

Urban Water Politics and Water Security in Disadvantaged Urban Communities in Ghana

KWEKU G. AINUSON

Abstract: Ghana, like most developing countries, struggles to improve access to water and sanitation to its urban population. Presently, many areas within the country do not have access to clean water from the national grid. And in areas served by the approved utility company, water service is mostly erratic and increasingly unreliable. Available evidence indicates that only 59 percent of urban residents have access to improved drinking water. The main policy tool aimed at improving water supply is private sector participation in the water sector. The inadequacies in urban water supply are felt disproportionately in disadvantaged or peri-urban communities. Often, the needs of the disadvantaged communities are hidden in the aggregate statistics of the larger urban areas. This research theorizes that because of the unique characteristics of the disadvantaged community—a high concentration of low income dwellers, squatter communities, and poor infrastructure developments—private sector participation often has very limited effect on the disadvantaged communities. Using a multiple case study approach, this study analyzes the unique water problems faced by disadvantaged urban communities. The research concludes by espousing a multi-sectoral approach which utilizes all resources and uses multiple avenues for water delivery as the best approach to ensure water security to disadvantaged communities.

Introduction

In spite of the benefits of adequate water supply to economic wellbeing, Ghana like other developing countries struggles to improve access to water and sanitation to its urban citizens. At present, many areas within the country do not have access to potable water from the national grid. And in areas served by the approved utility company, water service is mostly erratic and increasingly unreliable. Available evidence indicates that as of 2008, only 59 percent of urban residents have access to improved drinking water from the national grid.¹

Low water supply coverage is not peculiar to Ghana alone, but forms part of a systemic urban water supply problem in sub-Saharan Africa (SSA).² According to the UK based international charity WaterAid, water supply coverage in Burkina Faso and Uganda is estimated at 61 percent and 60 percent, respectively. In Ethiopia, only 22 percent of the population have access to potable water, while 43 percent and 48 percent of the population in Mozambique and Nigeria, respectively, have access to potable water.³

Kweku G. Ainuson is an Assistant Professor at Mississippi State University with a joint appointment at the Department of Political Science and Public Administration and the African American Studies Program.

<http://www.africa.ufl.edu/asq/v11/v11i4a4.pdf>

The problems that account for urban water supply shortages in SSA are enormous and very complex in nature. These problems range from institutional bottlenecks like water utility management capacity and weak regulatory mechanisms to infrastructure problems such as poor urban planning, rapid growth of squatter communities, and insufficient financial resources.⁴

According to the United Nations, the urban population in SSA continues to grow at a faster pace than any of the other continents. With an urban population of 13 percent in 1950, the urban population in SSA had increased to 33 percent by 2002.⁵ The United Nations (UN) estimates that by 2030 one in two Africans will be living in urban areas. In Ghana, the proportion of total population living in urban areas increased from 26 percent in 1965 to 46.3 percent in 2005. It is projected to increase to 58 percent within the next twenty years.⁶ The growth in the urban sector outpaces the growth in infrastructure development and therefore limits the ability of government to provide adequate utility services to all urban dwellers. The group hardest hit by this shortfall in urban water supply is the urban poor.⁷ Current estimates indicate that over 28 percent of the urban dwellers in Ghana live below the poverty line. The urban poor are more likely to congregate along urban fringes and defined areas within the urban centers.⁸ These poor urban communities are mostly populated by squatters and migrants workers, lack basic amenities, and usually have very poorly developed infrastructure.⁹

The response of governments to the urban water crisis has been through a multi-sectoral approach that strengthens legal and regulatory structures and emphasizes a clear separation between water policy making, water regulation, tariff reforms, and operational functions.¹⁰ The main goal of water sector reform in Ghana has been geared towards introducing private sector participation (PSP) into the water supply sector.¹¹ This idea of PSP is based on a neo-liberal market ideology which advocates that PSP in the water sector will improve technical know-how and efficient utility management and bring much needed private capital investment.¹² However, gains from PSP in the water sector have received mixed reactions from scholars and researchers, and its continued use as a policy tool has become very controversial among practitioners.¹³

Within the disadvantaged urban areas, the gains of PSP have been very minimal as PSP often leads to an increase in tariffs and slow expansion of infrastructure to disadvantaged urban areas.¹⁴ Private water companies have no real incentives to expand services to disadvantaged urban communities, which tend to have a high concentration of low income dwellers. To this end, residents in the disadvantaged urban communities are more likely to be unconnected to the national grid and therefore more likely to resort to the unofficial and informal sector for their water supply.¹⁵

This research studies three disadvantaged communities to explore a multi-sectoral approach to ensure greater water security in disadvantaged urban communities in Ghana. Part One sets the context of urban water policy in Ghana. It highlights the main policy areas and how they affect the low income urban resident. Part Two is a case study of three disadvantaged urban communities in Ghana. It highlights the unique water supply challenges faced by these communities. The third part explores multiple avenues to ensure greater water security in disadvantaged urban communities.

Urban Water Supply Policy in Ghana

Under the Ghana Poverty Reduction Strategy I and II (GPRSI and GPRSII), adequate water supply is featured as one of the priorities to reduce the incidence of poverty in Ghana.¹⁶ The GPRS sets out strategies to “to reduce human deprivation, promote human rights and achieve sustainable growth.” In spite of the emphasis on increasing access to water as part of poverty reduction, urban water supply is still under 60 percent coverage of its capacity. Meanwhile, with almost 50 percent of Ghana’s total population of 23 million living in urban centers and growing at an annual rate of 3.5 percent, inadequacies in water are bound to grow if there are no sustained measures aimed at addressing the phenomenon.¹⁷

