DRINKING WATER SECTOR IN GHANA

Drivers for performance

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DISSERTATION

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LIST OF ACRONYMS

AfDB	African Development Bank
AFD	Agence Francaise de Development
ASP	Alternative Service Providers
ATMA	Accra Tema Metropolitan Area
BCE	Bill Collection Efficiency
BOOT	Build Own Operate Transfer
BOT	Build Operate Transfer
CAPEX	Capital Expenditure
CIDA	Canadian International Development Agency
COM	Community Ownership and Management
CWS	Community Water Supply
CWSA	Community Water and Sanitation Agency
DA	District Assembly
DANIDA	Danish International Development Agency
DER	Debt Equity Ratio
DFID	Department for International Development
DMD	Deputy Managing Director
DRR	Days Receivable Ratio
DWST	District Water and Sanitation Team
EPA	Environmental Protection Agency
ERP	Economic Recovery Programme
ESA	External Support Agency
EU	European Union
GDP	Gross Domestic Product
GLSS 4	Fourth Ghana Living Standards Survey
GNP	Gross National Product
GOG	Government of Ghana
GPRS	Ghana Poverty Reduction Strategy
GSB	Ghana Standards Board
GSS	Ghana Statistical Service
GTZ	German Agency for Technical co-operation
GWP	Global Water Partnership
GWCL	Ghana Water Company Limited
GWSC	Ghana Water and Sewerage Corporation
HD	Hydraulics Department
IDA	International Development Agency
IMF	International Monetary Fund
ISSER	Institute of Statistical, Social and Economic Research,
IWE	Institute of Water and Environment
IWSD	Institute of Water and Sanitation Development
JICA	Japan International Co-operative Agency
KfW	Kreditanstalt fur Wiederufbau

KNUST	Kwame Nkrumah University of Science and Technology
MD	Managing Director
MDAs	Ministries, Departments and Agencies
MDGs	Millennium Development Goals
MF	Ministry of Finance
MLGRD	Ministry of Local Government and Rural Development
MSE	Ministry of Science and Environment
MWH	Ministry of Works and Housing
NCWSP	National Community Water and Sanitation Program
NGOs	Non-Governmental Organizations
NPM	New Public Management
NRCD	National Redemption Council Decree
NRW	Non-Revenue water
O&M	Operation and Maintenance
OPEX	Operational Expenditure
PPP	Public Private Partnership
PPIAF	Public Private Infrastructural Advisory Facility
PSP	Private Sector Participation
PURC	Public Utilities Regulatory Commission
PWD	Public Works Department
QQR	Quick Quick ratio
RCC	Regional Co-ordinating Council
ROFA	Return of Fixed Asset
RWST	Regional Water and Sanitation Team
RWD	Rural Water Department
SAP	Structural Adjustment Programme
SEC	State Enterprise Commission
SIWI	Stockholm International Water Institute
SWOT	Strengths, Weaknesses, Opportunities, Threats
UN	United Nations
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
UWS	Urban Water Supply
WASH	Water and Sanitation for Health
WATSAN	Water and Sanitation
WB	World Bank
WHO	World Health Organization
WRC	Water Resources Commission
WRI	Water Research Institute
WSDB	Water and Sanitation Development Board

WSRS	Water Sector Restructuring Secretariat
WSSCC	Water Supply and Sanitation Collaborative Council
WUP	Water Utility Partnership
WWC	World Water Council

Abstract

This study aimed at identifying the drivers for improved performance of the drinking water sector by examining the influence of the national macro-environment and the water supply related organisation and institutions, and the role of the water service providers. The service providers were limited to the urban water supply and part of the community water supply (rural and small towns' water supply), specifically the small towns water supply delivery. The service providers for the urban areas were the formal water utility, Ghana Water Company Limited (GWCL) and the informal providers or alternative service providers such as vendors and tanker operators. With respect to the institutional environment, the scope was limited to the influence of the national macro-environment and the task environment that is composed of the water supply related organisations and institutions. The specific objectives of the study were to:

- Determine the effects of national macro environment (political, socio - economic and international factors) on water supply provision in Ghana
- Examine the effects of the institutions involved in water supply from the perspectives of the institutional reforms of the water supply sector since the 1990s and the current institutional arrangement
- Investigate the performance of the urban and small towns' water service providers for the factors explaining lack of access to improved water supply for a significant proportion of the population
- Examine water pricing in the water supply sector and how that affects water supply sector.

The research strategy employed a pluralistic approach due to the segmentation of the water supply sector with different approaches for service delivery. The analysis was conducted at three levels, the macro-environment, task environment and the service providers/utilities. The main research instruments used for data collection were document review, interviews with key informants in the water sector (utilities, government agencies, regulators, external support agencies and customers) and surveys. The surveys conducted were customer perception surveys of GWCL customers, subjective performance description of GWCL functioning from the perception of GWCL staff, small towns financial sustainability, GWCL prices for households in different housing types and water supply services to the urban poor.

From the national macro environment, the study revealed significant political interference, which adversely affects the drinking water sector. Political interference manifests in both the urban and small towns water supply. In the urban water supply, political interference comes from the national level and affect GWCL functioning through the appointment of top management of GWCL, GWCL Board members and

in tariff setting. For the small towns water supply, political interferences affects tariff setting process from the district assemblies and functioning of the water boards from traditional authorities.

The institutional reform in the drinking water sector has resulted in separation of policy formulation, service delivery and regulation for sector. Urban and community water supply has been separated allowing each sector to use appropriate approaches for water service delivery. The introduction of independent economic regulation by PURC in the drinking water sector has reduced the extent of political interference in tariff setting in the urban water supply. However, PURC falls short of the requirement of good economic regulation to ensure universal service delivery. PURC has developed strategies to improve water supply delivery to the urban poor but are yet to be implemented.

The drinking water sector is gradually implementing aspects of the New Public Management (NPM) with the small towns water sector more advanced than the urban water sector. Whilst customer involvement and participation in decision-making is high in the small towns water supply, it is not so in the urban water sector. In the small towns the Water and Sanitation Development Boards are selected by the community members whilst in the urban water sector, specifically for GWCL the board is appointed by the president and subject to political influences.

The task environment does not provide adequate incentives for GWCL to achieve universal service coverage in a sustainable, effective, equitable and efficient manner. There are no mechanisms to regulate the activities of the informal service provider in the urban water supply such as tanker operators and vendors.

The performance of GWCL is poor with a coverage of 60 %, bill collection efficiency around 80 % and unaccounted-for water, around 50 %. A number of factors contributing to the poor performance include lack of adequate funding for investment and operations, low levels of water tariffs, poor customer orientation, negative political interference in GWCL functioning, inadequate incentive systems to drive efficiency, inadequate autonomy of GWCL and poor accountability of GWCL to its client and users.

The performance of the small towns water supply delivery is reasonably good. On the positive side, the service providers are autonomous, there are inherent accountability relationships with the actors and tariffs cover operational cost. On the negative side, there are inadequate incentives to make the accountability relationships effective, the capacity of the WSDB and the operation team is low, tariffs are not sufficient to recover the full cost of water supply, implying that most systems are not in a position to pay for repairs of system components as they fall due.

The water tariff for water supply services does not cover cost and vary for the various service providers. About 40 % of the urban population relying on alternative service providers' pay between 5-14 times GWCL lifeline tariffs per m^3 of water. The GWCL tariff is the lowest of all the water service providers and do not recover the cost of the service provision. The tariff in the small towns water supply sector is generally higher than GWCL tariffs, going up to 2.5 times GWCL lifeline rate tariffs

per m^3 of water, but not recovering all the water supply cost.

The existing lifeline tariff generally does not benefit the poor. High-income customers residing in single-family houses pay the lowest rate per meter cube (m^3) of water and receives highest subsidy whilst consuming the highest quantity per person (120 l/c/d), which is clearly more than necessary for public health benefit. The low-income customers residing in multi-occupancy houses pay the highest GWCL rate per meter cube of water (21 % higher per m^3 than the high-income customers) whilst consuming the lowest quantity per person (50 l/c/d), which is just sufficient for the public health benefits.

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Importance and challenges of water supply

Importance of water supply for developing countries

Access to safe water supply is a universal need and essential for human development [1]. The availability of safe water supply contributes positively to enhance public health and economic development [2]. For the developing countries, however, access to safe water is a challenge. At the beginning of 2000, at least 1.1 billion people in the world lacked access to safe water [3]. The majority of these people live in Asia and Africa, where fewer than out of five Africans lack improved water supply.

Every year millions of people, most of them children, die from diseases associated with inadequate water supply, sanitation and hygiene practices. The combination of safe drinking water, adequate sanitation and hygienic practices is recognised as a precondition for reduction in morbidity and mortality rates, especially among children [4]. According to WHO [5], 1.8 million people in the world die every year from diarrhoeal diseases (including cholera) and 88 % of diarrhoeal diseases is attributed to unsafe water supply, inadequate sanitation and poor hygiene. WHO [5] reports that access to improved water supply reduces diarrhoea morbidity by 21 % and improved sanitation reduces diarrhoea morbidity by 37.5 %.

The WHO also reports that 500 million people in the world are at risk from trachoma. Of these 146 million are threatened by blindness and 6 million people are visually impaired by trachoma [5]. These diseases are strongly related to lack of face washing opportunities, often due to absence of nearby sources of safe water. Improving access to safe water supply sources and introducing better hygiene practices can reduce trachoma morbidity by 27%.

Access to water supply contributes to economic development through reductions in productivity losses due to illness and time wasted in collecting water. Readily available water supply empowers women to engage in economic activities and allow girls to have time to attend school [4]. Carrying water long distances and waiting at sources waste the energy and time particularly of women and children at the expense of family activities, education and productive work [6]. The sickness and illness resulting from water related diseases have far reaching adverse effects. The victims would have to be taken care of, health care costs paid as well as time lost for productive activities. In Africa, it is estimated that over 24 billion hours per year is lost in caring for those with diarrhoea; and the absence of water supply and sanitation services results in the loss of productivity amounting to US $ 3.2 billion per year and health care cost of about US $ 20 billion per year[7].

Many of the people without access to safe water spend a significant amount of their time collecting water of poor quality. This reduces the time available for engaging in productive ventures and affects school attendance of children. In Africa, it is estimated that 40 billion hours per year is spent in collecting water [7]. The fourth round of the Ghana Living Standards Survey (GLSS4) reveals the time spent in

collecting water. One percent of the population spends between 3 to 6 hours in fetching water a day, 4 % spend between two to three hours per day and 35 % spend between zero to one hour [8]. The average time spent in collecting water per person was 38 minutes per day [8].

The benefits of having improved water supply and satisfactory sanitation services far outweigh the cost of the services [2]. A cholera epidemic in Peru in 1991 resulted in the loss of about US $ 1 billion in lost tourism and exports, which could have paid for all the water supply and sanitation systems Peru needed to prevent such an outbreak from occurring [2]. The study of Hutton and Haller [9] on economic cost and benefit of selected interventions to improve water supply and sanitation to achieve the UN Millennium Development Goals (MDGs) for water supply by halving the proportion of those without access to water supply by the year 2015 revealed that in developing regions an investment of US $ 1 would yield benefits in the range of US $ 5 –$ 28, with the main contributor to the benefits being the time savings.

Challenge of water supply in Africa

Africa faces a number of challenges in making water supply services available to all its inhabitants. Continuing population growth higher than rate of increase in water infrastructure leads to increasing number of inhabitants without access to water supply. Inadequate government commitment in terms of the policies and funding as well as the weak economic situation hinders the development of the water supply sector.

In Africa, the number of inhabitants without access to improved water services has been increasing. From the year 1990 to 2000, the population without access to improved water supply services in Africa increased from 266 to 300 million [3]. The Global Assessment Report 2000 [3] used an improved methodology that used the term “improved” rather than “safe” access due to the difficulty in assessing the safety of water supply facilities. The improved methodology of the Global Assessment report was based on technology type, which was classified as either safe or not safe. The assessment revealed that, in Africa water supply coverage increased from 57 percent in 1990 to 62 percent in 2000. Within the period (1990 to 2000) the absolute number of people with access to improved water supply increased by 40 % whereas the absolute number without access to improved water supply also increased by 13 % due to population growth [3]. The Water Utility partnership (WUP) for capacity building in Africa estimates that the absolute number of people without access to water services will double between 2001 and the year 2020 from 200 million to 400 million if drastic measures are not taken [10].

The constraints in addressing these challenges include political and financial factors. Inadequate political will to expand water supply coverage is one of the political challenges. It refers to the absence of political leadership to undertake reforms necessary to improve performance and attract investment and government commitment to allocate sufficient national resources to the sector [4].

Poverty is a constraint to increasing access to water service from the household to

the national level. Within communities, some households cannot afford the cost of improved services. Many poor countries do not have the financial resources either to provide water services to all or sustain their operation. The United Nations Millennium Development Goals (MDGs) No. seven, target ten, aims to halve, by 2015 the proportion of the population without sustainable access to safe drinking water and sanitation raises a difficult financial challenge. In order to achieve the MDG target 10 in Africa, the number of people served with safe drinking water will need to double. An estimated 350 million more people, half-rural and half-urban, will need to be served by 2015 [11]. A least cost estimate of the investment required to achieve the 2015 MDG for water is $20 billion ($1.5 billion per year) [11].

The Camdessus report commissioned by the GWP/WWC/3rd World Water forum states that the financial flows to achieve the MDGs target 10 needs to at least double [6]. The financial flows will have to come from financial markets, from water utilities through tariffs, multilateral financial institutions, governments and public development aid [6].

A significant proportion of the urban population, without direct access to piped connections or standpipes provided by the main service providers tends to rely on other informal service providers such as tanker operators, vendors and independent producers. The services from these alternative service providers are characterised by high prices (up to 10 times that of the urban utility provider) and are often of doubtful quality. The impact falls primarily on the poor, who do not enjoy the benefit derived from the economies of scale and the government subsidies, and therefore pay excessively high prices to water vendors for the meagre water supplies. Given the poor economic situation in developing countries, where a significant proportion live on less than 1 US $ per day the reliance on the alternative informal service providers could erode all potential savings to improve the quality of life.

Water Supply in Ghana

Introduction

Water supply was initially categorised based on population as either urban or rural with rural defined as a community with less than 5000 inhabitants. This classification is consistent with the national definitions of rural and urban communities, which are used by the Ghana Statistical Service. This classification did not pose problems when there was only one formal and official water service provider in Ghana. However, with the reforms in the water supply sector resulting in two approaches for water supply delivery another classification has emerged.

Currently, water supply is also classified based on the approach of service delivery as Urban Water Supply (UWS) or Community Water Supply (CWS). The urban water supply is made up of about 86 urban systems under the Ghana Water Company Limited (GWCL) management. GWCL is the public utility responsible for water supply delivery in the urban areas. The rest of the water systems, which are rural and

small towns water systems fall under the CWS. The government agency responsible for facilitating community water supply in the rural and small towns is the Community Water and Sanitation Agency (CWSA). The sources of water supply in Ghana based on the old classification are shown in Table 1.1.

Table1.1 Source of drinking water (percent) in the Ghana

Source of drinking water	Urban			Rural	Ghana
	Accra	Other Urban	All urban		
Pipe borne source	***100***	***72.7***	***80.4***	**18.8**	**41.6**
Indoor plumbing	9.8	5.0	6.4	1.1	3.1
Inside standpipe	38.7	21.0	26.0	1.8	10.7
Water vendor	15.6	4.4	7.5	1.2	3.5
Tanker	0.3	0.1	0.1	0.8	0.6
Neighbour	22.3	8.0	12.1	1.1	5.1
Private outside standpipe	13.1	14.9	14.4	2.6	7.0
Public standpipe	0.2	19.3	13.9	10.3	11.5
Well	-	***15.1***	***10.8***	**47.2**	**33.9**
With pump	-	2.8	2.0	31.6	20.8
Without pump	-	12.3	8.8	15.6	13.1
Natural	-	***12.2***	***8.8***	**33.9**	**24.6**
River/spring	-	11.8	8.5	33.6	24.4
Rain	-	0.4	0.3	0.2	0.2
…. Other	-	-	-	0.1	0.0
All	**-**	**100**	**100**	**100**	**100**

Source: [8]

Table 1.1 shows that only 41.6 % of the Ghanaian population has access to pipe borne water. 16.2 % of those getting their supply from pipe borne water receive it through the alternative informal service providers, which are usually more expensive. These are from water vendors (3.5 %), tanker operators (0.6 %), private standpipes /neighbours (12.1 %). The rest of the Ghanaian population relies on wells (33.9 %) and other natural systems such as river or spring (24.4 %) and rainwater (0.2 %).

It is also shown in Table 1.1 that majority of the urban dwellers rely on pipe borne water sources whilst the rural dwellers rely on wells and other natural systems such as rivers, springs and rain water. In the urban areas majority of the inhabitants relying on pipe borne water get it though standpipes, vendors and neighbours. Microbial contamination of domestic drinking water during and after collection from the source has been recognised as a problem for households even where the water sources are uncontaminated [12]--[13]. Thus, the inhabitants relying on standpipes, vendors and neighbours are potentially at risk of poor water quality.

In the capital city Accra, all inhabitants get water from the pipe borne supply but only 9.8 % get it through an indoor plumbing system. Almost four out of ten

inhabitants get it through an inside standpipe or a yard connection and the rest constituting about 60 % get it through private standpipes, water vendors or tanker operators. Water services through these alternative informal service providers (the private standpipes, water vendors or tanker operators) are characterised by high prices for meagre suppliers and potential water quality problems.

Urban water supply problems

The GWCL operates 86 urban water systems ranging in capacity from 216 to 178,000 m^3/d. The age of the systems ranges from less than 1 year to 70 years. The total installed capacity of the systems is about 737,000 m^3/day whilst the average daily production is about 599,000 m^3/day. GWCL estimate the potable water demand in the urban water sector (GWCL supply areas) as 995,000 m^3/day giving an effective urban coverage of 60% [14].

GWCL has about 289,000 water connections and metering ratio of 52%. The majority of the customers in the urban areas with direct access to pipe borne water from GWCL are concerned with the reliability and quality of the water supply. The Public Utilities Regulation Commission (PURC) that regulates urban water supply delivery conducted a survey on 'Use and Satisfaction' of water services in urban areas of Ghana. The results of this survey provided reliable data to enable the PURC to understand the current level of service performance and the priorities for water supply improvement as perceived by the consumers (both GWCL customers and potential customers). From the survey the first priorities were Accessibility (including reliability for piped customers), Affordability and Quality (PURC 2001). The other two issues identified during the qualitative stage are Community Involvement to promote sustainability and Duty of Care by Institutions in respect of consumers as individuals and as members of their local communities (PURC 2001).

Water supply has not kept pace with population growth and has resulted in water shortages, low pressures, poor water quality problems, etc. This is partly due to financial constraints to expand the system by extending the pipe mains and making more water available to serve the growing population. As an indication, the water system has a non-revenue water of about 52% [14], which include about 20 % from commercial losses (illegal connections, poor or underestimated estimated billing due to a shortage of meters, etc.) [15].

Community water supply problems

Community water supply refers to water supply to rural and small towns, which are owned and managed by the communities. Small towns' water supply in Ghana refers to water supply delivery using piped networks to communities with population between 2,000 and 50,000 under Community Ownership and Management (COM) arrangement. Under the COM, the communities elect their representatives to form the Water and Sanitation Development Boards (WSDB) who are responsible for the management of the water system. Rural water supply refers to the use of point sources, such as hand dug wells or boreholes fitted with hand pumps.

At the close of year 2001, the total number of functional point sources (hand dug wells or boreholes fitted with hand pumps) in Ghana stood at 15,910. These were adequately serving 4,313,100 people and contributed to 33 % of the national water supply coverage. This was based on the National Community Water and Sanitation Programme (NCWSP) criteria that a borehole of acceptable characteristics should serve a maximum of 300 people each of whom is within a maximum walking distance of 500 m [16].

The total number of small town water systems under Community Management stood at 254 in 2001, which was adequately serving 1,087,635 people and contributed to 8 % to the national coverage given the locations, system capacities, designs and constructions of the piped systems [16].

There are two main challenges in achieving universal service in this sector. The first challenge is the resources needed to expand the services to those who are currently not served. The other challenge is to ensure that all systems provided will be operated in a sustainable manner. It was reported that four out of the 12 newly constructed small towns water systems were not functioning due to suspected factors ranging from technical, institutional, financial and management in the Western Region of Ghana [17].

Despite the poor state of water supply mentioned in the previous sections, a number of efforts have been undertaken, which will be introduced in the next section, before formulating the problem statement of this research.

Efforts to improve water supply services in Ghana

A number of attempts have been made to improve water supply delivery in spite of the water supply challenges in Ghana. The sector has gone through various institutional transformations in attempt to improve water supply delivery without substantial performance improvement. This has resulted in the institutional changes shown in Table 1.2.

Public water supply in Ghana started as the Hydraulics Department of the Public Works Department with responsibility for urban water supply in the 1920s. Later on a Rural Water Department was created within the Public Works Department to deal with rural water supply in 1948. The Hydraulics Department and the Rural Water Department were merged into the Water Supply Division (WSD) of the Public Works Department in 1958. The Water supply division operated until 1965 when it was transformed into Ghana Water and Sewerage Corporation (GWSC) with responsibility for both rural and urban water supply.

Table1.2 Changing institutional modes in the water supply sector in Ghana

Period	Institutional Mode	Sector
1920s –1958	Direct public provision (by Hydraulics department of Public Works Department)	Urban
1948 – 1958	Direct public provision (Rural water department of Public Works Department)	Rural
1958 – 1965	Direct public provision (Water supply division of Public Works Department)	Rural and urban
1965 -1998	Corporatisation (GWSC)	Rural and urban
1998 - date	Public Company limited (GWCL) with room for Private Sector Participation (PSP)	Urban
1994 – date	Decentralisation – using the Community Ownership and Management arrangement under the District Assemblies	Community (rural and small towns)-

From WSD to GWSC there was little change in the institutional framework. The major differences were that the head of the Division was no longer the Chief Engineer but the Managing Director; and the Deputy Chief Engineer was designated as Chief of Operations and placed above the Chief Engineer. Despite improvements in conditions of service of GWSC there was no evidence that productivity levels were significantly affected [18].

Attempts to fulfil the objectives of GWSC resulted in a restructuring in the 1970s, which led to a number of changes in the organisational structure. One of these changes was the appointment of Regional Mangers to decentralise decision-making within the corporation (GWSC) and devolve authority to the regions. The Regional managers were mandated to be the representatives of the Chief Engineer in the regions and heads of the corporation in their respective regions.

After operating GWSC for about a decade, the need to revise the organisational framework was again recognised leading to a strategic review in 1985. The review resulted in the post of Chief of Operations being abolished and replaced by two positions for Deputy Managing Directors, one for operations and the other for Finance and Administration. Another change was that the role of the Regional Managers was strengthened to Regional Directors that resulted in more autonomy for the regions. Some of the regions, which were in a healthier financial situation, became separately accountable and operated as separate cost and profit centres. Staff conditions of service were altered in those regions and eventually created problems with the other regions. Regional autonomy in GWSC was severed in 1990 especially on accounting and personnel aspects, which were re-instated at the head office. This re-centralisation enabled GWSC to settle outstanding redundancy payments, settle indebtedness to

suppliers and account for liabilities of the non-viable regions. These actions resulted in considerable friction between Regional Directors and Head Office particularly relating to financial and personnel matters.

GWSC operated as a centralised utility service, dependent on government subvention for its operations until 1986, when government withdrew its subvention and increased tariffs to enable GWSC operate on its own. From 1986 to 1994, GWSC provided water service to both urban and rural communities without government subvention for its daily operations. At the end of the International Water Supply and Sanitation Decade (IWSSD) decade, it was realised that rural water supply had been marginalised and the approach for its delivery was not appropriate. Based on this reason and the need to improve the urban water supply delivery reforms of the water supply sector were initiated. The reforms resulted in the separation of community water supply from urban water supply, separation of water policy formulation functions, regulatory and service provision functions, and establishment of regulatory institutions. The reforms are analysed in chapter six.

Problem Statement for this Research

The water supply sector in Ghana has not been able to provide and sustain adequate drinking water services to all citizens. The main problem is the lack of sustainable access to improved water supply service for the people of Ghana (urban and communities) in an efficient, effective and equitable manner. Two problems are evident. The first is lack of access to water supply and second is the poor and unsustainable service for the inhabitants with access to water supply services. A significant proportion of the population does not have access to improved services and those with access are concerned with the quality of the service such as reliability, water quality and response to customer complaints. 10.3 million (51%) of Ghana's 20 million people had access to water supply in 2000 [19]. To achieve the MDGs in 2015, 13.6 million more people would need to obtain access to water. This would still leave 6.1 million without water. Those without access to improved sources rely on natural systems such as rivers or spring and rainwater or alternative service providers from vendors, tanker operators or standpipes.

There are a number of factors, which impact upon the effectiveness of the water supply sector. These factors may be classified as internal and external factors. The external factors include the national policies, socio-economic situation and the influences of the international factors on the water supply sector [19]. Another important external influence is from the national task environment, which is made up of the national water supply related organizations. The internal factors are the corporate governance, human resources management, financial resources and physical assets of the water service providers [14].

Other factors influencing the water supply sector are the specific trends emerging from the recent institutional reforms of the water supply sector worldwide constituting

the international factors. These factors include the role of pricing, public private partnerships and regulation, which have been key components of reform. The influences of these factors are important for understanding the behaviors and the performance of the water supply sector. In the next sections the scope and objectives of the research, research justification and structure of the thesis are presented.

Scope and Objectives of the Study

The objective of this research is to understand the factors contributing to the lack of sustainable access to improved water supply services in Ghana. This will form the basis for identifying the drivers for the performance of the drinking water supply sector in Ghana. A well performing drinking water supply sector should provide access to sustainable water supply services to the people of Ghana in an efficient and equitable manner.

Two areas of particular interest in this study are the role of the water service providers and the influence of the institutional environment on the water supply sector. The scope of the study for examining the role of the service providers was limited to the urban water supply and part of the community water supply, specifically the small towns water supply delivery. For the urban water supply, the focus was the formal water utility GWCL and the alternative service providers who are the informal providers. With respect to the institutional environment, the scope was limited to the influences of the national macro-environment and the task environment that is composed of the water supply related institutions.

Consequently, the specific objectives were to:

- Determine the effects of national macro environment (political, socio - economic and international factors) on water supply provision in Ghana (chapter five)
- Examine the effects of the institutions involved in water supply from the perspectives of the institutional reforms of the water supply sector since the 1990s (particularly separation of CWS and UWS, attempts at introducing Public Private Partnership and regulation) and the current institutional arrangement (chapter six)
- Investigate the performance of the urban and small towns' water service providers for the factors explaining lack of access to improved water supply for a significant proportion of the population (chapter seven and eight)
- Examine water pricing in the water supply sector and how that affects water supply sector (chapter nine).

Research Justification

The water supply problem, which is the lack of access to improved water supply, requires a combination of political, social, technical and institutional approaches for a sustainable solution. Also, there is no blue print for ensuring sustained water supply delivery, as each situation in a particular context needs a coordinated approach by all the stakeholders to ensure that the intervention reflects the true demand of all sections of society. Consequently, the research attempts to bridge the gap between engineering technology, water supply utility management and public sector management for efficient and sustainable delivery of water supply service.

Previous studies [20]--[21] on water supply performance based on cross-country data have been useful to highlight the variations and differences in performance. However, the different environmental settings (different macro environment, policy, legal and regulatory frameworks) coupled with the many and often-complex intervening variables within the environmental settings (such as the political, economic and social system) present inherent shortcomings in getting the explanations for the performance difference. Reforms in the Ghana water supply sector leading to the use of two different approaches in water supply delivery provide an opportunity to compare the different approaches and learn from each other.

This research is focused on the water supply sector in Ghana with the aim of contributing to a better understanding of the issues that confront the water supply sector in Ghana. This is expected to be of benefit to all stakeholders (policy and decision-makers, policy implementers, water supply organisations and customers) as we aim for improved accessibility to water supply services. As the problems facing the water supply sector in Ghana is not peculiar but rather similar to that in other developing countries, the findings of this study may be relevant at all levels i.e. at the global, regional and national levels.

This research also intends to support the national efforts in water supply provision as well as the needs of the Civil Engineering Department, KNUST, Kumasi, which is the leading institution for training water supply sector professionals in Ghana. This is expected to stimulate research in utility management and institutional development and contribute to the knowledge base needed to accelerate improvement in water supply service provision in Ghana and other countries with similar problems.

Structure of the Thesis

This chapter has provided an introduction to this study and presented the study objectives, scope and research justification. The theoretical and conceptual framework and the research questions and hypotheses guiding the study are discussed in the second chapter. Chapter three provides background information on Ghana and describes the water supply sector in Ghana. The methodology and research strategy used for the study is presented in chapter four. An analysis of the national macro-environment within which the water supply sector operates is reported in chapter five.

In Chapter six, the national water related institutions are analysed using the

reforms of the water supply sector in Ghana since the 1990s and the current institutional arrangements on the performance of the water supply sector. The performance of the urban water supply services provider, Ghana Water Company Limited (GWCL) is analysed in chapter seven. Chapter eight examines the performance of the water supply services management for small towns. Chapter nine analyses water pricing and its effects on the Ghanaian water supply sector. In chapter ten, a synthesis of the analysis and its implications for the theoretical framework and the drivers for the water supply sector performance in Ghana are presented. The conclusions of the research are presented chapter 11.

Chapter Two

Theoretical and conceptual framework

Contents

Introduction

This chapter presents the theoretical and conceptual framework for the study. It begins with the nature of the drinking water services delivery by examining the characteristics of the water services and how that influences government role in the delivery of the service. The next section, describes models of public sector management as the drinking water sector falls primarily under the public sector and provides a good framework for analysing the water supply related agencies and checking for improved performance in the water supply sector. The recent reform in the water supply sector, which is the result of the ideas discussed under the public sector management, is discussed. The functioning of the water service providers is considered by examining requirements for technical and operational performance, good governance and financial self-sufficiency. A conceptual framework for the study is then developed to guide the research. Following on from the conceptual framework the research questions and hypotheses are presented.

Nature of drinking water services

Description of water supply system

A drinking water supply systems usually comprises of a source of water, transmission or transportation of the portable water to community, a network of pipes and appurtenances (valves, bends, meters, reservoirs) known as the distribution systems that convey portable water to the consumers or customers. The source of water is either from a well field of boreholes or from surface water sources based on conventional treatment methods. The water transmission system is made up of large diameter pipes that convey water from the treatment work or headworks to the community for distribution. The distribution network consists of small to medium sized pipes usually laid along the sides of the streets to allow households to tap using their service lines.

The engineering aspects (hydraulic and engineering design) of water supply aim at the following:

- Water production of acceptable quantity and quality to meet the population
- Adequate pressures, velocity and acceptable head loss within the network
- Engineering design to ensure that the potable water is transported efficiently to the community by selected appropriate pipe sizes (diameters) and appropriate pipe materials.
- Location and design of storage facilities to ensure that there will be adequate water supply during emergency situation, break pressure tank in some case depending on the topography

- Reliable distribution system that ensure good quality of service. Criteria usually include adequate pressures, water quality and reliability of the services.

The exact nature of the water supply system may vary depending on a number of factors such as topography, availability of water resource and its quality. The nature of the water supply system gives rise to peculiar characteristics, which influence how the water system and the sector is organised.

Characteristics of drinking water sector

The drinking water sector exhibits a number of characteristics that influences how water services are organised or should be organised. The drinking water sector is characterised as a natural monopoly, private good, merit good and a basic need. The weighting accorded the various attributes in a particular context governs the way drinking water services are delivered.

Drinking water delivery as a natural monopoly

A natural monopoly occurs when economies of scale available in a production process is so large that the relevant market can best be served at least cost by a single firm [22]. In the case of the drinking water sector, instead of having three drinking water companies laying separate networks where one would do, it may be more efficient to give one firm a monopoly subject to regulation of prices and quality of service. Where a natural monopoly occurs the use of competition may be undesirable. In such circumstances, the role of Government is required to ensure that the monopoly provider is efficient. In practice, the economies of scale phenomenon that gives rise to "natural monopolies" may affect only one part of a given process indicating that only the part which is a natural monopoly should be regulated and the rest left to the market forces [22]. This is the case for the water supply sector as only some aspects of the service provision may be classified as a natural monopoly namely the retail distribution system [23]. It may therefore be argued that the other aspects of water supply provision, which are not a natural monopoly, could be left to the market. Also, the aspects that exhibit monopoly characteristics could rather be competition for the market rather than competition in the market.

Drinking water as a Public or Private good?

The basic criteria for assessing the degree to which a good or service is closer to being public than private pertains to excludability and substractability [24]. Substractability occurs where one person's use or consumption of the good or service decreases or substract from its value to others who use the same good or service. For public goods, there is no conventional consumption during use (zero subtractability), and the goods can continue to provide the same benefits to everyone, as long as there is no congestion.

Excludability refers to the situation where the service provider is able to exclude potential users who are not willing to pay for services. When it is impossible or

prohibitively expensive to exclude users the service becomes a public good. But when the price potential users can be prevented from benefiting from the service without paying the price, and no alternative way of free riding is available, the service becomes a private good.

For drinking water supply, the levels of service are usually a house connection (in house connection or yard connection) or a standpipe. In the case of excludability, users can easily be excluded for non-payment either through disconnection for house connection or "pay as you fetch" for a standpipe. Water use is also rivalry and hence water supply service could be considered as a private good.

Drinking Water as a Merit good

Even though water supply services exhibit the qualities of a private good, some quantity, a basic quantity of water is required to ensure good public benefit. This basic amount of water needed for basic needs to ensure public health benefit is considered as a merit good because water consumption for basic needs has benefit to society beyond that which accrues to the individuals consuming them [24]. A merit good is considered to have some intrinsic values and, which left to individual consumers, may not be consumed at the required levels but when readily available and consumed the long-term effects are positive for the economy and hence deserve pubic sector intervention [25]. This merit good aspect has given water supply the recognition as an essential and a basic service [26]. The merit good aspect implies universal accessibility, which therefore nullifies the excludability argument and makes the service a public good [27].

This merit good nature of water supply service delivery has wide political acceptance and is usually the dominant reasons for government subsidies. It is based on the premise that user fee alone cannot recover the cost of the service and that some consumers especially the poor cannot pay the full cost. In South Africa for instance, $6m^3$ of water per month per household (based on 25 litre per person per day for household size of 6) is provided at no direct cost to customers [28]. Most water utilities in developing countries charge a reduced tariff also known as social tariff or lifeline tariff for a specified amount of water to satisfy the merit good criteria. According to [29] the lifeline tariff band varies from 5 m^3/month in Cote d'voire, Cameroon and Gabon to 20 m^3/month in Sri Lanka.

To achieve this merit good objective of water supply, it is therefore important to aim at improving the targeting of subsidy so as to achieve the social objective with the least cost to budget allocation and economic efficiency [30]. So, the determination of the quantity of water that can be classified as the merit good as well as the particular group that really need it is important. It may therefore be argued that, the required amount of water needed to achieve the social objectives could be used as the basis for the social tariff or lifeline.

Role of Government in drinking water supply

In the drinking water sector, the primary aim of government intervention is to offset the effects of market failure. Therefore depending on the nature of the market failure government intervention can take many forms. Market failure occurs when markets do not bring about economic efficiency. In the case of the drinking water sector, the possible "market failure" are monopoly, externalities, large-scale investment and merit good characteristics at basic level of consumption [31].

Government interventions that have responded to the above "market failures" have been varied and changing. In the past direct government provision of water supply services were very common. However, this is giving way as the consensus from the various meetings, workshops and forum on water supply has led to a shift in Government role from a direct provider of water services to an enabler and regulator of these services [6]. Even though there seems to be consensus on the shift in Government role, there is no "blue print" on the form of government involvement but rather concepts and principles that could guide governments to determine the appropriate intervention based on local circumstance. Appropriate government intervention could be in the form of financing, facilitating information dissemination, and regulation [32]. Other interventions include appropriate policies, procedures, guidelines, laws and regulations.

