

Water Pricing and Water Sector Reforms Information Study in Ghana

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Abstract: *This study seeks to provide information on water pricing in Ghana. It looks at the experiences in water pricing practices, the problems and successes encountered in the country. It outlines the reforms instituted in the water sector for the provision and sustainability of urban, rural, and agricultural water supplies to address the problems. Also discussed are the institutional arrangements put in place to ensure the coordinated management of the country's water resources. Finally, the study makes suggestions on how the problems on water pricing can be effectively addressed particularly in ensuring consumer protection and investor interest with the obvious introduction of the private sector in the urban water service delivery.*

Keywords: *Ghana, water pricing, tariff, water sector reforms, subsidy, urban, rural, and agricultural water sectors.*

Introduction

Until 1965 there was no tariff policy for drinking water supplies for urban and rural water systems in Ghana. Most of the rural communities had no adequate and improved water supply systems that attracted cost while the central Government met all the costs for water supply to the urban centers. Also, up to 1984, prices were heavily subsidized for both urban and rural water supplies. At the same time, operation and maintenance costs increased enormously. These were not passed on to the consumers, so the consumers have not been restrained in their demand. The situation started to be reversed when the Government decided in 1984 to reduce and eventually eliminate the subsidies.

The current state of performance of the water sector is rooted in the economic reforms which began in the early 1980s under the Economic Recovery Programme (ERP), the Structural Adjustment Programme (SAP) (1983 to 1993), and the Programme of Action for the First Medium-Term Development Plan (1997 to 2000) of Ghana Vision 2020 (NDPC, 1998).

This study looks at the history of water pricing, the difficulties so far encountered and the institutional reforms, which have been put in place to make water pricing successful and to make sure of the provision and sustainability of urban, rural, and agricultural water supplies in Ghana.

History of Water Pricing in Ghana

Institutional Responsibility

In Ghana responsibility for urban, rural, and industrial

water supplies and sewerage lies with the Ghana Water and Sewerage Corporation (GWSC). The GWSC is a centralized para-statal organization set up under the authority of Act 310 of 1965 (Act 310, 1965), by bringing together the then Water Supply Division of the Public Works Department and the Department of Rural Water Development.

In 1994, the Community Water and Sanitation Division (CWSD) was established within the GWSC to be responsible for the rural sector and was assigned a facilitating role to get:

- The communities to select their own preferred water system;
- The private sector to install the systems selected for the communities; and
- The necessary training in operation and maintenance of the systems to the communities.

In the case of agricultural water supply, responsibility rests with the Ghana Irrigation Development Authority (GIDA). The Authority was established in 1977 (SMCD 85, 1977) and it took over from the staff and assets of the Irrigation and Drainage Department of the Ministry of Agriculture.

By Act 522, the Water Resources Commission (WRC) was established in 1996 to formulate policies on the regulation and management of the utilization of water resources in Ghana and for related matters (Act 522, 1996).

The Public Utility Regulatory Commission (PURC) was also established in 1997 to regulate and oversee the provision of utility services by public utilities to consumers

and to provide for related matters, among which is to examine and approve rates chargeable for provision of utility services (Act 538, 1997).

Introduction of Water Pricing in Ghana

Before 1965, there was no cost recovery and tariff policy for drinking water supply because:

- Coverage was limited to the urban centers with central Government meeting all costs; and
- Almost no rural communities had adequate or improved water supply which attracted cost.

The advent of GWSC saw an expansion in public water supply coverage that involved significant Government funding. There was, therefore, the need to recover cost, hence the introduction of water supply rates and charges. Under Subsection 2f of Section 2 of its establishment Act (Act 310, 1965), the GWSC has power to determine adequate rates, charges, or fees and effective methods for collection thereof for water and sewerage services furnished to all classes of users. These are required to be approved by the Minister and covered by legislative instrument (L.I.).

Water supplied to farmers on irrigation schemes attracted no fee or charge before 1977. The establishment Decree of GIDA, however, requires the authority to fix rates and improvement charges with the approval of Government by legislative instrument (SMCD 85, 1977).

