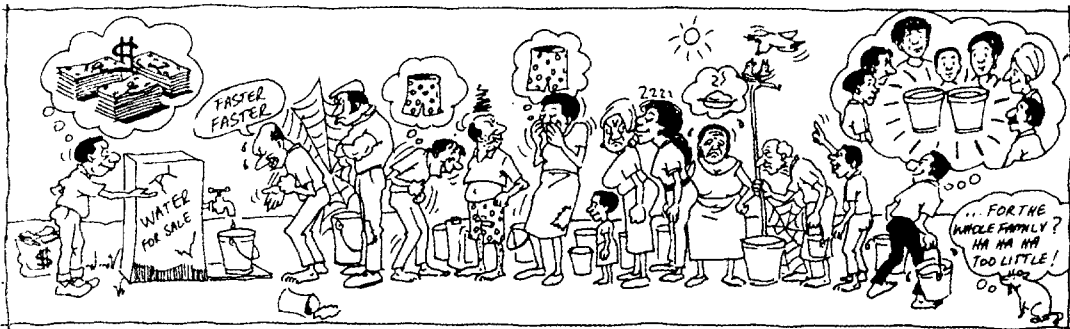
- The kiosks draw water from the NCC mains and over 93 percent have complied with NCC technical standards for pipes.

- Lack of a comprehensive water distribution network has however given rise to parallel laying of pipes and the distance between the main line and the kiosk varies from 5 meters to 1,680 meters.
- 75 percent of kiosks that were surveyed use water supply pipes of between 1/2 and 3/4 of an inch and therefore have a limited supply.
- Only one out of every six kiosks had any form of physical "superstructure". A number of kiosks are, however, operated from windows of shops.
- About two out of every three kiosks had water storage tanks constructed mainly from GI sheets. All kiosks owned by self help groups had water storage facilities.
- There was little or no provision for waste water disposal resulting in stagnant pools of water within the settlement. Waste water was however better managed among kiosks owned by individuals than by self help groups.

Investment and Running Costs

In order to establish the cost of setting up kiosks, the study made an estimate of resources required to establish a kiosk at current prices. Some kiosks had been established more than 15 years earlier. Others had changed owners and information had not been passed on.

- The full cost of all infrastructure from the mains to, and including, the kiosk is borne by the owner.
- The cost of pipes, linking the kiosk to the NCC water supply, constitutes the single most expensive item accounting for upto 89 percent of the total investment cost.



The agony of queuing for water

- Investment in construction of shelter or water storage facilities, is low and accounts for less than 10 percent of the total investment cost.
- Informal payments (Kshs. 8,000) made to numerous "gatekeepers" to facilitate water point installation, are twice the official payments made to WSD.
- The median capital investment ranged between Kshs. 5,000 and Kshs. 40,000. Operation and maintenance costs are estimated at Kshs. 125 per day.
- Family members are an important source of labor for running the kiosks; a majority of which are run alongside other small-scale family businesses. (Only 12 per cent of kiosks hired labor).

Water Availability

During the period of the study, kiosk owners expressed dissatisfaction with the availability of water and cited interruptions in supply and irregular flow as the key problems. Of the kiosk owners surveyed, 70 percent reported receiving water at least three days in a week while 30 percent received water or once a week. Since water is the kiosk's commodity of trade, its absence from the taps when in demand is considered unacceptable.

Water Trade

The study found that 30 percent of kiosks accounted for 70 percent of the total volume of water sold in Kibera. Ease of access to the mains and availability of water (e.g. through large storage tanks) was a significant factor influencing sales in these kiosks.

- On average, each kiosk sold about 50 jerricans of water a day. The principal customers of individual kiosks were neighbours and tenants. Vendors also buy water from kiosks and sell it to neighbouring formal settlements whenever there is a widespread water shortage.
- Water was sold at twice the price recommended by WSD (Kshs 2.00 per 18 litre jerrican whenever it is available¹). During

shortages, prices are increased further. This may be a result of the high investment costs incurred by some kiosk owners.