The total renewable water resource in Ghana is estimated at 53.2 km³/yr out of which 30.3 km³/yr is produced internally. In 2000, only 0.982 km³ of water representing 3.27 percent of internally produced water was withdrawn for use.¹⁸ Thus, there are enough water resources within the country to satisfy urban water needs. However, in spite of the abundant water resources, water supply is erratic and unavailable in many places. Available data shows that in Accra, the capital, only 25 percent of residents have 24 hour water supply. For about 30 percent of residents, water supply service averages twelve hours a day for five days a week. For another 35 percent of residents, water supply is estimated at two days per week. For the remaining 10 percent living mainly in poor neighborhoods at the urban fringes there is no access to piped water supply.¹⁹ Ghana Water Company (GWCL), the only regulated utility service which provides water to all urban areas in Ghana, is able to meet the water demands of only 59 percent of urban residents.²⁰

It must be noted that the availability of water in its natural state does not necessarily lead to adequate water supply. Delivering water to needed points within urban centers entail four separate actions?²¹ This urban water delivery process entails capturing the needed water through diversion, reservoirs, or ground wells. The captured water then has to be transported to areas of economic need where it will be treated and delivered to consumers through pipes. The infrastructure system needed from capture to delivery requires long-term investments in fixed capital assets at a considerable cost.²² The investment cost in the capital assets to ensure delivery of water to all needed points is often beyond the means of governments, especially in developing countries.²³

Population growth in Ghana has also exploded in the last 50 years. With a population of 6.7 million in 1960, the population is estimated at 23 million currently, representing almost a 350 percent increase.²⁴ The population has grown faster than government has been able to keep up with infrastructure development. Problems with sourcing technical experts, efficiency issues, and inadequate funding have all prevented GWCL from operating at its optimum.²⁵

Water Sector Reforms

In 1983, under the World Bank sponsored Economic Recovery Program (ERP), Ghana Water and Sewerage Corporation (GWSC) adopted a five year water sector rehabilitation and development plan. The plan was aimed at institutional strengthening through manpower development, rehabilitation, and expansion of existing service and decentralization of water and sewerage supply.²⁶ Following the decentralization plan in the five year rehabilitation and development plan, GWSC was mandated to concentrate on the provision of water and sewerage

in urban areas only. A semi-autonomous division within the GWSC, called the Community Water and Sanitation Division, was created in 1994 and charged with the responsibility of rural water and sewerage supply

Restructuring the urban sector has been aimed at encouraging PSP in the delivery of water. As part of the restructuring and in preparation for public sector participation in urban water supply, the government has set up various institutions in the water sector to serve as facilitators and provide the backbone for a viable PSP regime. In this direction, the GWSC which hitherto was a full government corporation operating both rural and urban water was changed to GWCL, a semi-autonomous public agency. A Community Water and Sanitation Agency (CWSA) was set up in 1998 to facilitate rural water supply and a Water Resources Commission (WRC) was established in 1996 to see to the environmentally sound management of water resources in Ghana. In 1997, the Public Utility Regulatory Commission (PURC) was established to see to the regulation and provision of quality utility services. To coordinate the activities of the various institutions and get them to conform to government policies in the water sector, a water directorate was created within the Ministry of Works and Housing to coordinate all activities in the water sector. The work of PURC and GWCL provide the background information for this research.

The Public Utility Regulatory Commission

PURC is an independent regulatory institution set up to regulate water and electricity services. Under the Public Utility and Regulatory Commission Act of 1997 (Act 538), the functions of PURC among other things are setting water rates, regulating and monitoring the activities of GWCL, and embarking on public education to sensitize consumers about the functions of PURC. Section sixteen of Act 538 provides guidelines as to how water tariffs are to be fixed by utility companies. These functions are aimed at ensuring safe, clean, adequate, reliable, and efficient water service to the consumers while at the same time ensuring that consumers pay reasonable prices for the sustenance of utility providers. Within the water supply sector, PURC interprets its obligations as being limited to the regulation of the activities of GWCL.²⁷ Thus, PURC jurisdiction does not extend to the informal water sector dominated by the small-scale water providers that serve as the main service providers in the disadvantaged urban communities.

By far, PURC's most important function is setting of tariffs by which utility companies charge consumers for services provided. Act 538 provides in section 16 (3) that the tariff guidelines provided by PURC must strike a balance between consumer interests, investor interests, and the cost of production for water service providers. Since GWCL is the only recognized company providing water in urban areas, PURC uses a nationwide uniform tariff structure. For domestic customers, PURC utilizes an increasing block rate pricing scheme.

Ghana Water Company Limited

GWCL is an independent public company created in 1999 to succeed GWSC. The creation of GWCL was part of the water sector restructuring effort of the government of Ghana (GOG). The

restructuring of GWCL was partly to increase its efficiency and effectiveness and also position it to encourage private sector participation in the water sector.²⁸ The main objectives of GWCL are:

- planning and development of water supply systems in urban communities in Ghana;
- provision and maintenance of acceptable levels of service to consumers in respect of water quantity and quality;
- preparation of long term water supply plans in consultation with the appropriate coordinating authority established by the president;
- conduct water supply related research;
- create engineering surveys and plans as appropriate;
- construct and operate water works in urban areas;
- submit tariff proposals to PURC for review and approval; and
- conduct other related or incidental activities.

GWCL operates under the direction of the Ministry of Water Works and Housing which has oversight authority over the sectorial policies within the water sector. GWCL operates 86 pipe water systems in urban areas across the country. The total installed capacity of the water systems operated by GWCL is 737,000 m³ per day as against an estimated urban demand of 939,070 m³ per day, revealing a shortfall in water supply. Water supply problems are compounded by the fact that even though GWCL has the capacity to produce 737,000 m³ per day, administrative and distributional inefficiencies put actual supply at 551,451 m³ per day. The inefficiencies in GWCL account for most of the shortages in urban water supply to customers within the piped network of GWCL.