Experiences In Water Pricing

Water Pricing Methods

Between 1966 and 1985, water pricing was generally based on Government policy of subsidizing water operations rather than allowing consumers to pay economic tariffs to cover the cost of operation, maintenance and replacement (Ayibotele, 1990). Water charges by GWSC had four main schedules:

- Accra-Tema: the tariffs were supposed to cover operations and maintenance costs and also service loans for development in the drinking water supply sector.
- Kumasi and Sekondi/Takoradi: tariff was meant to cover operations and maintenance costs only.
- Other Urban Areas: revenue fell short of operational cost.
- Rural Areas: revenue was nowhere near operational and maintenance costs with the shortfall being borne by the central Government.

The tariffs covered the following:

- Metered household supplies at graduated rate/month
- Stand-post supplies at flat rates/month
- Unmetered domestic supplies at flat rates/month

- Industrial supplies at graduated rates per unit quantity consumed.

Urban Water Supply

From 1985, GWSC ceased to receive government budgetary allocations for recurrent expenditure, so it necessarily had to sell the water to meet its overhead and maintenance costs. The GWSC's new tariff system is uniformly applied in the urban areas over the whole country. It aims at recovering the full cost of providing the service (initial investment and operation and maintenance costs), while in the rural areas at least the operation and maintenance cost should be recovered based on charges per household (Ayibotele, 1987).

This water pricing policy is still being maintained with periodic increases in tariffs. From the beginning of the last decade (1990 to 2000), GWSC introduced some new service categories with corresponding rates for the urban centers. According to the Water Charges Regulation, 1995 (L.I. 1597), Government Institutions and Departments are now charged a separate rate of 2,532 cedis (US\$2.2) per 1,000 liters (264 gallons). Surcharges of 1.0 percent and 2.0 percent for public use of water for fire fighting and for rural development, respectively, have also been introduced.

Up to 1986 (UNDP, 1990), between one-third and two-thirds of GWSC's operation expenses were covered by Government subvention. After the withdrawal of Government support for operational cost, a fivefold increase in the existing urban tariff was implemented in 1986. Subsequently, this was followed with increases of 25 percent in 1987 and 1988 and a further increase of 15 percent in 1989. As a result, GWSC has succeeded in meeting all its operational cost without Government support. In keeping with its objective of full cost recovery, the GWSC proposed an increase of 243 percent in water tariff in December 1997, which when approved was to have taken effect beginning January 31, 1998. With this proposal, consumers would pay 600 cedis (US\$0.33) per 1,000 liters instead of 175 cedis (US\$0.10) per 1,000 liters. However, the actual increase in tariff approved by the PURC in 1998 was 130 percent. On June 1, 1999 new water rates at 30 percent increase over the previous 1998 rates came into effect after approval by PURC. The new tariff charges for domestic and commercial/industrial users of potable water per 1,000 liters range from 500 cedis (US\$0.28) to 2,230 cedis (US\$1.23). Flat rates of 6,500 cedis (US\$3.58) for unmetered connections, 1,500 cedis (US\$0.83) for boreholes, wells, handpumps per house per month, and 400 cedis (US\$0.22) for public standpipes per 1,000 liters are charged. New water tariffs came into effect on August 1, 2002 after approval by PURC. The new water rates have been increased by 40 percent over the 1999 rates.

Rural Water Supply

Throughout the country, rural piped systems and wells/handpumps attract flat but differentiated tariffs. At the

end of 1989, flat rates of 185 cedis/month and 560 cedis/month (US\$0.56 and US\$1.70) were charged to households using public standpipes and private connections, very few rural households have private connections. A flat rate of 109 cedis (US\$0.34) per household per month was charged for the use of a borehole (UNDP, 1990).

Since 1990 a national rural water supply and sanitation program has been implemented. Gradually, the rural water supplies are being transferred to the management of individual communities through the District Assemblies. This involves communities being directly responsible for the planning, operation, and maintenance of their water supply systems and for the collection of revenues to pay recurrent and replacement costs. Even though the basic principle of flat rate for water usage in the rural areas is being applied countrywide, this has different forms in different communities (Republic of Ghana, 1994). In the Upper East Region a tariff of 23,015 cedis (US\$19.18) per pump per year is charged. In some parts of the Eastern Region any community using up to three boreholes pays 20,000 cedis (US\$16.67) a month and 70,000 cedis (US\$58.33)

for those using five boreholes (see Figure 1 for the Administrative Regions of Ghana).