With respect to ensuring an enabling environment, it is essentially refers to the presence of clear "rules of the game" to stimulate all actors in the water supply sector to contribute effectively in the attainment of the overall water supply goal. An enabling environment is a key pre-requisite for successful delivery of infrastructure including water supply [33]--[34]. An enabling institutional framework should ensure that roles and responsibilities for all stakeholders in the service delivery are assigned and explicitly defined. It should also ensure the presence of appropriate legislation (new or amended) to improve water services to all user groups, ensure that other service providers currently complimenting or competing with the formal service providers know their roles and responsibilities. The relevant policy areas that should be addressed include the achievement of universal coverage, cost recovery, empowering consumers to participate in decision-making concerning the service delivery [35].

Governments have a role in financing the water supply sector especially when user fees cannot recover the water supply cost. This could be the reality given the economic situation in some countries especially in low-income countries. For instance, 78 % of the population in Ghana lives on below $ 2 a day [36]. The merit good aspect of water supply may warrant subsidies but does not justify subsidies across board. Rather subsidies should target at the poor and designed to ensure minimization of inefficient use or wastage in drinking water supply. The government also has the role of regulating the water supply sector primarily because of the inherent monopolistic nature and merit goods aspects of water supply.

Public sector management

An understanding of the public sector management is essential to provide a framework for examining the role of the task environment that is predominantly made up of public sector organisations. As such, the public sector management is described first from the perspective of traditional public sector administration and then from the new public management perspective. The new public management experiences and its implications for the task environment made up of the water related institutions are then discussed.

Traditional public sector administration

The traditional public administration (also known as classical or orthodox) produces public services by using budgeted funds, bureaucratic forms of organisation, and public employees as workforce [37]. This model is built on the machine metaphor of organisation that draws an analogy between the relationship among the parts of a mechanical device and relationship among positions in an organisation [38].

Max Weber's theory of bureaucracy had an enormous influence on organisational theory and management practise. It emerged to ensure optimum functional performance and professionalism of the public sector. The characteristics of the traditional public administration based on [38]--[39]--[37]--[40] are:

- Clearly defined division of labour and authority
- Hierarchical structure of office
- Written guideline prescribing performance criteria
- Recruitment based on specialisation and expertise
- Office holding as a career or vocation
- Duties and authorities attached to positions, not persons
- Pre-defined procedures, rules and task
- Policies and procedures that provide a knowledge-base minimising risk and maximising consistency in decision-making
- Command and control
- Hierarchies of government
- Separation of production and decision-making.

The hierarchical and bureaucratic model has come under extreme pressure because of a number of reasons. First, it is inflexible and unresponsive to customer needs [39]--[40]. Secondly, it focuses more on procedures and rules at the expense of objectives, efficiency gains and achievement of results [41]. Thirdly, it stifles individual freedom and creativity [38]. Finally, its structure and rules, which makes it stable also makes it difficult to adapt or accommodate to a world of rapid or constant change [37].

The increasing pressure for the public sector to improve its performance and demonstrate greater transparency and accountability has resulted in a shift of paradigm from traditional public administration towards the New Public Management (NPM), which will now be described.

New public management

The New Public Management (NPM) is a framework whereby public sector is undertaken with market inspired solutions to address problems [41]. The NPM has been described as a global paradigm in public management, internationalization of public management and post bureaucratic paradigm replacing the earlier bureaucratic paradigm [42]. NPM focuses on how government may use and mix market and bureaucracies in order achieve its objectives with regard to the provision of goods and services with special emphasis upon the employment of tendering and contracting out [43]. It is claimed by some commentators that the NPM offers an all-purpose key to better provision of service but [42] argues for these claims to be treated with some scepticism. Notwithstanding the claims and counter claims, there are a number of features that describe the NPM, which are characterized by:

- Focus on making organisations autonomous and giving manager freedom to manage
- New approaches to accountability at the top of public organizations/Building accountability rather than enforcing responsibilities
- Performance targets and creation of competitive environments within and among public sector organization
- Customer orientation.

Organisational autonomy The conversion of civil service departments into free standing agencies or corporatisation, de-regulation of line management with discretionary powers, decentralisation with less hierarchies has been part of the public sector reform to increase its autonomy for increasing efficiency and effectiveness. Central to the NPM is the principle that organisations and their managers must be free to exercise authority over resources in pursuit of their mission. [44] distinguish between two forms of autonomy, which are external autonomy and internal autonomy. The degree of external autonomy is determined by the legal authority of the utility, only constrained by a number of external limitations. Organisational autonomy refers to the external autonomy and measures the degree to which an organisation exercises it mandates without external interference [45] even though still subject to necessary regulatory control and political oversight.

The internal autonomy refers to the degree of decentralization within the entity. Decentralisation emphasises the need for managers to take initiatives to get things accomplished and to achieve results [46]. It encourages managers to manage operations and people rather than administer. Administrative decentralisation is essential to allow for greater managerial discretion [40]. For water service providers, effective allocation and delegation of authority within the utility is essential to give employees more discretion that could encourage initiative and innovation. This is expected to provide the needed flexibility that gives rise to a high speed of response (including decision-making and actions) to customers, which is important for performance improvement.

Performance (results) orientation Increasingly public sector organisations are emphasising on the outputs or performance rather than on the inputs or procedures [47]. According to [48] the NPM emphasises accountability based on results in a transparent manner. Accountability is the obligation to present an account of and answers for the execution of responsibility to those who entrusted those responsibilities [49]. Without adequate accountability management of resources can best be wasteful and incompetent and at worst corrupt. Where there is inadequate accountability resources may be used inefficiently and ineffectively or decisions may be made to favour particular individual or groups [49]. The enforcement of performance targets by a system of sanctions and rewards drives managers and workers attention on achievement rather than conformity with rules and procedures [50]. The assumption is that once the organisation has the needed autonomy and the required resources for its mandate, it is then possible to hold the organisation (represented by management) responsible for the outcomes of their decisions.

The performance orientation translates into accountability that holds the organisation or service providers (management and employees) responsible for the performance that their decisions and actions have produced and presents a direct linkage between the decision taken and the resulting performance of the utility. Questioning whether it is the individual, office or the organisation that should be accountable, [44] distinguishes between two forms of accountability. The external accountability relates to the relationship between the service provider (represented by the management) and the external environment (represented by the management oversight or the Board or other water related organisations). The accountability mechanisms within the utility referred to as the internal accountability, is the accountability of staff within the organisation (service provider). There are cases where individual performance targets aggregate into targets for the organisation. Performance related pay or salaries are also common.

Accountability mechanisms therefore hold actors (including the service provider) responsible for achieving the desired outcome. Successful utilities have clear focus on achieving their objectives [51]. It is argued that water service provision would improve if the water utility organisations have authority and managerial discretion over how to combine inputs but are held accountable for their decisions; outcomes and performance [32]. Fundamental to achieving accountability for performance are comprehensive mission statements; outcome related goals and descriptions of how these goals would be achieved [49].

The reformulation of the management of the public sector using the NPM framework seeks greater transparency and accountability in the way public services are run, which is seen to depend on market mechanisms and on treating citizens as customers [52]. The use of contracts for public services with the aim of stimulating the market has increased responsiveness to users in some case, particularly simpler, repetitive services such as refuse collection.

Market oriented dimension The market inspired solutions describe mechanisms that make greater use of markets or quasi markets to stimulate market conditions between

either suppliers working outside the utility or between outside suppliers and internal departments [40]. A feature of the NPM may be interpreted as an institutional change from long term contracts to short term contract in response to difficulties with traditional long term contracting coming from moral hazard problem [43]. The short term contracting options includes contracting out, leasing, franchising and PPP that may provide better tools for government than traditional long term contract that emphasises expertise evolution, agency dependence and rule of law. Short-term contract eliminates the extensive post contact opportunism connected with long term contracting but is vulnerable to pre-contractual opportunism [43].

Public services are increasingly delivered through contracts which are either internal or with private or voluntary organisations. The main argument is the inefficiency of the public sector and the necessity for more accountability [47]. The market-oriented dimensions include outsourcing of non core-functions, competitive tendering for suppliers, performance related salaries, and competitive tendering for goods, services and works.

Customer orientation The accountability of the organisation to customers is emphasised in the NPM [48]. This is an important mechanism to hold the service provider as an organisation responsible and accountable for the outcome of their decisions to the customers (also acting as clients). Customer orientation also has other dimensions such as the involvement of customers in the activities of the organisation, which could be in a variety of ways, from consultation to direct decision-making [50]. Successful organisations have a high degree of customer orientation. They listen to the customers, seek to provide customers with the product that they want and are willing to pay for. According to [39] entrepreneurial governments redefine their clients as customers and offer them choice. The range of procedures to make services more customer oriented include vouchers to enhance choices and market research to find out what people think. Charters, which set out standards and what people can do when, required standards are not achieved are also in use.

NPM experience and implications for the water sector

The introduction of NPM particularly market and contract have both brought benefits and presented problems. Simpler services have gained from the reform but evidence from more complex ones is equivocal at best [52].

Most analyses of the outcome of the introduction of NPM hint at the reduction of cost for government. The cost reduction seems to be at about 20 % or more at least in the short run and has occurred across sectors ranging from garbage collection to health care provision. However, these direct and large cost saving is to some extent dissipated by considerable transaction cost, i.e. the effort to negotiate, execute and monitor a lot of contracts [43].

Contracting requires the public organisation to be capable of managing at a distance, through the monitoring of explicit standards. In many cases, though, there are problems of adverse selection and moral hazard, because of the difficulty of

observing effort and performance and the problem of obtaining information. There are difficulties of writing down complex services in specification, which has been apparent in cases of health and social care. It is easier to operate market-based contracting approaches for simpler repetitive services than for complex professionally based activities, but there are difficulties even with simple services [52]. With regards to quality of service the evidence is mixed concerning outcomes. According to [43] examples of all three quality results are evident: (1) quality deterioration; (2) quality improvement; and (3) no quality change.

In conclusion, there is a gradual shift from traditional public administration towards the NPM. From the NPM theory it follows that successful public institutions would have implemented a number of the NPM elements. So the higher the NPM elements used within the water related organisations the better the performance of the water supply sector. Thus a high degree of autonomy, accountability, customer orientation and market orientation would be expected from the water related agencies to impact positively on the water supply sector.

Therefore, the regulatory bodies should be independent, autonomous and hold the service providers accountable for their actions. The public should also hold the respective water related institutions (such as ministry, regulatory bodies) accountable for their mandate. The water sector related agencies should collaborate where necessary for the achievement of the overall objective of the sub-sector. For instance, the UN Millennium Development Goals and the respective country Poverty Reduction Strategies provide clear targets. Therefore in the areas of monitoring and regulating to achieve the sector goals, the Ministry responsible for formulating policies and the regulatory agencies could collaborate to monitor the achievement of water supply targets.

Water supply sector reforms

The water supply sector has been undergoing a series of reform in an attempt to deliver improved services. Recent reforms have been influenced by the nature of the water supply and particularly the role of government and the current development in public sector management and international factors from the External Support Agencies particularly the World Bank and other bilateral agencies. The key components of the reforms include Public Private Partnerships (PPPs), economic regulation of water supply and attention to water supply for the poor. These reform elements are discussed in the next sections.

Public private partnership

General One of the effects of the international influences on the drinking water sector is the presence of the Public Private Partnership (PPP). The PPP attempts in water supply sector grew significantly in different forms and across many regions. The reasons for advocating PPPs include the need for management expertise, private investment and separating policy making from its implementation, efficiency improvement through transparency and accountability to users, [32]. The political

arguments against and in favour of liberalisation of the water supply sector according to [23] are indicated in Box 2.1.

Box 2.1 Political arguments against and in favour of liberalisation

Against	In favour
Privatisation has failed in the past	Too expensive to subsidise water
Unbundling is more complicated in drinking water sector	Pressure from potential market entrants
Subsidy for low income consumers is a reason for public role	Government can not do all the investment in the drinking water sector
	There can be independent regulators defending the interest of society at large
	Customer orientation will lead to better services and lower prices
	The public ask for lower prices

Source: [23]

The PPP trend The shift towards PPPs in the water sector started in the 1990s and became popular, even fashionable. The number of PPP contracts reported per year in middle and low-income countries increased from 4 in 1991 to 29 in 1999, the cumulative number of reported Middle and Low Income Countries Public Private Partnerships (PPPs) reaching 109 in 2000 [53]. However sub-Saharan Africa has only 10 % share in the water and sanitation PPPs by the number of projects [54]. In terms of the global announced water and sanitation PPPs the numbers are increasing as indicated in Figure 2.1 below.

PPPs are increasing for a number of reasons. These include the desire for efficiency improvements by ensuring transparency and accountability to users, the need for private capital to reduce public sector borrowing, the injection of commercial principles into the water sector by the private sector and the aim of stimulating accountability and competition to improve utility performance [34]--[55]. Presently, 34 out of 48 countries in Africa either have PPPs or have initiated actions towards PPPs [21].

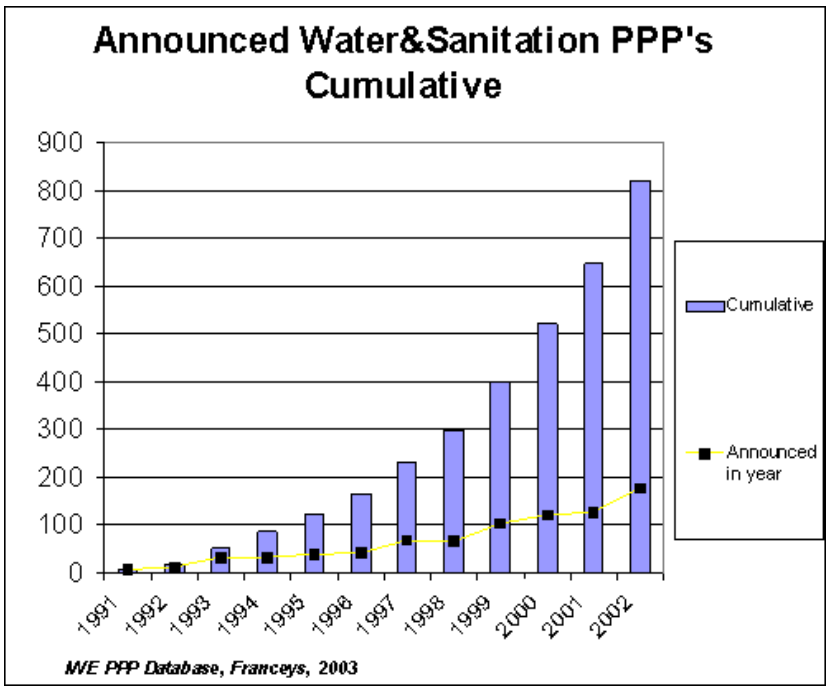

Figure 2.1 Announced Global Water and Sanitation PPPs

The range of public private partnerships (PPPs) Service contracts refer to arrangements whereby the public authority retains responsibility for operation and maintenance of the system, but where specific activities of the system are contracted-out to the private sector for a fee. Examples include periodic maintenance of electrical equipment, procurement of spare parts, billing and metering. Service contracts usually have duration of six months to two years. The main benefits include having private sector expertise, focused on that particular activity as well as being a driver for efficiency achieved through the tendering process.

In management contracts the private firm takes responsibility for operations and maintenance of the wider system or parts of the system for a fee. The public authority retains ownership of assets and investments in the system. It usually has duration of three -five years. Examples include the private operator having responsibility for all operations and maintenance in a town and /or metering, billing and collection of tariffs.

Under the lease (affermage) approach, the lesser (private operator) 'rents' the facility from the public authority and becomes responsible for operating, maintaining and managing the system. The public authority remains responsible for new investments into the system. The private operator pays a fee for the use of assets. The operator also bears the commercial risk. The duration of the contract is between 8-15

years. The leasing contracts are administratively demanding e.g. setting and monitoring the performance targets, and the use of assets.

The Build Operate Transfer (BOT) or Build Own Operate Transfer (BOOT) contracts are generally used to construct new systems or parts of the system such as water treatment plants and wastewater treatment plants. The private operator builds the plant, and assumes responsibility for operation and maintenance in exchange for a fee, which is usually related to the volume of water supplied or treated. After a predetermined time, the facility is transferred back to the public authority.

In the concession arrangement the concessionaire (private operator) has overall responsibility for services, including operation, maintenance, and management as well as capital investments during the concession period, carrying all commercial risks for construction of fixed assets, operating and maintaining those assets in exchange for tariffs which the concessionaire is also responsible for collecting. Ownership of the fixed assets remains with the public authority. The duration is between 20-30 years to ensure a reasonable return to the concessionaire on the capital invested in new works. Because of the complexity of contracts that might begin to cater for all eventualities over such a period, longer public private partnerships require an economic regulator, an 'impartial contract referee' to agree to changes in tariffs and output that might be needed as the social and economic environment develop.

Country models of PPP in the water sector A number of PPP models are found in some countries and are hereby described. In the French model, the Government owns the infrastructure, with the water service delivery often delegated to private management (management contracts, lease and concessions). The system is self-regulating and is achieved through competition in the selection of the private concessionaire [56]--[57]. Communes/municipalities are responsible for water services delivery in France. With over 13,000 communes/municipalities, the bidding process is presumed to be competitive. New legislation to introduce a central regulator of prices and contracts has recently been abandoned.

The Water Utilities in England and Wales were privatised in 1989 to improve efficiency and control Public Sector borrowing, particularly in the light of demands for increasing quality from European directives. The facilities are now owned and managed by private companies, including all the fixed assets. The public sector remains responsible for policy-making and legislation in the sector and for regulating the activities of the private sector. The Office of Water Services (OFWAT) is responsible for economic regulation, utilising a number of mechanisms such as comparative 'yard stick' competition and incentive based regulation to promote efficiency and enhance outputs in the sector. The public Drinking Water Inspectorate and the Environment Agency compliment economic regulation.

The management model being practiced in Cote d'Ivoire was modelled after the French system. A variation in this system is the use of a Water Development Fund to help achieve the social service goal of water provision and hence provide a good balance/leverage for the "socio-commercial" requirement of the service provision.

Unlike the situation in France where there are a large number of contracts to promote competition, there is only one contract and contractor in Cote d'Ivoire.

The Dutch model may be seen as an intermediate point in the public private spectrum of alternatives, whereby a publicly owned water company operates under conventional private company law, with all the subsequent requirements for governance and transparency. The Public Water PLC, similar to 'Public Interest/Public Benefit Companies in other countries, combines the strength of market and state governance by combining private management with public ownership. It is an autonomous, profit-making (only rarely profit-distributing), shareholder company with local and provincial government as majority shareholders. The shareholders are responsible for appointing the board members and through them, the Managing Director. The Public Water PLC model is also found in Poland, The Philippines and in Chile before the recent programme of divestiture.

PPP experience in the water supply sector

The state of African water utilities with regards to the implementation of PPP is shown in Table 2.1 below.

Table 2:1 PPP implementation in selected African water utilities

Public management	Public Private partnership	
	In existence	*Under preparation*
Kenya, Algeria, Tunisia, Libya Egypt, Ethiopia, Somalia	Tanzania, Mali, Niger, Zambia, Uganda, Cote d'Ivoire, Guinea,	Ghana, Togo, Chad, Congo, Rwanda, Sierra Leone, Zaire

Source: [11]

The introduction of PPP has brought benefits and presented challenges. Concession based contracts in water and sanitation that promised managerial innovation were the favoured PPPs but suffered from high rates of failure [58]. These stemmed from ambitious scope and hasty design that made them susceptible to macro economic shocks and political opportunism. On the positive side concession contracts introduced managerial innovations in the water industry. For instance, it resulted in limited government interference in tariffs especially future tariffs, placed utilities under corporate law and liberated them from undue public sector rules and regulations.

In Gambia for example, experience with the water supply lease contract concluded in 1993 was generally considered as a failure. While performance improved with respect to connection rate and un-accounted for water (UFW) levels during the implementation of the lease, this progress was due, not to the lease contract, but to implementation by public authorities (with much delays) of a project with various international donors during the second half of the 1980s [59]. Also, the relations between the public asset holding company and the private operator were tense from the beginning of the PPP contract. This was partly attributed to severe lack of capacity

within the state holding company, both at staff and at managerial level, and a high degree of uncertainty regarding the precise scope of maintenance and investment responsibilities.

In Guinea and Senegal water supply lease contract implemented in 1990s saw improvement but even then suffered from problems such as weak performance of public entities, poor coordination between operational and investment activities, dispute over exact scope of maintenance and investment responsibilities, and lack of accountability for overall performance [59]. These problems were common when operations and maintenance are given to private operators and investment planning and financing to public entity.

In Uganda, experiences with management contract and lease contract in the urban water supply and sewerage points to critical factors that affect PPP [11]. Appropriate design and implementation through regulation and monitoring are important. When sole sourcing was used for the management contract, which was not competitive it resulted in negative impact. Following the lessons from the management contract, a lease contract was designed and implemented. With the lease contract it was realised that the transaction cost for the PPP was high, especially when the private operator requested for re-negotiating sections of the contract (see Box 2.2). Contract re-negotiation in PPPs especially for long duration contracts has surprisingly been the norm rather than the exception [58]. Difficulties due to various interpretations of contract terms also came up in Niger lease contract, which was signed in 2001 [11].

The introduction of private operators in a country that has no experience in this area is a long and a difficult process [6]. Compared to other sectors the water sector has been the least attractive. Some cases failed mostly due to insufficient preparation. In Tanzania, preparation of a lease contract that started in 1997 resulted in unresponsive bids in 2000 because the “terms of reference” developed and used for procuring the private operator turned out to be unclear. This was also attributed to limited in house capacity for the process and necessitated re-bidding.

The French model of PPP as is being practised in France has a peculiar character that could adversely affect performance. Three big private companies dominate the French drinking water market with 85 % market share and the rest (15 %) in government hands. In practices, there is little in way of real competition, the situation is an oligarchy, which in theory and practice leads to stable high prices and in which competition between members is conducted in a variety of ways excluding price mechanism [60].

In [60] it is also pointed out that the question should not focus on whether service provision should be public or private but on how actual performance of public goods and services can be improved. In [61] it is also argued that water service delivery doesn’t have to be private but rather it can take various forms, ranging from a department to a corporatised body where the key ingredients transparency, accountability and defined managerial autonomy combined with a commitment to public service, business plans and pricing policies are present as demonstrated by the water company of Porto Alegre, Brazil.

Water supply regulation

Regulation is a necessary part of placing water agencies at arms length from government and making their behaviour accountable to the public [6]. Success of PPP depends on at least the performance of a complementary public regulatory regime [60]. Although regulation is usually seen as pre-condition to private sector involvement it has a role in the public sector too, where it enhances the accountability of the agency to the public. Two aspects of water supply regulation may be distinguished. These are water resources regulation and economic regulation. The water resources regulation considers water in broad terms, which has various uses such as irrigation, water for transport, drinking water and maintenance of ecosystem. The allocation, pricing and management of water resources affect drinking water supply. Consequently, regulatory commissions are increasingly being established to focus on the allocation, permitting and licensing of water resource usage. With respect to drinking water supply, the regulator is responsible for ensuring the long-term availability of raw water for good quality and quantity for all users.

Box 2.2 Ugandan urban water PPP experiences

Investments in the rehabilitation and expansion of water and sewerage services in the Ugandan National Water and Sewerage Corporation (NWSC) from 1988 – 1998 did not yield much improvement. In 1998, the performance of the NWSC was unsatisfactory as UFW was 60%, bill collection efficiency was 60 %, staff per 1000 connections was 35, and Debt age of 429 days. To improve on the performance, NWSC Management decided in 1997 to involve the private sector in Management of Kampala water system under a project code named Kampala Revenue Improvement Project **(**KRIP), which was consistent with Government policy of involving the private sector in the provision of services.

Kampala Revenue Improvement Project (KRIP) –1998-2001
A private operator was selected through a non-competitive bidding process in December 1997 to run the Kampala water supply services in Uganda for 42 months (1998 – 2001). KRIP covered all operations of water distribution, sales and arrears collection but excluded water production and sewerage services.

The expectations of NWSC under KRIP were Improved financial performance, Improved service delivery, Capacity building and technology transfer, Mutual respect and good faith between the parties to the contract and a Win – win situation for the parties. These expectations were not fully met even though there was significant improvement in some areas e.g. financial performance. For instances, bill collection increased from 1025 Million Ugandan shillings to 1579 million Ugandan shillings giving 102% target achievement and UWF (from 60% to 48%) after 3 years. The number of new connections increased from monthly average baseline of 150 to 299 new connections. On the negative side, the KRIP contract was not ambitious as it had a fixed fee that was not pegged to performance.

There were a number of contractual challenges. These were:

- The operator had no incentive for cost effectiveness in operations as the NWSC was fully responsible for all operational costs.
- Conflicts between the operator and the employer.
- Failure by Government Ministries to pay bills/arrears in time.
- Lack of funds for investments especially network improvements to reduce high level of water losses.
- Difficulties in payment of Management fees by the employer due to cash flow problems.

The KRIP Contract expired on 30th June 2001 and an interim NWSC management was set-up to run Kampala. A new operator was procured through an international competitive bidding process for a lease contract.

Cont'd

Lease Contract - Feb 2002

The lease contract became operational in Feb 2002 with the operator responsible for all water and sewerage services except water production and sewage treatment. This was a Fixed Management fee covering both operational and management costs. The operator had full control over the staff. The Operational investment fund to finance network rehabilitation supported by KFW and NWSC.

The operator after six months of the contract expressed dissatisfaction with the Management fees and requested for a renegotiation of the contract. The operator's request was an increase of management fees by minimum 20%, exchange rate to be pegged to the Euro not the US dollar and additional expatriate middle management staff. The negotiations took over six months involving the use of an external audit firm and a contract amendment no.1 was signed in April, 2003.

A challenge cited was that the operator sometimes tries to misinterpret clauses in the contract to try and benefit from it. As such there were increased costs of managing the contract, including the costs of Technical Advisor, Transaction Advisor, Financial Auditor, and NWSC Monitoring

The economic regulation of water supply is related to the natural monopoly nature of water supply. Where a monopoly occurs the "market fails" because competition is deficient. The inability of the market to produce behaviour or results in public interest becomes a justification for regulation. For instance, the service provider may only be interested in extending services to areas, which guarantees profit. Also, the service provider may want to charge high prices and pass on their inefficiency to the users. Consequently, regulation is essential to balance the interest of the customers (public interest) and the service provider (investors) interest. Increasingly regulatory institutions have recently been established as part of the water supply reform in most developing countries to deal with these issues [10]. The economic and quality of service regulatory bodies are responsible for the protection of both the investors (service providers) and the customers' interest. The economic aspects regulated are tariffs, investment levels and asset management plans. The economic regulators are characterised as independent, impartial, knowledgeable and transparent. Where the necessary infrastructure is not in place for universal service a number of suggestions have been made for "good economic regulation" as shown in Box 2.3.

Box 2.3 Requirements of good economic regulation for universal obligation.

Require water suppliers to produce asset management plans which include provision for the universal service obligation, even to the 'illegal' slums (almost certainly requiring phasing over, say, ten years for universality) which are part of a wider business plan for which the regulator can objectively (minimal government/political interference) set tariffs at an appropriate level for an efficient provider
Ensure that any subsidies are targeted where they are needed, not where they have traditionally been captured
Report transparently on performance and use comparative competition to encourage/demand greater efficiency in operating expenditures as well as capital maintenance and new capital works
Provide other incentives to facilitate performance improvement
Give voice to customers, even poor customers, to have an influence on price setting and service standards
Promote adequate capital maintenance - the poor always suffer/pay most for failing infrastructure."

Source: [62]

A criterion for effective regulation is the independence of the regulator, which should insulate it from political interference especially for PPPs. From the WUP workshop on reforms [11] it was revealed that there were different mechanisms for ensuring the independence of the regulators. These are the examples from some African countries:

- In Mauritania the law mandates the regulator to advise the minister. The regulator makes his proposals public before taking it to the minister.
- In Mali the water and electricity regulator has five commissioners. The selection is by advertisement. The selection of the commission could however be influenced.
- In Zambia, the chairman is selected among the members or commissioners themselves.
- In Ghana the regulator is independent of Government and no case of removal from office has been recorded. There is also institutional representation to reinforce independence.
- In Cote d'Ivoire a seeming case of interference was when the Government removed the head of the regulatory agency.

A thorny question that arose was how to deal with an incompetent regulatory body without the accusation of political interference.

Pro-poor water supply

Another result of the international influence on the drinking water sector is the attention to pro-poor issues, which is also a part of the poverty alleviation strategy. In the water supply sector, the effect of inadequate access to water supply is disproportionately felt by the low income and the poor residents. Given that their concerns have always been one of the main justifications for government involvement in water supply, pro-poor initiatives are now increasingly being recognised. Furthermore, as part of broader development goals, many developing countries are implementing Poverty Reduction Strategies, which have a component for improved water supply to the poor. Water supply and sanitation for the poor can make positive contributions to improve health and economic productivity in low-income countries and are therefore vital component of efforts to reduce poverty. The challenges in serving the poor by the service providers are indicated in Box 2.4.

Box 2.4 Challenges cited by the service providers in serving the poor

- Low revenue collection results in little or no provision for infrastructure developments to new areas
- Poor infrastructure in low income areas i.e. not well planned, no roads etc means utilities find it difficult to extend services
- The complex land tenure system impedes extension of conventional water and sanitation structures and system
- Initial capital cost for water supply connection charges are high, and residents of low-income communities may not be able to afford them
- Perception (on the utility side) that people in low income settlements cannot afford to pay for services
- Inadequate capacity on the part of the utility to serve low-income communities, i.e., no provision in the utility for specialised staff to handle such issues
- Unclear responsibility for working in informal settlements.

Source: [35]

The strategies for addressing pro-poor water supply concerns include ongoing regulation to ensure services reach the poor, customer empowerment particularly to low-income customers, incentives for pro-poor water supply, supporting pro-poor water supply policy and streamlining land tenure system [35].

The Service Providers

Further to the requirements from the external environment, the sustainable delivery of the water supply services requires sustained performance from the service providers.

Two critical aspects that affect the functioning of service providers are the corporate governance mechanisms [47] and their financial viability [63]. In addition the technical and operational performance of the service providers are important. These aspects are described together with the characteristics of a well performing water supply sector.

Governance mechanism

Governance is about how agreed upon goals are implemented and how norms of practices and performance are institutionalized [64]. A clear governance structure is essential for Service Providers. It describes the system in place for ensuring adequate checks and balances, accountability for organization and management, requirement for the achievement of organizations objectives by the Board and Management. Corporate governance describes the processes and structures for overseeing the direction and management of a firm so that it fulfils its mandate effectively [47].

It follows that good governance for enterprises should address the selection of the Board Members of the service providers, description of the incentives and powers of the Board, accountability mechanisms between the Board and the Management, accountability between Management and the key staff, policies that addresses human resources management, promotion of staff. The NPM elements described already are also relevant to the Service Providers. It requires that the service providers have a high degree of autonomy, are accountable to clients, who are the water customers and the water related agencies, and are customer and market oriented. The extent to which Board protects the interest of the investors and other stakeholders and hold managers accountable depends on the incentives, powers and quality of the Board [65].

Pricing, cost recovery and financial sustainability

The Service Providers require adequate resources (or input) such as human and financial resources to be able to provide the service. Successful Service Providers are required to be financially self sufficient, which requires that as a minimum the cost of water supply should be recovered.

Cost recovery The full cost of water supply service delivery is made up of the supply, external cost and opportunity cost. The supply cost consists of the cost of capital and running (operations and maintenance) and may be determined based on historical or marginal costing [66]. The historical approach is based on cost that has actually been incurred, whilst the marginal cost is based on the cost of expanding services. Marginal costing may be short run or long run [67]. The external cost consists of the economic, public health and environmental externalities. The economic externalities may arise from the changes in economic activities as a result of the project. The public health externalities for example may include pollution from wastewater. The cost imposed on the ecosystem constitutes the environmental externalities. The opportunity cost is the forgone benefits for the next alternative use. Full recovery of cost from users result in economic efficiency, which in theory result in optimum water use with

neither over-usage (wastage) nor under-usage (below adequate health and other criteria). Full cost recovery therefore provides incentives for efficient use of facilities.

Water pricing The price is the amount set by the political and the social system to ensure cost recovery, equity and sustainability. The basic rule of efficient pricing states that the price should be equal to marginal cost. If the price were set below the marginal cost, society would consume more water than would be optimal. Marginal value reflects the economic value of water but it is difficult to implement it due to difficult in defining and estimating accurately the marginal cost in quantitative terms, which is needed to determine appropriate user charges. The determination of price of the service for a particular segment of the customer profile may vary according to the objectives of the utility, political and social criteria. The criteria for water pricing is usually to ensure fairness, simplicity in administration, conserve water use, equity and adequacy. Water pricing is also important for water demand management to achieve efficient and sustainable use of water.

Financial sustainability The Camdessus report points out that discussion of finance tends to be dominated by investment whilst recurring expenditure is also equally important as in some cases revenues do not cover all the recurring expenses [6]. Ideally full cost recovery should recover the water supply cost, external cost and opportunity cost. However, water tariffs implemented in many developing countries results in inadequate cost recovery [63]. Therefore as a minimum the water tariffs should recover the water supply cost (capital and operational expenditure) to ensure financial sustainability. Thus successful water service providers should recover the water supply cost from the user fee. If there are cases where the user fee cannot recover all the supply cost due to special circumstances then Government can come in to ensure financial sustainability.

Conceptual framework for the study

The drinking water sector

The drinking water sector in Ghana is made up of actors from three levels. Therefore the factors affecting the performance of the water supply sector are considered from these three distinct but interrelated areas, which are the general or national macro environment, the task environment and the water service providers. In addition the drinking water sector in Ghana is also influenced by international factors. These international factors come in two ways. The first influence is from the development partners of the government of Ghana, which specifically influences the national macro environment. An example is support from the World Bank and the International Monetary Fund for an Economic Recovery Programme (ERP). The second influence is from the multilateral and bilateral agencies that are active in the drinking water sector referred to as the international drinking water environment, where the influence reflect significantly on how water supply is delivered.

The first level of influence is the general or national macro-environment, which is part of the external environment that reflects the broad conditions and trends in the society within which the service provider operates [68]. The general environment is beyond the ability of the service providers to affect or alter directly, at least in the short run. It consists of five major elements: economic, political, socio-cultural, technological and international. The political and socio-economic factors constitute the national macro-environment.

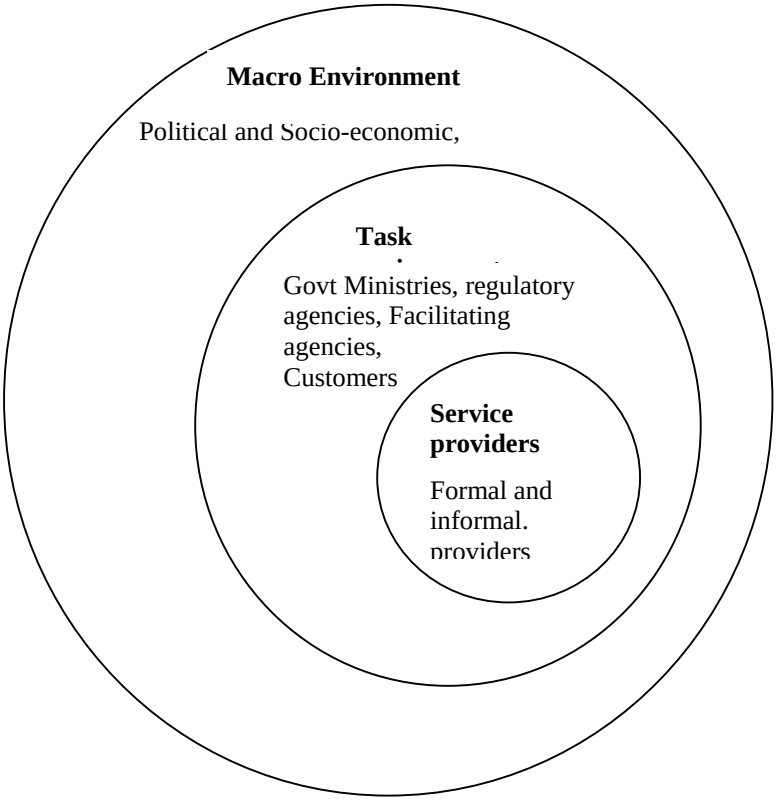

Figure 2.2 Factors influencing the water supply sector

The task environment is the second level of influence on the water supply sector. It refers to the immediate outside elements of the water service providers, which is within the external environment but is easier for the service providers to influence compared to the general environment. The task environment is made up of the consumers and the institutions involved in water supply such as the ministry responsible for water and related regulatory bodies.