Most of the problems that affect GWCL were inherited from GWSC. GWSC was a public corporation that was, for a considerable period of time, kept under the dictates of politicians.²⁹ It operated at a time when there was no independent regulatory institution to monitor its activities. GWSC operated as a water supplier, water resources manager and a water supply and resource regulator. Accordingly, politicians were able to keep water tariffs low with the aim of protecting consumers for a long period of time.³⁰ Public policy objectives of GWSC were to a large extent geared towards satisfying political ends instead of strengthening the corporation to efficiently and effectively supply water. With low tariffs and interference from politicians, the corporation was plagued with low investment and general breakdown of water systems.³¹

One of the important problems that confronted GWCL when it came into existence in 1999 was therefore capital investment to maintain the existing water systems and to undertake system expansion to cover the ever increasing urban population in Ghana. In 2005, PURC estimated that a total of \$891 million will be required to meet the Millennium Development Goal (MDG) of 85 percent urban water coverage by 2015.³² Similarly, estimates by WaterAid Ghana indicate that \$85 million in annual investment is needed to reach the MDG. Current spending averages only \$17 million annually.³³ GWCL is therefore in need of an average of \$68 million in investment funds annually to reach its MDG goals.

The current financial commitment of the Ghanaian government and other donor partners to the water sector is woefully inadequate. For instance, GOG's allocation to the water and sanitation sector in 2006 was lower than the previous year even though it is expected to increase its expenditure over time to meet set targets. Out of the expected annual expenditure of \$85

million in the sector in 2006, government expenditure was only 3.7 percent, with the rest expected to be picked up by the donor community.³⁴ However, donor funding is erratic and often inadequate. From 1990 to 2003, Ghana's major donors contributed \$220 million to the urban water sector. It is estimated that within the period of 2004 to 2010, donor support (excluding NGOs) for the urban water system will be only \$185 million. In the light of the recent world economic crisis, these estimated donor contributions are likely to fall below target. GOG will therefore need to increase its financial commitments in the water sector and at the same time convince donor partners to increase theirs as well in order to meet its water supply targets by 2015.

Private Sector Participation

An earlier attempt at PSP in the water sector failed when a twenty year lease contract between the now defunct Azurix, a subsidiary of Enron, and the government of Ghana was cancelled. This lease contract failed mainly due to allegations of corruption and increasing public opposition to water privatization.³⁵ In 2006, GWCL entered into a five year management contract with Vitens Rand Water Services BV of Netherlands and its subsidiary in Ghana, Aqua VitRa Limited operating under the joint name of Aqua Vitens Rand Limited (AVRL). The main components of the management contract are system expansion, rehabilitation of existing water systems, capacity building to enhance the skill, and competence of the staff of GWCL and project management.³⁶ Under the system expansion and rehabilitation component, the operator must work to increase the amount of treated water for sale, extend service to low income areas and rehabilitate existing networks to reduce non-revenue water (i.e., unaccounted for water). The operator also must work to ensure safety at the various dam sites and procure and install billing meters for consumers. Under the capacity building and project management component of the contract, the operator shall among other things train seconded staff and offer technical assistance to the grantor.

Since the agreement is only a management contract, AVRL does not have to provide any funding for the project. They get paid for the services of managing the urban water system in Ghana. The grantor (GOG) through GWCL has to provide the funding for the realization of the target components set out under the contract. The contract is estimated to cost \$120 million. The government of Ghana is providing \$12 million while its development partners, the World Bank and the Nordic Development Fund, are providing \$103 million and \$5 million, respectively. AVRL is entitled to contract with consumers for the supply of water on behalf of the GWCL. AVRL will therefore issue bills, receive payments, and disconnect consumers for non-payment. The facilities of GWCL also shall be under the care of AVRL for the duration of the contract. Upon satisfactory execution of the contract, AVRL shall have the right to submit a bid for a leasehold agreement. AVRL shall be paid a base fee for its services. In addition to the base fee, AVRL shall receive financial incentives based on the extent to which it exceeds performance targets as stated in the contract. The base fee will also be reduced by penalties based on the extent to which AVRL falls behind on the targets of the contract.

The success of the management contract depends to a large extent on the ability of GWCL and other regulatory agencies to monitor the performance of AVRL. For instance, adjustments

in the base fee can be made only with data on the performance of AVRIL. Performance measures such as reduction in non-revenue for water needs accurate water production levels to measure. Other indicators like extension of services to areas outside the network are relatively easy to measure. Extension of water supply services to areas outside the coverage areas will have physical infrastructure and consumer satisfaction as indicators of performance. Personal interviews conducted with officials at the GWCL show that GWCL does not have the capacity to collate the data necessary for a full performance review of the management with AVRIL. A senior policy staff interviewed at GWCL acknowledged that almost three years into the management contract GWCL has not been able to establish a baseline for AVRIL on which to measure performance targets.

Urban Poor

Although extension of water infrastructure to serve the poor was a component of the AVRIL management contract, three years into the contract no significant improvement in the services to the poor has been recorded. Under the contract, low income areas are defined as all areas which do not receive piped water services from GWCL. For purposes of this research, low income areas have been defined as areas which do not receive regular or piped water services from GWCL as well as areas with higher concentration of residents with average annual income at the threshold level of \$400.

The urban poor in Ghana find themselves in a very vulnerable situation. When GWCL was created in 1998, it was mandated to supply water to urban areas in Ghana, i.e. cities or towns with population exceeding five thousand residents. There are areas or communities within these urban centers which exist almost as autonomous communities but are regarded as part of the larger city because of their location within the city limits. Thus, though these communities would have been regarded as rural because of the size of their populations, there are regarded as urban because of their geographic location. These communities tend to be at the urban fringes, exhibit shanty town characteristics, and have a high concentration of poor people. The communities are characterized by low income dwellers, squatters, inadequate infrastructure, and low levels of education. A sizeable proportion of these residents are rural-urban migrants in search of work in the cities. GWCL, which caters to the needs of the more traditional urban centers, therefore severely disadvantage these poor urban dwellers in water service provision. Although there is an acute water supply shortage in such areas, their plight is often hidden within the aggregate data obtained for the entire urban areas. Thus, though GWCL figures put urban water coverage at 59 percent, coverage in the poor neighborhoods is around 20 percent and in the worst areas below 5 percent. In Accra, GWCL water connection rates average 90 percent in high-income areas and sixteen percent in low-income settlements.³⁷ In fact, in some of these poor neighborhoods, the living arrangements make it almost impossible for the GWCL to extend pipe service to the area. Residents build structures anywhere within the community, in most cases without official approval. In the communities of Nima, Sukura, and Ashiaman residential areas for instance, it is difficult for vehicles to drive through most of the area because buildings and structures have been erected on every possible space in the community. The political will needed to demolish illegal structures to pave way for pipes to be laid is often absent.

