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ACCESS TO SANITATION AND SAFE WATER: GLOBAL PARTNERSHIPS AND LOCAL ACTIONS

Water supply coping strategies in Accra

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Many areas in Accra, the capital city of Ghana are experiencing shortfalls in water supply from the urban water utility, Ghana Water Company Limited (GWCL) resulting in various means of coping. This study examined the various coping strategies and the cost of coping based on a survey carried out among 170 households in Accra. The coping strategies were buying from neighbours, water tanker operators, building water storage facilities and buying bottled and sachet water for drinking. Coping strategies and cost for different income groups in Accra are discussed. High income consumers buying directly from tanker operators pay 7 times GWCL lifeline rate, Low income consumers buying from neighbours/vendors were paying 10 -13 times GWCL rates. The cost of sachet water was 150 times GWCL rates and that for bottled water was 900 times GWCL lifeline rate per cubic meter.

Introduction

Ghana like many developing countries in sub-Saharan Africa has low water supply coverage. The Ghana Water Company Limited (GWCL), responsible for urban water supply effectively meets only 60 percent of the urban water demand (Ofosu, 2004). A survey on 'Use and Satisfaction' of water services in urban areas of Ghana revealed Accessibility (including reliability for piped customers) as the first priority followed by Affordability and Quality (PURC, 2005).

Accra, the capital city of Ghana has its fair share of inadequate water supply. Majority of residents in Accra, the capital city of Ghana, rely on GWCL water sources directly or indirectly through secondary and tertiary service providers. However, only 9.8 percent of inhabitants in Accra have house-connection with indoor plumbing (GSS, 2000). The other inhabitants rely on house connections with inside standpipe or yard connection (38.7 percent), water vendors (15.7 percent), tankered water (0.3 percent), neighbours (22.3 percent), private outside standpipe (13.1 percent) and public standpipe (0.2 percent) (GSS, 2000). Another study in Accra by Boadi (2004) revealed wide difference between wealthy and poor households regarding access to safe water. The study showed that 71.1 percent of medium wealth households and 94.8 percent of high wealth households have indoor pipe connection, whilst only 28.8 percent of poor households have indoor connection.

The poor water supply situation has resulted in the use of various coping strategies by consumers. An understanding of coping strategies and cost, the focus of this study, is important to inform ongoing efforts to improve the water situation. A household survey was conducted in Accra for information on the various sources of water and its cost. The communities for the survey were chosen to represent the different income groups (see Table 1) to allow for comparison across the income groups. In all, 170 questionnaires were administered over a period of two months, from 29th December -16th February, 2007.

Income group	Communities Selected	No. of respondent	Percentage of respondent
Low income(LI)	Mallam, Nungua, Agbobloshie, Korle Gonno	33	19
Middle income(MI)	New Gbawe, Taifa, Anyaa, Lashibi, Spintex, Adenta, Madina, Korle Bu, Mataheko,	100	59
High income(HI)	West/East Legon, McCarthy Hill, Labone Estate, Manet (Court & Ville),	37	22

Source of water and coping strategies

The respondents were classified as either GWCL customers or non GWCL customers. GWCL customers refer to respondents with direct connection to GWCL water supply. Non-GWCL customers refer to respondents without direct access to GWCL water connection. Majority (79%) of respondents were GWCL customers even though it varied across the income groups (see Figure 1). The reliability of GWCL water supply was found to vary considerably. A third of the respondents (33%) received water 1-2 days per week, 16% received water 3-4 days per week, 6% received water 5-6 days per week and 17% received water every day. A small percentage of respondents (7 %) with GWCL connections hardly received water and were therefore not receiving bills. These were isolated cases in McCarthy hills (a high income area) and some parts of peri-urban areas. Another interesting but not surprising result was that a higher proportion of the high income customers had GWCL water connection compared to the low income customers.