The final level of influence of the sector is from the functioning of the water service providers. These water service providers interact directly with the task environment. The water service providers include both the formal and the informal organisations that provide water supply services. The formal services providers are the ones that are recognised and duly registered. The informal service providers consist of a number of small-scale water service providers without any formal registration but providing water services to consumers who are not served or under served by the formal water utilities.

The relationship between these three levels of influence on the drinking water sector is illustrated in Figure 2.2. It shows that the Macro-Environment affects both the Task Environment and the Service Providers whilst the Task environment also directly influences the service providers.

From Figure 2.2, an understanding of national macro environment, task environment (water supply related institutions), functioning of the service providers and interactions between these elements is paramount for understanding the factors influencing the performance of the water supply sector.

Good performing water supply sector

It is important to have a clear goal or objective for the drinking water sector. The water supply sector is said to be performing well if water services are delivered to all consumers in a sustainable, equitable, effective and efficient manner [2]. Therefore a good performing water supply sector should satisfy the following conditions with respect to the delivery of drinking water services:

- Sustainability – financially, environmentally and technically sustainable
- Equity considerations – all users groups are treated equally and fairly
- Effectiveness –achievement of universal service
- Efficiency – efficient service delivery that will be assessed by indicators such as non-revenue water and bill collection efficiency ratio
- Good governance – accountability to users, transparency, customer involvement.

Conceptual Framework

The factors influencing the water supply sector in Ghana forms the basis for the conceptual framework used in this study. The performance of the drinking water sector is a function of the water service providers, the task environment and the general environment as shown in Figure 2.3.

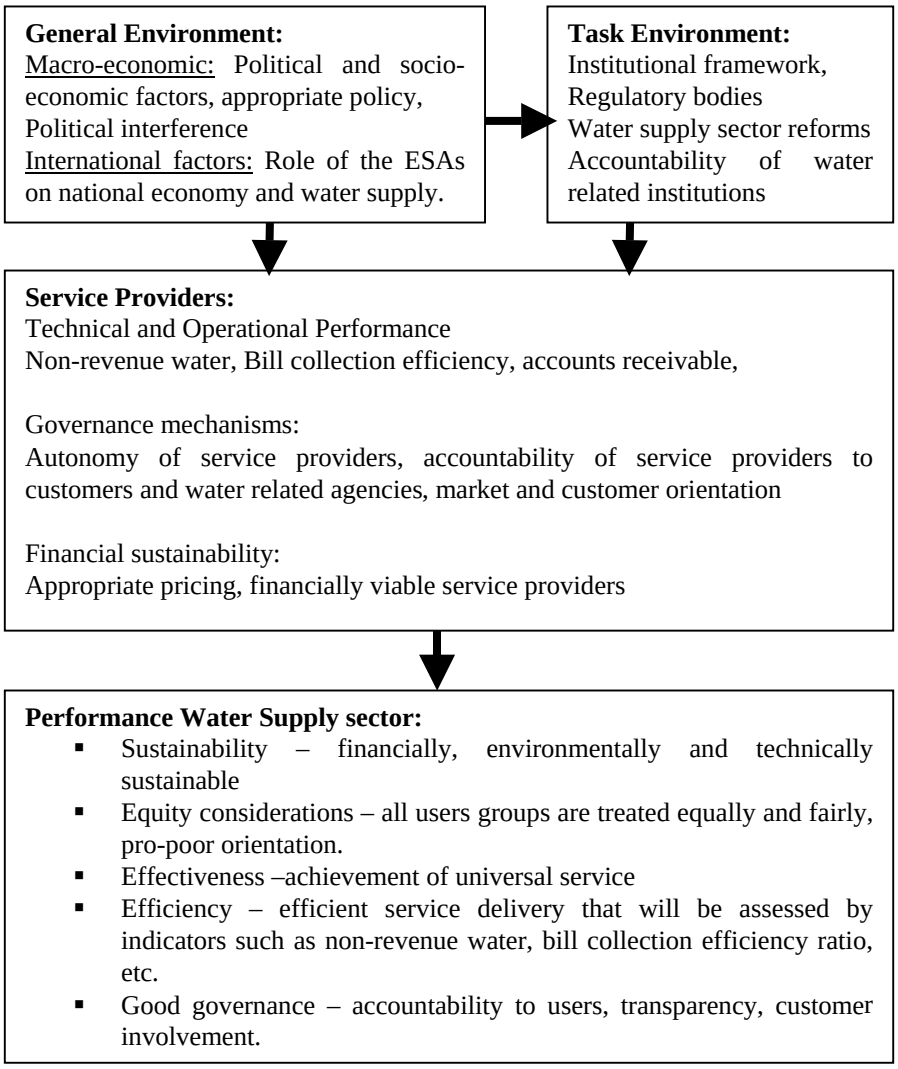

Figure 2. 3 Conceptual framework for understanding water supply

As shown in Figure 2.3, the key political and socio-economic factors affecting the water supply sector are the policies, political interference, and economic situation. In addition, the macro-environment provides the rules of the game, which should provide clear and appropriate policy for the water supply sector, allocate responsibilities and roles for all stakeholders and provide an appropriate institutional framework [35]. This is the expectation of the general environment as shown in figure

2.3. The international influences coming from the role of the external support agencies or development partners such as the bilateral and multilateral on the national economy and the drinking water sector are also relevant.

The key factors relevant for the task environment are the interactions within the water related agencies and the interactions with the water supply sector. The water related agencies is made up of the ministry, regulatory institutions (economic and water resources) and the customers. The New Public Management theory considered already provides a framework for the analysis. The water sector reforms, which have been influenced by the international water supply sector also provides insight for analysing the appropriateness of the task environment. The task environment is also expected to ensure that the service providers have both financial and organisational autonomy and are accountable to their customers. It also requires that there are clear accountability mechanisms between the service providers and water supply related agencies or organisation

Once the requirement from the general and task environment is in place, it creates the enabling environment for the water service providers to deliver. However, in addition to this requirement, the water service providers are also required to function well. In addition to the technical and operational performance, two other conditions that would be used in this study for the functioning of the service providers are the corporate governance requirement and financial sustainability requirement.

Research Questions and Hypotheses

Research questions

The research questions are based on the research objectives mentioned in chapter one. The research questions that have guided the study are:

1) What has been the effect of the national macro environment (political, socio-economic, international factors) on the water supply provision in Ghana?
2) What has been the effect of the institutions involved in water supply on the performance of the water supply sector?
3) What are the experiences and lessons of the post 1990s water sector reform especially the separation of CWS and UWS, private public partnership and regulation in the water supply sector?
4) Is GWCL not performing well? Which factors explain the performance of GWCL in the urban areas?
5) Is the small towns' water supply organised in a better way through a different approach, by different actors and in a different institutional context?
6) How are the prices of water fixed and how does the pricing affect the performance and the financial sustainability of the water supply sector?
7) Has the lifeline tariff system helped to improve water supply for the poor in Ghana?

Hypotheses

The following hypotheses are proposed concerning the study:

1) Strong political interference hinders GWCL operations. It does not provide GWCL with the required autonomy to deliver its mandate
2) The external environment also does not provide sufficient incentives mechanisms for utilities to improve their performance to serve all their potential customers and does not provide the necessary incentives to attract investments
3) The more New Public Management (NPM) factors implemented in GWCL, the better will be its performance. Currently, inadequate accountability mechanisms, customer orientation and market orientation are hindering GWCL performance
4) The water supply reforms have not yielded the desired results because of delay in the implementation of the private sector participation for service provision
5) The small towns water supply provision is using a very different approach from GWCL. The small towns water supply delivery is potentially more successful because it is more bottom-up and allows for private initiatives, it is decentralised and works with local people through the district assemblies and receives substantial support from donors
6) Private sector involvement in the small towns' water supply sector has introduced greater autonomy for the service provider, demanded accountability from the service provider to the clients and users, and increased customer orientation
7) The small towns water supply sector has all the NPM factors present contributing positively to its performance
8) Water prices (tariffs) are not sufficient to recover the cost
9) The pricing of water services in Ghana is not fair to some user groups as the urban poor relying on alternative service providers pay high prices, low income customers in tenement system pay more than high income groups in single household dwellings for GWCL services
10) The tariff structure for the GWCL with a lifeline band mainly favours rich consumers. The small towns tariffs are generally higher than GWCL tariffs.

Conclusions

The chapter has provided the theoretical and conceptual framework for studying the water supply sector in Ghana. The NPM provides a framework for analyzing the water supply related agencies and checking for improved performance in the water supply sector. A conceptual framework for the study is developed to guide the research. The conceptual framework forming the basis for the research methodology is discussed in chapter four. First in chapter three, background information on Ghana and a description of the drinking water sector in Ghana is presented.

Chapter Three

The water supply sector in Ghana

Contents

Introduction

Chapter two provided the theoretical and conceptual framework for the study. In chapter two the conceptual framework for the study was developed as well as the research questions and hypotheses. This chapter provides background information on Ghana as well as an overview of the drinking water sector in Ghana. The next section on the background information on Ghana addresses the location, physical characteristics, demographic and socio-economic situation and the national economy. The subsequent sections describe the water supply sector in Ghana by first looking at the historical development of the sector and then examining the urban water supply and the community water supply sectors.

Background information on Ghana

Study site and description

The republic of Ghana is located in West Africa within latitude $4^{o}30'$N and latitude $11^{o}0'$N and longitude $1^{o}10'$E and $4^{o}30'$W. Ghana is bordered in the north and northwest by Burkina Faso, in the east by Togo, in the west by the La Cote D'Ivoire (Ivory Coast) and on the South by Gulf of Guinea. Ghana is a republic and a member of the West African economic grouping of countries (ECOWAS). The economy is largely based on agriculture.

Administratively, the country is divided into 10 regions namely the Northern, Upper West, Upper East, Volta, Ashanti, Western, Eastern, Central, Brong - Ahafo and Greater Accra. The capital city is Accra in the Greater Accra region, where the seat of the Government is located. The country is further divided into 110 districts, municipal or metropolitan assemblies under the government decentralisation programme. The Ministry of Local Government and Rural Development (MLGRD) administer the decentralisation process.

Physical characteristics

The republic of Ghana covers an area of 238,537 sq. km (92,100 sq. miles). Ghana is a low land country except for a range of hills on its eastern border. Several rivers and streams cross the sandy coastal plains. The Volta River in the east was dammed with the Akosombo Dam, forming one of the largest man made lakes in the world. The hydroelectric scheme at the dam generates much of Ghana's electricity.

The climate is tropical with temperatures generally between 20º C - 30ºC. Relative humidity varies widely from 20 % during the dry months in the northern part of the country to 90 % along the coast in the wet months. The mean annual rainfall figure ranges from a maximum of 2150 mm in the extreme southwest of the country reducing eastwards and northwards to 800 mm in the southeast and about 1000 mm in the northeast of the country [69].

Demographic and socio-economic characteristics

The census data indicates that, the population increased from 12.3 million in 1984 to 19 million in 2000 and urbanisation as a percentage of total population increased from 32 % to 44 % [70]. In 2000, the GNP per capita was US $ 390 and life expectancy at birth in 1999 was 58 years [65].

The assessment of poverty by the Ghana Statistical Service using nutritional based poverty lines reports 39.5 % of the urban population as poor[1] and 26.8 % as very poor[2]. The incidence of poverty (or proportion of a given population identified as poor) measured by consumptive[3] poverty reduced from 52% in 1991/92 to 40 % in 1998/99 using the upper poverty line of 900,000 cedis (US $ 376) per adult per year [71].

In 2000, GDP grew by 3.7 % compared to a target of 5 %. In terms of contribution of sector to GDP, agriculture dominates with 36 %, followed by services 29.7 %, and industry 25.2 % [72].

National economy

After independence in 1957, Ghana embarked on a public sector led strategy for socio-economic development. The public sector led strategy was characterised by capital-intensive technology, attempts at import substitution industrialisation, a large parastatal sector funded by public budget and a highly centralised administrative system.

By the 1970s the national economy has started deteriorating due to a number of reasons. The internal factors included policy deficiencies, public sector maladministration, mismanagement, corruption and political instability. The external factors were decline in commodities terms of trade, oil price shocks and decline in development aid. The economic decline worsened until it reached a crisis point in 1980s where inflation reached 123 % in 1983 and expenditure on social services fell drastically resulting in deterioration of social infrastructure.

Following the economic stagnation and decline, Ghana embarked on an Economic Recovery Programme (ERP) with the support of the International Monetary Fund and World Bank in 1983. The ERP started with the stabilisation of the economy and the pursued a structural adjustment programme. The key measures used for the ERP were fiscal stabilisation, devaluation, economic liberalisation, divestiture, privatisation and de-regulation.

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[1] Those below the poverty line but above the extreme poverty line. The poverty line was set to include both food and non-food consumption.

[2] Very poor refers to those lying below the extreme poverty line, which is what is needed to meet the nutritional requirement of household members. Individuals whose total expenditure falls below this line cannot meet the minimum nutritional requirement with their entire budget.

[3] Consumptive poverty is measured using the minimum nutritional requirement

The ERP recorded improvement in the economy with GDP growing from –7.2% (1982) to 5.6 % (1988) and inflation reducing from 123 % in 1983 to 10 % in 1992. The ERP also prepared the way for market led approaches in Ghana that became a key component of the broader national agenda thereby affecting all sector of the economy. However, the update of the market led approaches with respect to the speed and scope varied from sector to sector. Another effect of the ERP was that by 1988, the process to introduce a decentralised administrative system had started.

Research location

The research location is in Ghana, where three representative regions based on geographical representation and the capital city was used for the research. The regions are the Northern region (representing the northern part), Greater Accra region (representing the southern part) and the Ashanti region (middle part). GWCL was examined using 3 out of the 10 regional offices (branches) and the whole GWCL as a unit. For the small towns the selected regions were the same but Volta Region was used instead of Greater Accra region to represent the southern part due to the fact that there are no small towns in Greater Accra region.

Historical development of the water supply sector

Pre GWSC era (1928-65)

The development of public water supply in Ghana began in 1928 in Cape Coast. Between 1928 and 1965, water supply delivery was under the Public Works Department. Public water supply started with the Hydraulics Department (HD) of the Public Works Department (PWD), which was responsible for urban water supply. In 1948, a Rural Water Department (RWD) was created within the Public Works Department (PWD) to deal with rural water supply. In 1958, the Hydraulics Department and the Rural Water Department were merged into the Water Supply Division (WSD) of the PWD with responsibility for both urban and rural water supply. During that era, there was little or no commercial and customer orientation as water supply was considered as a social service. The autonomy of the water service providers was limited since it was a division under the Public Works Department.

A severe water shortage in 1959 prompted the Government of Ghana (GOG) to appeal to the World Health Organisation (WHO) to assess the water supply situation in Ghana. The outcome led to the creation of Ghana Water and Sewerage Corporation (GWSC) from the Water Supply Division (WSD). The Ghana Water and Sewerage Corporation (GWSC) was established in 1965 under Act 310, for the provision, distribution and conservation of both urban and rural supply of water in Ghana for public, domestic and industrial purposes. In addition to that, GWSC was responsible for the establishment, operation and control of sewerage systems. GWSC grew over the years to have about 208 piped water supply systems as well as over 6,600-drilled

wells for rural water supply. Most of the water supply systems were relying on surface water sources and were using conventional treatment systems.

GWSC era (1965-1994)

The establishment of Ghana Water and Sewerage Corporation (GWSC) marks the beginning of the GWSC era. The GWSC era represents the period from 1965 to 1998. Since the establishment of GWSC, water supply delivery was focused more on the urban water systems at the expense of the rural water supply. In 1986, the first attempt to enhance service delivery in the rural areas, which are communities with less than five thousand (5000) inhabitants, was initiated with the establishment of the rural water department within the GWSC [73]. The approach of providing rural water services by the rural water department was a supply driven one just like the parent organisation (GWSC) at that time. The supply driven approach could be described as "Providing facilities believed to be suitable for the community without their involvement and consent". With more propitious revenue from the urban areas as well as the technical challenges of providing urban water services, GWSC focused more on the urban areas to the detriment of the rural water delivery. For instance, less than 50 out of 4500 staffs were responsible for rural water supply and were maintaining about 6,600-drilled wells by GWSC. Meanwhile the rural population at that time was between 65-70 % of the Ghanaian population. Given this background, we can see that sufficient attention was not devoted to rural water sector under GWSC era. The responsiveness of GWSC to customer concerns in rural areas was poor and there was no involvement of the rural communities in the water supply delivery and therefore did not have any sense of ownership, which affected sustainability of the water facilities.

In 1994, the rural water department of GWSC was converted into a semi-autonomous Department, the Community Water and Sanitation Department. During the period, GWSC operated as a centralised organization with its head office responsible for strategic decisions and the regional offices responsible for operations. At that time user fees were small compared to the operational and capital expenditure. GWSC was therefore receiving annual budgetary allocation from the government for capital expenditure, operation and maintenance expenditure until 1989 when government decided to withdraw subsidies for recurrent expenditure. The GWSC era marked the beginning of increasing the autonomy of the utility by making it a corporation with Board of Directors. Commercial orientation also increased even though the objective of ensuring cost recovery from the user fee was not achieved. However, GWSC continued receiving annual budgetary allocation from the government for capital expenditure, operation and maintenance expenditure until 1989.

The International Drinking Water and Sanitation Decade from 1980 to 1990 witnessed significant external support in water supply delivery globally and in Ghana. During that time a number of water supply facilities were provided but at the end of the decade a significant percentage became non-functional. In 1991, after the International Drinking Water and Sanitation Decade, the ministry responsible for

water, the Ministry of Works and Housing (MWH), with the assistance of the External Support Agencies (ESAs), organised a workshop to discuss the provision and sustainability of rural water supply and sanitation. The outcome of the workshop gave birth to the National Community Water and Sanitation Programme (NCWSP), which aims at accomplishing the following objectives:

- To provide basic water and sanitation services to communities that will contribute towards the capital cost of the water facilities and pay the normal operations, maintenance and repair cost of their facilities.
- To ensure sustainability of these facilities through community ownership and management, community decision making in their design, active involvement of women at all stages in the project, private sector provision of goods and services, and public sector promotion and support.
- To maximise health benefits by integrating water sanitation and hygiene education [74].

This then became an integral part of a broader water supply sector reform. As part of the reform, the urban and rural water supply systems were separated in 1994. The provision of water supply and sanitation services to rural and small towns was decentralised to the District Assemblies[4] (DAs). The rural water division of GWSC was transformed into a semi-autonomous department known as the Community Water and Sanitation Department (CWSD), with the responsibility of implementing the National Community Water and Sanitation Programme (NCWSP).

Post GWSC era

The Community Water and Sanitation Department (CWSD) was further transformed into an autonomous agency, the Community Water and Sanitation Agency (CWSA) by Act 564 of 1998 to facilitate the provision of safe drinking water and sanitation services to rural and small towns. CWSA facilitates the development, operations and maintenance of the community water supply systems. CWSA has been providing technical assistance, formulating policies on community water and sanitation activities as well as monitoring and evaluating projects. The rationale at the time of establishing CWSA was that, the Government of Ghana (GOG) would continue to take the lead to mobilise funds for the non-viable rural water supply systems without recourse to cost recovery. But tariffs would be used to recover operation and maintenance costs of the systems.

In 1998, GWSC was converted into a limited liability company, the Ghana Water Company Limited (GWCL) with the responsibility for urban water supply as part of the water supply sector reforms. There were plans to run the urban water supply on commercial principles through private sector participation.

The reform of GWSC had three components. This first component of the restructuring led to the following structures:

[4] The District Assemblies are the local authorities with responsibility for infrastructure provision.

- Ghana Water Company Limited (GWCL)– Public utility for the production, supply, operations and maintenance of urban water supply.
- Community Water and Sanitation Agency (CWSA) – Government agency responsible for facilitating Community water supply and sanitation.
- District Assemblies: Local authority responsible for the provision of infrastructure including sanitation and community water supply.
- Communities- Service Provision (Operations) of Water Supply.

The second component of the restructuring focused on separation of service provision from regulatory functions to enhance efficiency and public accountability. It resulted in the establishment of the regulatory institutions in the water supply sector. These are the Public Utilities Regulatory Commission (PURC) for regulating tariffs, Water Resources Commission (WRC) for regulation and management of water resources.

The final component of the restructuring aimed at establishing Private Sector Participation (PSP) for urban water supply delivery in Ghana. The primary objectives of the water sector-restructuring programme were [29]--[18]--[75]:

- To improve efficiency in production and distribution through improved operation and maintenance, cost effectiveness and pricing strategy guided by commercial principles.
- To increase accessibility to water supply by expanding the supply of safe water in urban and rural areas.
- To ensure sustainability of the water services through cost recovery and improved sector management.
- To ensure that low income and poor households have access to safe water.
- To relieve GOG of the financial burden by accessing private capital.

The original intention was to complete the implementation of the PPP in 1998 with an operator managing the urban water supply. However, this delayed unduly for a number of reasons that will be discussed in chapter six. However in June 2005, a private operator was selected for a management contract with duration of five years.

Urban water supply (UWS)

Definition of UWS in the Ghanaian context

In Ghana, an urban area is defined as a community with more than 5,000 inhabitants. The Urban Water Supply (UWS) was initially (before 1990) defined as water supply to all urban areas. Since 1994, when community water supply came into existence 115-piped systems some serving over 5,000 inhabitants have been transferred from the Ghana Water Company Limited (GWCL) through CWSA to the respective District Assemblies as small towns water supply for community ownership and management arrangement. Consequently, urban water supply in Ghana is now seen as water supply to urban areas provided by GWCL. Thus, piped system under

community ownership and management does not fall under the urban water supply system.

Ghana Water Company Limited (GWCL)

GWCL is the public utility responsible for urban water supply. GWCL operates about 86 piped water systems. GWCL is a highly centralised organisation with its head office in Accra and the regional offices in all the ten regional capitals. The head office provides strategic and executive control of GWCL in all functional areas. The regional offices maintain operational control in the regions.

The internal structure of GWCL has two main branches, the finance/administration and operations. A deputy Managing Director (operations and maintenance) supports the regional operations and maintenance activities from the Head Office. The GWCL regional offices are headed by the Chief Managers, who are responsible for carrying out all operations and maintenance in the region.

The regional Directors for each of the administrative regions report directly to the Deputy Managing Director responsible for operations. The head office personnel department is responsible for recruitment and transfers of staff between regions and thus exercising operational control in a way. Regional budgets are set by GWCL head office on the basis of "bids" submitted by the regions. Budgets allocated have been below what regional managers have perceived as necessary to maintain and operate the system effectively. District management offices are responsible for supervision of technical and commercial operations at the system level.

Community water supply

Water supply to rural and small towns, which is decentralised under the local government structures, constitutes the community water supply. In this section, we will provide information of the strategy for Community Water supply and the definition of the small towns water supply sector. Subsequently, the small towns project cycle and the small towns water supply system is described. This is essential to provide background information on the small towns water supply sector, which is examined together with the urban water supply sector for the study.

The national community water and sanitation strategy

The CWSA Project Operation Manual summarises the key elements of the national community water and sanitation strategy. The national community water and sanitation strategy [74]:

- Is to play a facilitating role in ensuring equity and widespread coverage of water and sanitation facilities through targeted subsidies supporting basic service level;
- Ensures Community ownership and management, and maintenance of facilities;

- Supports District Assemblies to play a central role in supporting community management;
- Establishes private sector provision of goods and services;
- Introduces a demand-responsive programme, in which the communities make informed choices on facilities and their management;
- Focuses on women as the principal users of water, planners, operators and managers of community-level water systems;
- Develops an integrated approach to hygiene promotion, water and sanitation.

Definition of the small towns water sector

A small town is defined in the CWSA Act as "a community that is not rural[5] but is a small urban community that has decided to manage its own water and sanitation systems" [76]. It was initially defined in the Ministry of Works and Housing's (MWH) Comprehensive Development Framework for the water sector based on a population ranging from five to fifteen thousand (5 –15,000) [69]. The CWSA policy defines a small town water system as a piped system serving communities of between two and fifty thousand (2,000 and 50,000) inhabitants who are prepared to manage their water supply systems in an efficient and sustainable manner [77]. The Act further defines a rural community to be those with less than five thousand (5000) inhabitants.

Box 3.1 Small Towns Project Cycle

- Project Promotion –for the prospective Community to be familiar with the project cycle and procurement procedures
- Community Selection and Approval - by the District Assembly in collaboration with the CWSA
- Community Mobilisation - An extension team is engaged to provide relevant community mobilisation and extension services in each beneficiary community.
- Hygiene Education and Sanitation promotion
- Participatory Planning - to ensure that beneficiary communities are adequately informed and are responsible for decisions made on the system
- Design-Water supply systems shall be adequately designed to provide reliable and good quality water in sufficient quantity over the design period
- Construction, Operation and Maintenance of the facility
- Post Project-The CWSA shall provide relevant post project support (up to one year) to beneficiary communities to promote achievement of system sustainability.

Source: [77]

[5] Rural area is a community with less than 5000 inhabitants in Ghana.

Description of a small towns' water system

A typical small towns' water system consists of a source (usually a mechanised borehole), Pump house (a submersible pump powered by a 3-phase voltage transformer), Source of power (AC power from the national grid, local diesel Power generator or Solar panels (only few cases in the northern region), Pipelines (transmission and distribution pipes made of PVC and HDPE), and an elevated reservoir, standpipes and appurtenances [17].

The Water and Sanitation Development Board (WSDB) is responsible for the overall management of the water system. Typically the board would recruit the operating staffs, which usually consists of Technical manager, Account clerk, Vendors and Plumbers/pipe fitters.

The CWSA provides three possible management options to the community [78]. For the first option, the community manages, operates and maintains its water supply systems. Secondly, the community manages and does routine operations and minor maintenance on the water system whilst the private sector carries out periodic maintenance and rehabilitation. Finally, the community will only manage the water system and enter into a contract with the private sector for the operation and maintenance.

Chapter Four

Methodology

Contents

Introduction

The theoretical and conceptual framework discussed in chapter two provides the basis for conducting this study and guides the choice of research strategy and methods. The methodology is also influenced by the nature of the water supply sector in Ghana described in chapter three. Consequently, the research strategy employs a pluralistic approach due to the segmentation of the water supply sector with different approaches for service delivery. The factors affecting the drinking water sector are examined from three levels, the macro-environment, task environment and the service providers. The factors influencing the various units of analysis are operationalised to allow for the measurement or assessment of these factors. Moreover, the elements constituting the desired water supply sector are also operationalised in the same section. The main research instruments used for data collection are document review, interviews with key informants and surveys, which are discussed in subsequent sections.

Operationalisation of factors influencing water supply delivery

National macro-environment

The factors from the macro environment affecting the water supply sector were assessed as shown in Table 4.1

Table 4.1 Assessment of the national macro environmental factors

No	Factors	Assessed by:
1	Political	National Policies Political will Government commitment on water supply issues Political interference in the water supply sector such as: - Appointment and firing of management of service providers (e.g. MDs and Boards of GWCL, WSDB of small towns systems), tariff setting and approval
2	Socio-economic	National income levels Level of poverty Population growth
3	International Factors	Role of the External Support Agencies in national economy Role of the External Support Agencies in drinking water sector

The task environment

The factors necessary for the successful functioning of the service providers, derived from the task environment, are operationalised in Table 4.2 below.

Table 4.2 Assessment of task environmental factors

No	Factors	Assessed by:
1	Water supply Policies	Policy on urban water supply Policy on community water supply Policies addressing cost recovery, universal service obligation, delivery of services to the poor and the vulnerable.
2	Accountability of water supply related organisation	Accountability relationships between water related agencies Accountability relationships between water related agencies and water users Incentives to back the accountability relationships between water related agencies Autonomy of the water related agencies.
3	Institutional and Regulatory frameworks	Protection of monopolistic abuse, customers and investor concerns Presence of economic regulator Presence of service of quality (water quality and customer needs) regulation Presence of water resource regulation, such as the licensing and permits for water use Licensing of water operators Development and adherence to asset management plans Overlapping and un-assigned roles.

The service providers

The factors affecting the service providers identified in the theoretical chapter are assessed as shown in Table 4.3.

Table 4.3 Operationalisation of the factors for service providers

No	Factors	Assessed by:
1	Corporate culture	Vision and mission statement Training programme.
2	Financial and Technical sustainability	User fees or tariff recovering as a minimum the cost of supply Availability of human resource capable of managing the water system Standardisation of equipment to allow for readily available spare parts.
3	Autonomy	Hiring and firing of top management of the service provider Establishment and implementation of levels of tariffs and service charges sufficient to meet capital and recurrent costs Establishing and maintaining staffing levels sufficient to meet its need Establishing employee levels of remuneration including salaries and benefits and its sufficiency to attract and maintain capable staff.
4	Accountability	Accountability to owner and stakeholders such as regulators and customers Monitoring mechanisms for the performance targets for service providers Accountability mechanisms for getting work done according to agreed performance measures Presence of contracts such as performance contract, customer charters, loan agreements etc.
5	Market orientation	The use of out contracting/outsourcing in service provision The use of benchmarking practices The use of other mechanisms to introduce (quasi) competition.
6	Customer orientation	Level of Customers Satisfaction Mechanisms to get the concerns of the customers Mechanisms to respond to customer concerns promptly Mechanisms for consumers to interact with key areas of the institution over important matters (for example, accessible district offices, emergency telephone hotline, bill disputes, service problems) Mechanisms for the service providers to respond to complaints, emergencies and suggestions which consumers make Accessible services to all levels of customers Presence of effective level of consumer participation Tariffs designed to be fair, equitable and understandable Staff oriented towards serving consumers.

Well Performing water supply sector

The water supply sector is said to be performing well when the water supply services are delivered in a sustainable, effective, efficient and equitable manner. A well performing water supply sector is therefore operationalised as shown in Table 4.4

Table 4.4 Operationalisation of the sustainability factors for service providers

No	Factors	Assessed by:
1	Sustainability	Financially, environmentally and technically criteria
2	Equity considerations	All users groups are treated equally and fairly, pro-poor orientation
3	Effectiveness	Achievement of universal service or concrete plans for its achievement
4	Efficiency	Efficient service delivery that will be assessed by indicators such as non-revenue water, bill collection efficiency ratio
5	Good governance	Autonomy of service providers, accountability to users, transparency and customer involvement.

Document and Literature Review

The Acts of Parliament of the republic of Ghana establishing the water supply organisations (see Table 4.5), the specific policies, guidelines and strategies affecting the water supply sector were reviewed to provide specific information on the water supply sector. In addition, available specific water supply project documents and literature on water supply sector delivery, performance and management were used. The outcome of the review led to the identification of factors influencing the water supply sector, the conceptual framework for the study and then the operationalisation of these factors presented in the previous section. The method of assessment of these factors forms the basis for the research instruments, discussed in the next sections. The key actors active in the water supply sector used in the study are shown in Table 4.5 with their respective roles.

Table 4.5 Key actors and their roles in water supply sector

Urban Water Supply		Community Water Supply	
Organisation	Roles/Mandates	Organisation	Roles/ Mandates
MWH	Policy formulation	MWH	Policy formulation
PURC	Tariff and water quality regulation	DA	Tariff and water quality regulation
WRC	Regulation and management of water resources - Abstraction rights	WRC	Regulation and management of water resources - Abstraction rights
WSRS	Secretariat handling the water sector reform programme	CWSA	Facilitators, provide technical assistance
SEC	Performance contracts	MLGRD	Policy formulation on local government and rural development

Key:

CWSA	Community Water and Sanitation Agency
DA	District Assembly
MLGRD	Ministry of Local Government and Rural Development
MWH	Ministry of Works and Housing
PURC	Public Utilities Regulatory Commission
SEC	State Enterprises Commission
WRC	Water Resources Commission
WSRS	Water Sector Restructuring Secretariat

Interviews

The interviews were conducted with the key informants of the water related institutions, sector professionals and representatives of the external support agencies. The position and role of the key informants and the type of data collected are indicated in Table 4.6. The purpose of the interviews was to solicit information on internal functioning of the service providers and the interaction of the service providers with the national water related agencies. In addition, the extent of application of the New Public Management (NPM) principles namely, autonomy,

accountability, customer and market orientation were examined for the service providers and the water related agencies.

Table 4.6 Key informants and the type of data collected

Institution	Water supply Sector	Position of Key Informants	Areas covered by interview
PURC	Urban	Exec. Secretary Head, Water quality inspectorate.	Economic and service quality regulation.
DA	Small towns	DWSTs, Planning officer	Accountability between the DA and the service providers Institutional arrangement.
CWSA	Small towns	Small towns engineer Regional engineers	Accountability between the CWSA and the service providers Institutional arrangement.
MWH	All	Director Water, Assistant Director	Accountability and incentives system for the service providers and other actors. Institutional arrangement.
WSRS	Urban	Director, Comm. expert, Project manager	Water sector reform in the urban water supply sector.
SEC	Urban	Performance manager	GWCL performance contracts, appointment of Managing Director and Board.
MLGRD	Small towns	Focal person for water	Institutional arrangements for small towns water supply Role of Ministry of Local Government and Rural Development (MLGRD) Accountability and incentive mechanisms.
WRC	All	Executive secretary, technical expert, Water law expert.	Regulation of water resources and implications for the water supply sector.
GWCL	Urban	Finance, Commercial, Operations, Planning and development, personnel.	Appointment of MDs Tariff setting Level of autonomy, accountability, market and customer orientation.
WSDB	Small towns	WSDB, DWSTs	Performance, Autonomy, accountability and incentive systems, management models Customer perception survey.

Surveys

Introduction

A number of surveys were conducted as part of the research. For the surveys conducted, the topics, the location and where the results are reported in this study are shown in Table 4.7. The next sections describe the surveys, which follows the format: purpose, design, sampling, and administration of the surveys.

Table 4.7 **Surveys for the study**

	Survey	Sector	Results
1	Customer perception surveys of GWCL customers	Urban	Chapter 7
2	Subjective performance description of GWCL functioning from staff view point	Urban	Chapter 7
3	Small towns financial sustainability	Small towns	Chapter 8
4	GWCL prices for households in different housing types	Urban	Chapter 9
5	Water supply services to the urban poor	Urban	Chapter 9

Customer perception survey

Purpose of survey

The purpose of this survey was to measure customer perception of GWCL services and the extent of customer orientation of GWCL. It also provides a measure of GWCL performance from the point of view of the customers. The survey measured indicators such as customer satisfaction; customer perception of GWCL staff attitude to customers, responds to complains, notification for interruption; and customers desired service improvement.

Design of survey instrument

A semi-structured questionnaire was designed and pre-tested with 20 customers to check the length, depth and thoroughness of questionnaires, and to eliminate any ambiguous questions. Based on the pre-testing the questionnaires were improved for the implementation of the survey.

Sampling

The questionnaires, 700 in number were administered to 300 customers in Kumasi metropolitan area and 400 customers in Accra-Tema metropolitan area in March 2001. A systematic sampling technique was used where the total number of questionnaires for each region was distributed among the various water supply districts that constitute the region. This was based on the proportion of the water connections in the GWCL district. Thus districts with high number of connections

were given more questionnaires. Within the GWCL districts, questionnaires were distributed equally among the meter readers who distributed the questionnaires to the respondents by hand alongside their work of the distributing water bills and reading meters.