Agricultural Water Supply

In the case of agricultural water supply, no charges were imposed before the establishment of GIDA in 1977. It was not until 1980 that GIDA submitted proposals to charge tariffs for water supplied to farmers on its schemes (GIDA, 1989). The tariffs are uniform for the authority's projects in the country except two – Tono/Vea and Weija – where independent companies have been established that determine their own tariffs. The tariff is a fixed rate per hectare per season. Up to the early 1990s GIDA tariffs covered 30 percent of its operations and maintenance costs with the Government subsidizing 70 percent. For the two independent public companies, the Government paid 50 percent of the operations and maintenance cost (Ayibotele, 1990). Presently what happens is that depending on the type of irrigation project, the sum of the administrative, operation, and maintenance costs is divided per hectare for every season and shared equally among the farmers who have been grouped under cooperatives. Since the tariff system is worked out and agreed upon by both the farmers' cooperatives and the officials of GIDA based on administrative, operation and maintenance costs of each project, tariff charges are therefore not uniform but differ from project to project. In some cases, particularly the pumping irrigation schemes, the farmers have completely taken over the running of the projects with minimum help from GIDA. For the gravity systems, the farmers are normally seen as not wanting to pay the tariff charges because of low returns arising out of lack of credit schemes, no technology transfer, and non-availability or limitation of markets. It has been observed that where yields are good and marketing is assured, the payment of water tariff is without much problems.

Difficulties or Problems

The Acts of Incorporation of GWSC and GIDA mandate the two institutions to seek the approval of Government (or a body acting on its behalf) before imposing tariffs. The experience is that because of Government sensitivity to tariff increases approvals are delayed to the extent that by the time the approvals are given high inflation rates have made the new tariffs ineffective. For instance proposals submitted by GWSC to Government for tariff increases in 1978 were granted in 1981 by which time it had become totally inadequate. The next tariff increase submitted in 1982 was finally approved in 1984 when the Corporation (GWSC) was already heavily in debt (Ayibotele, 1987). GIDA submitted proposals to charge tariffs in 1980, but it was not until 1984 that the Ministry of Food and Agriculture (MOFA) gave ministerial approval. The tariffs were legalized in 1987 when Legislative Instrument 1350 was passed to pave the way for the charging of water and other inputs supplied to farmers (Ayibotele, 1990).

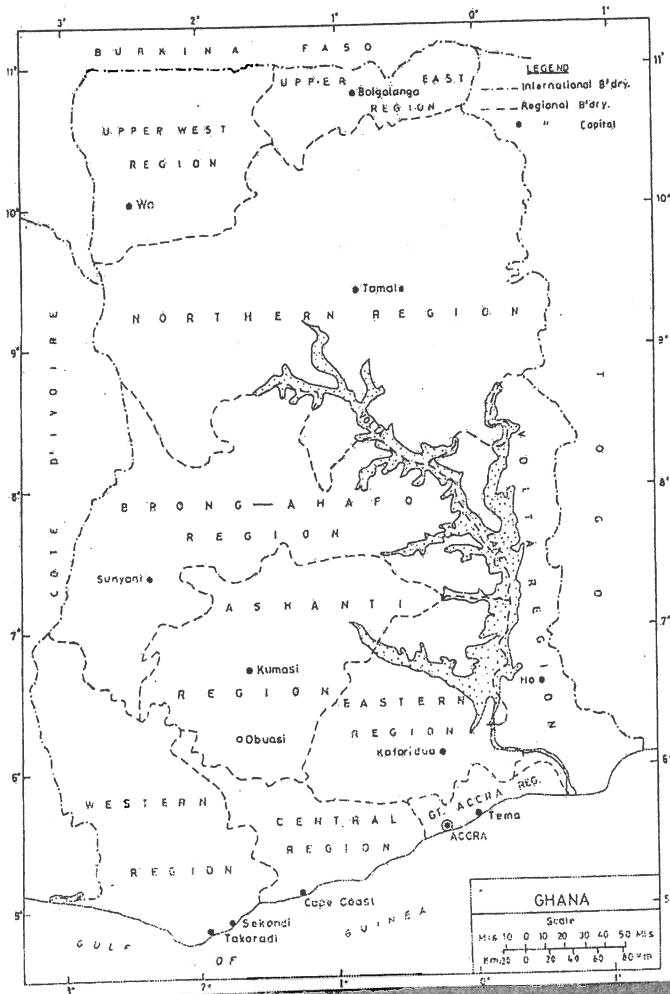


Figure 1. Map of Ghana showing the Administrative Regions.