The main function of CWSA is to assist district assemblies with water supply in rural areas.³⁸ Since rural dwelling units are generally not suitable for piped water systems, CWSA facilitates the construction of boreholes and hand dug wells to make water readily available to rural dwellers. Boreholes and hand dug wells provide suitable water alternatives to rural communities with fewer people and low incomes to economically afford the convenience of network piped water systems. Boreholes and hand dug wells therefore serve as a cheap alternative to get reliable and clean water supply throughout the year. However, since low income communities within the urban centers are not defined as rural areas, they do not come under the jurisdiction of CWSA and can therefore not benefit from the boreholes and the hand dug wells provided by CWSA. Poor communities in urban centers therefore resort to buying water from water vendors, small-scale water suppliers and other unapproved sources. Where there is piped water system close by, family members walk to fetch water or pay for people to cart water to their residence. In communities which are far from piped water supply, residents pay small-scale water suppliers who fetch water in motorized tanks for delivery. There is a lot of controversy about the source and quality of the water supplied by the motorized tanks as well as other small-scale water providers.

Residents in low income communities pay three or four times what residents on the GWCL network pay for water. In Accra, many of the 800,000 people living at or below the poverty line pay ten times more for their water than residents in high income areas.³⁹ The operations of the small-scale water suppliers do not come within the purview of the PURC and therefore are not required to adhere to the regulations of PURC. PURC itself has not shown any interest in regulating the activities of the small-scale water providers. In its 2005 tariff policy statement, though PURC agreed that the best pro-poor measure of water supply will be to extend GWCL coverage to such areas, it said that the operations of the small-scale water providers should be left to the market forces. Because of information asymmetry, low income consumers do not possess the necessary information to make the right decision as to whom to buy water from and how much to pay. The urban poor are therefore left at the mercy of the small-scale water suppliers while the high income consumers enjoy the protection of PURC and the convenience of piped water from GWCL.

Case Study Communities

A multiple case study involving the three disadvantaged communities of Nima, Ashalley Botwe, and Ashaiman was used to study water supply in disadvantaged urban neighborhoods.⁴⁰ The three case studies were arrived at by considering demographic factors such as income levels, educational levels, and ethnicity. Experts in the water sector were consulted as well as various government documents on the subject area. Data collection in the case study areas took place in December 2007 and January 2008 after obtaining the necessary permit on conducting research involving human subjects.⁴¹ Congruent nested mixed method was used to collect and analyze data in the case study areas.⁴² Actual data collection methods involved a combination of interviews of water sector stakeholders, focus group discussions, and household surveys.⁴³

The three communities exhibit the attributes of the quintessential peri-urban neighborhood with their poor infrastructure development and continuous deterioration of the surrounding environment.⁴⁴ They fit the description offered by Birley and Lock that the informal nature of settlements makes it attractive to rural migrants because they serve as a conducive location for the establishment of squatter settlements in hope of deriving benefits from the city.⁴⁵ In addition, city residents who are priced out of high income neighborhoods find these areas cheap alternatives.

Ashalley Botwe was barely a community in 1970; it was at best a rural area with only a few inhabitants and houses. The growth in the city of Accra in the latter part of the 1980s and the 1990s saw an increase in the population of residents in the area. Migrants coming into Accra to work settled in the relatively less expensive areas in Ashalley Botwe. Rapid population growth in Ashaiman took place during and after the construction of the main seaport terminal in Ghana. Low income migrants in search of jobs at the harbor hub quickly filled up the area. Subsequently, returning peacekeeping troops with saved income from their missions settled in Ashaiman as their income was not enough to earn them places in high income residential areas. Nima grew as an area that socializes new migrants to the city of Accra. Most of the growth in Nima took place during Nkrumah's five year development plan in the 1960s when migrant trooped to Accra in such of jobs. Table 1 details these population changes.

Table 1 Population Change in the Case Study Areas

Area	Population			Population Change		Percentage Change	
	1970	1984	2000	1970-1984	1984-2000	1970-1984	1984-2000
Accra Region	734,896	1,203,292	2,548,975	468,396	1,345,683	63.74	111.83
Ashalley Botwe	383	410	11,974	27	11,564	7.05	2820.49
Ashaiman	22,549	50,918	150,312	28,369	99,394	125.81	195.20
Nima	52,270	52,906	69,044	636	16,138	1.22	30.50

Source: Ghana Statistical Service 2000 Census Data

Source of Water Supply in Disadvantaged Communities

Disadvantaged communities are often the last to receive water services from official water and sanitation providers. Living arrangements within these communities are often ill-suited to allow piped network without a major reorganization of structures. Where piped water exists, the informal nature of the living arrangements may prevent residents from acquiring the necessary legal documents necessary for pipe connection. While many "house owners" in Nima and Ashaiman could not produce any legal documentation to their properties, they did not feel threatened by their lack of documentation, arguing that their neighbors and others within the community knew they owned their properties.

Data from the study revealed that the case study communities relied heavily on small-scale water providers for their water supply. Ashalley Botwe residents depended on a combination of private mobile water tankers and hand dug wells. Nima and Ashaiman residents got their water supply mainly from their neighbors' house pipe or public stand pipe. The market

arrangement for water in all three communities is similar even though providers differ slightly. Water providers are mainly local residents, and water is primarily sold in buckets to consumers.