Administration of questionnaire
The meter readers, who are responsible for taking the water meter readings and distributing bills monthly, were instructed on how to distribute the questionnaires based on the sampling fraction. For instance, a meter reader who received 20 questionnaires and was responsible for reading meters of 1000 houses had one questionnaire for every 50th house. The questionnaires were administered by hand to the respondents. Self-addressed envelopes were enclosed for the respondents to mail the filled questionnaires directly to the researcher.

In cases where the customers or respondents ability to read and respond in English were doubtful, the meter readers who had been taken through the questionnaires explained the questions and recorded their answer on the questionnaires. The meter readers (knowing where the questionnaires were administered) reminded the respondents the following month during their routine work to send the questionnaires by the self-addressed envelopes, which had been included. Five (5) percent of the filled questionnaires were received via meter readers and the rest through the self addressed envelopes by post. In all about 65% of the filled questionnaires were received for the analysis.

Subjective performance descriptions

Purpose of survey
The purpose of the survey was to determine the performance descriptions of GWCL as an organisation from the viewpoint of the GWCL staff. The performance categories used are leadership, organisational autonomy, effective management and administration, commercial orientation, customer orientation, legislative framework, and corporate culture. The assessment from the staff of GWCL covering all categories and conducted at various levels provided useful information covering the effect of the macro-environment, water supply institutions and GWCL as a utility.

Design of survey instrument
The survey instruments for the subjective performance descriptions were based on a methodology for diagnosing institutional deficiency in the water sector, which emerged from the WASH (Water and Sanitation for Health) project funded by USAID [79]. It involves making rating assessments against a number of indicators within each of the following performance categories.
Leadership is the capability to inspire key stakeholders to develop and understand the institution’s mission/objectives, to commit themselves to that mission, and to work towards its fulfilment. Effective leaders serve as positive role models and are required

at all levels of the organisation. Leaders are essential to motivate managers and staff to perform their functions, often in difficult and sometimes apparently unrewarding situations. Effective leaders help transform an institution by making it active, energetic, visionary and making the sum of the parts greater than the whole. In effective institutions, leadership does not only rest with the top manager but also many of the staff.

Organisational autonomy is important for the organisation to manage and respond to their customer needs fully. It is the organisation authority subject to necessary regulatory control and political oversight. The institution requires autonomy to function effectively with minimum bureaucratic controls or political interference from other external organisations or departments. Adequate organisational autonomy is necessary for the success of water supply institutions.

Effective Management and Administration is demonstrated by the capacity to get the most out of the resources available (human and other) in a deliberate or planned manner. An effective management climate is characterised by teamwork, cooperation, and good communication among staff. To enable managers to perform effectively an efficient administrative system is required. This is the policy and procedures, which regulate, guide and facilitate the actions of managers. A matured organisation has effective sub-systems such as personnel, budgeting, accounting, financial management, procurement, contracting out and management information.

Commercial orientation is the degree to which actions in an institution are driven by cost effectiveness and operating efficiency. The performance of an organisation should be guided and disciplined by a strategy to achieve financial sufficiency at an appropriate stage of growth. This commercial orientation can be viewed at both operational and policy levels. At the policy level, commercially oriented institutions structure and stage investments, plan for expenditures and revenues to achieve financial equilibrium annually. At the operational level, everyday activities are guided by quality standards and by constant attention to cost factors.

Customer orientation is organising and directing the services and output of the organisation towards the demands and desires of customers. Staff of successful water service providers sees serving customers as their primary function. All work, all programmes and projects are directed towards greater efficiency, effectiveness and quality of service to all consumers. Every effort is made to inform and educate customers about the role of the institution and the means it is using to achieve its (the customers) objectives.

Legislative Framework is the policy and legal framework that affect water supply provisions. Every service provider has to work within the framework of a country's political choices, as demonstrated by the legislation passed by politicians to define the institution's roles and responsibilities. This legislative framework needs to assist and guide in a positive manner rather than hinder and restrict negatively.

Corporate culture is the set of values and norms, which inform and guide everyday actions, which translate, into behaviour, which can be observed. Although often not stated, the corporate culture serves as a powerful means of defining and justifying

organisational operations either in positive or negative ways.

The organisation with a positive culture has a clear sense of mission and identity. This is often expressed by a majority of the employees in the form of 'Legends' about the organisation, or messages about 'who we are'. In positive terms this often takes the form of a sense of pride in belonging to the group and a sense of history of the organisation, which is passed on from old to new employees.

Part of the culture is the way in which staff are maintained and developed. In addition to a regular process of skills transfer (continuous learning), effective institutions provide sufficient incentives, compensation, employee benefits and promotion opportunities so there is a minimum of unwanted turnover. People are seen as the most important asset.

Sampling

The subjective performance description questionnaires were administered to 80 staff members of GWCL. These are 20 in GWCL head office and 60 in GWCL regional offices in Kumasi (20), Accra (20) and Tamale (20), representing the southern, middle and northern parts of the country. The questionnaires were administrative based on the proportion of technical, commercial, financial and administrative personnel in the respective regions.

Administration of questionnaires

All the 80 questionnaires were sent to the chief Director Administration in GWCL after previous discussion on the study. The chief manager added a covering letter and distributed the questionnaires to the head office and the three representative regions for the study. These are Accra-Tema Metropolitan Authority (ATMA), Ashanti and Northern regional offices. The chief manger gave clear instructions for the region administrative manager to distribute the questionnaires to the various categories of staff from the middle to top management. The regional administrative manager collected and returned the filled questionnaires to the chief manager administration in the head office in self addressed envelopes for the researcher. The filled questionnaires were then forwarded to the researcher. The response rate was about 65%.

Survey of financial viability of Small towns water *system*

Purpose of survey

The purpose of the survey was to determine the financial sustainability of the small towns water systems from the user fee (tariffs) and mechanisms in place when the user fee does not recover fully the supply cost. Financial sustainability is important to ensure that the systems continue to provide services and does not become non-functional due to lack of finances for operations and replacement of key parts.

Design of the survey
Questionnaires were designed to capture the financial information on the small towns water supply systems. These were the capital cost for the water supply system together with the year the expenditure was made, additional investment made in the system, and the operational expenditure for running the system. In addition, information on the population of the town, and the number of users and the system description were collected.

Sampling of small towns systems for the survey
The small towns water systems were selected based on the size of the community, technology, and geographical representation. In all, ten small towns' water systems were selected for the study as shown in Table 4.8.

Table4.8 Small towns' system used for the study

No	Town	Region	Population in 2003	Age (years) of water system in 2003
1	Bimbilla	Northern	20,000	4
2	Avenui Awudome	Volta	2088	7
3	Aveyime	Volta	5000	4
4	Afiadeyengba	Volta	5000	3
5	Bekwai	Ashanti	28,000	2
6	Kuntenase	Ashanti	3024	2
7	Juaso	Ashanti	8421	2
8	Manso Nkwanta	Ashanti	2591	2
9	Wiamoase	Ashanti	12677	2
10	Mankranso	Ashanti	5044	2

Administration of the survey: The survey was conducted in 2003 for the 10 small town water systems shown in Table 4.8. The Water and Sanitation Development Board (WSDBs) members provided the historical data on income and expenditure for the systems. Focus groups discussions with the WSDB were used to provide clarifications on the operational data where necessary. The CWSA regional offices also provided the initial investment cost for the water systems.

The annual operation and maintenance cost was obtained from historical records. Many of the water systems were not conducting routine water quality test. As such, the cost for water quality testing was determined from existing charges from GWCL water quality laboratories. The unit operational cost was determined as the total operational expenditure divided by total annual volume sold. The operational costs excluded depreciation, interest and debt service. The unit cost of supply was measured as the total cost of supplying the service (capital expenditure and operational expenditure) divided by total annual volume sold. Average inflation of 15 %, based on 2002 inflation figures was used [80] to adjust the capital cost for calculating the annual capital expenditures.

Survey of GWCL prices

Purpose of survey
The purpose of the survey was to examine GWCL water prices for households in different income groups using the different housing types as proxies. The purpose of the survey was also to highlight the effect of the tariffs on financial sustainability and the effect of the lifeline tariffs on the households in different housing structures. The survey was conducted in Kumasi, the second largest city in Ghana.

Design of the survey
The housing stock in Kumasi was classified based on the number of households to reflect the income levels as shown in Table 4.9.

Table 4.9 Housing classification for the study

Housing Type	Characteristics	Location (suburbs)
Type I	> 10 households per house (Low income group)	Bantama, Ash town, Asafo
Type II	2-10 households per house (medium income group)	Patasi, Asokwa, Suame
Type III	1 household per house (high income group)	Danyame, Nhyieso, Ridge

Discussions were then held with the commercial department of GWCL Kumasi, who offered to make the water consumption and billing records for the year 2002 available for the selected suburbs. The missing information from the records forming the basis of the survey was the housing characteristics, specifically number of households in the houses and the household size. A questionnaire was then designed for the survey.

Sampling
In all 419 houses were used for the survey. They were selected from the nine suburbs representing the three housing types. Using the 2000 census, 5 % of the houses in the three randomly selected suburbs from each housing type were used for the study as indicated in Table 4.10.

Administration of the survey
Visits were conducted to the selected houses for information on the housing characteristics such as number of inhabitants and number of households. The meter readers in the various districts assisted in identifying the houses as they have been distributing the bills by hand.

The calculation of subsidies in the water supply sector was based on budgetary approach due the conceptual and empirical difficulties of calculating subsidy from an economic perspective [30]. Subsidies for water service provision were calculated by subtracting the revenue from the supply cost. The results and analysis of the tariff

levels and subsidies for the various customers in the housing groups have been presented in chapter nine.

Table 4.10 Sampling of the Households and corresponding GWCL district

Housing Type	Total no of Houses	Sample - (5%) Of the Houses	No of Households in the Sample	GWCL District
Type I				
Asafo	587	30	527	Central
Ash-Town	1447	72	1741	North
Bantama	1106	55	908	West
Type II				
Patasi	1118	56	85	West
Suame	1225	61	434	North
Asokwa	1101	55	260	Central
Type III				
Nhyieso	587	30	35	South
Ridge	587	30	35	Central
Danyame	587	30	35	Central
Total	8345	419	4060	

Source: Data from Ghana Statistical Service and GWCL

Survey of water supply to the urban poor communities in Accra and Kumasi

Purpose of survey
The purpose of the survey was to determine the nature of the water supply services available for the low income and the urban poor dwellers in Kumasi and Accra. The purpose was also to examine the water pricing and cost for accessing the water services.

Design of the survey
The survey was designed using questionnaires and interviews. The instruments were administered to households in the urban poor communities. The questionnaires for the households were used to determine the socio-economic conditions of the households, availability of water supply services and the pricing and cost of the services to the households. These were supplemented with direct interviews.

Sampling
Two urban poor communities in Accra and Kumasi were used. In all the questionnaires were administered to 50 households 25 in each community. The survey was conducted in 2004.

Administration of the survey

Questionnaires were administered to households in the two communities in a random manner. This was supplemented with interviews conducted with selected households. The results of the survey are presented and discussed in chapter nine.

Chapter Five

Macro-environment for water supply

Contents

Introduction

As explained in chapter two, the functioning of the service providers and water supply related institutions is influenced by the conditions in the national macro-environment. The national political and economic factors are a part of the national macro-environment. The political conditions and government policies provide an indication of the degree of commitment of government to water supply. The economic condition of the country also has implications for the water sector. For instance, the level of government financial commitment as well as households' ability to pay for services are all related to the economic situation. The international factors affecting the macro-environment are considered from the role of the external support agencies on the macro-environment in general and on the drinking water sector in particular.

Therefore an analysis of the water supply sector needs to take the macro-environment into account. The national economic development process presented in chapter three revealed that gradual introduction of market led strategies and decentralised administrative structures. This historical perspective also provides insight on the nature of the macro-environment. This chapter is based on document review and discussions with key informants of the urban and small towns water supply. The objective of this chapter is to examine the effects of the macro-environment on the performance of the water supply sector. Specific objectives are to determine:

- The effect of the policy and legal environment
- The effect of political interference in water supply delivery
- The effect of the economic situation on the water supply sector.
- The role of the external support agencies on the water supply sector.

Policy and Legal Framework

The general policy framework relevant to the drinking water sector is first described and followed by the drinking water policy.

General Policy Framework

The policy framework The policies affecting the water supply sector are examined in this section. They range from sections in the constitution of Ghana, the Ghana Growth and Poverty Reduction Strategy and specific drinking water supply policies. The Constitution of Ghana, Article 35(3) enjoins the state to promote just and reasonable access by all citizens to public facilities and services, which naturally include water supply services [81]. The Constitution of Ghana, 1992 in Article 17, also permits Parliament to make "different provisions for different communities having regard to their special circumstances" and therefore provides opportunity to

make special arrangement to enhance the delivery of services to the poor and vulnerable customers.

The Ghana Growth and Poverty Reduction Strategy (GPRS) sets the policy framework for development and lays out the government's medium term development strategy. The priorities of the Ghana Growth and Poverty Reduction Strategy are infrastructure, modernized agriculture based on rural development, enhanced social services (including water supply), and good governance and private sector development. The GPRS states that: "increasing access to potable water and sanitation is key to achieving health outcomes and sustained poverty reduction". As a result, the strategies for providing safe water will focus on improving access in rural, peri-urban and un-reached poor urban areas. The priorities for the period 2003 to 2005 did not include water supply but rather focused on education and health [82]. With respect to health the emphasis were on ensuring that model health centres are developed for every district [82].

The first Ghana Water Policy (in draft version) was prepared by the Ministry of Works and Housing covering all aspects of water [83]. The specific policies for the various sub-sectors such as urban water supply, community water supply, irrigation based on the overall national water policy are under preparation as of 2005. The draft policy for drinking water supply states that the Government of Ghana (GOG) considers the provision of potable water as a critical element in its policy for achieving sustainable economic development of the country, and is therefore committed to ensuring that all Ghanaians have access to potable water [84]. In line with this commitment, the sector Ministry responsible for water supply initiated various water sector reform measures in the 1990s to improve the efficiency of water delivery, which will be discussed in the next chapter.

The draft drinking water policy aims at providing affordable, equitable and sustainable access to potable water in both urban and rural areas throughout Ghana through the establishment and implementation of an efficient and effective institutional arrangement and improvement in management and investment in the sector. According to the draft policy, total commitment to good governance and a stable macro-economic environment are required to provide the enabling environment for sustainable water supply development and management [84]. The MWH also acts as the government's representative in GWCL and is involved in appointing the Board members and the Chief executives for the urban water utility, GWCL and the facilitating agency, CWSA.

Water abstraction policy The Water Resources Commission (WRC) is an independent agency set up by the Water Resources Commission Act 522, 1996 for the regulation and management of the utilisation of water resources, and for the co-ordination of any policy related to its functions [85]. The act empowers the WRC to carry out the following functions:

- Propose comprehensive plans for the utilisation, conservation, development and improvement of water resources

- Grant water rights
- Initiate, control and co-ordinate activities connected with the development and utilisation of water resources.

Under the Act, the control of all water resources is vested in the Presidency on behalf of, and in trust for the people of Ghana. No person shall divert, store, abstract or use water resources, or construct or maintain any works for the use of water resources except with the prior grant of a right by the commission. The WRC also levies charges for water abstraction. The procedure for granting abstraction licenses has been laid down in the Legislative Instrument (LI) 1692.

Environmental policy The Environmental Protection Agency Act 490, 1994 established the Environmental Protection Agency (EPA), as the principal environmental regulatory body in Ghana [86]. In relation to water supply the role of EPA is to ensure that the operations and activities of the general population and the industries in particular do not cause any harm to the immediate environment, such as water catchment's area. Also, the EPA carries out activities on water conservation. There is a requirement for all projects to comply with laid down environmental impact assessment procedures in the planning and execution of development projects.

Water quality policy The Standards Decrees 1967, 1973 of NRCD 173, 199 empower the Ghana Standards Board to set standards for drinking water quality, among others. However, actual enforcement and monitoring are however the responsibility of PURC with respect to urban water supply. Prior to the establishment of PURC, GWCL was regulating itself. For the community water supply, the enforcement and monitoring is the responsibility of the District Assembly.

Drinking water policy The main policies on the drinking water supply delivery are derived from the GWSC/GWCL Act, PURC Act and the draft water supply policy prepared by the Ministry of Works and Housing. The main points from the GWSC, Act 310 of 1965 are the following:

- Cost recovery -Taking one year with another the cost of water supply should be recovered.
- Universal service - GWCL to provide service to all inhabitants in the supply area [87].
- The PURC Act 538 of 1997 provides a framework for regulating tariffs and quality of service.

The drinking water policy stipulates the Government's specific policy objectives for the water supply sector in the context of the overall water policy. The policy addresses both the urban water supply and the community water supply, which are presented in the next sections.

Urban Water Supply
The key points on the urban water supply are presented based on the draft policy [84] in the next paragraphs.

Management Efficiency The GOG policy seeks improvement in efficiency in the management, operation and maintenance of water utilities. To accomplish this, GOG will take action to:

- Improve and strengthen the institutional arrangement in the water sector, improve the skills of the personnel of GWCL to enable them play their role in water delivery
- Strengthen its relationship with the private sector in urban water supply delivery as a means to improve operational efficiency and financial performance in the sector
- Improve efficiency in production and distribution through effective and improved operations and maintenance, pricing strategy and structure that is guided by commercial principles.

Service Quality Service quality levels in areas covered by pipe supplies will continuously be improved and monitored to ensure the attainment of water quality that meets the national standards, progressively achieve 24 hour service and meets consumers' expectations. To accomplish this, GOG will take action to:

- Increases water tariffs linked to improvements in the quality of service delivery (water quality and quantity and customer service) and performance
- Progressively extend services to consumers who are not connected
- Increase public awareness of customer rights and obligations and expected levels of service
- Improve the ease of access and mechanisms for consumers to participate in decision-making on the level of service.

Water Supply Tariffs and Cost Recovery Water tariffs will be set and adjusted to reflect the full cost of efficiently supplying water to consumers. To accomplish this, GOG will take action to:

- Set water tariffs at a level that reflects the full efficient cost of supplying water such that the rates include the cost of efficient operation and maintenance of assets to deliver water that meets the national standards and provide a reasonable return on future investments
- Maintain a uniform tariff in which the rates are the same within a particular class of customers throughout the country
- Implement measures to ensure that the water bills of government institutions funded through the central government are paid on time to eliminate any need for domestic or commercial consumers to subsidize non-paying government consumers
- Minimize the overall price impact on consumers due to loan repayments

- Allow disconnections for all consumers, except critical consumers, for non-payment after all appropriate and the service provider has taken reasonable measures
- Ensure sustainability through cost recovery, taking into account the basic right to a threshold level of supplies, especially for the segment of the populace who can demonstrably not afford the full cost of supplies.

Provision for Low-Income Consumers Provisions will be made to ensure the accessibility to safe drinking water by low-income and peri-urban consumers. To accomplish this, GOG will take action to:

- Adopt a tariff rate structure that provides an optimal benefit to consumers including low-income consumers
- Encourage cooperation between GWCL or private operators and small-scale independent providers, rather than grant exclusivity to either party, to facilitate adequate and affordable provision of safe drinking water to un-served and underserved areas
- Establish a program such as a social connection fund or similar program to support the connection of low-income consumers to the network
- Progressively extend services to un-served areas
- In tandem with the private service providers and the communities, develop programmes to provide service to low-income communities through the distribution system (house connections and/or standpipes) or alternative options for supply such as tankers and other mechanisms.

Institutions and Regulation Policy-making, planning, and regulatory functions will continue to be supported and strengthened within the sector ministry, GWCL, Environmental Protection Agency (EPA), WRC, and PURC. The institutional and regulatory structures of the sector shall encourage private sector participation while ensuring adequate protection of consumers and the natural environment. To accomplish this GOG will take action to:

- Maintain the sector Ministry as the central institution responsible for policy formulation, monitoring and coordination of all activities in the sector
- Retain and develop the EPA's and WRC's current functions
- Continue to develop the regulatory framework for water supply and support the PURC to regulate the urban water supply sector
- Support the GWCL as urban water supply infrastructure asset owner, and develop its capacity for investment, planning and contract monitoring and management
- Ensure proper coordination of roles between the Sector Ministry, and relevant ministries in the management of rural/small towns' water supply and offsite sanitation.

Investments Internal GOG resources, donor financing, and private capital will be sought and utilized to rehabilitate, improve, and expand the urban water systems throughout the country in an efficient, cost-effective and rational manner. To accomplish this GOG will undertake to:

- Prioritise new investments in system extensions and expansion of bulk water production based on well-established criteria that include health factors, demand levels and potential for commercial and industrial growth
- Ensure that an equitable amount of the investment resources are dedicated to extending services to low-income communities
- Coordinate with the private operators to effectively plan and oversee infrastructure development including rehabilitation renewal, improvement and extensions
- Identify and source the required financing and undertake the required extensions to extend coverage of the water supply system to the un-served urban population.

Protection and Conservation of Water Resources All water resources including those used for drinking water purposes will be protected and measures will be taken to promote efficient utilization and conservation of water by operators and consumers. To accomplish this action will be taken to:

- Decrease non-revenue water by reducing water losses in the production and distribution systems
- Promote measures to encourage efficient use of water by consumers
- Institute measures to protect catchment's areas that provide water for drinking water purposes
- Ensure coordination between the sector Ministry, GWCL, the private operators and the Water Resources Commission
- Ensure strong technical and financial capacity of the Water Resources Commission to carry out its mandate of managing the country's water resources.

Water Harvesting and Storage Facilities Water harvesting is considered a key source of water supply to supplement conventional water provision. Successful implementation of water harvesting schemes will significantly reduce the huge investments required to expand conventional water supply systems to meet the growing demand. Consideration will therefore be given to this source of water supply in town planning to provide for water harvesting and storage facilities. To accomplish this, action will be taken to:

- Promote incorporation of water harvesting schemes in the design of buildings through the amendment of the Building Regulations LI 1630 to provide for water harvesting and storage facilities

- Educate and encourage landlords to seek necessary assistance to provide water harvesting and storage facilities to existing buildings.

Small towns water supply policy

The first policy document on the small towns' water supply was published in the January 2001 and called the draft policy [78]. It contains the following statements:

- Beneficiary communities would pay a part of the capital cost and take up all operations and maintenance costs. The community contribution shall depend on the levels of service selected by the community. It is 5% of the capital cost for basic water supply services, which is the supply of 20 litres per capita per day (standpipes) for 80 % of population and 60 litres per capita per day (house connection) for 20 % population. For higher levels of service, the community contribution shall be 50 % of the capital cost and all operations and maintenance cost
- District Assembly shall contribute 5 % of the capital cost
- Water produced shall meet WHO International Drinking Water Quality standard and guidelines
- Delivery of water should be in a cost effective manner (not exceeding the cedi equivalent of $1.0/m3).
- The 2001 draft policy was later revised and the major amendments for small towns' water supply [77] are:
    - Community contribution for capital expenditure would be 2.5% for basic water supply services and 50% of the additional cost for levels of service higher than basic water supply services
    - The membership of WSDBs shall exclude traditional authorities and DA. Where necessary, they may participate in WSDB meetings as observers
    - Tariffs shall be set by the WSDBs in accordance with CWSA approved tariff setting guidelines. The DA shall review and approve all tariffs. Any reduction in expected tariff revenue as a result of action by the DA, e.g., reduced tariff, etc., shall require that the DA pay the difference in revenue into the WSDB account. The CWSA in collaboration with the Regional Co-coordinating Council (RCC) shall ensure compliance
    - The implementation of small towns' water supply and sanitation projects shall be in accordance with the regulations of the Environmental Protection Agency (EPA) and Water Resource Commission (WRC).

CWSA also has guidelines for the operations and maintenance of the small towns water systems. This guideline stipulates that communities through tariffs shall undertake all major repairs and replacements [88]. But for total rehabilitation, cost sharing arrangement and procurement procedures shall be the same as for new systems [88]. Water produced shall meet Ghana Standards Board drinking water

quality standard.

The Letter of Sector Policy issued by the Minister of Works and Housing in 1998 in support of CWSP phase 2 outlines the measures that are being taken to increase accessibility to community water supply from a current coverage of 36% to 85% by the year 2009. The measures include institutional restructuring and establishment of CWSA, PURC and the WRC; decentralization policy - transferring authority, capacity and responsibility to DAs by promoting community participation in the administration of programmes; and Private Sector Participation (PSP) in urban water supply. In the statement it is made clear that Government will continue to subsidise investments in rural/small towns water and sanitation systems.

The cost recovery policy for the small towns water supply is not clear and explicit, especially for the recovery of capital cost. The initial CWSA policy for the small towns made it clear that water tariffs would have to cover all the operations and maintenance cost, but was not explicit on the recovery of capital expenditure [78]. The new policy indicates that, after the initial community contribution, water tariffs should cover operations and maintenance, major repairs, replacements, and extension to new areas [77]. However, the operations and maintenance guidelines also states that for total rehabilitation of existing system components cost sharing arrangement and procurement procedures for new projects would be followed [88]. The lack of definition to differentiate between major repairs and replacement, and the total rehabilitation makes the policy unclear especially on the recovery of capital expenditure.

Political Interference in the water supply sector

Urban water supply sector

Political interference refers to political interventions that adversely affect the drinking water sector. In the urban water supply, political interference was found to affects the urban water supply adversely. Political interferences were identified to be significant in tariff setting and implementation, and in the appointment of top management of GWCL. Tariff increases and timely implementation of new tariffs are essential for improving revenue of the utility and ultimately improving the urban water supply sector. However, interference from national government and politicians were strong to prevent tariff increases and its timely implementation because of the so called political expediencies. Prior to the establishment of PURC, GWSC was largely dependent on ministerial approval for tariffs. GWSC tariff proposals in 1978 were granted in 1981 at a time when the proposed tariff had become inadequate and the 1982 tariff proposal was finally approved in 1984 [89]. GWSC/GWCL operations were never conducted on a full cost recovery basis. From 1965 to 1986, GWSC operations were conducted more as a social service with the government subvention ranging from 30 % – 60 % of the re-current expenditure of [89]. In addition, the government (ministries, departments and agencies) were the biggest defaulters in paying water bills. In 1986, the government removed subsidy for operational

expenditure and increased tariff by 500 %, followed by 25 % in 1987, 25 % in 1988, and 15 % in 1989 [89]. This period coincides with the ERP when market led approaches were being introduced in the country.

The tariff increases from 1990 onwards were barely enough to match inflation levels (fig 5.1). The influence of politics on water tariff levels is also indicated in fig 5.1, where in 1996 and 2000 (election years) there were no tariff increases to even match inflation. On those occasions in 1996 and 2000, GWCL did not request for tariff increase, which suggest the decision could be politically motivated.

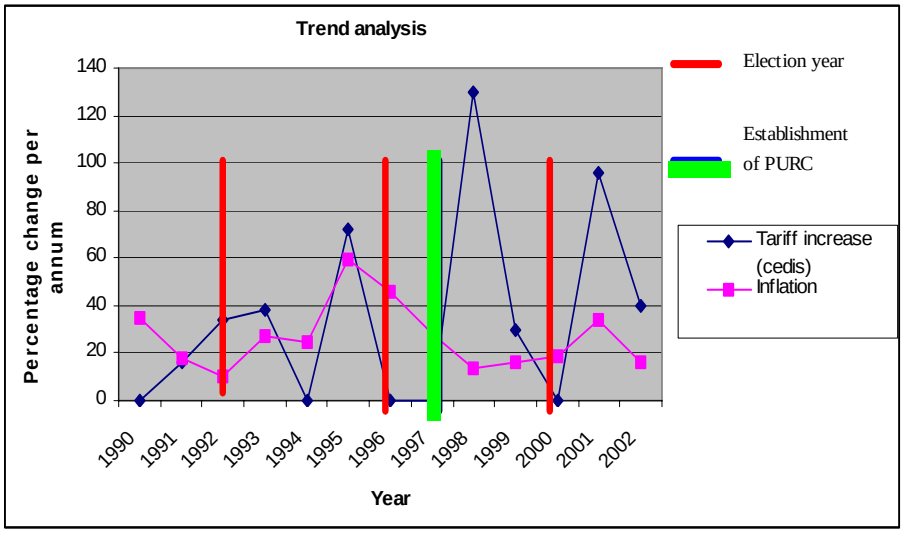

Figure 5.1 Comparison of tariff increase and inflation from 1990-2002

The establishment of PURC has reduced political interference in tariff setting to some extent. However, tariff setting still has political dimensions that cannot be ignored, given the high proportion of the population who are poor. The government does not want the tariff to go beyond a certain level, whilst the utility requires appropriate tariffs to deliver sustainable services. So the challenge for the PURC is to get a good balance between cost recovery and the social concerns.

The poor state of infrastructure resulting from the low levels of investment, poor operations and maintenance, and the huge backlog of investment in the urban water sector means that high tariffs would be required to achieve financial sustainability.

The second aspect of political interference manifested in the appointment and tenure of the chief executive of the GWSC/GWCL. GWCL is a public service according to the 1992 constitution of Ghana [81]. As such, the Public Service Commission establishes terms and conditions of employment in the public service. The power to appoint a chief executive is vested in the president, acting in accordance

with the advice of the governing council of the service concerned, and in consultation with the Public Service Commission [90]. Table 5.1 illustrates the effect of political interference in tenure of GWCL Chief Executives.

First, the effect of political interference in the tenure of the GWCL MDs shows that the position of the Managing Director (MD) has generally been filled by "acting" office holders. It was not uncommon to also have "acting" office holders in the regions as well. This did not help the organisation as the office holder is given responsibility for the job but not the status and the remuneration that goes with it [18]. Secondly, a significant number of the MDs ended up being fired and this situation makes the MDs position relatively insecure and could affect decision-making, as the MD would be more cautious and hence follow the status quo rather than being innovative to address the challenges of the organisation. Also, GWCL is the only formal utility so if you are to loose your job it becomes difficult to get another one in the sector. As a result some top and middle management personnel indicated during interviewing that they have no desire to be in the MDs position because of the extent of political interference. This same reason could also make competent staff search for better jobs outside GWCL.

Table 5.1 Tenure of office of GWSC/GWCL Managing Directors from 1987 to 2003

Name of MD	From	To	Remarks
J. B. F Acquah	17/11/87	13/12/91	Retired because of internal problems in GWSC
E.K.Y Dovlo	14/12/91	23/7/94	Acting MD
E.K.Y Dovlo	24/7/94	15/11/96	Fired one month to retirement
Nii Boi Ayibotele	16/11/96	12/2/98	Was Board Chairman, who was asked to Act as MD
J. N. A. Nunoo	13/2/98	3/5/98	Recommended by Acting MD to Act – was the most senior in GWCL
Charles Adjei	4/5/98	22/2/2001	Outsider brought in. Fired after change in government
J. N. A. Nunoo	23/2/2001	2003	Acting MD till retirement
S. G. O Lamptey	2003	Date	Acting MD

Source: GWCL Management

Small towns water supply

In the case of the small towns, political interference manifested differently. From the national development trajectory, the creation of the small towns water sector happened at a time when discussions on market led approaches and decentralisation were ripe. As such the design of the small towns water sector was embedded in the decentralisation process as well as market led approaches. Because of the level of decentralisation achieved in Ghana, political interference from the national level in

the small towns is rather weak unlike in the centralised urban water supply system. However, there are some socio-political dimensions associated with the small towns water delivery that hinders performance, which could be referred to as local political interference. Four examples from the survey that highlights the nature of the local political interference are hereby presented.

In a small town (Bimbilla), the WSDB organised a meeting with the community and informed them of the implications of the existing low water tariff and the need to increase it, which was accepted by the community. After agreeing and implementing the new tariff for about a week, a section of the community managed to convince the District Chief Executive (DCE) that the tariff increase was not in the interest of the community. This resulted in a reversal of the decision on the tariffs. This was clearly in response to political considerations that suggested that increasing the tariffs would make the make the DCE and the ruling party unpopular.

In another small town (Bekwai), the District Security Council dissolved the WSDB in response to a proposed demonstration threat by some customers. The allegation from those customers was that, the tariffs in some of the neighbouring small towns were not as high as the tariffs in Bekwai. Secondly, there was the perception that the WSDB members were affiliated with the political party previously in power. The Chief of the towns managed to resolve the issues after which the WSDB were re-instated after about six months.

In another small town (Juaso) the Chief requested for money from the WSDB for farming. This was granted by the WSDB. Subsequently, the DA and the community got to know of it and demanded the money back and then dissolved the WSDB. For over 6 months the new WSDB did not have access to their bank accounts because the signatories to the account were that of the old WSDB.

In another small town (in Western region) the WSDB chairman was the chief and his nephew was also the treasurer. The implications were that the two could withdraw money from the accounts at any time. In view of the local political interference, the new small towns water supply policy has addressed some of the concerns. The new CWSA policy, which states, “the membership of WSDBs shall exclude traditional authorities and DA members” is therefore laudable.

Socio-Economic Factors

The effect of previous attempt for macro-economic stability and growth were felt in the drinking water sector as it led to new way of doing things in Ghana. Two key elements evident in the water supply reform are use of market approaches, commercialisation and shift from centralised systems to decentralised systems. In comparison to the GWCL, the small towns water supply systems are more decentralised.

In addition to the impact of the macro economic development process on the water supply sector reforms, national economic performance is also relevant. The current development in Ghana towards macro-economic stability and stable economic growth has a major impact on water supply delivery as they affect government, support from

the external support agencies and the households or community financing.

To start with, a stable macro-environment is a pre-requisite for achieving the goals of the water supply sector. It is admitted in the Ghana Poverty Reduction Strategy documents that government goals are dependent on an environment of macro-stability. The necessary sustained growth required was projected to be GDP growth of 4.7 % in 2003, 5.0 % in 2004 per capita growth of 2.1 % and 2.4 % for the respective years.

Beyond economic stability, the growth of the economy would also be vital for the water supply delivery. High levels of economic growth would translate into high government support and counterpart funding in the sector, and also encourage external support agencies to develop faith in the economy and hence offer greater level of assistance. It is also expected to result in increased income of households, which will enhance community contribution for water systems and household ability to pay for water services.

The rapid growth of the country's population over the past decade is expected to continue. This places more stress on the provision of water facilities and services and inevitable leads to grater demand for potable water. The Ghana Growth and Poverty Reduction Strategy, in recognition of this problem, intend implementing strategies towards reducing the fertility rate from 4.6 % in 2000 to 4.2 % in 2004.

Role of the External Support Agencies

The main external support agencies are multi-lateral, bilateral institutions and governments that support the sector. They include the African Development Bank (AfDB), Agence France de Development (AFD) – France, Canadian International Development Agency (CIDA) – Canada, Danish International Development Agency (DANIDA) – Denmark, Department for International Development (DfID) – UK, European Union (EU), International Development Association (IDA) of the World Bank, JICA - Japan International Co-operative Agency, KFW/GTZ - Kreditanstalt fur Wiederufbau and German Agency for Technical co-operation, the Netherlands Government, UNDP and UNICEF. The roles of the partners range from financing feasibility studies through project preparation, facility delivery, capacity building, up to monitoring and evaluation.

ESA activities during GWSC Era

Prior to the reform of the water supply sector, the investment from World Bank included the following:

- Project Credit 160 GH, 1969 –1973, ($3.5million). Expansion of the water supply distribution network in Accra-Tema and construction of sewerage network in Central Accra.
- Project Credit 499GH. 1974, ($10.4 million) with additional assistance from AfDB, and CIDA- bringing total to $51.5m - expansion of water supply facilities in Accra - Tema Metropolitan Area (ATMA) to meet the needs of

some 800,000 people and extend services to some 170,000 people in outlying small towns.

- Project Credit 1342GH(1983-90 -$13.5m) -Water Supply Technical Assistance & Rehabilitation Project. Provision of Technical Assistance for Strengthening GWSC's managerial capabilities through attachment of 5 expatriate experts to key managerial positions, improvement of operational and financial skills through training exchange programme with Thames Water of UK, rehabilitation of the major transmission line in Accra - Tema Metropolitan Water Supply System to improve reliability of Accra water supply system.