Another issue is the poor bill collection rate in both the urban and rural areas. The other is that of unpaid bills. The Government (Institutions and Departments) is known as the biggest defaulter in paying its bills (Ayibotele, 1990). Revenue collection in rural communities is problematic because of the distances involved and because many people still believe that water is not a saleable commodity. Most boreholes were originally provided free of charge with no commitment made by the communities to maintain them. Water tariff was later introduced abruptly without adequate information provided to the communities. While the tariff structure appears adequate, only about 10 percent of GWSC's handpump maintenance costs are recovered through tariff payments (UNDP, 1990). If no repairs are necessary during the year or if GWSC's response is slow, the communities see no clear relationship between the cost of repairs and the tariffs and feel that they are being overcharged. The introduction of community-based maintenance should avoid the almost impossible task of collecting revenue in dispersed rural communities.

Also, up to the early 1980s, most of the existing water supply systems had deteriorated to the extent that they required rehabilitation and expansion to boost production in order to make their operations viable.

Significantly, there is a relationship between accessibility and cost. On the average, over 60 percent of the population who are the low-income segments and who live in the rural, the fringes, and densely populated areas of urban centers have least access to water. They pay more than ten times the official rates to vendors for water supply and end up spending more than 10 percent of their income on potable water.

The Reform Process

Over the past two decades, the Government of Ghana has introduced a number of reforms in the water sector intended to move the country away from the uncoordinated and unsustainable management and utilization of water resources. These reforms were dictated by the country's Economic Recovery Programme, decentralization of public administration, the national development policy framework, and environmental action plans.

Urban Water Supply

There are 208 urban water supply systems based on surface and groundwater sources. Only four were adjudged viable, and revenue from these were used to cross subsidize the operations of the remaining systems. About 114 of the systems serve small communities in the population range of 5,000 to 15,000 people and can be better managed at the community level. Since 1995, a Water Sector Rehabilitation Project was put in place to fully rehabilitate 34 of the systems, and also to provide spare parts, plants, and equipment to make the other systems operate. These rehabilitation works and provision of parts, plants,

and equipment were intended to restore the systems to their original design capacities. The rehabilitation program was implemented at a cost of \$240 million, with funds provided by the government of Ghana, the then Ghana Water and Sewerage Corporation, and donors. The projects, which ranged from Institutional Support for GWSC to Rural Water Projects in the form of boreholes and hand dug wells, received tremendous support from foreign institutions and donor agencies (Dotse et al., 1995; CIDA, 1998a and 1998b; DANIDA, 1998; DFID, 1998; European Union, 1998).

Subsequent to the rehabilitation program, further reforms have been initiated in the urban water supply sector. The reforms are intended to create favorable conditions for increased private sector participation, improve efficiency in the development and management of the water supply facilities and thus attract more capital investment into the sector. The corresponding policy objectives of the Government are:

- Involvement of private sector operators in the delivery of urban water supply, through leasing out of Ghana Water Company Limited's (GWCL) facilities;
- Creating the enabling environment, through legal, business and regulatory frameworks for private sector participation.

As part of the reforms, the regulation of tariffs for potable water and other services have been shifted away from government to an independent body, the Public Utilities Regulatory Commission (PURC). The Commission is to ensure protection of consumer interests, while at the same time maintaining the balance between tariff levels and investment, operation, and maintenance costs of the utility services that will encourage private sector participation in provision of these services.

Rural Water Supply

Following a review of the results achieved by Ghana at the end of the International Drinking Water Supply and Sanitation Decade (IDWSSD) in 1990, it became necessary to introduce reforms in the drinking water supply sector, in order to accelerate the coverage of the population with good drinking water and sanitation facilities. It was decided to separate the Rural Water Department of the Ghana Water and Sewerage Corporation and set it up as an autonomous Community Water and Sanitation Agency (CWSA) (CWSA, 1998). A new policy was introduced which requires that the supply of water to rural communities should be demand driven and community managed. The communities are also required to make a contribution of 5 percent of the capital cost of providing the facility. The CWSA is to facilitate the implementation of this policy. Government's policy objective on rural water supply reforms include:

- Putting ownership and management of water supply and sanitation facilities in the hands of rural communities;
- Strengthening the Community Water and Sanitation Agency to adequately address the water and sanitation needs of the rural population;
- Adopting strategies for ensuring water supply services to vulnerable groups such as the poor rural communities and the urban poor.