There are enormous health risks associated with small-scale water providers. Local business people store water in poly tank containers—usually with a capacity of 1000 liters—with water from piped connections where it exists or tanker-delivered water. These poly tank containers are rarely cleaned and evidence of growing spirogyra around the tanks points to the quality of water in the tanks. The tanks mounted on water tankers, often manufactured from scrap metal, are also hardly ever cleaned. In an interview of twenty water tanker operators in Ashalley Botwe, the average cleaning time ranged from once a month to once every three months. The disturbing part was that drivers climbed into the tanks to clean them using laundry detergents containing bleach. It is not surprising therefore that international health agencies including the World Health Organization do not recognize the activities of small-scale water providers, especially tanker service.⁴⁶ It is for this same reason also that the GOG does not recognize the activities of the water tanker suppliers.

Resident participants in the focus group discussion were emphatic when it came to the quality of water supplied by small-scale providers. There were numerous complaints about odor and particles in the water supplied by vendors. Mobile water tankers cart stream water or other kind of untreated water for consumers when the intended use is for construction or outdoor use and cart treated water when the intended use is domestic. However, consumers have no way of knowing the source of water when it is delivered to them. During the focus group discussion, consumers charged that tanker drivers often deliver untreated water even though they had paid for treated water. Mobile water tanker drivers vehemently denied this charge during an interview with selected drivers. Without testing the water delivered by these mobile water drivers it is difficult to determine in certainty the charge of consumers. However, the picture is quite clear. With no regulation and uninformed consumers, the incentive to cheat is very great.

There also was evidence of illegal water connections in the communities. Some poly-tank owners directly tap into the main water lines to fill their containers for sale. This phenomenon was very prevalent in Nima. In spite of persistent resident complaints both to the police and officials of GWCL, nothing seemed to have been done about them. With limited resources from GWCL and ill-equipped police to check such illegal connections, perpetrators sense a lack of credible commitment on the part of the authorities and therefore operate with impunity.

Information gathered from the case study area indicated that residents in disadvantaged urban neighborhoods paid more for water than residents in other parts of the urban area with piped water from GWCL. Based on the tariff structure of PURC, a bucket of water (35 liters) should be priced at GHc 0.0145, for this is the calculation used for residents in other parts of the city with piped water. However, in Ashaiman and Nima, residents paid an average of GHc 0.07 for every 35 liters of water consumed, and Ashalley Botwe residents paid an average of GHc 0.25 for every 35 liters of water consumed. (Table 2) The price differentials in the case study areas reflect the level of water scarcity in the localities. According to GWCL, unlike Ashaiman and Nima where about 50 percent of water demand is met, in Ashalley Botwe only 45 percent of water needs are met. In addition, residents in Ashalley Botwe reported earning more than

residents in the other two communities. Thus, there is a higher demand for water in Ashalley Botwe than in Nima and Ashalley Botwe. Table 2 illustrates the water prices in these three localities.

Table 2 Water Prices in the Case Study Areas

Number of Buckets	Number of liters	Ashalley Botwe Price (Cedis)	Ashaiman Price (Cedis)	Nima Price (Cedis)	PURC Approved Price (Cedis)
1	35	0.25	0.0700	0.0700	0.0145
2	70	0.50	0.1400	0.1400	0.0290
3	105	0.75	0.2100	0.2100	0.0435
4	140	1	0.2800	0.2800	0.0581
5	175	1.25	0.3500	0.3500	0.0726

Source: December 2007 Household Survey

It must be noted that small-scale water providers incur transactional costs such as transportation and purchase of equipment and do not enjoy the economies of scale of the large utilities providers. However, with no regulatory oversight and no obligation to follow the directives of the PURC, they are free to charge any amount they deem fit. In all three communities there were voluntary institutions that have made attempt at some regulation. The chief concern of these voluntary organizations is the regulation of prices for small-scale water operators. Lists of prices approved by the local institutions were displayed on a number of buildings in the communities. However, there was very little indication that water sellers took the price list seriously, as prices varied from seller to seller with many in excess of the approved prices. With no compulsion and no selective incentives, very few small-scale water operators join these organizations.

The voluntary institutions were not so much concerned with regulating the quality of water their members sold. In any case, the associations possess neither the technical know-how nor the financial resources to arrange for quality checks. Membership in the water associations does not give one any special advantages, thus associations risk losing members if they push any regulations that will increase the operating cost of members. Thus, low income urban residents are left at the mercy of the small-scale water providers. Institutional reforms in the water sector have not been fast and far reaching enough to ensure increased water security in low income areas. The only option left to residents in disadvantaged communities is to rely on the unregulated services available through the informal sector.

Opportunities for Ensuring Improved Water Security

Achieving water security is very important. In fact, water security forms a fundamental part of poverty alleviation and forms part of the critical infrastructure that attracts foreign investments.⁴⁷ It is obvious that GOG lacks the capacity to mobilize the needed resources to build network pipes to all needed areas by 2015. Thus, exploring other avenues to increase

water supply as well as strengthening local institutions, even in the interim, is important to diversify supply sources and ensure increased water security. In this direction, there is the need for technical and financial support for small-scale providers. Official recognition of small-scale providers that will include being subjected to the regulatory supervision of PURC will be a step in the right direction.

Regulation of Small-Scale Water Providers

As the case studies indicate, small-scale water providers provide valuable services to the disadvantaged urban community. Small-scale water providers are relied on as the main source of water for disadvantaged urban areas in Ghana, providing more than two-thirds of all their water supply. The usefulness of small-scale water providers is not unique to Ghana. Disadvantaged urban communities in Kenya, Nigeria, Sierra Leone, and Tanzania as well as in other African countries rely heavily on their services.⁴⁸ In spite of their importance, several problems exist in this sector. Chief among them is lack of access to capital to purchase tankers, containers, water pumps, and resources to maintain their equipment. They also face constant harassment from local officials as well as utility providers. These problems have been exacerbated by the refusal of government and other practitioners to pay close attention to their services, thereby preventing effective policy support for their efficient engagement. The lack of support from government as well as practitioners has been due to the fact that in the first place the services of the small-scale water provider are seen as a short-term fix to water inadequacies in the urban area. Secondly, policy makers have dealt with a few large public enterprises that have historically handled urban water supply. To them, it is easier to deal with the few large enterprises than to deal with a heterogeneous group of small-scale water providers. Third, international technical standards sometimes do not recognize the activities of the small-scale water providers. For instance, because of the controversy surrounding water handling, the Joint Monitoring Program of the World Health Organization does not consider water tankers and water vendors as sources of safe water supply.⁴⁹ Nonetheless, donor agencies and NGOs such as the World Bank, the Canadian International Development Agency, the United Kingdom Department of International Development, and WaterAid International have increasingly recognized the services of the small-scale water providers and thus provide some assistance. The heterogeneous nature of the operations of the small-scale water providers as well as the lack of a coherent organization of their trade, however, severely hampers such assistance.