In addition, investment from other ESAs include:

- AfDB ($20m) - rehabilitation of ATMA system.
- Italian Govt. ($9m)- Rehabilitation of Kpong-Tema –Accra transmission lines.
- CIDA ($41m) - ATMA rehabilitation, GWSC Assistance Project for water supply for rural towns in Northern, U/East, U/West Regions. The Canadian International Development Agency (CIDA) has been active in the rural water supply since the 1970s. Over the period a lot of projects have been implemented such as Ghana Water and Sewerage Corporation Assistance Project (GAP) from 1990-2000, Community Water Project (COWAP) from 1993-2000, Northern Region Water and Sanitation Project (NORWASP) from 2000-2008, and District Capacity building Project (DISCARP)
- KfW ($45.5m) – Upgrading of Cape Coast and Sekondi-Takoradi Water Supply. The KfW drilled 3000 wells fitted with hand pumps in the southern sector of Ghana from 1980-82. The project was supply driven with minimum involvement of the rural communities for which they were provided. In addition the KFW provided assistance to GWSC to improve water supply management in Volta and eastern region.

The ESAs apart from supporting projects with capital cost also supported with technical assistance, which took many forms including funding studies relevant to the sector development process. The ESAs as development partners have been instrument in the sector development process including the reforms. The key milestones in the drinking water development process were reached with the support of the ESAs.

In 1991, after the International Drinking water and Sanitation Decade (IDWSSD), the MWH with the assistance of ESAs organised the Kokrobite Workshop to discuss the provision and sustainability of the rural water supply and sanitation. The outcome of the workshop was the National Community Water and Sanitation Programme (NCWSP). Another important process was the path taken for increasing private sector participation, particularly in the urban water supply. Furthermore, the first study that provided justification for private sector involvement in the small towns. The support is usually in the form of the ESAs resources mainly ideas and money.

The next examines the role of the external support agencies for the community

and the urban water supply, which essential represents the period after the separation of the water supply service delivery. The way of doing things by the ESAs changed to reflect the different methods of delivering water services.

Small towns water supply

According to national community water and sanitation project, the financing arrangement for capital cost of small towns water supply are: ESAs 90%, District Assembly 5 % and community members 5 %. Quiet recently, community contribution has been reduced to 2.5 % due to concerns about the ability to pay by small towns. As such most of the investment in the small towns water sector are from the ESAs.

Funding from the external support agencies are currently provided on a project-by-project basis, rather than through a basket, as is the case for the Health and Education sectors in Ghana. However, national executing institutions (in most cases CWSA) are appointed to handle disbursements.

The approach to project formulation, implementation and operation and management in the community water supply sector varies from one external support agency another. At one extreme, is the World Bank/IDA approach used for the Community Water and Sanitation Project. This approach relies heavily on building capacity at the district level and allowing the DAs to procure the goods and services in respect of the project. In this case, CWSA acts as the facilitator and provides support to the DAs. At the other extreme is the KFW/GTZ PRODICAP project in which there was no involvement of the CWSA or DAs in the procurement of the goods and services. The procurement of the goods and services was rather executed by the GTZ Project office in Accra. In the case of JICA and CIDA, the projects were initiated and planned at the CWSA regional level. Another approach used in the case EU supported small towns project was for the CWSA head office to initiate, procure and manage the project.

The National Community Water and Sanitation strategy, which underscores demand driven approach, community ownership and management, advocates for high level of the beneficiary communities' involvement and the adherence to the CWSA guideline to enhance sustainability of the services. The procurement rules differ for the various projects because of the project approach, which makes project implementation cumbersome for CWSA and the DAs. However, it appears that most of the external support agencies are now trying to follow the implementation arrangement proposed in the CWSA Act. The capital contributions for community water supply by the key actors are shown in Table 5.2, where the variation in the contribution by the external support agencies is evident.

Urban water supply

Initially all the external support agencies active in the sector were working with the then GWSC, which was responsible for both urban and rural water supply. After the separation of community water supply from urban water supply the support from the external support agencies were directed to the specific sector, thus either urban or

community. Most external support agencies, with the exception of DFID have paid more attention to providing support for potable water supply in communities compared to the urban water sector. The state of poverty in rural areas has been a major reason for this.

Table 5.2 Capital Cost contribution

Development Partners	Development Partners	DAs	Community	Remarks
World Bank, KFW/GTZ	90	5	5	
DANIDA	95	-	5	
EU, CIDA, AFD	100	-	-	CWSA is allowed to collect up to 5% community contribution as a pre-requisite to pump installation for point sources and construction for pipe schemes
JICA	100	-	-	CWSA is allowed to collect up to 5% community contribution but not as a pre-requisite

Source: [91]

The urban water supply sector receives funding mainly from the UK Department for international Development (DfID), International Development Association (IDA) of the World Bank, the Government of the Netherlands, Nordic Development Fund (NDF) and the African Development Bank (AfDB). The most significant urban investment in the last 10 years was the World Bank funded Water Sector Rehabilitation Project. This has recently (early 2005) been followed by the Urban Water Project, which is being funded through a $103 million grant from the IDA, $5million from the NDF and $12 million from the Government of Ghana.

The implementation of the community water supply strategy started on schedule whilst the PSP component of the urban water supply delayed unduly. Unfortunately, some of the support from the external support agencies to the urban water sector was linked to the successful implementation of the PSP. Most of the technical assistances for the PSP were supported by the external support agencies, whilst support for investment were linked to the implementation of PSP.

From the interviews conducted with the key informants in the urban water sector, it was indicated that GWCL has been following the consensus of the external support agencies. On the effect of the external support agencies on the sector, the informants indicated that the effect was mixed. On the positive side, funding for technical

assistance and investment intervention has been very useful. However, procedures such as pre-disbursement conditions (no objection by the world bank) in some cases contributed to the delays in project implementation. Also, individual interests of the external support agencies affect the sector as it makes it difficult to blend and at times fix projects within the national development plans. For instances, some external support agencies are interested in particular regions, resulting in a wide disparity in coverage levels for the regions.

It has been difficult to standardise the water facilities, component and parts to improve sustainability of the facilities as each external support agency has its own procedures and conditions. This has resulted in varied technologies from different projects over the years. For instance, the Weija treatment plants providing water to the people in Accra, has benefited from interventions supported through external support agencies with funding from Germany, Canada and Britain at different times. This has resulted in the use of components from Germany, Canada and Britain, which creates operation and maintenance problems especially in the acquisition and management of spare parts etc.

Conclusions

Urban water supply

The broader reforms in the national macro environment that resulted in market led approach have influenced the drinking water sector. This is seen in the draft policy for the urban water supply sector that supports market led approaches, mechanisms to enhance pro-poor orientation and regulation. Unfortunately, some of the policies and strategies in the draft Drinking Water Policy are yet to be implemented. For instance, the policy goal of ensuring cost recovery, which has been in place since 1965 has not been realised. The strategies for ensuring proper pro-poor orientation in service delivery are yet to be implemented.

The high political acceptance of the merit good characteristics of water services also makes the service susceptible to political interferences all in the name of political expediency. Political interference in the urban water supply is significant manifesting in the appointment of top management, Board of Directors, and in tariff setting. The effect on the appointment of the MDs of GWCL creates a sense of insecurity for the Managing Director and does not encourage innovative ways for tackling GWCL problems. The nature of the appointment of the Board members makes them more accountable to the political system rather than the customers for achieving the sector goals. Another effect of the political interference manifest in the water tariff or pricing through low tariff levels which leads to inadequate revenue for sustaining the services. Before the establishment of PURC, tariffs were subject to ministerial approval that was highly influenced by political considerations. The extent of political influence on tariff setting has reduced considerable under PURC era. Yet, there were occasions when GWCL did not seek for tariff increase probably because of political considerations especially around election periods.

The economic situation presents a daunting challenge as more than 70 % of the population lives on less than $ 2 a day and the cost for providing the services have to be recovered.

The ESAs have been active and supporting the urban water supply sector over the years. The international sector trends emerging globally and supported by ESAs have also happened in Ghana, PPP and regulation (discussed in chapter six), suggesting that the Ghana water sector has been following the international consensus.

Small towns water supply

The market led approach and decentralisation, which are elements of the reform of national macro-environment, are present in the small towns water sector. With respect to the reforms, the small towns water sector is more advanced compared to the urban water supply. Whilst the small towns water systems are decentralised the big towns systems are highly centralised. With respect to size of system and economies of scale, the urban water systems even have a higher potential to gain from decentralisation. Decentralising urban water supply on regional basis would provide opportunity for benchmarking and yard stick competition, which is a tool that can drive efficiency.

The small towns water supply sector has a well-developed policy, which was recently updated. However, the policy on cost recovery for the small towns' water supply sector is not clear especially on the recovery of capital expenditure such as rehabilitation and major replacement. Some policy documents indicate the recovery of operational expenditure whilst others include capital expenditure.

Political interference is present in the small towns water supply but manifest differently from that in the urban water sector. It is usually associated with influence from political factors and traditional authorities from the local level. Political interference usually comes from DA or the traditional authorities. Some of the effects were reversal of collective decision on increasing tariffs, misappropriation of funds by traditional authority and dissolution of WSDB by DA.

The macro-economy affects the small towns sector in similar fashion as it affects the urban water supply. In addition, it affects the level of community contribution to capital cost, which is a condition for getting water facilities. It also affects available financial commitment as counterpart funding from government, which is also a requirement for project implementation.

The external support agencies drive the sector development in the small towns as they provide about 90 % of the investment. It therefore makes the sector dependent of the external support agencies making the sector susceptible to donor fatigue. Therefore increased financial commitment from the government is important to enhance the sustainability of the sector.

Chapter Six

The Task Environment

Contents

Introduction

In the previous chapter, the effects of the macro-environment were examined by analysing the effect of the policies, political interference, economic situation and the role of the external support agencies on the water supply sector. It was concluded that the macro-environment influenced drinking water sector through the introduction of market style reforms and decentralisation. This provides a good background for analysing the influence the task environment on the water supply sector, which is the focus of this chapter. In chapter two, the task environment was defined as the national organisation involved in or related to water supply in Ghana. An analysis of the task environment is essential to provide a description of the roles of the various institutions in the sector and how they interact with each other. Furthermore, the role of the task environment also provides insight for understanding the behaviour of the water supply sector.

An overview of the institutional reforms or changes in the Ghana water sector is first provided in this section to serve as a background for subsequent analysis. The water supply sector in Ghana has gone through a series of reforms through institutional changes in an effort to make water services accessible to all. The institutional changes in the water sector that occurred before 1990 were presented in chapter three. A summary of the changing institutional roles is given in Figure 6.1 to provide a background for this chapter.

<table>
<tr><th rowspan="2">SERVICE AREA</th><th colspan="5">INSTITUTION and PERIOD</th></tr>
<tr><th>1928</th><th>1958 -</th><th>1965-</th><th>1994-</th><th>>1998</th></tr>
<tr><td>Rural (< 5000 inhabitant)</td><td>RWD</td><td>WSD</td><td rowspan="2">GWSC</td><td>CWSD of GWSC</td><td>CWSA</td></tr>
<tr><td>Urban (>5,000 inhabitant)</td><td>HD</td><td>(Merger of RWD & HD)</td><td>GWSC /GWCL</td></tr>
<tr><td colspan="6">HD - Hydraulics Division of Public Works Department (PWD) established in 1928 to manage first water supply
RWD - Rural Water Department established in 1948
WSD - Water Supply Division of PWD. Created in 1958 as a merger of RWD and HD
GWSC - Ghana Water and Sewerage corporation established in 1965 to succeed WSD.
CWSD - Community Water and Sanitation Department, established in 1994 for rural water
CWSA - Community Water and Sanitation Agency, established in 1998 to succeed CWSD
GWCL - Ghana Water Company Limited established in 1999 to succeed GWSC.</td></tr>
</table>

Figure 6.1 Responsibilities for water service provision with time.

This chapter examines the role of the task environment through the effect of national agencies involved in water supply on service delivery and the water supply institutional reforms process. The chapter focuses on two perspectives, namely, the institutional reform of the water supply sector since the 1990s and the current institutional arrangement. In addition, the chapter also reflects on the historical evolution of the national macro-environment is also used to gain more insight and explanations of the sector reform. Thus, the specific objectives of this chapter are to:

- Examine the institutional reform of the sector since the 1990s particularly regulation and attempts to introduce Public Private Partnership
- Examine the separation of functions (policy formulation, service provision and regulation) by the government
- Determine the effects of the current institutional arrangements on the sector.

The next sections examine the institutional reform of the water supply sector since the 1990s, which has been evolving in response to the sector challenges, before analysing the current institutional arrangement. The separation of functions and the resulting agencies established are discussed, followed by the discussions on the private sector participation in the urban water supply sector. The current institutional arrangement is then examined followed by an analysis of the task environment.

The reform: separation of functions

Introduction

The Ghana Water and Sewerage Corporation (GWSC) and the Ministry of Works and Housing (MWH) were the principal actors in water supply delivery in Ghana. These two institutions were virtually responsible for service delivery, policy formulation, and regulation as shown in Table 6.1. The roles and responsibilities of water supply delivery institutions before embarking on the major institutional reforms in the 1990s are summarised in Table 6.1, which serves as the framework for describing and analysing the institutional reform.

The outcomes of the reforms in the drinking water sector were largely influenced by the activities within the national macro-environment. As already mention the government embarked on an economic recovery program (ERP) in response to the economic decline in the 1980s. One of the important results was the introduction of commercialisation and markets orientation. For The Ghana Water and Sewerage Corporation (GWSC) the main effects were the government decision to restructure GWSC to upgrade its commercial operations, improve conditions of service, withdraw subsidies, increase tariff, eliminate redundant staff and recruit key personnel in 1985, as part of the ERP [92]. A consulting service for this purpose recommended the establishment of two positions for deputy managing director; -one for operations and the other for finance and administration in replacement of the post of chief of operations. The creation of the finance and administration position was an acknowledgement of the importance of the commercial aspects. The post of Regional

Managers was further strengthened to Regional Directors to increase autonomy [18]. The subsidies were withdrawn and the tariffs increased about 14 times. Performance contract were also introduced in 1989 [93].

Table 6.1 Allocation of roles and responsibilities prior to 1990s

Role/Responsibility	Institution or Agency	
	Before 1990	Current
Sector policy formulation	MWH	MWH
Capital sourcing and mobilisation	MWH	MWH
Credit facility approval	Ministry of Finance	Ministry of Finance
Asset ownership and management	GWSC	GWCL
Water resource management	MWH and GWSC	WRC
Establishment of tariff structures	MWH and GWSC	PURC
Consumer education and protection	GWSC	PURC
Customer relations	GWSC	GWCL
Monitoring of water utility performance	GWSC	GWCL
Definition of water quality standards	GSB	GSB
Monitoring of water quality	GWSC	PURC
Enforcement of water quality standards	GWSC	PURC

Some functions previously performed by GWSC have been transferred to other agencies. GWSC had the mandate by Act 310 [87] to set tariff, but that mandate has now been repealed. The PURC Act states that the Ghana Water and Sewerage Corporation Act, 1965 (Act 310) is amended by the repeal of section 2(2) (f) and section 14(b) and (d) that gave GWSC the power to set tariffs. Furthermore, the GWSC was using the Ghana Standards Board requirement to regulate itself on drinking water quality. However, PURC is now responsible for enforcing drinking water standards set by GSB.

The GWSC and MWH were responsible for the control and co-ordination of activities connected with the development and utilisation of water resources for water supply. This role is now the responsibility of the Water Resources Commission (WRC). GWSC was also responsible for water supply delivery to all inhabitants. But now, the responsibility for rural and small towns water supply has been transferred to the District Assemblies to form, the community water supply sector. The separation of the community water supply sector from the urban water supply are described and analysed in the next sections.

There were other regulatory bodies functioning before the restructuring of the water supply. These are the Ghana Standards Board for setting standards including drinking water quality standards, the State Enterprise Commission responsible for ensuring that state owned enterprises are efficient, and the Environmental Protection Agency (EPA) for environmental regulation.

Establishment of community water supply agency

The Community Water and Sanitation Department of GWSC was transformed into an autonomous agency, the Community Water and Sanitation Agency (CWSA) by Act 564 of 1998 to facilitate the provision of safe drinking water and sanitation to rural and small towns. The rationale was that, the Government of Ghana would continue to take the lead to mobilise funds for the non-viable rural water supply systems without recourse to cost recovery. The tariffs were to be used to recover operation and maintenance costs of the systems.

CWSA has been providing technical assistance, formulating policies on community water and sanitation activities as well as monitoring and evaluating projects. The District Assemblies are responsible for the provision of infrastructure, which includes sanitation and community water supply. The management of the community water supply systems has been delegated to the community representative, the Water and Sanitation Development Board (WSDB). From the interviews and the surveys, the effect of the separation of community water supply from urban water supply was positive. First, it resulted in more focus on both the community and the urban water supply sectors. Secondly, it allowed the use of different approaches for each of the sectors. Finally is has allowed dedicated funding for community water supply.

Establishment of GWCL

In 1999, GWSC was converted into a limited liability company, the Ghana Water Company Limited (GWCL) with the responsibility for urban water supply as part of the water supply sector reforms by the government. One of the objectives was to implement the urban water supply on commercial principles through private sector participation. As such, the systems considered not to be financially viable were removed from GWCL operations for the remaining systems to run on a commercial basis.

Prior to the conversion of GWSC into GWCL all the rural water supply systems were transferred to the district assemblies. The responsibility for facilitating rural water supply was vested in the then Community Water and Sanitation Department, which was later converted into Community Water and Sanitation Agency (CWSA). Over 110 small towns water supply system previously managed by GWSC were transferred to the district assemblies for community ownership and management as part of the small towns' water supply delivery.

Public Utilities Regulatory Commission (PURC)

In Chapter five, the introduction of independent economic regulatory body and its functions for urban water supply sector were described from the perspective of the national macro-environment. PURC's scope is limited to the urban water supply and does not deal with the community water supply sector. With respect to the institutional reform, the introduction of independent regulation has resulted in a number of changes.

PURC and GWCL have developed a customer charter, which stipulates the roles and responsibilities of both the customer and the utility. PURC has issued two regulations: the Public Utilities (Termination of Service) Regulations 1999. LI 1651 and Public Utilities (Complaints procedure) Regulations 1999. LI 1665. However, plans by PURC to establish customer service committees or watchdogs to involve the customers and also empower the customers have not been implemented.

The presence of PURC has increased the number of accountability relationships for GWCL. The accountability to PURC is primarily through the introduction of performance targets and its role in tariff approval. PURC regulation for Termination of Service and Complaints procedure also strengthens the accountability relationship.

The independence of PURC in its functioning reduces the extent of political interference in tariff setting. Tariff increases are implemented much earlier under the PURC regime. PURC also has its "Social policy and strategy for water regulation, 2005", which is the first attempt to emphasise pro-poor water supply in the urban areas. It stipulates that PURC will insist that public utilities include pro-poor criteria when undertaken water supply projects and promote cooperation between utility and secondary providers in safeguarding the quality of service [94].

Water Resources Commission (WRC)

The functions and mandates of the water resources commission were presented in chapter five. With respect to the water supply sector reforms, the establishment of WRC has given attention to water resource management that will ensure that there will be sufficient quantities at the right quality for water supply delivery. The WRC focuses on the water resources, which is the raw material for the water supply sector. Prior to the establishment of WRC, GWCL was collaborating with MWH for managing the water resources affecting GWCL supplies. This was not being done from a holistic perspective but rather from GWCL perspective. In addition, the enormous task of GWSC did not allow GWSC to focus on the resource. For instance, developers have encroached on most of the water catchments leading to pollution in the water catchment.

The presence of WRC has relieved GWSC/GWCL of the need to manage the resource. Now GWCL can report to WRC, when they realise that the raw water quality is deteriorating for WRC to investigate. GWCL now takes a license from WRC and pays the abstractions charges to WRC for water use, which was previously non-existent.

The reform: proposed private sector participation (PSP)

Following the separation of community from the urban water supply the idea was to expand services and run the urban water supply on a commercial basis. One of the strategies was to use PSP in the urban water supply to achieve a number of objectives. These were to:

- Improve efficiency in production and distribution through improved operation and maintenance, cost effectiveness and pricing strategy guided by commercial principles
- Increase access to water supply by expanding the supply of safe water
- To ensure sustainability through cost recovery and improved sector management
- To ensure that poor households have access to safe water
- To relieve GOG of the financial burden by accessing private capital.

The different stages of the PSP process are now reviewed in the next sections.

Preparatory phase for a lease

The proposed Private Sector Participation (PSP) process in Ghana started in 1994 with the Ghana Water Sector Restructuring Study, which evaluated eight options for PSP in the urban water sector by the Ministry of Works and Housing and the World Bank. The outcome of the study was presented at a three-day stakeholders review workshop, which had 60 participants in February 1995.

The workshop endorsed the lease option. The Ministry of Works and Housing established an Advisory Committee composed of stakeholder representatives in 1996 to supervise the transition from the existing GWSC structure to the Lease regime. A full time Secretariat, the Water Sector Restructuring Secretariat (established in 1997), was also set up with responsibility for the implementation of the proposed public private partnership project on a day-to-day basis.

Transaction structuring: enhanced lease

The Ministry of Works and Housing in 1998 commissioned another study to develop the business framework for preparation of the tender documents. The outcome of the study was the definition of two business units (A & B), the institutional, legal and business framework to support the PSP process is detailed in Box 6.1.

Further to the business framework study, the Water Sector Restructuring Secretariat (WSRS) under the oversight of the Advisory Committee (AC) conducted a number of related activities concurrently. An 'Information Memorandum' was prepared to the Cabinet, explaining the form and steps in the PSP process and the measures being taken to safeguard the interests of the vulnerable groups. A public relations firm was appointment in 1998 to prepare and implement a public awareness programme for the PSP. A series of seminars were organised for GWCL workers to sensitise the workers on the process of the reform, benefits of the PPP and also to solicit their views on the restructuring process. A number of studies including the Willingness and Ability to Pay for water services, the Technical Audit and the Fixed Assets Revaluation Study were conducted to assist bidders. A study tour to France and UK was organised in July 1998 for a selected number of stakeholders in the water industry led by the Minister of Works and Housing to visit private water companies and regulatory agencies to learn more about how they function. This resulted in a tender for the enhanced lease.

Box 6.1 Outcome of Business Framework Study

- Definition of an overall institutional framework for private sector participation including the structure, roles and responsibilities of the different actors.
- Evaluation of the Legal/Regulatory framework to identify areas where modification will be needed to position the proposed PSP in the appropriate environment.
- Analysis of the Technical aspects of the water supply operation to estimate the operating cost and capital expenditure based on projected development of the PSP programme.
- Financial analysis of the water supply sector under the existing and the proposed PSP arrangement to establish average tariff level necessary to render the sector financially viable.
- Socio-economic analysis to determine the impact of the PSP on the low-income sector.
- Business framework for PSP including:
  - Detailed definition of Selected PSP strategy for implementation,
  - Implementation framework
  - Packaging of existing urban water system into business units for PSP
  - Financial evaluation of the proposed business units

  Market testing of interest in the various units

Source: [29]

Procurement phase

Four out of eight firms were pre-qualified as prospective operators to be considered for tendering for the lease contracts for Business Unit A and Business Unit B in 1998. An 'enhanced lease' requiring limited investment by the private operator, particularly in the distribution systems was envisaged. It was hoped that this would enable rapid improvement in services, particularly in extending distribution systems to peri-urban areas, whilst allowing for the length of the contracts to be restricted to ten years.

A Transaction Advisor was appointed in April 1999 to assist the Secretariat to structure the legal and financial arrangements with private operators, prepare the bid documents, and carry out the evaluation of bids and negotiate with the operators. In September 1999, the first drafts of the lease contract, bid documents and the financial model for the two Business Units were ready for comments by stakeholders. A Data Room, located at the offices of the Water Sector Restructuring Secretariat (WSRS), was opened to the pre-qualified bidders in August 1999 with all information considered relevant for the bidding process. The secretariat also initiated the process for the re-organisation of Ghana Water Company Limited as an asset-holding company and the transfer of staff to the operating companies. Four local firms submitted proposals for the provision of consulting services in August 1999 to that effect.

The process appeared to be developing satisfactorily when in October 1999, the Ministry decided to include a BOOT (Build Own Operate Transfer) project (for enhanced water supply from Kpong to Accra) in Business Unit A, leading to a re-definition of the contract. It appeared that the Ministry was going to negotiate with a private operator, but after stakeholders raised concerns on the process's transparency, the ministry then decided to invite all interested operators for the BOOT project. Consequently, the ministry conducted a new pre-qualification exercise (due to the redefinition) and then organised a bidder conference in July 2000. At the bidders' conference, it was realised that the private operators preferred the enhanced lease to the BOOT arrangement, believing that the proposed levels of investment were too high to be recovered through tariffs. Business Unit A was again re-defined, back to its original arrangement as an enhanced lease PPP arrangement.

Consequently, the process had to be repeated with the necessary adjustment for the new data etc. The pre-qualified operators were then asked to update the pre-qualification information. The necessary steps were taken to prepare bidding documents to reflect the necessary changes. However, some of the factors that led to the choice of the PSP option were also changing due to the nature of the external environment. Discussions on the most suitable PSP option started again in 2003 and the new decision was to have a management contract. In the late 1990s, when the PSP process was under preparation, the government considered investment in the order of US $ 50 million to be possible from the private sector but presently not more than US $ 5 million would be expected from the private operators due to the current economic climate.

In addition, during the extended PSP process sections of civil society in Ghana, with international support, begun to generate significant opposition to the idea of private sector involvement in drinking water sector. This has been fuelled by the IMF conditionality for the fourth and fifth tranche of Ghana's loan under the IMF's Poverty Reduction and Growth Facility requiring full cost recovery in the public utilities with the additional requirement for an automatic tariff adjustment formula for water. A coalition against the urban water PSP was formed. This coalition against the PSP has enhanced public debate and discussion on the urban water PSP, which has ultimately led to increased public education on the water sector and the role of private involvement in the process. As in many countries, the promotion of critically necessary cost reflective tariffs has been confused with the more discretionary nature of consideration of private sector involvement [95].

A team to finalise the contract framework and the management contract was in place in February 2004. The team was made up of representatives of the major stakeholders from the consumer association of Ghana, Public utilities worker union, MWH, GWCL and the Ghana Urban Water Project. The responsibility of the successful operator includes operating existing and future assets of GWCL on a day-to-day basis. The nature of the management contract is shown in Box 6.2.

Box 6.2 GWCL Management Contract

The GWCL Management Contract has duration of five (5) years. The Operator will provide a working capital of US $ 250,000 for the contract period. The government of Ghana will be responsible for capital investment, whilst the operator takes responsibility for operations and maintenance.

The Operator shall have the right and obligation to provide the services in the service area on an exclusive basis during the period of the management contract. The operator is responsible for the supply of potable water; issuing bills on delivery of potable water and discharge of Sewage; receive payments from the customers; and disconnect Customers, except Priority Customers, for non payment and/or for other grounds in accordance with Applicable Law.

If the Operator fails, as determined by Technical and Financial Auditors, for reasons attributable to the Operator, to meet any or all of the Service Standards, the Operator shall be subject to penalty.

The Operator shall perform the services in accordance with applicable Law (including environmental legislation and PURC Regulations), Prudent Industry Practice, the Consumer Charter, the Service Standards, the Low Income Household Policies and the PURC Regulatory Social Policy.

The operator shall have care and custody of facilities during the term of this Management Contract. The Operator shall be responsible for submitting periodic reports to the Grantor.

Source: [96]

Current Institutional Arrangements and Framework

Urban water supply

GWCL is the lead organisation responsible for the delivery of urban water supply. It is under the oversight of the MWH, which is the ministry responsible for water (see Figure. 6.2). The MWH formulates policies and provides oversight, and general support for water supply sector. Before the establishment of the Public Utilities Regulatory Commission (PURC), the MWH was responsible for approving GWCL/GWSC tariffs. The MWH, as the government's representative is involved in the appointment of the Managing Director and the Board members for GWCL. The GWCL management is accountable to the Board, whilst the GWCL Board is accountable to the MWH. The relationship between GWCL Board, GWCL management and MWH is one of the important accountability relationships. In July 2005 a Dutch operator, Vitens was selected for the management contract. The operator is responsible for directing and managing GWCL staff (except those in GWCL head office that will constitute the asset holding company). The operator is also responsible for billing and collection of tariffs.

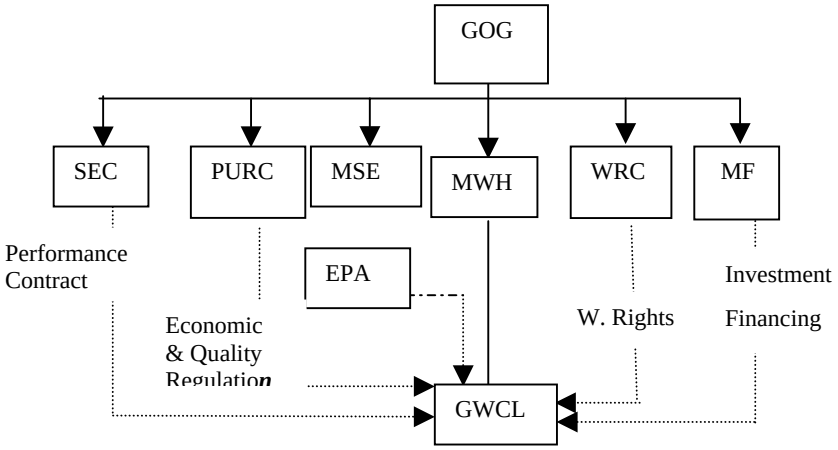

Figure 6. 2 Institutional structure of the urban water supply sector

GWCL is the successor of Ghana Water and Sewerage Corporation (GWSC), which was a statutory corporation established by Act 310, 1965 as a body corporate with perpetual succession and a common seal; capable of suing and being sued [87]. GWSC was converted to Ghana Water Company Limited (GWCL) in accordance with Statutory Corporations (Conversion to companies) Act 1993 [97] in 1998. Section seven of the Act 310, 1965 indicates that GWSC/GWCL should be operated to ensure that, taking one year with another its revenues should be equal or greater than its outgoing [87]. Thus the annual revenue should be equal to or greater than the annual expenditure.

Following the change of name to Ghana Water Company Limited, its key objectives did not change except that the change in its supply areas. Since the establishment of WRC, PURC, and the enactment of the DAs Act, certain functions previously performed by GWCL have been taken away. For instance, the setting of standards for water supply and the monitoring of drinking water quality are now performed by PURC, and responsibility for sewerage is now overseen by DAs. Sub section 2f of the Act 310, which empowered GWSC to determine adequate rates, charges or fees, and effective methods for collection thereof of, for water and sewerage subject to the approval by the Minister and covered by legislative instrument has been abolished since the establishment of PURC.

PURC as introduced already is responsible for promoting fair competition among public utilities, initiate and conduct investigation into standards of quality of service given to consumers as well as examine and approve rates chargeable for the provision

of utility services [98]. PURC is also responsible for ensuring that utilities are able to finance their operations and earn a reasonable return on their capital. For water supply the mandates cover only urban water supply. Tariffs proposed by GWCL are sent to PURC for approval. PURC also has a number of performance indicators, which GWCL should meet. The Ghana Standards Board (GSB) is responsible for setting standards for drinking water and PURC monitors' drinking water quality as part of it targets for GWCL to comply. PURC has also developed a social policy for urban water supply. According to [94], the key points of PURC Social tariffs are:

- PURC will take the lead role in the resolution of pro-poor issues in the urban water sector in line with its regulatory mandate to protect the interest of consumers, as well as Government poverty reduction objectives.
- PURC's working definition of the 'urban poor' refers to those (i) without direct access to the utility's supplies, (ii) who depend on secondary suppliers and (iii) who buy by the bucket or container.
- PURC will support any interventions, which result in improved and more reliable access to water, with the ultimate goal of direct connections.
- PURC will lead the formation of a working group of stakeholders to address provision of service to the urban poor. The group's tasks will include the targeting of any social funding or other relief schemes for the poor. PURC will undertake pilot studies to test interventions in delivering water to low-income communities to provide lessons that will inform its regulatory policies, the supply and payment options available to the utility and the criteria for determining investments targeted to the urban poor.
- Investments in water supply projects will not benefit the poor unless such investments specifically target them. PURC will therefore insist that the public utility includes pro-poor criteria when undertaking water supply projects.
- Secondary and tertiary suppliers – tankers, cart operators and domestic vendors – form an important aspect of the water distribution chain. PURC acknowledges that the best approach to water delivery is to provide direct supply through the utility's mains. However, the Commission recognizes that this will be hard to achieve in the short to medium term, and secondary providers will continue to play a role in the supply chain. PURC has therefore resolved to adopt innovative approaches to reaching the urban poor in the short term through some of the following interventions to enhance the capacity of secondary suppliers to deliver acceptable service at an affordable price: bring tanker filling points closer to areas of need (recognising technical limitations) through collaboration with Ghana Water Company Limited; require GWCL to allocate a percentage (say 10%) of their production to secondary providers; promote co-operation between the utility and

secondary providers in safeguarding the quality of service given to consumers.

Working alongside PURC is the State Enterprise Commission (SEC), which is a government institution responsible for regulating state owned enterprises to ensure sustained improvement. The State Enterprise Commission Law, 1987 established SEC for ensuring that State Owned Enterprises including GWCL and CWSA perform efficiently. GWSC/GWCL has since 1989 been signing performance contracts with State Enterprise Commission (SEC) on behalf of the government. The functions of the State Enterprise Commission (SEC) include the following [99]:

- To promote within the framework of government policy, the efficient and profitable operation of the prescribed state owned enterprises
- To advise government on the appointment and removal of Chief Executives and members of the Boards or other governing bodies of the prescribed bodies
- To ensure that appropriate dividends are paid to government
- To ensure that prescribed bodies establish internal audit units, corporate planning and management information systems and also ensure the implementation of managerial and professional training programmes for their staff.

The Environmental Protection Agency (EPA), under the Ministry of Science and Environment (MSE) is charged with environmental regulation. The Water Resources Commission (WRC) is responsible for the management of water resources and has the obligation to allocate and grant water rights. WRC charges GWCL for the raw water use. The Ministry of Finance (MF) is responsible for negotiation and approval of credit facilities (loans) in the water supply sector.

In addition to the services from GWCL, there are other service providers in the urban areas serving those underserved or un-served by GWCL. These service providers, referred to as the Alternative Service Providers (ASP), rely on GWCL sources or their own sources of water for serving their customers. Their activities are largely not regulated in terms of prices and water quality, but currently serve about 40 % of the urban population.

Small towns water supply

The institutional arrangements for small towns water supply are different from that of the urban water areas. The District Assembly (DA) has the responsibility for water service provision, whilst CWSA facilitates the processes of making water service accessible to the communities. The Community Ownership and Management (COM) arrangement where communities are part owners of the system and also have responsibility for the management of the service is used as the approach for service delivery to ensure sustainability. CWSA is responsible for defining strategies, procedures, standards and recommending policies to the MWH on community water and sanitation. The Community Water and Sanitation Agency Act 564, of 1998, which establishes the CWSA stipulates its functions as to:

- Provide support to District Assemblies to promote the sustainability of safe water and related sanitation services in rural communities and small towns
- Support the DA to encourage the active involvement of the communities, especially women, in the design, planning, construction and community management of projects related to safe water
- Design strategies for mobilising resources for the execution of water and sanitation projects
- Encourage private sector participation in the provision of safe water supply and sanitation services in rural communities and small towns
- Prescribe standards and guidelines for safe water supply and provision of related services in rural communities and small towns and support the DAs to ensure compliance by the suppliers of the services.

The DA is the highest political and administrative authority in the district, with responsibility for development and management of basic infrastructure, municipal works and services [100]. The Regional Co-ordinating Councils (RCC) and their respective Regional Planning Co-ordinating Units, play the role of co-ordination, whilst the DA is responsible for implementing development programmes.

The Ministry of Local Government and Rural Development (MLGRD) sets the policy framework for the development of local communities and oversees the performance of local administrations – Metropolitan, Municipal and District Assemblies. The Local Government Act 462, 1993 devolved a number of responsibilities and powers over the management of local affairs to DA [100]. Under the Act, the DA is responsible for the provision of infrastructure including water supply within the district. These DAs have no responsibility over urban water; however the concept of community management of water supply in rural and small towns places considerable responsibility on the DAs in ensuring that water facilities are installed and operated satisfactorily.