Between 1996 and 1998, the Government of Ghana as part of the Water Sector Rehabilitation Project spent an average of 3,549 million cedis (US\$1.95 million) per annum while the donor contribution went up by 2.3 times over the 1996 contribution to 62,170 million cedis (US\$34.2 million) in 1998.

Agricultural Water Supply

The reforms in the irrigation sub-sector were to accelerate the slow pace of development of the potential 346,000 hectares of irrigable land, out of which only 10,000 hectares have been developed to date. The measures implemented to achieve the reform strategy of increasing agricultural production, through development of water resources for irrigation are:

- Limiting the cost of irrigation projects to not more than US\$600/ha;
- Recovery of at least operation and maintenance costs;
- Handing over the management of projects to farmer associations and assisted by the Ghana Irrigation Development Authority;
- Involving farmers from the inception, selection of technologies through to the decision making stages of irrigation projects; and
- Contribution of 10 to 25 percent of project cost by beneficiary communities or associations for small-scale projects.

Water Resources Management and Regulation

The above reforms by their sectoral nature and approach achieved some level of improvement and made the existing water resources sub-sectors more efficient but did not in themselves achieve integration of water resources planning, development, and management. Various constraints were identified during the sector reforms which needed to be addressed. The identified constraints include:

- The absence of overall coordination of water resources management. Planning was at the sectoral level without any mechanism for coordination among the various sectors. This was the source of lack of coordination of activities in the water sector, which increasingly led to conflicts in objectives of the various institutions as well as use of water.
- Institutional weaknesses among information and de-

velopment agencies in the water sector.

- Inadequate participation of stakeholders in policy formulation and decision-making, hence the need for a coordinated management framework.

In order to address these issues, a Water Resources Commission (WRC) was established by an Act of Parliament (Act 522 of 1996). The Act mandates the Commission to regulate and manage the country's water resources and to coordinate government policies in relation to them.

The Commission, since its establishment by legislative instrument has made regulations for preserving existing uses of public water; controlling any change in the course, current or cross-current of any contained surface water, the granting of permits for water use, regulation of activities in protected catchment areas, and levying of charges.

Hitherto, in pricing potable water, account has not been fully taken of the cost of raw water and also the cost after value has been added by abstraction/damming, treatment, transmission, and distribution. Similarly the cost of raw water was not reflected in pricing hydropower and irrigation facilities. The Water Resources Commission has, therefore, developed and instituted raw water charges that serve as an input cost as well as a way of managing demand (WRC, 1999).

Achievements/Successes

Urban Water Supply

Since the beginning of the Reform Process there have been improvements in both the Water Sector Rehabilitation Project (WSRP) and the Restructuring of the Urban Water Sector in the country.

Water Sector Rehabilitation Project (WSRP)

Some of the achievements of the Reforms in the Water Sector Rehabilitation Project include

- Increase in production and coverage through: (1) rehabilitation and limited expansion of 33 water supply systems that contribute about 95 percent of the production of GWSC; (2) construction of new systems, e.g., the Obuasi water supply scheme; and (3) preparation of a Strategic Investment Plan to cover further rehabilitation, capacity expansion, construction of new systems, and a Master Plan.
- Increase in coverage. In spite of the improvements, water supply coverage dropped from 76 percent in 1992 to 70 percent in 1999 in the urban areas due to the transfer from 1998 of some small towns' water supply systems to the District Assemblies and hence there was no common basis for comparison.
- Manpower improvement and rationalization through: (1) reducing the work force which stood at 6,558 in 1987 to 4,226 by the end of 1998; (2) engaging qualified professionals like engineers, accountants, and com-

mercial officers; and (3) improving the Weija (near Accra) and Owabi (near Kumasi) training schools for seminars and workshops.