- Although economic analysis suggests that kiosks may be an unprofitable business venture, this may be discounted by other benefits to resident kiosk owners, such as having water available for domestic use. Non payment of bills and use of family labour by many kiosks also contribute to a better profit margin.
- Water kiosks also seem to confer added value to other forms of businesses, such as rental houses and small-scale retail shops run alongside these kiosks.

Water Management Issues

Among the key management problems documented by the study were those associated with meter reading, billing and payment collection. More than 90 percent of kiosk owners had their water connected within six months of applying to the WSD.

- *Delayed and Irregular Meter Readings.* Only half of the readings for 1994 had been recorded, while the latest readings available were for water consumed six months earlier.
- *Bills Issued Late and Irregularly.* At the time of the study in mid 1997, bills were being issued for water consumed in the second half of 1996. Kiosk owners reported being billed for sewerage even though they were no sewer connections within the informal settlement.
- *Poor Rate of Payment to the NCC.* An average of 13 percent of kiosk owners had paid their bills between 1995 and 1996. Owners cited lack of confidence in meter reading, and irregular billing as reasons for non payment.
- *Unbilled Water.* The WSD was billing for less than 10% of water used in Kibera. Illegal connections and leakage also contributed to low revenue collection.

¹ Tariff is Ksh 10 per cubic metre and Kshs. 1.00 per 18 litre jerrican. Current prices are between 2.00 and 3.00 for a 20 litre jerrican (1998).

Infrastructure and Investment Costs by Village			
Village Name	Pipe Lengths (range metres)	Total Storage (gallons)	Investment Cost (range in Kshs*)
Gatwekera	3-1,680	13,800	3,698-112,351
Kianda	23-338	2,000	349-11,351
Kisumu Dogo	19-375	6,750	1,593-16,480
Lindi	8-750	3,000	79-76,792
Laini Saba	284-1,166	9,600	9,424-184,177
Makina	1-360	11,800	1,469-29,250
Mashimoni	5-294	4,200	135-12,290
Silanga	704-1,061	8,000	10,223-89,873
Soweto	101-523	4,500	7,939 - 54,727

* 62 Ksh = 1US\$ (1997)

Conclusions

The study findings point to a number of issues requiring action at various levels. Below are actions being undertaken by NCC in respective areas:

- *Upgrading the Water Distribution Network within the Settlement.* This will be carried out through the ongoing KWDIC which includes 20 km of infilling mains, bulk metering and mapping. On completion of the network, distance to the mains will be less than 100 meters.
- *Improving the Management of Water Supply.* A study on alternative management

arrangements for Kibera water supply is being conducted in consultation with stakeholders. The new management arrangement will facilitate cost recovery through improvements in meter reading, billing and payment collection.

Study Methodology

The study was undertaken through a combination of methods that include a survey, analysis of records, structured interviews and observations. The first task was a detailed physical count of all water selling points (kiosks) in Kibera. During the count, pertinent features of the 651 registered water selling kiosks in the nine "villages" were documented. This was followed by an analysis of data on all 651 water outlets from records maintained by the NCC's Water and Sewerage Department. The third task was interviews with owners or operators of 63 kiosks selected at random - 59 responded. Data collected from the questionnaire was supplemented with a one-day unobtrusive observation of one kiosk, selected at random, in each of the nine "villages". Problems encountered during the study included discrepancies between the ground count of kiosks and records kept at the NCC and the standard limitation associated with information gathered through questionnaires.



An aerial view of a section of Kibera

This Field Note was prepared by Mukami Karuki and Lawrence Gikaru, and edited by Brazille Musumba and Japheth Mbuvi. It is based on the findings of the Kibera Water Kiosk Study conducted by Business Economic Research (BER) consultants for UNDP - World Bank Water and Sanitation Program, May 1997

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