With rapid population growth, urbanization, and scarce financial resources, sub-Saharan African governments cannot effectively provide for all their urban population in the foreseeable future. Already, civil society groups have charged that the MDG goal of ensuring 85 percent water coverage by 2015 is unattainable given current policies and financing levels.⁵⁰ As a result, the services of small-scale water providers have almost come to stay.⁵¹ If governments want to make real progress at achieving the MDG goal of ensuring 85 percent water coverage by 2015, then they must accept small-scale providers as partners.

Too little attention has been devoted to regulating small-scale water providers. The lack of attention creates a serious regulatory gap, especially from the point of view of residents in disadvantaged communities. Adopting policy interventions that regulate the quantity, quality,

and prices of the small-scale water providers can close this regulatory gap. Formal recognition will make it easy for small-scale water providers effectively to organize into cooperative associations through which their activities can be better regulated. Public agencies can then partner with them to ensure that proper equipments are used for the trade and strict hygiene standards are adhered to. For instance, individual business owners who pass a periodic hygiene and equipment test can display a sticker to that effect. Public agencies, through the cooperative associations can use negative market incentives like suspensions or withdrawal of licenses for operators who do not adhere to the strict hygiene standards. Consumers can then use the market information supplied through the hygiene stickers as well as membership in approved water associations to determine the services they choose. Public agencies must also work to ensure them easy access to capital as well as technical support for the mobile water providers for buying equipment and building containers. For the mobile water providers, such support must ensure that proper materials are used to construct water tanks. Support should also facilitate the designing of tanks so that drivers wouldn't have to stand in the tanks to clean them. Education on the frequency of cleaning tanks as well as the right cleaning materials to use will remedy the scenario where drivers clean their tanks once every three months with laundry detergent. Water resellers should also be assisted as to the proper place to site containers and build tanks to either prevent or drastically reduce the buildup of spirogyra.

PURC has consistently said that they will not regulate the prices of the small-scale water providers, especially because of the fact that transport cost which makes up the bulk of production cost for the small-scale provider is difficult to control. PURC has therefore argued that prices should be subjected to the law of supply and demand. However, in the water business there is a high level of information asymmetry in favor of the water provider. Not only do consumers find it difficult to ascertain the source of water, they also have very little information about the quality of water delivered to them. With no enforced regulations and very little information available, consumers do not have enough information to make the right choice as to whom to buy from. Distortions in the market therefore make it easy for the poor to be further exploited. In any case, consumers who fall sick as a result of the negative externality of the operations of the small-scale providers may burden public health care cost. In addition, other adverse effect from the health problems may be eventually felt throughout the economy as lost job hours increase. If PURC hope to fulfill its mandate of protecting the interests of consumers, then it is incumbent upon that authority to regulate the activities of the small-scale provider.

PURC must work with GWCL to ensure that small-scale providers, especially mobile tanker services, have access to quality water. Existing booster stations (water treatment centers) must be expanded to ensure small-scale providers clean water for resale. In fact, GWCL must proportionally allocate treated water to small-scale providers. Consumers in the disadvantaged communities are also tax-paying members of the society and must therefore benefit from publicly supplied water. If piped networks cannot be constructed quickly to all needed areas, then water treatment centers should be sited strategically so that small-scale suppliers have access to treated water for their customers. GWCL must work to ensure that water sold to small-scale providers is sold at bulk water rate. When water treatment centers become easily accessible to tanker services, it will reduce their transportation cost and thereby translate into

reduced prices for consumers. In a survey conducted by PURC in 2005, consumers rated water accessibility as the most important water issue.⁵²

Community Involvement in Decision Making Processes

Water supply agencies must actively engage consumers in the decision making process as well as in the implementation of policies. Burby has argued that lack of public involvement in government plans often lead to wrong solutions and an apathetic public. Policies that have low public involvement tend to be dominated by technical experts and may then raise the fundamental issue of democratic participation in governance.⁵³ In addition, as Lindblom and Cohen have acknowledged, citizens possess pertinent situational knowledge that can help ensure that policies take account of local conditions and reflect local values.⁵⁴ The relevant situational knowledge is lost when there is no committed attempt at actively engaging the public, and the policies government or donor agencies seek to implement may seem irrelevant to the citizenry.⁵⁵ In engaging consumers, public agencies must also engage the civil society groups that represent the interests of the consumers. The way forward is to use information, subtle persuasion and openness to ensure mutual understanding, trust and strive to achieve consensus. The current process of heavy handedness, name calling, and secrecy only deepens the mistrust between stakeholders.⁵⁶ Current civil society opposition to water privatization has been due to the fact that civil society stakeholders have fundamentally regarded the planning process as shrouded in secrecy. Gleick et al. notes that water is so important for human health that in privatizing water services governments must set up clear guidelines that among other things ensure transparency and include all stakeholders in the decision making process.⁵⁷

Through a committed engagement process during planning and implementation, potential opposition to policies can be identified at the outset and dealt with appropriately. In the words of Pressman and Wildavsky, policy implementation that is revolutionary and not evolutionary is more likely to fail.⁵⁸ In 1992, the city of Cartagena, Columbia was confronted with a situation very familiar in other developing countries – inadequate water supply. The city responded to the crisis with a management contract, but strong public opposition affected its effectiveness. Acucar, the private company eventually won the support of the people when, with the help of the government, they implemented a large public relations campaign. It organized educational campaigns for community leaders and other stakeholders about the water treatment process and other important operating issues as well as the vision of the private company for the city. The water managers also listened to the concerns of the consumers and addressed them in an open and collaborative manner. In Cartagena, the efforts of the private operator not only demonstrated their commitment to reform water services, but it also began to alter the view of most residents that potable water was a free and ever abundant resource. In Ghana, a committed engagement process has the potential of changing the relationship of the government and the private company on one hand and civil society groups from one of distrust to mutual trust and coordination.