Section 15, of the DA Act gives the DA the powers to delegate its functions other than legislative functions. The DAs may as appropriate delegate any of its functions to Town, Area, Zonal or Urban Council or Unit Committee or such other body or person it may determine [100]. In accordance with this provision, the DA has delegated the management of the small towns water supply to the Water and Sanitation Development Boards. However, these delegated bodies do not have power to legislate, levy rates or borrow money.

The District Water and Sanitation Team (DWST) is the focal point in the District Assembly (DA) for water service delivery. It is a three-member team with members seconded from the Public Works Department, the Department of Community Development and the Department of Environmental Health.

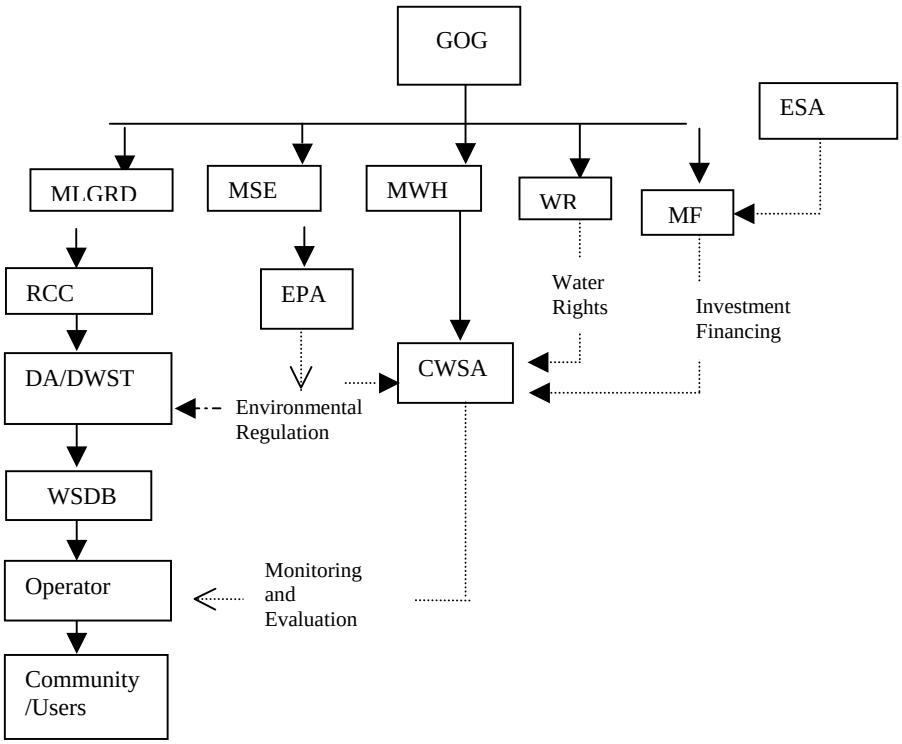

Figure 6. 3 Institutional arrangement for Small Towns' Water Supply delivery

Their role includes the identification of interested communities and providing support to the Water and Sanitation Development Board (WSDB). The MLGRD provides oversight to the DAs, municipal and metropolitan authorities. The institutional framework for small towns water supply delivery is shown in Figure 6.3.

The community representatives, the WSDB members are responsible for the management of the small towns' water supply system. They are composed of elected community (small towns) members and are also responsible for appointing the operational staff for the water system, promoting and disseminating information within the community, ensuring that all community members participate in decision making, setting tariff and ensuring proper financial management.

Analysis of the Task Environment

General water supply sector: separation of functions

The institutional reform of the water supply sector resulted in the separation of policy formulation, regulation and service provision functions. Also, the water services

provision was separated for community and urban water supply provision to allow the use of the most appropriate method for each category.

The separation of functions has given the MWH the required focus for policy development and formulation. To fulfil that effectively, the ministry has recently established a Water Directorate to focus only on water related activities since the ministry's mandate include housing. The policy for the community water supply sector was prepared during its establishment and has been revised recently. The overall water policy for water supply has been drafted and the various sub-sectors such as drinking water supply, and irrigation are preparing the specific policies derived from the principles applying for the overall water policy.

Previously, the MWH was performing the regulatory role, which is now undertaken by the special regulatory bodies. These are the PURC and the WRC for economic and water resources regulation respectively. The separation of the Community Water supply (CWS) from Urban Water Supply (UWS) has segmented the market. This has provided an opportunity for the use of appropriate institutional arrangement, and different approaches for each segment. The CWS is using a different approach, which is decentralised and based on the COM concept to enhance sustainability of the water services. The guiding principles of the COM concept are demand responsive, community empowerment through involvement, participation and ownership, and community management.

The use of the COM concept since 1994 for community water supply delivery has achieved significant success. Community ownership and management is well entrenched and the concepts are being replicated in other sectors. The communities are more responsive to the operations and maintenances needs with a higher speed of response compared to the previous arrangement where it was centralised and demanded action from the head office [101]. Furthermore, the CWS can now boasts of improved human resources from 10 engineers (located at the head office) under the previous arrangement to dedicated Regional Water and Sanitation Teams consisting of Regional Director, Water and Sanitation Engineers (2 No), Extension Services Specialist (2 No), Management Information specialist, Financial specialist. All the districts also have three member District Water and Sanitation Team (DWST) as the focal point in the DA for water and sanitation in the district.

In contrast, GWCL is a highly centralised organisation where the non viable rural and small have been transferred to the district assemblies for community ownership and management. The idea was to relieve GWCL of the relatively non-financially viable systems so as to provide an opportunity for GWCL to run on commercial basis by charging full cost recovery tariffs. Unfortunately, the objective of running the urban water supply on commercial principles by charging full cost tariffs has not yet been implemented as it was linked to the implementation of the private sector participation.

The separation and allocation of functions to different institutions has been useful to clarify the accountability relationships between the actors (service providers, MWH, PURC, WRC, etc.) responsible for the various water related functions, which

are important for improving the performance of the actors.

Urban water supply

Regulation

The two regulatory institutions established as part of the reform are PURC and WRC. PURCs mandates cover only urban water supply but not community water supply. The WRC is responsible for all the water bodies in the country.

The introduction of independent economic regulator has been useful and necessary for the sector. Before the establishment of PURC, GWSC was largely dependent on ministerial approval for tariffs, which were subjected to political influence. The presence of PURC has reduced political interference considerable. However, there have been occasions when GWCL did not request for tariff increase, although this was necessary. This happened in particular during election years and could be attributed to political factors.

Tariff approvals under the MWH before the establishment of PURC, were unduly delayed making inflation erode the benefits before being implemented. For example, GWSC tariff proposals in 1978 were granted in 1981 at a time when the proposed tariff had become inadequate and the 1982 tariff proposal was finally approved in 1984 [89]. The tariffs under PURC regime are much higher (reasonable) and tariff proposals are reviewed within a short period. PURC has also introduced automatic adjustment formulae so that periodic review would be faster. PURC has also published its social policy, which previously did not exist that addresses the interest of the poor [94]. The PURC in collaboration with GWCL has drafted a Customer Charter, which spells out the roles and responsibilities for the parties (GWCL and the customers).

The establishment of the Water Resources Commission (WRC) has improved the management of water resources in Ghana. Previously the management was undertaken by the MWH and the then GWSC. The WRC is managing the resources from a holistic viewpoint not from the perspectives of a single user. Some of the outputs of WRC are the introduction of catchments management, abstraction charges and water use regulation. GWCL can now inform WRC of their concerns on the water resource for an action to be taken.

Private sector participation

The implementation of PSP for the urban water sector was one of the objectives of the reform, but delayed unduly. The reasons why the PSP delayed may be attributed to a number of reasons, some of which are linked. The Water Sector Restructuring Secretariat (WSRS) could not function as a fully independent and autonomous body because it became susceptible to undue political interference that contributed to the decision to re-define the business unit A to include the BOOT.

Consequently, the re-definition of the business unit A to include the BOOT (Build Own Operate and Transfer) introduced the first major significant delay about 2 years

in the process after which the idea was rejected. The main reason for the rejection of the BOOT was that most bidders' felt the duration was too long for a new partnership in an uncertain political and economic environment. The WSRS, which was set up for the day-to-day management of the restructuring advised the ministry, the MWH on the consequence but because of its limited autonomy, the ministry was able to proceed with the BOOT idea. From the interviews held, it was suggested that the redefinition of the Business Unit A was perceived by some stakeholders as being politically motivated and hence a form of political interference in the process, which could indicate likely behaviour on completion of the contract process, thus increasing risk for the potential private operator.

A key requirement for successful implementation of a PSP is public education and awareness creation to increase public acceptability. The public education and campaign component of the PSP process could not start on schedule due to a misunderstanding between the local and foreign partners of the joint venture that was selected for the public education component. Consequently, public education and awareness creation throughout the process was not adequate, making some stakeholders, including decision-makers, not understand the reform and its issues. This may have partly contributed to the lack of understanding and political will to bring the process to completion.

Accountability relationships and competition

Despite the reforms, the accountability relationships within the water supply related organisations in the urban water sector are still weak with little procedures, processes and incentive mechanisms. The MWH acting as the government representative (also the sole shareholder) is expected to oversee the activities of GWCL by demanding accountability from the GWCL Board of Directors on their decisions and results. From the interviews with the key informants of GWCL, it was indicated that the MWH is a bit distant from GWCL and does not have adequate mechanisms to ensure that GWCL performs. In addition, the MWH finds it difficult to ensure that GWCL has adequate resources for the achievement of its mandate.

SEC has been signing performance contract with GWCL since 1989. This was useful in increasing the accountability relationships through a number of performance targets. It also resulted in introduction of corporate planning and management information systems unit for GWCL. However, the effectiveness of the accountability for results was affected by weak incentive system. Sanctions for poor performance are that no bonus shall be paid when GWCL fails to achieve the targets, whilst reward for achieving performance targets are annual bonus subject to available of funds [102]. Also, the institutional framework does not empower the users or customers adequately to demand accountability from GWCL management and Board members.

The coordination and collaboration between the regulatory agencies and the ministry is weak. PURC does not collaborate with the MWH in the areas of establishment of performance criteria, targets and monitoring. The regulatory role of SEC and PURC overlaps, for example both regulators have some common indicators

but the target may differ. The ministry could collaborate with the regulatory agencies to harmonise the targets for GWCL, eliminate duplication, and also use the targets to drive the performance of the sector by having effective accountability and incentive system.

The PURC by its mandate is required to promote competition within the urban water supply. But with only one utility provider, GWCL, it is difficult to have effective competition that would drive efficiency and performance. A clear institutional framework that encourages other providers to compliment the efforts of GWCL could improve access to water supply services and also provide opportunities to drive efficiency through competition. In some countries, such as Zambia, the economic regulator also grants licenses for the water supply operators and if the operators do not comply then licenses could be withdrawn.

Effect of Institutional framework on the small towns water supply

Anchorage of DWSTs in DA structure

The District Water and Sanitation Team (DWST) is the DAs full time field team for water and sanitation. As indicated previously, the DWST is composed of three members from the departments of Community development, Works and Environmental Health. The DWST members are ultimately responsible to their respective regional directors, who can transfer them without consulting the respective district assemblies. The DWST members are therefore not anchored in the DA structure because they are subject to transfers. There are cases of such transfers to different districts on a totally different assignment, which is not in the water sector. In some cases, the time taken for the vacancy to be filled normally takes three to twelve months, after which re-training had to be organised for the new staff.

Inter-sectoral collaboration and accountability relationships

The inter-sectoral coordination and collaboration is weak in the small towns water supply sector. CWSA is under MWH whilst the DAs are under the Ministry of Local Government and Rural Development (MLGRD). CWSA works upwards through a Board of Directors and the Ministry of Works and Housing for policy direction. CWSA then has to implement the policy directives through another ministry the MLGRD for the District Assemblies. The CWSA works through the DWST of the DA, which bears only minimal allegiance to CWSA. The peculiarity of the institutional arrangement is the main weakness of CWSA, and a constraint to effective water delivery as pointed out in CWSA corporate plan 2003-2006 [103].

At the DA level, CWSA as a facilitating agency cannot force the DAs or the community (WSDB) to execute its water related activities (e.g. ensuring the submission of periodic reports, water quality monitoring and using appropriate water tariffs). The DAs is also expected to play the role of the Water Resources Commission at the district level in the areas of water abstraction rights and permitting. This aspect is not yet operational at the DAs level. The small towns are

primarily relying on boreholes or drilled wells for water supply. The availability of the resource and its long-term sustainability has not been given adequate attention. The WRC has the challenging role of managing the resources for the country, have plans to monitor some wells, determine the extent of aquifers and suitable methods of ensuring long-term availability of the resource in both quantity and quality. Water abstraction beyond 5 litres/second requires an abstraction license. However, all cases of abstraction must be registered whether they fall below the minimum abstraction or not. The procedures for application, registration and granting of license at the local level are now also being worked out under the Densu Pilot project [91]. The structure of the WRC is not yet decentralized and operational at the district level. At the District level there is the need for mechanisms for operating both at the community and project level.

Small towns and urban water supply nexus

The modalities for transfer of water systems management from small towns water system to GWCL system and vice versa is lacking in the existing institutional framework. This situation may arise for a number of reasons. One of the key conditions for a small towns system is the community willingness to own and manage the system, which can change with time, especially as small towns tariffs are generally higher the GWCL tariffs. On the other hand, towns with population of less than 50,000 currently under urban water supply sector but not getting the required services may want to be a part of the community water supply where the service is generally more reliable. An example is the Ejisu township, a small town which claims that for over 10 years they have not been receiving water from GWCL and want to be part of the community water supply because some of their neighbouring towns now have water under the small towns water system projects. The current institutional arrangement is silent on this and does not provide the modalities for transfer between small towns and urban water supply.

Regulation

The DA provides the regulation of the small towns water system whilst the CWSA plays a facilitatory role. The DA has the mandate for the management of water supply in the district and has the power to delegate some of its functions other than legislative. The DA has accordingly delegated the water management to the WSDB. The WSDB sets the tariffs and submit to the DAs for approval. Regulating and monitoring of the small towns activities by the DAs is poor. Periodic reporting is not regular in most cases and the DAs do not give feedback to improve the service. The capacity of the DWSTs to regulate and monitor could be a reason. The workload of the DWSTs could also be a factor since they are responsible for all community water and sanitation activities. For a district assembly, this may be hundreds of point sources and 5-10 small town water supply.

For the small towns' water systems, majority of the customers buy by the bucket from the standpipes. The COM arrangement puts the community in charge of the

management of the water system through the WSDB, who can institute special arrangement for the vulnerable and disadvantage, subject to the approval of the DAs. So the small towns water systems have a flexible approach for addressing the needs of special customers such as the poor and aged.

Conclusion

The 1990s reform

A number of conclusions are drawn from the study of the institutional reforms of the water supply sector in Ghana since the 1990s. The reform has led to clear separation of policy formulation, regulation and service provision functions for the water supply sector. Also, service provision functions have been separated for the urban and community water supply. This has improved the allocation of responsibilities for the water supply related institution, which intends provides a good framework for improving the accountability relationships between the water supply related institutions.

The separation of service provision for the community water supply (rural and small towns' water supply) and urban water supply delivery has given both sectors the required focus as well as the opportunity to use appropriate approaches for service delivery. The community water supply delivery is employing a demand driven approach and the community ownership and management concept, which has improved the sustainability of the community water supply sector. In contrast, the formal utility for urban water supply, GWCL is highly centralised.

After about 11 years of trying to implement the urban water supply PSP, a private operator was finally selected in July 2005. The delay in the implementation was due a number of factors. First, the lack of autonomy of the Water Sector Restructuring Secretariat could not restrain political interference from negatively affecting the process. Secondly, inadequate public awareness and education contributed to the lack of sustained political will, uncertainty in choice of PSP option and periodic changes in the PSP option. At another level, one could argue that the PSP process has been a reasonable one within the particular socio-political context, giving due credence to the various stakeholders concerns and accepting the various mistakes along the way, whilst continuing to search for a valid solution. Meanwhile, the recent arrangement of a management contract with a single operator is different from the initial plan, which proposed two operators that could be used for comparison. Contrary to one of the objectives of getting private capital for the water supply sector, this option does not bring in private capital.

The introduction of independent regulatory body, PURC for economic and quality of service regulation for the urban water supply sector has provided a framework for appropriate water pricing for GWCL as will be elaborated later in chapter nine. The establishment of the independent regulatory commission, WRC for water resources

management provides a better arrangement for water resource management.

Current institutional arrangement

The institutional arrangement is certainly an improvement over the previous arrangement with policy formulation, service provision and regulation clearly in place. However, there is room for improvement. The absence of adequate and effective accountability relationships between actors is a weakness in the institutional arrangement that affects the sector performance. Most of the accountability relationships are not backed by appropriate reward system. The lack of incentive mechanisms is a contributing factor for the ineffective accountability relationships. In the urban water supply sector, the collaboration between the MWH and the regulatory agencies is weak, with the roles of SEC and PURC overlapping in some areas. This results in duplication of efforts with its implications for scarce human and financial resources. This also puts unnecessary pressure on GWCL to meet different targets for indicators from different regulators.

The institutional arrangement for the urban water supply does not make room for licensing of service providers within the urban water supply in addition to GWCL. However the introduction of a system for registration and licensing could enhance service delivery for those under-served or unserved in the urban areas as well as promote competition as required by the PURC Act.

A number of challenges are evident in the institutional framework for small towns water supply delivery. At the national level the degree of inter sectoral coordination is low especially between MWH and MLGRD for small towns water supply. CWSA works upwards through its Board of Directors and the MWH for policy direction. It then implements its activities through the DA, which is under the MLGRD. The DA is an autonomous body and its DWST with responsibility for water supply has minimal allegiance to CWSA, which is the weakest link in the institutional arrangement hindering the sector. At the district level the DWSTs members seconded from the other department to focus on water and sanitation are subjected to transfer by their mother organisations making their anchorage in the DA system weak.

Notwithstanding these challenges, the institutional arrangements for the small towns' water supply are flexible allowing the incorporation of pro-poor mechanisms that suits the community. Contrary to the desires of certain towns to transfer from GWCL to the small towns' water supply or vice versa the current institutional arrangement does not provide modalities for such transfers.

Chapter Seven

Ghana Water Company Limited

Contents

Introduction

The Ghana Water Company Limited (GWCL), which has responsibility for urban water supply delivery for public, domestic and industrial purposes, is the focus of this chapter. The GWSC/GWCL supply coverage decreased from 76 % in 1990 [104] to 60 % in 2002 [14]. Un-accounted-for water remains around 50 % throughout the time period. The performance of the urban water supply sector is poor and requires attention since access to safe water supply is crucial for socio-economic development.

The objective of this chapter is to assess the performance of GWCL. The assessment is based on objectively verifiable indicators and subjective performance. This is followed by an analysis of GWCL functioning with respect to the NPM framework presented.

Verifiable Performance Assessment of GWCL

Performance assessment has been carried out with respect to GWCL mandate of serving all inhabitants within its supply areas in a financial sustainable manner. Objectively verifiable indicators were used to obtain information to determine GWCL's performance. The assessment covered the period 1990 to 2002. The verifiable performance indicators were obtained from GWCL annual reports. The verifiable indicators used for the assessment are as follows: water production and sales presented; non-revenue water, coverage and bill collection efficiency for the effectiveness and efficiency measurements; liquidity ratio; profitability and leverage; and accounts receivables for customer management.

Water production and sales

The urban population is growing but the water supply coverage is not 100 %. Therefore, it is expected that the volume of water production will be increasing with time. However, the annual water production from GWCL has been fluctuating instead of increasing (Figure 7.1). The annual water production has been fluctuating between 173 million cubic meters to 195 million cubic meters, with year 2000 annual production of 185 million cubic meters. Of the amount produced only a part is supplied because of high losses in the system. The Non Revenue Water (NRW) is around 50 %, which means that half of the water produced is not billed, whilst collection efficiency of the fraction that is billed is not 100 %. Therefore, the water sold ranges from 72 to 99 million cubic meters during the period, which compares with a projected water demand of 213 million cubic meters in 2000.

A number of reasons account for the fluctuating water production. These include natural factors such as drying of raw water sources, installation of production meters leading to actual production figures instead of estimates [105]. Other factors are power interruptions, rehabilitation of major headworks, electrical and mechanical break down [106].

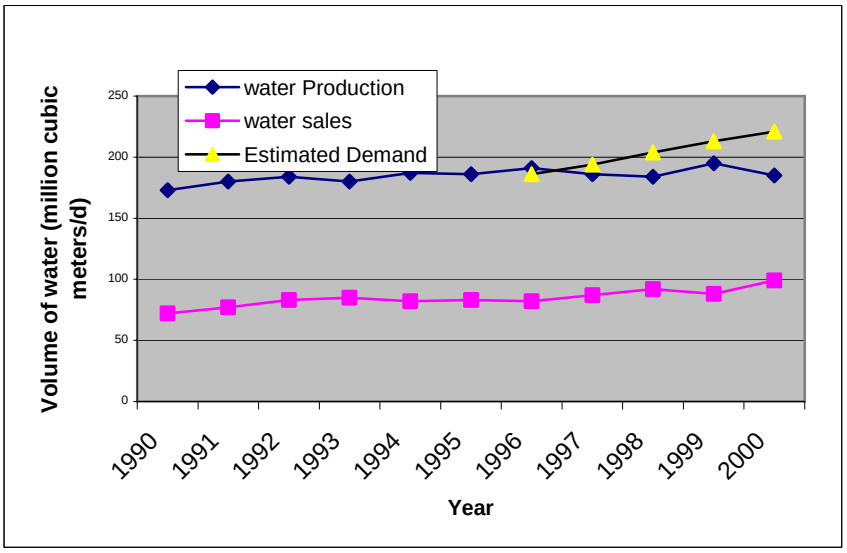

Figure 7.1 GWCL water production and sales 1990-2000

Effectiveness and efficiency

The Non-Revenue Water is defined as the percentage of water produced, which does not generate revenue for the GWCL. The water production and billing (sales) figure are shown in Figure 7.1.The coverage is defined using the water supplied and the projected water demand as the ratio of water supplied to the projected water demand. The Bill Collection Efficiency (BCE) is the ratio of collection to billing expressed as a percentage.

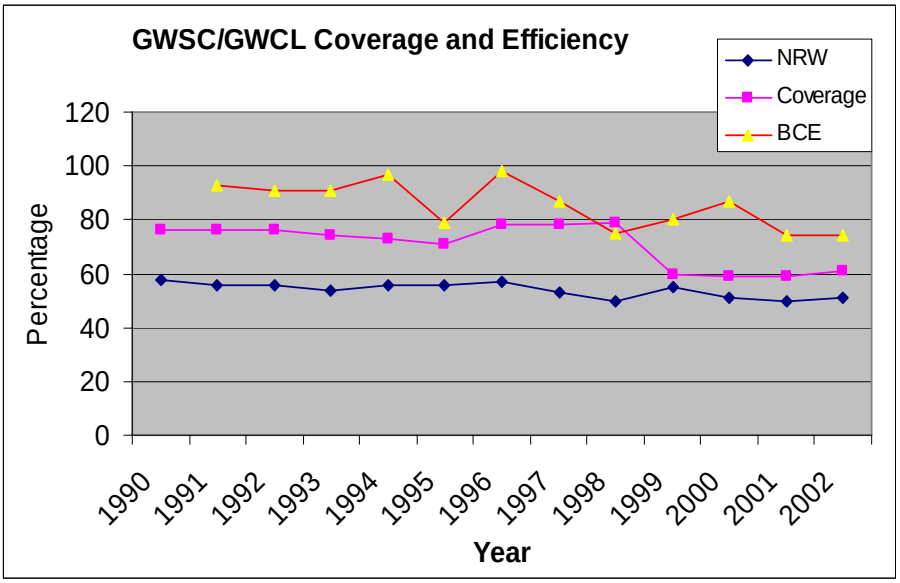

Figure 7.2 Efficiency and effectiveness indicators

Figure 7.2 shows that since 1990 the GWCL coverage has declined from 76 % to 60 % in 2002. The NRW of 50 % and BCE of 75 % for GWCL in 2002, when compared to Ghana neighbouring Cote d'Ivoire with NRW of 15 % and BCE of 97 % indicate that the performance in Ghana has consistently not been optimal. The Bill Collection Efficiency and the coverage have rather worsened. From Figure 7.3, the Bill Collection efficiency of the government Ministries, Departments and Agencies (MDAs) decreased sharply from 96 % in 1996 to 36 % in 1999, which contributed negatively to the low bill collection efficiency of GWCL. The main reason for the dramatic decline was the result of decentralisation of payment of bills by government agencies, which was not backed with budgetary provisions to allow the MDAs to pay at the district and regional levels [107].

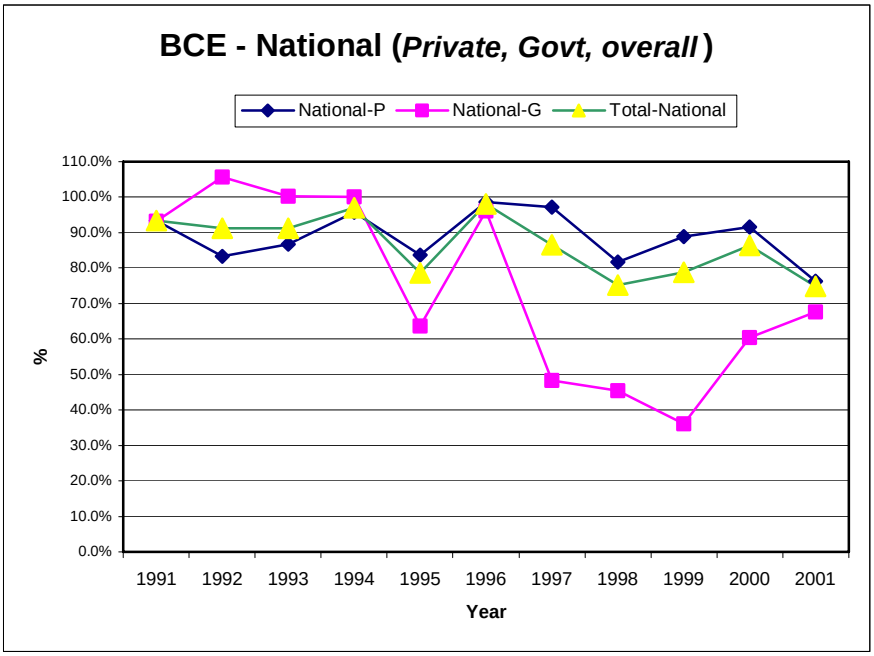

Figure 7.3 Bill collection efficiency

The high non-revenue water is estimated to be composed of both physical losses (30%) and commercial losses (20%). The physical losses are made up of water lost through pipe breaks or leakages, reservoirs, house connections. The commercial losses are water consumed but not billed. It includes meter under reading, use of fixed rates for un-metered premises and illegal connections etc. The high NRW is the most significant drawback to efficiency.

Liquidity

The liquidity indicators used are current ratio, quick ratio and Quick Quick Ratio (QQR). The liquidity ratios address the question “Will there be sufficient cash over the immediate future to meet short term liabilities as they fall due? Unless the answer is positive the company is in a financial crisis irrespective of its profit performance [108].

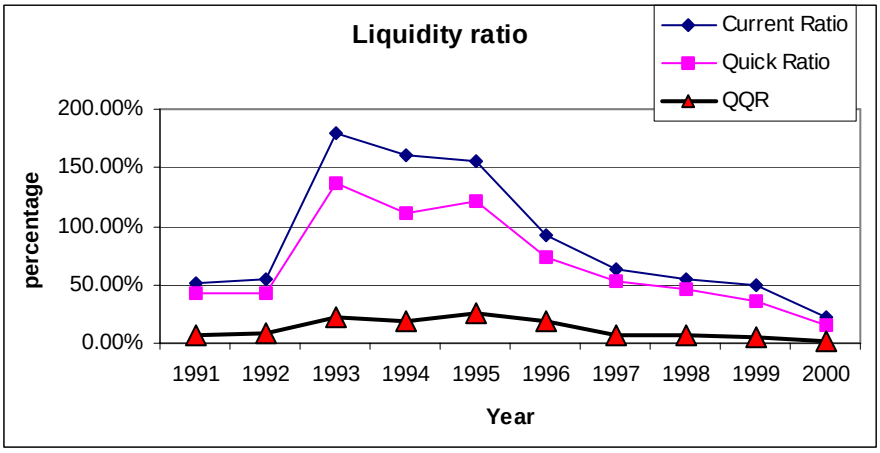

Figure 7. 4 Liquidity ratios

The current ratio is the ratio of current assets (cash and near cash) to the current liability a favourite of institutions that lend money. Typically a value in excess of 1.0 of this ratio is preferred. The ratio increased from 50 % in 1991 to 170 % in 1993 and has decreased continuously to 23 % in 2000. The Quick Quick Ratio (Acid Test) measures the ratio of cash (Current asset less the receivable and the inventories) to the current liability. It rose from 7 % in 1991 to 26 % in 1995, and then dropped down to 1.8 % in 2000. This was mainly due to the increase in current liability to sustain the operations. This means GWCL has liquidity problems making it difficult to meet urgent cash flow needs. The year 2000 was also a difficult one for GWCL as the US Dollar, which was exchanging at 3560 cedis at the beginning of the year came to about 6887 cedis at the end of the year [106], which made it difficult for GWCL to repay the foreign loans and pay for imports.

Profitability and leverage

The profitability and the leverage indicators used are Return on Fixed Assets (ROFA) and Debt Equity Ratio (DER). The ROFA provides a measure to determine the return on assets. It measures how well the management uses the assets in the business to generate an operating surplus. With an industry standard of 6-8 %, the ROFA was fluctuating between -2.8 % to 2 % from 1990 to 1998, which indicates poor profitability for GWCL. In 1994, GWCL assets were re-valued and the value of the fixed asset increased by eight fold, which also increased the depreciation charges making a loss before interest charges and taxes were added. From 1996 to 1997, the revenue increased by 3 % whilst expenditure increased by 37 % resulting in the low profitability shown in Figure 7.5. In 1997, PURC was established and the water tariffs were increased by 130 %, which reflected in the improvement from 1997.

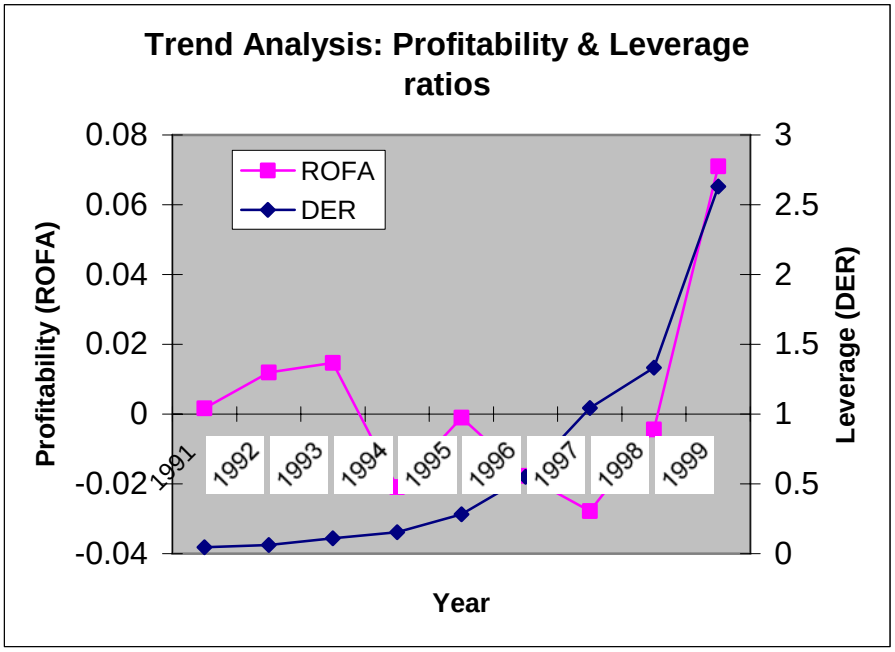

Figure 7.5 Profitability and Leverage trend profitability

The DER tests the financial strength of a company. It measures the mix of funds in the balance sheet to compare funds supplied by owners (equity) and those borrowed (debt). The DER increased gradually from 4.3 % in 1991 to 263 % in 1999 reflecting the role of debt in maintaining the urban water supply operations. The analysis was based on GWCL financial statements, which are prepared under historical cost convention as modified by the revaluation of fixed assets periodically. The re-valuation of GWCL assets was done at the end of 1993. The re-valued assets had higher values than the book values suggesting that the reported fixed asset for 1999 would be below its real value.

Customer management

Accounts receivables is expressed as equivalent mean monthly collections or day's receivable ratio. This is a customer management indicator showing how enthusiastically the billing and collection procedures are pursued. The accounts receivables are very high ranging from 6 to 12 months (Figure 7.6). From 1991, the amount receivables improved from 10 months collection to 6 months in 1993 and become stable until 1996 after which it started deteriorating. The main reason is not immediately clear. In 1996, there was no tariff increase, it was an election year and probably operations suffered because of inadequate revenue. Another reason contributing to the high receivable is that, the billing cycle is about three months, one

month to read the bills, one month to process and one month to distribute them. Thus the billing procedures together with the monthly billing contribute to accounts receivables.

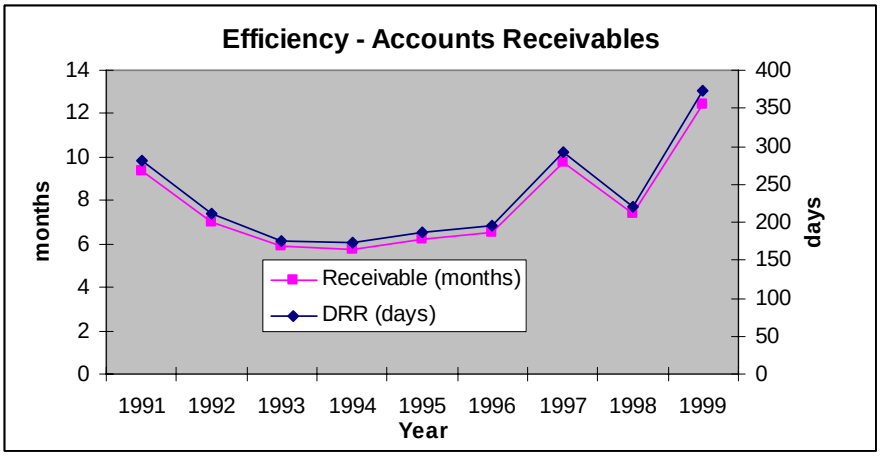

Figure 7.5 Accounts receivables

Subjective Performance Assessment by the Customers

A subjective performance assessment was carried out using a customer perception survey described in chapter four. The assessment of GWCL services from the point of view of the customers was conducted to add another perspective to the objective assessment and highlight specific problems. The customer perception survey was conducted in two major cities Accra and Kumasi in 2001. The customers in this case are those that are benefiting from GWCL services. The methodology for the customer perception survey was described in chapter four. The results of the survey are presented herein and discussed

.

Continuity of service or reliability

The continuity of service measures the average hours of water supply per day. On the average, thirty five percent (35%) of the customers were getting less than 8 hours of water supply in a day. The pattern for the continuity of service is generally similar in both Accra and Kumasi. 3 % in Accra and 11 % in Kumasi get water for less than 1 hour per day. 37 % in Accra and 32 % in Kumasi get water supply from one to eight hours per day, 33 % in Accra and 29 % in Kumasi get water for eight to sixteen hours, and 27 % in Accra and 28 % in Kumasi get water for sixteen to twenty-four hours per day (Figure 7.7).