- Improvement in management efficiency by: (1) revising the organizational set-up at the Head Office, Regional, and District levels; (2) restructuring of the Commercial Department to strengthen them at the district level; and (3) provision of logistics like motor-bicycles, calculators, and protective clothing.
- Improving profitability margin through: (1) tariff increases; (2) increase in water production and sales. Even though water production has increased as a result of the Water Sector Rehabilitation Project (WSRP) of 1994 to 1998, the Unaccounted For Water (UAFW) reached its peak of 57 percent in 1997 and fell to 50 percent in 1998; and (3) reducing the debt burden on GWSC and making it easier for the repayment of loans that had been contracted by the Government and on-lent to GWSC by: (a) conversion of such loans into grants and equity; (b) extending the moratorium of the US\$16.9 million International Development Agency (IDA) credit by four years due to unavoidable delays in the project implementation; (c) Clearing of outstanding loans through the Cross-Debt-Clearing-House arrangement between GWSC, the Volta River Authority (VRA), the Electricity Company of Ghana (ECG) and the Government; (d) intensification of collection of arrears; and (e) transferring of non-viable and loss making small towns piped water supply systems to the District Assemblies (DAs) for community management.

Rural Water Supply

Rural communities which have embraced and set-up community water management committees have succeeded to a very large extent in controlling and maintaining their handpumps. This strategy has been particularly successful in the Northern, Upper East, and West Regions where 41 communities were initially selected by GWSC (Republic of Ghana, 1994). The achievements as at the end of 1998 in the Institutional Developments in the rural water sector include the following (CWSA, 1999):

- The Community Water and Sanitation Agency (CWSA) had a head Office with well-staffed regional offices in all the ten regions of the country. Out of the 110 political districts in the country, the CWSA was operational in 82.
- CWSA was involved in mobilization of communities, education and capacity development, formation of Water and Sanitation (WATSAN) committees, program and implementation management, etc.
- A total of 2,177 boreholes and 2,612 hand dug wells representing 101 and 125 percent achievement, respectively, had been constructed. Also, 7,637 household latrines and 367 institutional/schools latrines representing 103 and 87 percent achievements respectively had been constructed.

- The national drinking water supply had dropped to 30 percent as compared to 46 percent in 1992. The disparity in the coverages reported in 1992 and 1998 are due to the fact that while in 1992, the rural areas surveyed had populations up to 5,000, in 1998 small towns were included. Some of these had populations up to 15,000. Thus the settlement base was different for the two periods. It can therefore be said that the two cannot be compared. In the 1998 survey, sanitation was not covered.

Agricultural Water Supply

According to the Ghana Irrigation Development Authority (GIDA, 1989), collection of levies for water supplied to farmers was initially difficult as some farmers who previously used to free services revolted. Payment of levies is however, now accepted by most farmers and the cash flow situation at the projects has significantly improved, allowing for regular maintenance and supply of inputs.

Future Perspectives

The government, as part of the institutional reforms, intends to involve the private sector operators in the delivery of urban water supply, through leasing out of Ghana Water Company Limited (GWCL) facilities. The primary objective for the new private operators will be to increase rapidly and significantly the number of customers receiving near-continuous water supply. However, unless the tariff is sufficient to enable an efficient operator to cover costs, it is unlikely that any private company will be willing to invest in the Ghanaian urban water sector without significant government subsidies and or guarantees. Secondly, the current tariff schedule does not promote allocative efficiency because many customers are not billed according to their actual consumption and the tariff rates are not based on the cost to GWCL of supplying customers in the different customer categories.

To promote the set objective under the proposed program, tariffs should therefore:

- Enable the urban water sector to be financially viable. This requires that the private operators can recover their operating and capital costs and earn a reasonable return, and that GWCL can finance the investment necessary to improve the water supply system.
- Reflect the true cost of water supply services in order to achieve allocative efficiency. Practically, this means tariff-setting should encourage people to take the value of water into account such that they use water only when they value consumption at least as much as the cost of the water. This is necessary to promote an efficient allocation of resources and to ensure that the right level of investment occurs in the sector.
- Be socially acceptable by ensuring that consumers have

the ability and willingness to pay for enough water to meet their basic needs; and ensuring, so far as possible, that the increase in bills to any particular group of consumers will not cause real hardship or widespread social dissatisfaction with the reforms.