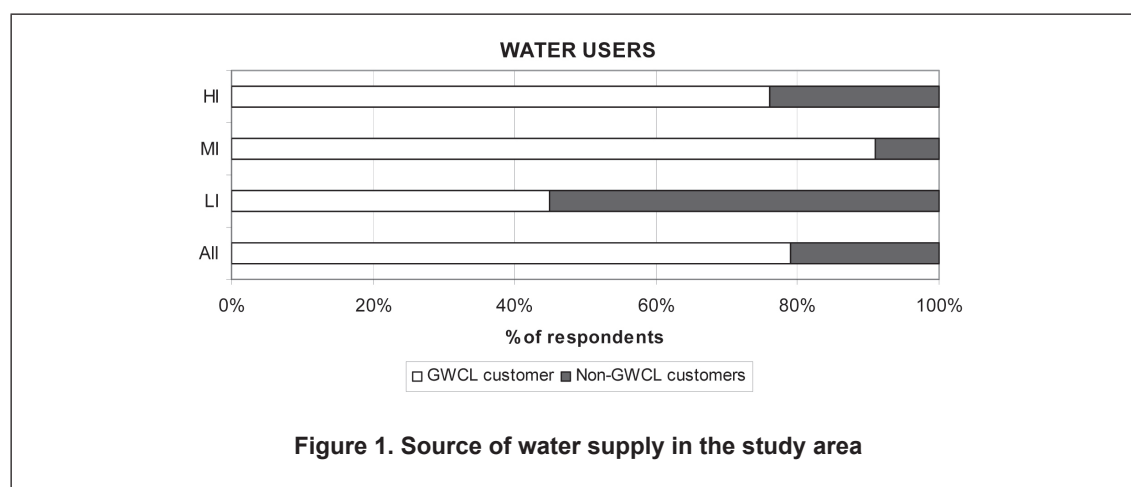


Figure 1. Source of water supply in the study area

Income level	Rain harvesting	Hand dug well	Water tanker	Neighbours	Sachet/ bottled water	Private vendor	TOTAL
High income	5	3	38	0	35	8	89
Middle income	10	2	18	11	40	11	92
Low income	0	9	0	70	3	6	88
All	7	4	19	20	31	8	89

Table 2 shows the main coping strategies in use and how it varies across the income groups. It reveals that 89% of the respondents are coping. Out of those coping, the majority are relying on sachet and bottled water (31 %), followed by Neighbours (20 %), tanker operators (19 %), private vendors (8 %), rain water harvesting (7 %) and hand dug wells (4 %). The dominant coping mechanism for the low income groups is the supply from their neighbours (70 %) whilst the dominant coping mechanism for the high income group was the use of tanker operators. From Table 2, 12 % of the respondents in the low income group, 8 % in the middle income group and 11 % in the high income group are not coping, meaning they rely solely on GWCL services. Coping strategies identified are used by both GWCL and non-GWCL customers.

Most of the respondents (89 %) were coping. They were consumers without services from GWCL and those underserved by GWCL. Coping strategies varied across the income groups. The high income group without reliable services from GWCL had big reservoirs and bought from tanker operators. The use of tanker operators is regulated by GWCL and Public Utilities Regulatory Commission (PURC). The tariff charged by GWCL to the tanker operators is regulated by PURC. The tariff to the end user is not regulated by PURC but rather let to the market. Some mechanisms for regulating tankered water quality is stipulated in the Memorandum of Understanding (MOU) between GWCL and the Tanker Water Associations. PURC is also in the process of preparing guidelines for the tanker operators to ensure water quality.

The use of bottled or sachet water was found amongst all income groups but was very common in the

high and middle income groups. The quality of the bottled water is very high whilst the quality of some of the sachet water has been questionable. Water from these sources is usually treated by filtration/Ultra-Violet radiations making them safe for consumption.

The low income groups normally did not have big storage reservoirs, thus bought in bits by bucket from neighbours and vendors. Private vendors refer to those who both buy directly from GWCL or tanker operators and re-sell to customers in areas poorly served with public water supply or distribute via carts. Cost of water from tanker operators is directly linked to the haulage distance for delivery.