Involving consumers in the planning and implementation of water policies creates a sense of ownership and fosters a culture of maintenance which may mature into an elaborate community self-policing system.⁵⁹ Community self-policing has the potential of reducing

agency policing costs. A genuine interest in communal projects will also ensure that community members give prompt and accurate feedback about the nature of community projects.⁶⁰ In Bangalore, India, the use of citizen report cards has given community groups and consumer associations greater say in reforming utility companies and improving performance by publishing utility performance assessments.⁶¹ In this direction, PURC and GWCL should grant to consumer groups and civil society groups access to their operations. In India, the utility company joined forces with civil society groups to undertake public meetings and also administer surveys to measure consumer perceptions about utility services. Through this process, there was evidence of improvement in water services with local consumers reporting improvement in efficiency and less bribes being paid for water connections.

Increased Coordination of Water Supply Agencies

Current evidence points to very little coordination between public agencies. For instance, there is no formal relationship between local government institutions and the key water supply agencies. Local governments are mandated to initiate development projects at the district level.⁶² Better coordination between local government officials and the water supply agencies would ensure that all the necessary information needed at the community level is solicited to provide proper management of water supply systems. In addition, since local government institutions are directly involved with local communities, local government institutions can become partners in ensuring small-scale water provider compliance with regulations as well as help reduce the incidence of illegal water connections.

Ultimately, a major problem of water inadequacies in the disadvantaged neighborhoods is the issue of illegal settlements. The financial costs of breaking down illegal structures as well as the political costs are sometimes too prohibitive for water agencies to undertake any progressive water supply planning. In Senegal and Cote d'Ivoire for instance, efforts on the part of governments to reduce water supply inadequacies in disadvantaged communities by providing subsidized water connections have been hampered by the existence of illegal settlers who do not have the requisite documentation to participate in the program.⁶³ A concerted coordination between developers, planners, and utility providers will be very instrumental in handling the problems of illegal structures. Often, planning departments and city councils are ill-equipped to handle the avalanche of building permits as well as handle defaulting developments. The result is the overnight mushrooming of unplanned, un-serviced and in many cases unrecognized neighborhoods. The Ghana Ministry of Water Works must create an interagency task force involving GWCL, PURC, district assemblies, town planning departments, and civil society groups to coordinate water supply management and most importantly curb the growth of squatter communities in urban centers.

Rain Water Harvesting

Rain harvesting has the potential to provide cheap and available water to disadvantaged communities. With torrential rainfall occurring during the months of April to June and September to October in most parts of southern Ghana, rainwater can supplement existing water sources to enhance water security. According to UNEP, a threshold of 200 millimeters of

rainfall is considered the minimum rainfall arrival to embark on a viable rainfall harvesting program.⁶⁴ In Ghana, rainfall ranges from 800 millimeters to 2000 millimeters, thus offering a atmosphere conducive for rainfall harvesting. Extensive rainwater harvesting is already underway in Kenya, Botswana, Malawi, and Uganda. Maasai women taking part in a pilot rainfall harvesting program in Kisamese, Kenya have reported gaining four hours in a day due to reduced demands on their time to travel to their water source.⁶⁵

The culture of rain harvesting has existed for a long time in Ghana, especially among rural residents. With little modification, rainfall harvesting can be used in urban centers as well. In consultation with estate developers and builders, modifications can be made to current building codes to facilitate rainfall harvesting. Requiring newly constructed houses to have rain caps for harvesting rainwater will ensure readily available water to supplement domestic use such as bathing and washing. Technical assistance can also be provided to owners of existing houses who will want to modify their homes to maximize rain harvesting. In addition, urban residents can use rainwater for washing cars and gardening so that the pressure on GWCL to continually increase production of treated water will be minimized. Water savings realized from this program can then be channeled to supplement the needs of disadvantaged communities. Within the disadvantaged urban communities, local government, and civil society groups utilizing communal labor can collaborate to construct rainwater harvesting points and store water in tanks. This could serve as supplemental water source to the residents, especially the most vulnerable who do not live in any permanent structure to enable them embark on their own water harvesting projects.

Conclusion

Ultimately, the problem of inadequate water supply is not limited to one SSA country. It is a pervasive problem that permeates all urban centers throughout the developing world. The problems are therefore not new, and many countries have embarked on different strategies to address these problems. A formal collaborative regime between different water agencies throughout the sub-region will help propagate best practices and avoid mistakes. For instance, Kenya and Tanzania in 2005 embarked on a citizens' audit approach to improve utility efficiency.⁶⁶ In Kenya, the cities of Kisumu, Mombasa, and Nairobi have launched a water and sanitation social audit that brings together residents associations, NGOs, and service providers. This audit has been used successfully to improve the performance of service providers in Philippines, Ukraine, and Vietnam.⁶⁷

Collaborating with the Greater Horn of Africa Rainwater Partnership (GHARP) can help water agencies to develop a sustainable water harvesting program while avoiding earlier mistakes. Established in 2001, the GHARP is a regional network of rainwater associations involving Ethiopia, Kenya, Tanzania, and Uganda. GHARP seeks to promote effective rainwater harvesting and management by sharing technologies to, among other things, increase water supply and ensure food security. This is a partnership that holds prospect for other SSA countries that struggle to ensure adequate water supply.