The PURC is also required to prepare guidelines for utilities on the rates that can be charged. One significant feature that needs to be considered by the PURC in its tariff setting process is that of public hearing. Organized public hearings would offer other stakeholders and the general public the opportunity to offer to comment on proposals by private operators.

The GWCL is structured to include a two percent levy that is imposed on urban water consumers to help facilitate the activities of CWSA in transferring and supporting 110 water systems to the District Assemblies. The District Assemblies should consider any proceeds from the two percent levy as specifically designated for water supply purposes and avoid applying these funds to other expenditures unrelated to water supply.

There is no doubt that there are communities that either cannot or will not pay the maintenance costs. It has been recommended and agreed that in such cases District Assemblies in such areas should be mandated to budget for and pay for the operation of boreholes and hand-dug wells in the areas.

Under water supply for irrigation, an exercise was undertaken in the early 1990s to reduce government subsidy from 70 to 30 percent. In the case of the two irrigation projects, which are managed by independent public companies, it was planned to reduce government subsidy to 25 percent from the prevailing 50 percent of the operations and maintenance costs (Ayibotele, 1990). Presently, the target is to recover all costs from irrigation projects. To improve water use efficiency and cost recovery on irrigation projects, it has been suggested that there is the need to either price the water in relation to the maximum yield per unit of available water or to install water meters at all diversions on the main canals from the intake to the fields to record the exact amount of water that enters each particular field.

The Water Resources Commission intends to set-up a Water Resources Management Fund (WRMF) as a mechanism of securing the flow of all charges, fees, and penalties related to its work and to the administration of its regulations. The issues that should be considered paramount are the legal framework for its implementation, the specific areas to benefit from the fund, the appropriate body to administer the fund, where to lodge the revenue collected, and what should be done prior to the legal set-up of the fund.

In line with the main focus of the Commission to effectively manage the water resources of Ghana, the WRMF should be disbursed for projects and activities identified by the Commission that address the following:

- Research activities that would be beneficial to the overall management of water resources in the long run, such as rational water use, conservation, sound environmental practices, and public awareness programs;
- Development of an efficient water resources database (hydrological and hydrometeorological) through support to the water resources data collection agencies;
- Cooperation with other riparian countries towards the protection of international water bodies;
- Support the operating expenditures of the main regulatory body (i.e. WRC).
- Assistance, where possible, to specific projects initiated by communities, e.g., rehabilitation of dams and dugouts;
- Watershed protection schemes to ensure good quality water resources, e.g., establishment of Green belts along water bodies; and
- Specific projects of concern to water resources utilization, e.g., eradication of noxious aquatic weeds (WRC, 2000).

Conclusion

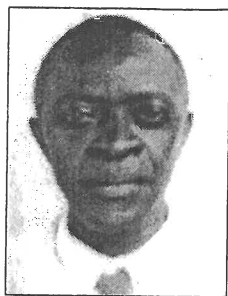
Information is given on water pricing and its history in Ghana. It is noted that there were difficulties and problems in the water sector up to the early 1980s, including the deterioration of many water supply systems and inadequate tariffs to recover at least the operations and maintenance costs of the GWSC systems. This necessitated, therefore, a water sector reform program in the early 1980s to arrest the deterioration and to address some of the problems in the sector. The semi-autonomous CWSD was created out of the reform process, and it has now been transformed into an autonomous body of CWSA that is responsible for the rural water sector. The GWSC has also been transformed into a limited liability company for the urban water sector whose future depends on private sector participation.

The WRC was also created in 1996 for coordination and responsibility of the water sector. In line with the Commission's mandate of effectively regulating and managing the country's water resources, it is in the process of instituting raw water charges from water users and put up a water resources management fund to finance various management programs and activities.

The reform process attracted funds and support from the multilateral and bilateral agencies including the NGOs. Through the reform process, some progress and achievements have been recorded in the water sector in the provision and sustainability of urban, rural, and agricultural water supplies with appropriate water pricing. With the current government policy of introducing private sector partnership into the water sector the issue of tariff setting needs to be critically reviewed with the view to balance and serve the interests of the consumer and the service provider. In this direction it is recommended that future

tariffs should ensure financial viability, allocative efficiency, and social acceptability.

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