Groundwater is not commonly used in Accra due to problems with salinity. Only one individual was using a borehole and 8 % of the respondents relied on hand dug wells.

Cost of water

The cost of water was dependent on the source of water. Direct water supply from GWCL was the cheapest though not reliable. GWCL water costs for domestic consumers are ₵4031/m³ (US \$0.44/m³) for the first 20m³ and ₵5528/m³ (US \$0.60/m³) beyond 20m³. The average cost of water per m³ from GWCL for the various income groups, shown in Table 3, were obtained from household water bills. It shows that low income groups were paying about 20 % higher than the high income groups. The tariff structure and the housing structure accounts for this variation. The increasing block tariff penalises houses with many households sharing a single meter.

Income group	Water Consumption (m ³)	Average Annual cost (GH₵)	Unit cost (GH₵/ m ³)	Unit cost (US \$/m ³)
Low income	80-130	48-78	0.53	0.58
Middle income	150-350	85-113	0.40	0.44
High income	250-400	120-180	0.45	0.49

As expected the coping cost was higher than GWCL tariff. The unit cost of water from the other coping strategies requiring initial investment such as Borehole, hand dug well and rain harvested water consumption were calculated based on both the capital and operational cost. The average unit cost of coping (excluding the cost of bottled and sachet water) for the various income groups is shown in Table 4. The cost of water from neighbours and vendors was about 3 times GWCL lifeline tariff, whilst that from tanker operators could go up to 15 times GWCL lifeline tariff. Neighbours supply water at different prices depending on the source of water. Consumers buying from neighbours with direct pipe connection e.g. Nungua paid ₵22,000/m³ (US \$2.4/m³). In areas without GWCL services, neighbours buy from water tankers and re-sell at ₵68,000/m³ (US \$7.2/m³) e.g. Madina, in the peri-urban area of Accra.

Income group	Unit cost (GH₵/ m ³)	Unit cost (US \$/m ³)	Remarks
Low income	1.35	1.47	Based on: Neighbours, Hand Dug Wells, private vendors
Middle income	3.75	4.08	Based on: rain water harvesting, Neighbours, Hand Dug Wells, private vendors, tanker operators
High income	5.97	6.49	Based on: rain water harvesting, Hand Dug Wells, private vendors, tanker operators

Water delivery via push-trucks (secondary providers) had an average cost of ₵32,000/m³ (US \$3.5/m³). This was used by the high income areas such as McCarthy Hill which has no flow of water. Water delivery by private vendors (tertiary providers) via secondary vendors was very expensive, ₵58,000/m³ (US \$6.3/m³) due to the long haulage in delivery and the long supply chain. This was however, prominent among some low and middle income areas like Nungua and Adenta where GWCL water supply is irregular. Bottled and sachet water was the most expensive going up to 800 and 120 times GWCL lifeline tariffs respectively.

Conclusion

Majority of the respondents (91 %) had adopted strategies to cope with the poor water supply in Accra. There was no significant difference in the proportion of the respondent coping across the income groups. The various coping strategies identified were rain harvesting, tanker operator, private vendor, hand dug well, neighbour on-selling, bottled/sachet water and storage reservoir. The high income group mainly relied on tanker operators, sachet/bottled water and private vendors whilst the low income group relied on neighbour on-selling, hand dug well and private vendors. Whilst the dominant coping strategy was the use of tankered water in the high income groups the low income groups relied mainly on water supply from their neighbours.

Whilst cost from GWCL was US \$0.49/m³ for the high income group, cost from GWCL was US \$0.65/m³ for low income group because of the housing types and the use of increasing block tariffs. Coping cost ranges from US \$1.47/m³ to US \$6.47/m³. Cost for coping varies for the various coping strategies. Neighbour on-selling could go up to 10 times GWCL rates, direct supply from tanker operators cost about 7 times GWCL rates, sachet water cost 150 times GWCL lifeline rate and bottled water cost about 900 times GWCL life line rate.

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