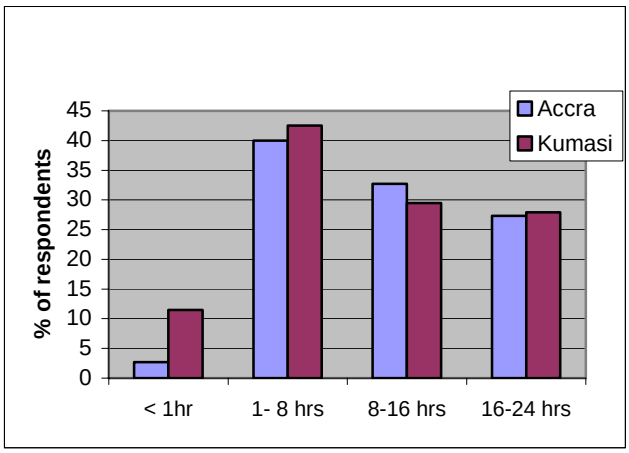

Figure 7.6 Continuity of service

Majority of customers in Accra and Kumasi receive water supply intermittently (< 16 hours) mainly because water demand is greater than the water supply.

Customer complaints

In both Accra and Kumasi, majority of the customers directly make complaints about water services in person by reporting on complains to the appropriate GWCL regional or district office (Figure 7.8). Customers indicated that making complaints in person was an indication of seriousness. The other modes of making complaints were by telephone or by informing the meter readers to inform the appropriate officers. As illustrated in Figure 7.8, less than 10 % of the respondents lodged their complaints through the meter readers in both cities. Again about 20 % of the respondents lodged their complaints using telephones. About 70 % in both Accra and Kumasi made their complaints personally inspite of the inconveniences compared to telephone or through meter readers. The use of the telephone for complaints though quicker and cheaper is not widely used probably because of the low tele-density. Some customers reported that responses are quicker with personal complaints than through the telephone.

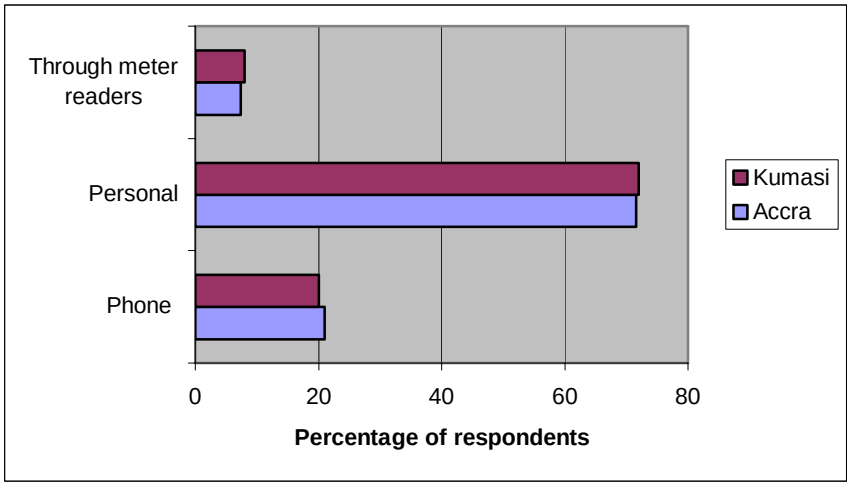

Figure 7.7 Mode of complaints by respondents

Many of the respondents (over 60%) had made complaints at one time or the other. Customer perceptions of GWCL response to customer complaints were similar in both cities studied. Less than 50% of the respondents were of the view that GWCL's response to customer complaints and GWCLs attitude to customers was excellent or very good. Generally, a greater percentage of the respondents in Accra thought that GWCLs response to complaints and its attitude to customers were better compared to those in Kumasi (Figure 7.9). The customers were not happy with the GWCL is usually unable to inform customers in advance of service interruptions (Figure 7.9). This was, however, better in Accra than in Kumasi.

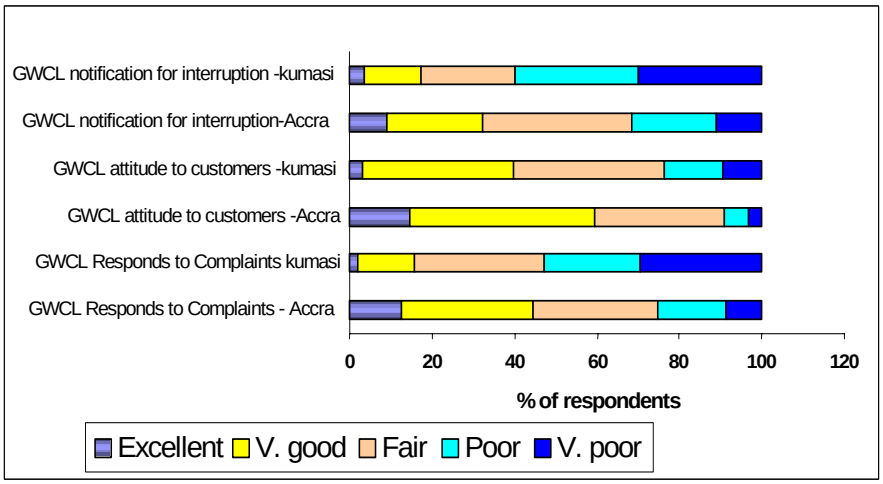

Figure 7.8 Customer Perception of selected indicators

Customer satisfaction

Only about 20 % of the respondents in Kumasi were satisfied (excellent or very good) with the service, compared with 45% of the respondents in Accra. The details of the respondents' perception are indicated below (Figure 7.10). It shows that in both Kumasi and Accra majority of the customers are not satisfied with the service from GWCL. Meanwhile comparing the water services in Accra with that Kumasi with respect to customer perception reveals that customer perception of services in Accra are better than in Kumasi.

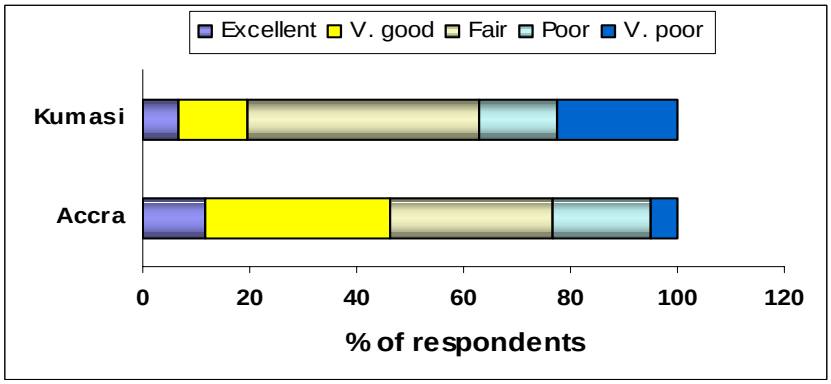

Figure 7.9 Customer satisfaction of GWCL service

Desired improvement by customers

The most desired improvement by majority of customers was to have regular supply of water (Figure 7.11). The overwhelming desire for regular supply of water is a clear indication of poor service delivery. Next to this was the need for improved water quality. In Kumasi, about 30 % of the respondents expressed the desire for improved water quality as compared to 10 % in Accra. The other suggestions by customers for improvement were metering for each house, regular billing, prior information on planned interruption, prompt response to complains and improved services to currently deprived areas.

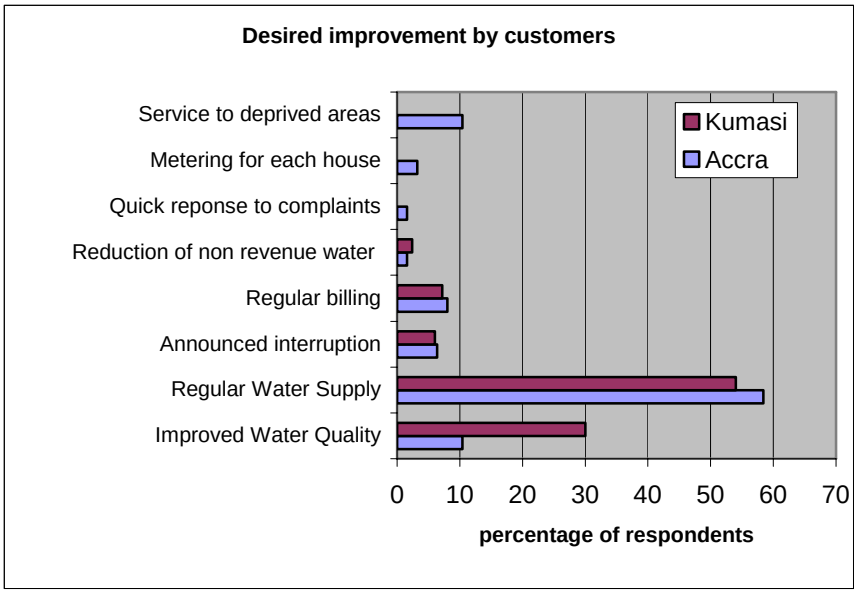

Figure 7.10 Desired Improvement by GWCL customers

Analysis of GWCL from NPM Perspective

The assessment of the governance factors was based on interviews with key informants in the sector and also on the assessment of subjective performance description described that was described in chapter four.

Corporate culture of GWCL

GWCL is a state owned enterprise with some level of organisational autonomy. The promotion of staff in GWCL is based on qualification, staff performance (based on performance assessment by immediate superior and head of department) and length of

service. The Public Service Commission establishes the terms and conditions of employment in the public service [90]. Salary levels and adjustments are also based on collective bargaining agreements between staff and management.

The mission statement of GWCL reads as follows:

"As a public utility Company responsible for water supply, GWCL is committed to the development, conservation and supply of potable water to urban areas for public, domestic and industrial purposes at least cost while reaching each consumer group with levels of service appropriate to their needs and affordable to them. GWCL will strive to be as profitable through efficient performance while ensuring that the needs and interest of employees, shareholders and the general public are protected" [105].

There are attempts to make the vision and mission statement visible within the utility. New staffs are encouraged to memorise it. The mission statement is also placed at visible places within the organisation for both staff and customers to see it.

A perspective of the corporate culture within GWCL was obtained through the subjective performance survey conducted with GWCL staff. As mentioned already in chapter 4, the questionnaires were administered to 80 staff member of GWCL and 65 % filled the questionnaires. The results are shown in Table 7.1 indicating a poor corporate culture. From Table 7.1, unacceptability of individual corruption to the detriment of GWCL was not perceived as very high but rather between fair and high, indicating some level of acceptability of individual corruption. It is also clear that staff perceive incentives to maintain and motivate staff, salaries, and staff commitment to the organisational goals between low and fair.

With regard to training and capacity building, GWCL provides opportunities for its staff to have further training both locally and abroad. Initially, the emphasis was on technical aspects whilst the non-technical aspects were not given much attention. However, capacity building for non-technical aspects (commercial and financial) is now being strengthened. In 1999, a total of one thousand two hundred and thirty five (1235) workers constituting over 27 % of the staff strength received training in various courses, both technical and non-technical [105].

The annual staff turnover is estimated to be below 10 % and is relatively low compared with the 1970s when there were a lot of job avenues. Absenteeism is not tolerated in GWCL, staffs have to register their attendance daily and this is audited periodically. Communication within the utility is usually thorough memos, reports and monthly departmental meetings. Chief Managers meet quarterly and the outcome of the meetings is passed on through the district managers to the other staff.

The corporate culture of GWCL does not contribute positively to performance as the salaries are based on public service rules, incentives to motivate staff are low and staff commitment is low.

Table 7.1 Corporate Culture in GWCL

CORPORATE CULTURE	HO	ATMA	AR	NR	Ave.
An observable team spirit exists among the staff	2.8	3.3	2.5	2.7	2.8
People express a sense of ownership and pride about working that is expressed in statements such as 'this is a good place to work'	2.8	2.8	2	2.7	2.6
There is a clear commitment to the organisational goals at all levels of the staff, people feel involved in and informed about the institution's activities	2.4	2.7	2	2.6	2.4
The commitment to personal goals is demonstrated by individuals support for the organisational goals	3	2.7	2	2.2	2.5
Staff believe they are trusted in the organisation with responsibility and authority	3	2.8	3	2.9	2.9
Staff are committed to improving their skills and knowledge and attitudes; people are interested in learning new things and new ways of doing things	3.2	2.5	2	2.9	2.6
Line managers are committed to and involved in the development of their staff	2.6	3.2	2	2.8	2.6
The organisation provides adequate salaries and incentives to maintain and motivate staff	2.4	2.5	2	2.8	2.4
Active systems are in place for providing ongoing formal and informal feedback to personnel about job performance	2.4	2.8	2	3.0	2.6
Individual corruption to the detriment of the organisational team is seen as unacceptable	3.2	3.2	3	3.3	3.2
A clear system exists for hiring qualified personnel and firing or disciplining staff when necessary	3.2	3.5	3	2.8	3.1
Staff place a value on maintaining the facilities of the organisation, for example the offices, treatment plants and grounds, sign boards, so they look clean, well maintained and attractive	2.8	2.3	2.5	2.9	2.6
AVERAGE	2.8	2.9	2.3	2.8	2.7

Ranking: 1-very low, 2 –low, 3 –fair, 4 – high, 5 very high

Key: HO - Head office, ATMA - Accra Tema Metropolitan area, AR - Ashanti Region, NR - Northern Region, Ave -Average score

External autonomy

The Ghana Standards Board (GSB) is responsible for setting drinking water standards whilst the Public Utilities Regulatory Commission (PURC) through its water quality inspectorate division is responsible for ensuring compliance of the drinking water quality standards. The Water Resources Commission (WRC) is responsible for issuing abstraction permits for raw water use. PURC is also responsible for approving water tariffs when GWCL submits a proposal to PURC for consideration.

The Board of Directors of GWCL provides immediate oversight of the management and exercises the overall direction and control of GWCL on behalf of government under the guidance of the Minister of Works and Housing. The President of Ghana selects the Board members (8 people) with the exception of the GWCL workers representative (elected by the workers). The day-to-day running of GWCL, its business, administration and organisation is the responsibility of the Managing Director (MD). The President of Ghana appoints the Managing Director of GWCL acting in accordance with the advice of the governing council of the service concerned, given in consultation with the Public Service Commission [29]--[90]. In a similar way, the president can dismiss the MD. The utility, GWCL, is sensitive to the political environment because of the nature (or perceived) of the service.

An assessment of the organisational autonomy within GWCL was also partly done by the subjective performance descriptions where the level of autonomy was not seen to be high (Table 7.2). It was also indicated from the assessment of the Subjective Performance Description that GWCL is unable to establish and implement levels of tariffs sufficient to meet capital and recurrent cost, nor establish adequate remuneration for staff to attract and maintain staff as indicated by GWCL staff in Table 7.2. However, GWCL maintains control over all the revenue they generate.

The utility is allowed to terminate defaulters of the utility bills, but it should be in accordance with PURC procedures for termination of water service. GWCL can attract qualified staff to a limited extent because the salaries and conditions of service are not the best. GWCL is subject to the government procurement guidelines for goods, works and services.

Table 7. 2 Organisational autonomy within GWCL

ORGANISATIONAL AUTONOMY	HO	ATMA	ASH	NR	Average
Sets own organisational objectives and changes them as necessary to provide guidance and direction in achieving the objectives of the organisation	3.4	3.8	3.5	3.1	3.5
Prepares annual capital and operating budgets linked to revenue and needs; successfully obtains approval for budgets	4.2	4.0	2.5	4.0	3.7
Establishes and implements levels of tariffs and service charges sufficient to meet capital and recurrent costs	3.2	2.5	2	2.6	2.6
Maintains control over all revenue generated	4.2	3.8	4	3.6	3.9
Establishes and maintains staffing levels sufficient to meet needs	3.8	3.7	2.5	3.5	3.4
Employs, discharges, disciplines and promotes personnel within established and approved guidelines according to institutional needs	4	4.0	3	3.3	3.6
Establishes levels of employee compensation including salaries and benefits sufficient to attract and maintain capable staff	3.2	3.3	3	2.8	3.1
Top management is well informed about external policy, financial and regulatory issues and actions	4.2	3.7	3	3.0	3.5
Top management maintains direct contact with the key individuals in all important external entities	3.6	3.7	3	3.3	3.4
AVERAGE	**3.8**	**3.6**	**2.9**	**3.2**	**3.4**

Ranking: 1-very low, 2 –low, 3 –fair, 4 – high, 5 very high
Key: HO - Head office, ATMA - Accra Tema Metropolitan area, AR - Ashanti Region, NR - Northern Region, Ave -Average score

Out of the five past Managing Directors (MD) for GWCL from 1987 to date, one retired on his own because of internal problems, another retired after serving his term, two were fired, and the last was appointed temporarily to act and he decided to hand over to the next most senior officer after 15 months. The tenure of office of the managing directors of GWSC/GWCL is a reflection of the level of organisational autonomy. It was therefore not surprising when GWCL organisational autonomy was rated between fair and high by the GWCL staff.

The negative Political interference in GWCL functioning points to inadequate organisation autonomy. Therefore the existing organisational autonomy is not sufficient for GWCL to deliver sustainable services. For instance GWCL is unable to get tariffs sufficient to meet capital and operational expenditures and motivate staff adequately.

External accountability

Government is the sole shareholder of GWCL. GWCL reports to the Government of Ghana through the Ministry of Works and Housing (MWH). The ministry, MWH decides which reports to forward to government. The key institutions that demand accountability from GWCL are PURC, SEC and the MWH. GWCL prepares periodic reports namely, annual reports and audited accounts, to the government via the sector ministry, MWH. Operational reports are also made available to SEC and PURC are part of the routine reporting.

PURC sets quality of service targets for GWCL. A typical target for GWCL was for personnel cost to be below or at 20 % of the operating income. GWCL has been complying with this directive and claim remuneration for GWCL staff, which used to be one of the best among the Ghanaian utilities is now one of the worst. The PURC quality of service improvement targets were for GWCL to reduce non-revenue water to less than forty five percent (45 %) in 2002 and 40 % in 2003, and increase revenue collection to 95% in 2003. The actual performances of GWCL were NRW of 58 % in 2002 and 57 % in 2003, whilst the collection ratio of 74 % in 2002 and 75 % in 2003 [109].

The Government of Ghana through the Ministry of Finance provides guarantees for GWCL to secure loans. GWCL also borrows directly from banks and become subjected to the conditions of the Banks. Non-governmental interest groups have not involved themselves in the functioning of the utility. However, GWCL was subjected to media reports almost daily, in 2000, when questions were raised on the procurement of the operators for the proposed private sector participation.

The SEC on behalf of the government of Ghana has been signing performance contracts with GWSC/GWCL since 1989. The introduction of the performance contracts acted as a key driver for the creation of a Corporate Planning and Management Information System Department in the GWCL head office. However, the performance contract is no longer effective. The draft drinking water supply policy is calling for the role of SEC to be replaced by PURC [84].

The performance contract for GWCL implemented by the SEC started in 1989. The contract is between GWCL (acting by its Managing Director and the Board) and the republic of Ghana (acting by the Minister of Finance and the Minister of Works and Housing) to regulate the performance of GWCL and the obligations of Government in respect of GWCL operations. The performance contract contains performance indicators and targets, major assumptions, undertakings of GWCL to Government and Government to GWCL, incentive mechanism, monitoring of the performance contract and arbitration and settlement of disputes

The governments' undertakings are to respect GWCLs autonomy and settle promptly bills raised by GWCL for water consumed by ministries, agencies and department of the Government. The incentives for achieving the targets are that GWCL management and workers would receive bonuses. However, SEC would have to be convinced that the incentives (which would be paid from GWCL resources) would not impair GWCL financial stability. Since the introduction of the Performance Contract, GWCL has been awarded bonuses twice for achieving its targets. On those occasions the targets were not ambitious as GWCL performance on those occasions were not spectacular.

According to the 2000 performance contracts the sanctions are that no bonus shall be paid when GWCL fails to achieve the targets [102]. Furthermore, where the non-achievement of the agreed targets is directly traceable to acts or omission of particular individual employees or divisions, sanctions in the form of appropriate disciplinary action shall be applied [102]. In such cases, GWCL management will determine the degree of individual or divisional non-performance and the corresponding sanctions.

The introduction of the performance contracts acted as a driver for the creation of a Corporate Planning and Management Information System division in GWCL head office. However, as reported by the key informants, the performance contract has now become a "ritual" and does not yield any significant performance improvement. It was realised during the discussions that some of GWCL staff even in middle level management were not sure whether GWCL was still signing the performance contract with SEC after the establishment of PURC. Now the role of SEC is being overshadowed by PURC. A number of reasons could be attributed to the ineffectiveness of the performance contract. In some cases the performance targets were not ambitious. The nature of the agreement, obligations of the parties and the key assumptions make its enforcement difficult. The performance contract lacks effective mechanisms to ensure that Government would honour its parts of the contract. For example as indicated by GWCL staff the Government was not fulfilling its role to the tenets of the contract, for example in 2001 the Government did not pay its bills nor its contribution to development projects within 30 days as stipulated in the contract. Tariff approvals were not granted within the 60 days stipulated in the contract. The performance contract does not insulate the utility (GWCL) from political interference, which makes it difficult for SEC, and for that matter the Government to hold GWCL/MD responsible for non-achievement of the targets. There are other important parameters that are not addressed in the Performance Contract. For example the performance contract does not address customer satisfaction and effective sanction for non-performance.

GWCL has a number of external accountability relationships with the key actors in the sector. However, these accountability relationships have not been very effective. For instance, the performance contract implemented by SEC did not result in significant performance improvement. In the case of the targets implemented by PURC, there are not adequate incentives to enhance performance. There is room for improving GWCL's external accountability for the benefit of the water supply sector.

Market-orientation

Strong market-orientation as part of the NPM is mainly aimed at reaping the benefits of (quasi) competition between providers of goods, services and works for GWCL. The level of out contracting in GWCL is rather limited, with less than 10 % of its operational budget. The nature of functions out sourced includes installation of pre-paid meters, billing and collection, debt/arrears collection, works and engineering design.

GWCL started out contracting on a pilot basis with billing and collection, and arrears collection. According to GWCL, the results of the pilots were not encouraging and hence were not replicated. Benchmarking with other utilities and within the utility is not practised. GWCL operates along regional lines and could provide basis for benchmarking with other regions. GWCL uses competitive bidding with due diligence for the procurement of goods, works and services. Ghana now has a public procurement Act, 663, of 2003 that GWCL, must comply with [110]. Since 1994, there have been attempts to increase private sector participation in urban water supply delivery as part of the institutional reform. Initially, it was envisaged that the PSP would increase market orientation in two ways. First, the selection of the private operators would be competitive and secondly, two operators were to be selected, which, would provide opportunity for comparative competition. However, the PSP that has been implemented is a management contract with a single operator. Thus the Ghana Government has missed an opportunity of having comparative competition in the sector, which would have been a driver for efficiency. The existing level of market orientation in GWCL functioning is low with room for improvement.

Customer-orientation

One way of getting to know customer preferences is through customer surveys. GWCL periodically seeks the opinions of the customers through customer surveys. The first and second customer surveys conducted by GWCL were carried out only in Accra. The third one was conducted nationwide in April 2004. The objectives of the survey included getting customers' perception and updating the customer inventory or records to get the true customer strength. PURC as part of its regulatory role has requested GWCL to establish customer service centres in all district offices. Customers can make complaints in person, by phone or through GWCL staff e.g. the meter reader. The use of the Internet for complaints is non-existent and the majority of customers make complaints in person and very few use the telephone. In addition, all GWCL offices take complaints but if customers are not satisfied they can inform PURC.

A GWCL customer charter was prepared in consultation with PURC (in draft form in April 2003), which spelt out the roles and rights of GWCL and its customers. The customer charter incorporates compensation payments in case the utility fails to meet its obligations. Water bills are usually paid at GWCL district offices. Recently the option of paying in banks and post offices has been introduced. GWCL actively

informs customers about changes related to service provision through flyers, television, newspaper advertisements, and radios. GWCL also have Public Relations Officers in all the regions to create public awareness on GWCLs activities. Opinions of customers are also reflected in public media such as television, radio, and newspapers.

There is a central point for lodging complaints concerning faulty systems in Accra. There is a 24-hour faults and emergency unit that is linked to the fault room. According to [14] the tariffs provide only 40 % of the cost of the water supply with almost all other investments funded by the Government. This means, government is providing most of the funding requirement and not the users. This probably explains the low customer orientation by GWCL and relatively high political orientation. The options for service delivery that GWCL provide are in-house connection; yard taps, communal stand pipes and public stand pipes.

The level of customer involvement in water supply decision-making is low. The main mechanisms are through the customer complaints, public hearing on tariff proposals, durbars, and customer representation on the GWCL board. However, PURC has intentions of forming customer service representatives in all GWCL supply areas [111]. When these initiatives are implemented, customer involvement and empowerment would increase and contribute positively towards the development of the water supply sector.

Decentralization of authority within the utility

Five layers of management separate the top management from the entry-level worker (Figure 7.12). But it is relatively flat in practice especially from regional chief managers to Deputy Managing Director (DMD) operations. There are authority limits, with financial limits, which dictate the level where, the decisions are taken. The procurements of goods, works and services may be procured at the regional office or at the head office depending on the amount involved. In 2003, the regional chief manager had a ceiling of 50 million cedis (US $ 6,000) without referring to the deputy-managing director of operations, whilst the Managing Director had a ceiling of $ 30,000. Consequently, the procurement of meters and chemicals for example is usually done in the head office because of the amount involved. The head office has a projects division under the planning and development department responsible for capital investment. Each region has a project engineer responsible for the capital investment in the region.

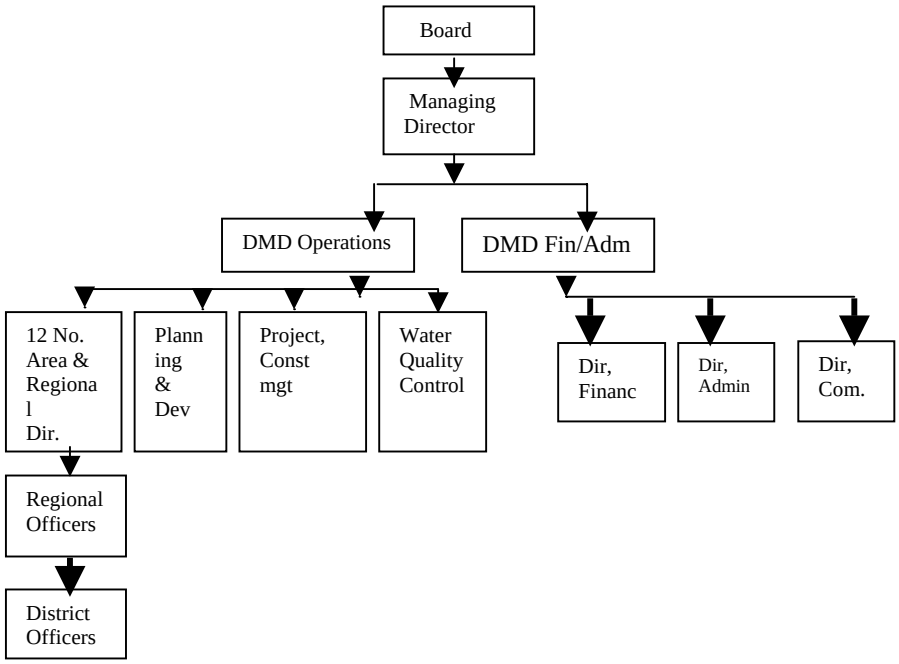

Figure 7.11 Simplified Organisational structure of GWCL

The setting of water tariffs and connection fees are determined by GWCL (head office) and subjected to PURC approval. The decision concerning loan agreements (decisions about capital sourcing) is done at the head office level. The appointment of an external auditor is done at the head office with the approval of the board of directors.

Human resource management is generally centralised in the head office. Hiring of staff members is centralised and requires prior approval from the Managing Director. The head of the human resource division reports to the Chief Manager Administration who also reports to the Deputy Managing Director, Finance and Administration. The head office is responsible for promotion and demotion of individual staff members, staff transfers, and determination of salaries and incentive structures of employees. However, some categories of staff may be recruited at the regional level such as temporary staff. And the promotion of some junior staff may be done at the regional levels.

The operations of the urban water supply systems are decentralised at the regional level. Field (district) staff has decision-making powers in maintenance, repairs and in some cases also in customer care. The district office has the authority and responsibility to maintain, repair and partly address customer issues. However, the

districts are expected to inform the regional chief manger of their activities.

The decision on customer management is taken at the head office level. For instance, the decision to establish the alternative ways in which bills can be paid is done at the head office. As a result, water bills can now be paid through some banks and the post office. However, the actual interaction with the customers is done at the regional and the district levels.

The GWCL structure is highly centralised and affects the speed of response in decision-making and implementation. The level of decentralisation within GWCL is not backed with mechanisms that would enhance the performance such as benchmarking and internal accountability for results.

Internal accountability for results

GWCL reports to MWH through the Board of Directors appointed by the Government. The Board of Directors is required to approve the annual plans, budget, salaries and other requests (such as loans) made by GWCL management. The Board of Directors also ensures that GWCL meets its performance targets set by PURC and the SEC. If GWCL meets the SEC performance targets, then the Board may recommend bonus to be paid to the management and staff of GWCL. The Board of Directors meet monthly where the MD and the workers' representatives, who are members of the Board, attend. Rewards are applied to the service provider (management and staff) for achieving specified performance targets, but no penalties have been applied so far for poor performance. There are regional performance targets derived from the overall target but not individual targets with rewards and penalties for the staff. There are incentives for the aggregate performance of the utility or for a department but not for individual staff. Penalties have never been imposed but GWCL has received bonuses on two occasions.

The indicators provided by the regulatory agencies SEC and PURC are the performance targets. GWCL does not employ (internal) performance contracts (either personnel contracts or contracts between departments). The incentive system works has so far worked in one direction for GWCL to be rewarded when it achieved its performance, but has not yet been punished for failing to achieve its targets. The performances of the employees are evaluated annually, first by the immediate superior, and then by the departmental head.

Another perspective of the internal accountability was measured by the subjective performance description provided by GWCL staff. The results of the same Subjective Performance Descriptions survey described in chapter four confirmed the low internal accountability for results as shown in Table 7.3. The results in Table 7.3 show a low level of internal accountability within GWCL. The staff of GWCL perceived individual staff accountability for getting work done according to agreed performance indicators not to be high but rather between low and fair (Table 7.3).

Table 7.3 Internal accountability within GWCL

INTERNAL ACCOUNTABILITY MEASURES	HO	ATMA	*AR*	NR	Ave
Leadership Identifies clear performance standards both at the institutional and personal levels and is strict but fair, gives positive and negative feedback where due	3	3.2	*1*	3.4	2.6
Managers communicate roles and expectations; clearly to others and involve them in defining their roles and responsibilities; they promote teamwork	3	3.5	*1.5*	3.4	3.3
Managers regularly set goals with staff and have a sense of priorities	3.4	2.8	*1.5*	3.1	3.1
Departmental/section objectives and performance indicators are clear and understood by staff and achieved at the desired level of quality	3.2	3.3	*1*	2.8	3.1
Staff are held accountable for getting work done according to agreed performance indicators	3.2	2.8	*1*	2.8	2.9

Ranking: 1-very low, 2 –low, 3 –fair, 4 – high, 5 very high
Key: HO - Head office, ATMA - Accra Tema Metropolitan area, AR - Ashanti Region, NR - Northern Region, Ave - Average score

Summary of GWCL Performance

The assessment of the verifiable performance indicators revealed poor performance of GWCL with respect to effectiveness (coverage of 60%) and efficiency (NRW of 50 % and BCE of 75%. GWCL was also unable to reach an acceptable level of performance compared with the PURC and SEC targets. Meanwhile there were efforts such as the performance contract with the SEC and targets with PURC to improve its performance. A summary of the contributory factors for the performance indicators measured are summarised in Table 7.4. using the framework provided by Bakker and Cameroon [112].

From Table 7.4 the factors affecting the performance of GWCL can be classified as internal factors (financial, capacity and governance) and the external factors (political, economic and demographic), which are now discussed.

A combination of financial, capacity and governance factors are responsible for the low water supply coverage. GWCL has over the years suffered from inadequate investments to build new facilities and rehabilitate old ones to sustain and increase water supply. The main sources of funds are from GWCL own sources, government and external support agencies. The funds from GWCL's own source, that is water revenue is not adequate as the tariffs are below cost recovery levels, bill collection

efficiency is low and the non-revenue water is high. The government has not been unable to provide sufficient funding to fill this gap. Funding from government is also not adequate because of the economic situation and inadequate government financial commitment to water supply. Consequently, GWCL is unable to fund both capital and operation activities at the required level resulting in years of under investment.

Another reason for the low tariffs is attributed to the prevailing economic situation for a low-income country where 47 % of the population lives below US 1 per day [36], leading to social concerns, especially for the poor. The argument for keeping tariffs low is to make the services affordable so that the poor can access reasonable amount to satisfy their basic needs. However, most of the poor customers do not derive direct benefits from the network and end up paying exorbitant prices.

At another level, funding from the external support agencies earmarked for urban water supply was linked or tied to the implementation of the private sector participation, which delayed unduly. GWCL tariffs under PURC regime are much better but the years of under investment are still felt and reflect in the present state of the system. Given the required financial resources needed by GWCL to keep existing systems financially viable and also provide water to the un-served, trying to use funds from existing low tariffs to solve this problem is simply impossible. For instance, the non-revenue water, which has consistently been unusually high, is partly attributed to low metering ratio (lack of funds to procure more meters) leading to poor estimation of water consumption in un-metered premises and old infrastructure.

Another equally important factor affecting the low coverage is the absence of clear policy, strategy and mechanism to ensure universal coverage. Even though the Act establishing GWCL and the draft drinking water policy supports universal access to water supply, GWCL does not have adequate mechanisms in place for achieving universal coverage. GWCL is officially allowed to provide water services to only areas with approved by the planning authorities where appropriate layout. However, some settlements are rather informal without approved layout. Further to this the capacity to provide services to informal settlements have not been a core competence of most formal utilities including GWCL. The high population growth rate of about 3 %, which GWCL has no control on, also influences affects the achievement of universal coverage.

Table 7.4 Summary of possible reasons for GWCL poor performances.

Indicator	Possible reasons for GWCL poor performance			
	Internal factors			External Factors
	Financial	*Capacity*	*Governance*	
Coverage	Inadequate investment. Low tariff Inadequate revenue.	Inadequate technical capacity		High population growth rate Low Political will.
Non Revenue Water (NRW)	Inadequate funding to maintain the infrastructure	Inadequate technical capacity to reduce leakage and commercial losses	Limited commercial orientation Inadequate accountability and incentive system	
Bill collection efficiency	Inadequate revenue	Inadequate management capacity	Inadequate accountability and incentive system Poor customer orientation	Non payment by government agencies
Current ratio	Inadequate revenue		Poor commercial and customer orientation	
Return on fixed assets	Inadequate revenue		Poor commercial and customer orientation	
Customer Management	Inadequate revenue		Inadequate commercial and customer orientation Inadequate accountability and incentive system	
Customer satisfaction			Inadequate customer orientation Inadequate accountability and incentive system	

GWCL need resources such as skilled personnel to deliver sustainable services.

The factors contributing to the poor efficiency of GWCL measured by NRW and BCE include financial, technical and managerial capacities and governance. The financial factors are as explained above concerning the low coverage. Technical and managerial capacities are essential for GWCL to improve its performance. The interviews with the key informants mentioned that the high NRW and low BCE figures over the study period is also partly due to low technical and managerial capacity of GWCL, which contributes to the low efficiency and effectiveness. In addition, there are also institutional problems such as the informal areas, which by their nature do not have approved layout and in principle utilities cannot be provided.