In Cote d'Ivoire, apart from lifeline water policies, the Water Society has also licensed water resellers (small-scale providers) in disadvantaged communities to ensure increased water

security. Available evidence indicates that water coverage has steadily increased for the last ten years in Abidjan, the largest city. In addition, with surtax on water bills, the water agency is able to provide 75 percent subsidy to low income residents for first time water connection.⁶⁸ In this case, because the requirement to qualify for the subsidy was proof of legal settlement, many poor households in the informal sector were not able to take advantage of the subsidy.

In KwaZulu Natal, South Africa, as part of efforts to increase cost recovery in the water sector, the utility company introduced prepaid water meters. Each family had to buy a plastic card with a chip for R60 (about US\$9) with additional "water units" available for purchase to supplement the card. People who were not able to pay for the cards resorted to unapproved water sources to satisfy their water needs. Subsequent research found that prepaid water meters negatively impacted hand washing and other hygienic practices. Eventually, this policy contributed to the worst cholera outbreak in South Africa's history with more than 200 deaths recorded.⁶⁹ Etego-Amenga reported that Ghana through a British company was installing prepaid water meters on a pilot basis in some part of the city of Tema.⁷⁰ Collaboration with water agencies in South Africa will help to avoid a repeat of the problems South Africa experienced in 2003.

The water needs of low income urban communities cannot continue to be unserved. These communities form part of the larger urban society, and their water needs are tied to the overall water targets of the country. In addition, diseases that confront residents in disadvantaged urban communities reverberate through the entire urban areas as health care cost increases and production decreases because of lost job hours. Ensuring water security should involve innovation and pragmatism and should be devoid of dogmatic theories. In Ghana, like other developing countries, problems confronting the water sector are enormous and resources needed to solve these problems are limited. Thus, no single solution should be touted as holding the key to water security. The government in consultation with major stakeholders must combine various policy tools with the aim of ensuring water security.

Notes

- 1 GNA, 2009.
- 2 Jaglin, 2002; Estache and Kouassi, 2002.
- 3 www.wateraid.org.
- 4 McGowan and Johnson, 1984; Hyden and Bratton, 1992; Pallett, 1997; Starr, 1991.
- 5 Tabutin and Schoumaker, 2002.
- 6 UNEP, 2005.
- 7 Rakodi, 1997; de Soto, 2000.
- 8 Hardoy and Satterthwaite, 1989.
- 9 Lauria, Hopkins and Debomy, 2005.
- 10 Amenga-Etego and Grusky, 2005; Balance and Tremolet, 2005; GPRS, 2005.
- 11 Amenga-Etego and Grusky, 2005.
- 12 Gortner et. al, 1997; Hall, et al. 2004.
- 13 UN-HABITAT, 2003; Dore, et. al. 2004, Clarke, et. al. 2004, Anwandter and Ozuna 2002; Balance and Tremolet, 2005; Lauria, Hopkins and Debomy, 2005.

- 14 Amenga-Etego and Grusky, 2005; Hall, et al. 2004.
- 15 Whittington, 2006.
- 16 GPRSI and GPRSII – 2003 and 2006.
- 17 WaterAid Ghana, 2007.
- 18 FAO Country Stat, 2005.
- 19 WaterAid Ghana 2005.
- 20 Ghana News Agency, 2009.
- 21 Noll, et. al., 2000.
- 22 Aldo and Raymond, 2005, Hanemann, 2006.
- 23 UNDP, 2006.
- 24 Ghana Population Census, 2000.
- 25 Mensah, 1999; IFFM, 2002; Amenga-Etego and Grusky, 2005.
- 26 IFFM, 2002; Amenga-Etego and Grusky, 2005.
- 27 PURC, 2005.
- 28 ISODEC, 2001; Amenga-Etego and Grusky, 2005.
- 29 Mensah, 1999.
- 30 Ministry of Works and Housing Report, 1998.
- 31 Mensah, 1999.
- 32 PURC, 2005.
- 33 UNDP, 2006.
- 34 UNDP, 2006.
- 35 Public Citizen, 2002; Amenga-Etego and Grusky, 2005.
- 36 Management Contract, 2006.
- 37 UNDP, 2006.
- 38 CWSA Act, 1998.
- 39 UNDP, 2006.
- 40 Yin, 1984.
- 41 Permission was sought from the Clemson University Institutional Review Board as part of a dissertation field trip.
- 42 Creswell, 2003; Cooper and Schindler, 2001.
- 43 Morgan, 1997; Morgan and Krueger, 1998; Krueger and Casey, 2000; Litoselliti, 2003.
- 44 Olumjimi and Gbadamosi, 2007.
- 45 Birley and Lock, 1998.
- 46 WHO, 2005.
- 47 Shiva, 2002; Barlow and Clarke, 2003.
- 48 Manu, 2001; WSP, 2003; Kariuki and Schwartz, 2005; Gulyani et al, 2005.
- 49 WHO, 2005.
- 50 <http://www.AllAfrica.com>.
- 51 Kariuki and Schwartz, 2005.
- 52 PURC, 2005.
- 53 Burby, 2003.

- 54 Lindblom and Cohen, 1979.
- 55 <http://www.WaterAid.org>.
- 56 Amenga-Etego and Grusky, 2005.
- 57 Gleick et al, 2002.
- 58 Pressman and Wildavsky, 1984.
- 59 Ostrom, 1990; Smith, 2004.
- 60 Adikeshavalu, 2004; Paul, 2005.
- 61 Adikeshavalu, 2004.
- 62 Local Government Act, 1993.
- 63 Luria et al, 2005.
- 64 UNEP, 2006.
- 65 Steiner, Achim UN Under-Secretary-General and UNEP Executive Director. (2006) Press release accompanying the release of a report compiled by the United Nations Environment Program (UNEP) and the World Agroforestry Center in Nairobi, Kenya.
<http://www.unep.org/Documents.Multilingual/Default.asp?ArticleID=5420andDocumentID=485andl=en>
- 66 UNDP, 2006.
- 67 Paul, 2005.
- 68 Collignon, 2002.
- 69 Public Citizen, 2003.
- 70 Etego Amenga, 2003.

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