The governance factors within GWCL negatively affecting its performance are inadequate accountability, poor customer orientation, and inadequate autonomy of GWCL. The low bill collection efficiency and high receivables is attributed to poor customer orientation that affects bill payment and inadequate accountability mechanisms for GWCL to collect the revenue. The low customer orientation produces unsatisfied customers who are not willing to pay for services promptly. Customer voice and empowerment as part of customer orientation is low. The level of accountability demanded from GWCL by its clients and customers is very limited and does not enhance performance significantly. The key informants indicated that the accountability relationship between MWH and GWCL is weak, with virtually no incentive mechanism. Also, the performance contract with SEC has not been effective and has not resulted in significant performance improvement. A number of reasons were mentioned for the poor outcome of the performance contract. The nature of the agreement, obligations of the parties and the key assumptions make its enforcement difficult. There are no effective mechanisms to ensure that Government honours its part of the contract. The incentives for achieving the targets are weak. The performance contract does not insulate the utility (GWCL) from political interference, which makes it difficult for SEC, and for that matter the Government to hold GWCL/MD responsible for non-achievement of the targets. The level of market orientation in GWCL is limited and could be increased especially by the introduction of benchmarking, which could drive efficiency by comparing systems of similar characteristics (such as size and technology).

GWCL has not been able to deliver services in an equitable manner. With the low water coverage, a significant proportion of the population does not have access to GWCL services. This includes both the poor and rich. There is no formal mechanism to exclude the poor or women per se except that the connection cost could be a barrier to access for the poor in areas with the network. Potential GWCL customers (both rich and poor) without direct access to GWCL services have to resort to other informal small-scale providers, where the cost is exorbitant and water quality cant be guaranteed because of the long supply chain.

Fortunately, GWCL tariff structure is uniform for all customers throughout the country. However, the lifeline tariffs, which in essence is a subsidy across board for basis needs benefits big consumers, who are usually the high-income customers (discussed in detail in chapter nine).

With respect to sustainable water services from GWCL, financial and technical sustainability are critical issues, which were found to be inadequate. The financial indicators measured as part of the verifiable indicators revealed poor performance respect to profitability, liquidity and leverage indicators. In addition financial sustainability from user fee is also inadequate, as we will see in chapter 9. The support from the countries development partners, the external support agencies over the years have resulted in different drinking water supply equipment from all over the world making acquisition of spare parts and repairs rather difficult. As an example, one of the headworks for water treatment now has three different set of equipment from different countries from three bilateral donors at different periods.

The external factors hindering GWCL performance are political interference, low political will and commitment and demographic factors. GWCL though autonomous is still subject to undue political interference that encourages the maintenance of the status quo, which is not sufficient to break through the performance ceiling. Political will and commitment is essential to make resources available from the government for the sector. The high population growth rate of about 3 %, which GWCL has no control on, also influences its performance.

Conclusions

Since 1990, the performance of GWCL has been poor as it failed to deliver water supply services in a sustainable, equitable, efficient and effective manner. The coverage has been consistently low (now 60 %), NRW of 50 % and BCE of 75%. In contrast, Ghana neighbouring Cote d'Ivoire has a NRW of 15 % and BCE of 97 %.

GWCL achievement with respect to universal coverage, cost recovery and equitable delivery of service differs from the policy goals.

The factors contributing to GWCLs performance include a combination of financial, capacity and governance issues. With respect to the financial factors, inadequate funding for investment and low water tariffs has continuously and consistently characterised the sector. The poor performance also points to inadequate technical and managerial capacity of GWCL as was also confirmed by some key informants. For instance high non-revenue water and low bill collection efficiency are clearly technical challenges.

The NPM factors, namely accountability for results, autonomy of GWCL, customer and market orientation needed to drive GWCL efficiency, are inadequate to deliver its mandate of universal coverage in a sustainable, equitable and efficient manner. In addition, the market orientation with a single operator is not adequate to drive performance. In fact it defeats on one the objectives of the market led approach in the urban water supply delivery for enhancing competition and getting optimal benefit from the market. Creating multiple service providers would increase the drivers for performance but enhancing yardstick competition.

Chapter Eight

Small towns water supply

Contents

Introduction

The small towns' water supply sector, which is a part of the community water supply sector, is the focus of this chapter. The sector counts about 300 small towns' water systems serving about five percent of the Ghanaian population. The sector is characterised by low per capita income, low human resource capacity, low revenue, poor remuneration and dis-economies of scale that threaten long-term sustainability of the water systems [101]. The main economic activities in these small towns are farming and petty trading, with limited job opportunities.

This chapter focuses on the performance of the small towns' water supply sector. The small towns water sector consisting of CWSA, District Assembly, DWSTs, WSDB, and Customers is analysed using the NPM framework. The functioning of the small towns' water systems is examined with respect to its corporate culture and financial sustainability. Finally a case study on private sector involvement in the small towns water supply is discussed after which summary of the findings are presented.

NPM Factors in the Small Towns Water Supply

External autonomy for the service providers

The Community Water and Sanitation Agency (CWSA), which is the facilitating agency for small towns' water supply provides standards, guidelines and strategies for the smooth delivery of services. CWSA has guidelines for tariff setting, operations and maintenance, and design of water systems. The Ghana Standards Board (GSB) provides the standards for drinking water quality, which all the service providers must comply with. The Environmental Protection Agency (EPA), under the Ministry of Environment and Science is charged with environmental regulation and requires the preparation of environmental impact assessments for infrastructure projects. The Water Resources Commission (WRC) is responsible for water resources management and grants abstraction permits for raw water use.

The District Assembly (DA) is the authority with responsibility for infrastructure provision, which includes water supply within their district. Section 15 of the District Assembly Act allows the delegation of functions other than legislative [100]. Accordingly, the DA has delegated the overall management of the small towns' water systems to the Water and Sanitation Development Board (WSDB) through a byelaw. The WSDB, which is made up of selected community representatives, has the authority, subject to the approval of the DA, for all decisions on the small towns' water supply. The WSDB exercises strategic control of the operations, hires (recruits) and fires the operating team, and provides oversight on the activities of the operating team. The DA is responsible for supervising the activities of the WSDB.

The WSDB sets the water tariff in consultation with the community members. The DA is required to regulate tariff and water quality in the district. The service provider

(WSDB and the operating team) is allowed to terminate water supply to bill defaulters. However, it is much more difficult to disconnect sensitive institutions such as hospital/clinics, police stations and schools. In a small town, Juaso, in Ashanti region, the WSDB disconnected water to the Chief for not paying his water bill for six months.

The WSDB can in principle recruit the required personnel but in most cases qualified staff have not been recruited, probably because of inadequate funds to pay competitive rates and lack of readily available skilled personnel in the local area. The small towns water service providers have a high degree of autonomy that contributes positively to its performance. The WSDB as the community representatives can make decisions and implement them without external interference. This is a plus for the small towns sector as it provides a flexible approach for the management of the system.

Accountability relationship between actors

The Community Ownership and Management (COM) concept for the community water supply sector has a number of in-built accountability relationships. The community members (also customers and beneficiaries) are empowered as part owners to demand accountability from the DA and WSDB. There are also regular community fora for the WSDB to present progress of their activities to the community. At such gatherings, the community members are free to ask questions on water supply services. The DA that delegated its management responsibility to the WSDBs also demands accountability from the WSDBs. The Government through the External Support Agencies (ESAs) contribute most of the capital cost and the government agency CWSA, demands accountability from the DA and the WSDBs on behalf of the Government of Ghana. The accountability mechanisms between the service providers and their task environment are illustrated in Figure 8.1.

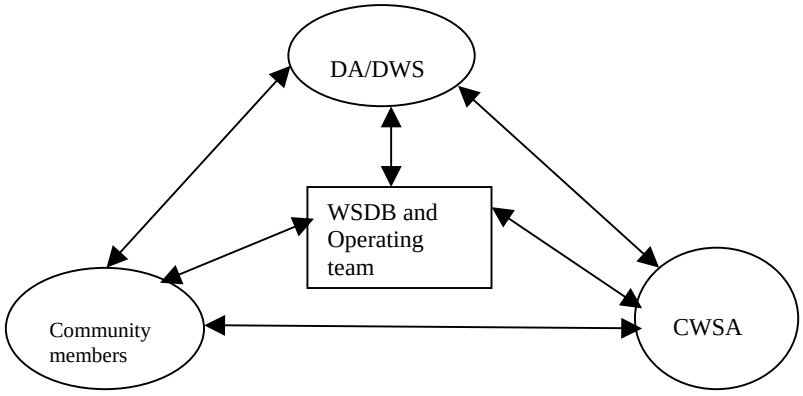

Figure 8. 1 Accountability relationships in the small towns' water sector

The operating team, headed by the technical managers are required to submit periodic operational reports (monthly, quarterly and annually) to the WSDB. The WSDBs are required to forward copies off these reports to the DA and the CWSA. The WSDB is expected to submit audited accounts to the DA. They are also required to have periodic meetings (twice a year) with the community members to inform the community of status of the system, its activities and finances and also to get the communities consent on some decisions. The effectiveness of the accountability systems depends on the extent to which these accountability relationships are enforced. From the discussions with the 19 WSDB chairmen on WSDB meetings with the community, six WSDB did not meet with their respective communities, six WSDBs met with their communities once in the last 12 month and seven WSDBs met with their communities twice or more within a period of 12 months (Table 8.1).

The community that selected the WSDB members can in principle terminate their appointment for non-performance in accordance with the constitution of the WSDB. Unfortunately, from the fieldwork conducted it was noted that most of the WSDB members that were removed before their tenure of office was due to political factors. These were very common after the change in national government in 2000, where a significant number of small towns had their WSDBs re-constituted. For example, in Bekwai (a small town) the WSDB was suspended by the District Chief Executive of the DA because of complaints by some community members. The intervention of the Bekwai Chief resulted in the re-instatement of the WSDB when the allegations against the WSDB were found to be false. This means that the community could use its role in selecting the WSDB positively to enhance service provision or negatively to hinder service provision.

The WSDB derives its authority from the DA and thus requires approval for major decisions such as water tariffs. Consequently, the DA can institute some incentive mechanisms to ensure that the WSDBs perform. However, the relationship between the WSDB and the DA lacks appropriate incentives to make it effective. For example, five out of 19 small towns' water systems did not submit the relevant periodic reports to their respective DAs in 2003 (Table 8.1) and there were no sanctions. The WSDBs reported that the DA often do not analyse their submitted reports to provide feedback. The DA also do not have monitoring teams or systems in place to analyse the activities of the small towns' water supply, to provide useful advice on its operations or sound a warning when the system is not being managed properly.

Also similar to the case of the DA is the CWSA, which does not have adequate mechanisms to ensure that the small towns' water service providers submit the required operational reports. Furthermore, there are no structured mechanisms in place to have the data analysed for comments and feedback to get to the service providers. This may be due to the fact the CWSA is a facilitating agency with the mandate to assist the DA, whilst the WSDB is an autonomous Board with no strong allegiance to CWSA. With respect to routine reporting, only three out of 19 WSDBs interviewed submitted the routine (operational and financial) reports to CWSA and only five had their accounts audited as illustrated in Table 8.1. So a number of

accountability measures have been introduced.

Table 8.1 Accountability measures in the small towns water service providers

Small Town	WSDB				
	WSDB term of office (in years)	Meeting with community /year	Submission of report to DA	Submission of report to CWSA	Auditing of account
Goaso	2	0	No	No	No
Drobo	2	1	Monthly	No	No
Bechem	3	1	No	No	No
Attebubu	2	2	Quarterly	No	No
D-Nkwanta	4	0	Annually	Yes	No
kuntenase	4	2	Quarterly	No	No
Awisa	3	2	Annually	No	No
Kenyasi	2	4	Quarterly	No	Yes
Ejura	2 + 2	0	No	No	No
Sekyeredumasi	2 + 2	1	No	No	No
Kintampo	2	1	Monthly	Yes	Yes
Salaga	4	0	Quarterly	No	Yes
Bimbilla	4	1	Monthly	Yes	Yes
Wiamaose	-	4	Monthly	No	No
Nalerigu	3	0	Annually	No	No
K'Danso	2	4	No	No	No
Mankranso	4	1	Quarterly	No	No
Derma	2	2	Quarterly	No	No
Bole	3	0	Monthly	No	Yes

Source: Fieldwork

Market and customer orientation

The activities requiring specialised skills including routine maintenance of electrical and mechanical equipment (for example pumps, motors and generator sets) are usually out sourced. Recently, there have been initiatives to involve the private sector in some of the core water supply activities like operations and maintenance and bill collection. As at 2004 there were four small towns (Bekwai, Attebubu, Wasa Akropong and Enchi) water supply systems where the WSDBs have signed management contracts with private firms for the operations and management of their water systems. These are relatively new, except the management contract in Bekwai, which started in 2002. The Bekwai experience is discussed in section 8.5, where it illustrates an example of a management contract that has improved water supply delivery.

From the fieldwork, the customer orientation in the small towns' water supply

sector is reasonably high. The community ownership concept provides for community members to assume positions as owners, managers and customers. The community members are involved in decision making through the community meetings. The customers can approach the operating team or WSDBs with a suggestion or complaint. The community members selected the WSDB members and if not satisfied with their performance, could terminate appointment of WSDB members. The community members as beneficiaries and customers can also make complaints to the district assembly. There are instances where sections of the community sent their grievances to the District Chief Executive (DCE) of the DA and received the necessary attention. The customer orientation is high and contributes positively towards the performance of the sector.

The Small Towns Water Supply Providers

The small towns water service providers are examined with respect to their corporate culture, which provides background information for the subsequent analyses of small towns sector. This is followed by an analysis of the financial sustainability of selected small towns water supply systems. Finally, analysis of the human resources capacity within the small towns water supply sector is presented.

Corporate culture

The day-to-day operations of the water system are the responsibility of the operating team appointed by the WSDB. The operating team consists of a technical manager, operator and accountant as the key personnel together with some support staff. A description of the functioning and institutional arrangement for the small towns' water supply systems was presented in chapter 5. Most of the WSDB members were constituted during the construction phase of the water system where they worked on voluntary basis. The work of the WSDB in managing water supply delivery is still voluntary but in many systems, they receive a sitting allowance of US $ 2.5 per sitting in 2002.

The general level of professionalism within the small towns' water supply sector is low, especially with respect to getting systems and procedures in place for the provision of water supply services. Almost all the small towns' service providers do not have vision and mission statements. Most of the operating staffs were appointed without formal appointment letters. Out of nineteen technical managers (head of the operating team) interviewed only three of them were given appointment letters out of whom two had the conditions of service clearly spelt out. As such, most of the technical managers are not well motivated. In one of the small towns' the technical manger complained that the WSDB has not recruited other key personnel making him extremely overworked. He was responsible for everything from source (borehole), distribution (repairs pipes) and collection of revenue.

The salary levels for the operating staff are fixed by the WSDB and are generally low compared to the Ghana government salary scale. In some of the small towns' water systems, the social security contribution and income tax obligation of the operating staff have not yet been implemented reflecting the semi-formal nature of their activities. Also, due to the voluntary nature of the WSDBs work some members resigned and took appointment as operating staff to earn income.

Training of the service providers (i.e. WSDB and the operating team) is usually facilitated or provided by CWSA. Initially, it was at no cost to the service providers and most small towns' representatives participated. Currently, the small towns' are required to pay a part of the training cost. The government through CWSA and External Support Agencies are providing 70 % of the training cost and the small towns are required to pay 30 % of the cost. Unfortunately, this has adversely affected the participation of the WSDB members and the operating staff.

The corporate culture in the small towns water service providers fits a semi formal organisation, which lack basic systems and procedures required for the organisation to function well. For instance, when staff does not have pension schemes it affects motivation, which will reflect in their output and also dictates the calibre of staff that will be willing to work.

Financial sustainability

In contrast to the indicators used for GWCL, it was difficult to come up with comprehensive indicators because of the differences in the small towns' water systems in terms of the size, technology use and their management models. The small towns used for the survey covered all the three representative regions for the study as shown in Table 8.4. It includes Aveyime small towns water system relying on surface water source and Bekwai small towns water systems with a private operator. The population, age and type of the systems used are indicated in Table 8.2.

Table 8. 2 Small towns systems

No	Town	Region	Population	Age[6] of system (years)	Type of system
1	Bimbilla	Northern	20,000	4	Mechanised Borehole
2	Avenui Awudome	Volta	2,088	7	Mechanised Borehole
3	Aveyime	Volta	5,000	4	Dam
4	Afiadeyengba	Volta	5,000	3	Mechanised Borehole
5	Bekwai	Ashanti	28,000	2	Mechanised

[6] Age since construction or rehabilitation of the water system.

					Borehole
6	Kuntenase	Ashanti	3,024	2	Mechanised Borehole
7	Juaso	Ashanti	8,421	2	Mechanised Borehole
8	Manso Nkwanta	Ashanti	2,591	2	Mechanised Borehole
9	Wiamoase	Ashanti	12,677	2	Mechanised Borehole
10	Mankranso	Ashanti	5,044	2	Mechanised Borehole

From the survey the following observation were made. First, there were no standardised formats in use for the water supply systems to record the operational data. Secondly, many of the small towns did not have
adequate mechanisms to properly record data. As a result, only the systems with reliable data were used for the analysis (see Table 8.2)

The information collected from the survey was used to determine the water tariffs required to achieve two different cost recovery objectives, namely, the recovery of only the operation and maintenance cost and the recovery of the water supply cost (recovering capital expenditure in addition to operational expenditure). These were then compared to the actual tariffs being charged in the water supply systems.

The annual operation and maintenance cost was calculated using historical records. Many of the water systems were not conducting routine water quality test. As such, the cost for water quality testing was determined from existing charges from

GWCL water quality laboratories. The average tariff was found to be generally higher than the unit cost of operation but substantially lower than the unit cost of supplying the service (Figure 8.2). The average tariff was calculated as the total annual revenues divided by annual amount of water sold. The unit operational cost was determined as the total operational expenditure divided by total annual volume sold. The operational costs excluded depreciation, interest and debt service.

The unit cost of supply was measured as the total cost of supplying the service (capital expenditure and operational expenditure) divided by total annual volume sold.

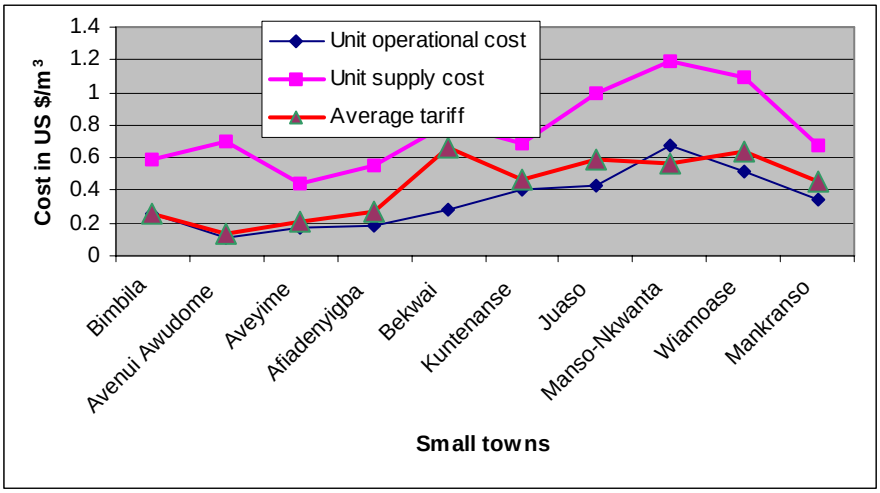

Figure 8. 2 Tariffs and cost of selected small towns systems

From figure 8.2 it can be concluded that the existing tariff ranges from US $ 0.1/m^3 in Avenui Awudome to US $ 0.6/m^3 in Bekwai. The tariffs required for recovering the water supply cost range from US $ 0.45/m^3 in Aveyime to US $ 1.2/m^3 in Manso Nkwanta. The high tariff required to recover the supply cost in Manso Nkwanta is due to its small population of 2591 (Table 8.4). All the water systems with the exception of Manso Nkwanta, representing 90 % of the systems, are recovering the operational expenditure with the existing tariffs. Bekwai is the only water system with the tariffs significantly higher than the operational cost. The tariff is US $ 0.67/m^3 whilst the operational cost is US $ 0.28/m^3 and the water supply cost is US $ 0.81/m^3. All the other systems are barely re-covering only the operational cost.

Full cost was not recovered by all systems, meaning there is the need for clear mechanisms to ensure the long-term sustainability of these systems. The CWSA policy for the small towns' states that tariffs should be set to recover all the cost but clearly this is not achieved.

Human Resource Capacity

The availability of human resource for water supply delivery is important. This is even more important at the local level for small towns' water supply. Therefore, the human resource capacity of the main institutions at the local level responsible for water service delivery, which are the WSDB and the operating staff are analysed and reported. The qualification and previous employment/experience of WSDB chairmen, technical managers and accountants or accounts clerks of the water system were used to measure the human resource capacity of the water service delivery in the small

towns. These are now discussed starting from the WSDB chairmen, Technical manager and the Accountants.

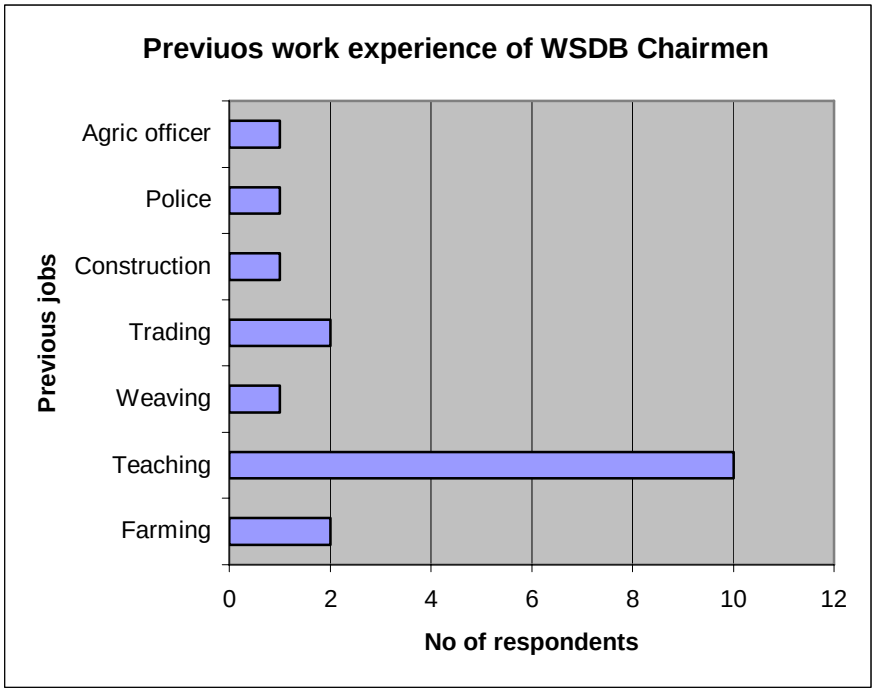

Figure 8. 3 Previous work experiences of the WSDB Chairmen

The educational levels of the WSDB members are generally low; some WSDB members are without formal education and illiterates. At a training course organised in September 2003 at KNUST for WSDB chairmen, seven participants out of 27 who attended were representing their illiterate chairmen. The previous working experience of the WSDB members varied widely (Figure 8.3). The selection criteria for the WSDB members do not specify minimum formal education qualification or experience. However, as expected it was reported during discussions with the WSDB members that the capacity (qualification and experience) of the WSDB in general and the chairman in particular affect the performance of the Board and ultimately service provision.

The WSDB members mentioned that during the water supply project preparation they were not adequately informed of the enormous responsibilities of the Board. They were rather informed that any community member selected by the community was sufficient for the task. The WSDBs indicated that when WSDB members and especially the Chairperson are educated it helps in the execution of their function.

This was confirmed in some small towns such as Afiadenyigba in the Volta region where the chairperson was a Teacher and they were doing very well. In cases where members have the required skills, performances have been exceptional [113].

The Technical Managers are responsible for managing the operations of the water system**.** The technical managers are expected to have appropriate technical skills to ensure the smooth operation of the system comprising pumping station (s), boreholes, reservoirs and pipe network with the necessary appurtenances. The qualification and previous work experience of the technical managers shown in Figures 8.4 and 8.5 indicate that the technical managers are coming from diverse backgrounds with majority not having prior experience to deliver the technical expertise required. Many of the Technical managers were teachers. The work experience of the rest of the Technical managers varied. It included farming, business, plumbing, auto mechanic etc. This makes the need for training and refresher courses important. All the technical managers had formal education as illustrated in Figure 8.5.

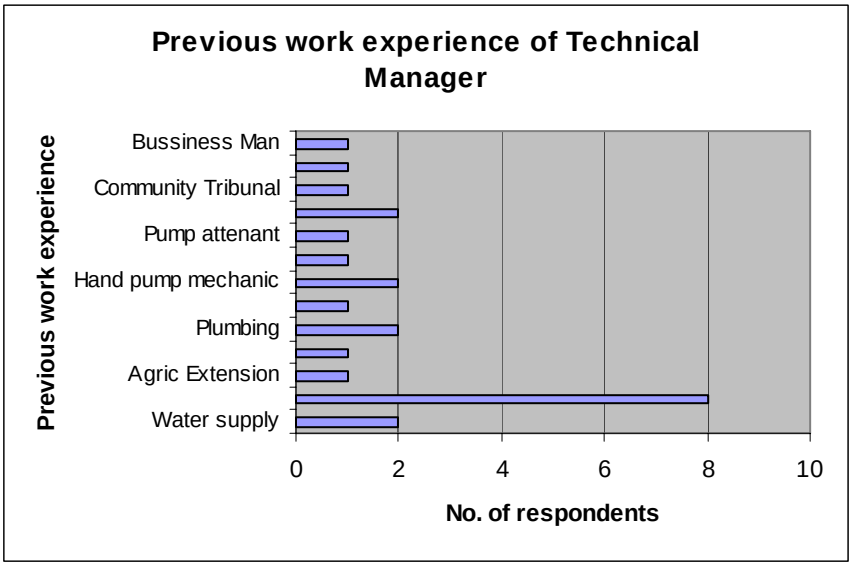

Figure 8.4 Previous work experience of the Technical managers

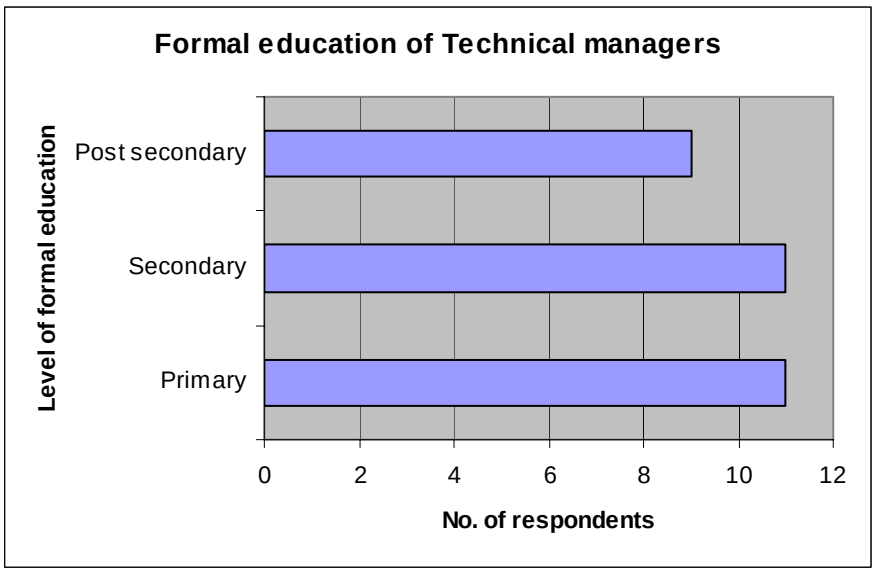

Figure 8.5 Qualification of the technical managers

The qualification and previous work experience of the accountants are shown in Figures 8.6 and 8.7. It shows that, apart from the revenue collectors and environmental health assistants working as water system accountants, the majority have accounting related backgrounds. Only two out of 16 had post-secondary education. From the fieldwork conducted there were problems with the accounting records, as the records were not following a single format. It was also difficult to get historical data.

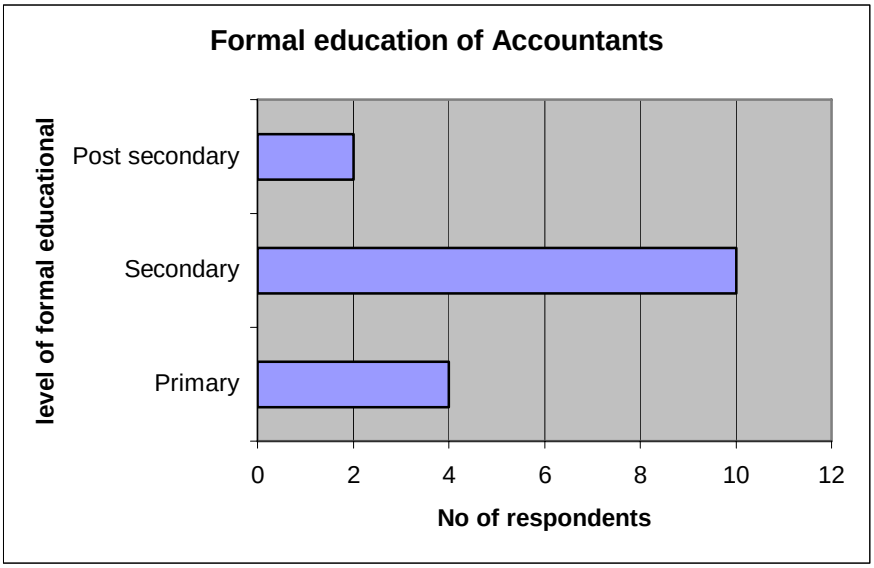

Figure 8. 6 Formal educational qualifications of the Accountants

Training of the WSDB members and the operating team of the small towns' water supply sector are essential for sustainable operations. Based on the formal educational qualification and previous work experience of the WSDB, technical managers and accountants, the human resource capacity needs to be strengthened.

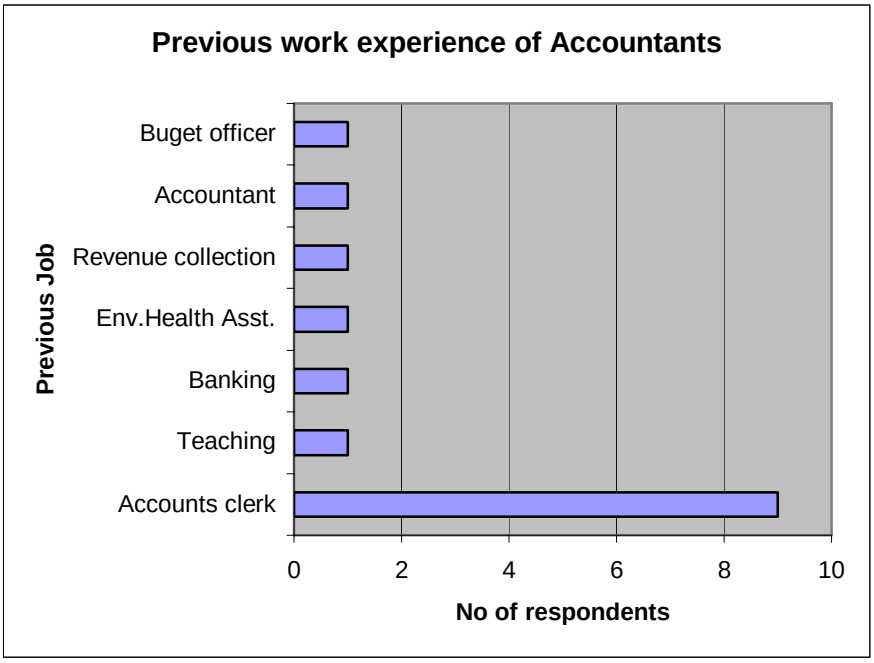

Figure 8.7 Previous work experiences of the Accountants

As mentioned already, CWSA was initially organising courses at no cost to the water systems staff. However, the WSDBs are now required to contribute 30 % of the training cost as part of measures to ensure sustainability. Since then participation in the training programmes has reduced significantly and CWSA has therefore informed the district assemblies that participation in training programmes would be used as criteria for support, which is expected to enhance participation. The human resource capacity of the small towns service providers are generally weak affecting the performance of the sector.

Equity and Pro-poor focus

Assessments of how equitable services are delivered were conducted at two levels, at the community as a unit as well as within the community for individual consumers. The first part examined the mechanisms in place to ensure that all community have equal opportunities of getting small towns water services. The second aspect examined the mechanisms to ensure that poor and vulnerable consumers were not left out or excluded from the service.

The approaches for delivering small tow water service rely on demand driven approach where small towns that do not demand water service are left out. The criteria for selecting communities or towns are based on factors such as: Poverty,

existing water sanitation facilities, water related diseases, community commitment/time since last application, expressed willingness of community members to contribute 5% of capital costs (demand).

The arrangement in place for ensuring accessibility for the poor varies from place to place because of the level of decentralisation. Also, the water service delivery in the small towns is flexible, allowing community based solutions to the local problems. In was realised in there were arrangement in most places for the aged (elderly) to get water services. In most cases, water for vulnerable consumers was at not cost to them. The community members through their representatives the WSDB made all these arrangement.

With respect to gender issues, the small towns policy was explicit on it. The implementation strategy of the project places a lot of emphasis on equal participation by men and women in all key community decisions and commitments on projects and their related activities. The WSDB, which is selected community members for managing the water facility, is expected to be gender sensitive with at least 40 % being women. This was to ensure that community decisions take into account the different priorities and interests of both sexes in improvements to be made.

Case Study of Local Private Sector Involvement

Introduction

This case study on private sector involvement in the small towns water supply was conducted as part of the study to provide insight on increased market orientation, which is one of the NPM principles. It describes and analyses the private sector involvement with special reference to Bekwai small towns water supply. The PSP in the small towns was initiated when more than 100 small towns (previously managed by Ghana Water Company Limited) were transferred to the DA for community ownership and management in 1997 and the challenges of direct community management increased significantly. This was mainly due to the nature of some of the transferred systems, which made direct community management difficult. These systems were relatively big with large customer base. Some of the systems were technically complex with conventional treatment systems.

Consequently, partnership with the private sector, which combines the strength of community management with private sector expertise and resources, was advocated as a viable alternative/option to improve sustainability of the systems. A number of attempts were made to involve the local private sector in the management of small towns' water supply. This resulted in management contracts for the small towns' water supply systems in Bekwai, Atebubu, Enchi and Wassa Akropong. This section describes the Bekwai Private Sector Participation (PSP), which is the oldest and highlights some of the positive aspects in terms of the performance improvement attributed to the new public management factors.

Procurement of the private operator in Bekwai

Background

The Government of Ghana and the Community Water and Sanitation Agency (CWSA) with support from the European Union (EU) selected 32 small towns water supply systems for rehabilitation and extension. During the rehabilitation phase some of the systems, which were considered sophisticated in terms of the size and technology were earmarked for PSP. Three small towns' water systems namely, Bekwai serving a population of 28,000, Attebubu serving a population of 20,000, and Wenchi serving a population of 40,000, were earmarked for private sector participation. However, in Wenchi, the PSP idea was rejected by the WSDB, and so could not be implemented.

The Bekwai water system designed for 500 house connections and about 40 standpipes is considered relatively big within the small towns water supply sector. The use of direct community management was considered inappropriate because of potential technical, managerial and institutional challenges associated with its size. Secondly, expertise for water services management, which could be obtained from the private operator was lacking at the local level.

Project preparation

The project consultants and CWSA explained the importance and the need for involving local private enterprises in the operation and maintenance of the water supply system to the project beneficiaries. The consensus building started with the project preparation for the rehabilitation of the water system. Consensus building and sensitisation was conducted throughout the project design and implementation stages (mobilising the community, conducting the engineering studies and the construction/rehabilitation phase).

The beneficiaries represented by the WSDB initially raised a strong opposition to the PSP arrangement mainly because of lack of understanding of the PSP arrangement and the WSDB initial perception was that they (WSDB) would be losing control to the private operator. The WSDB, in the year 2000, presented a resolution to the DA and the CWSA and expressed their objection to the PSP. However with continuous sensitisation, the project consultants managed to convince the WSDB of the need for private sector participation.

Procurement phase of the PSP

The CWSA head office and the consultants for the Bekwai water supply project initiated and managed the procurement of the private operator. An advertisement was placed in the national dailies for interested private firms to respond by expressing interest in operations and maintenance of small towns' water systems in 1998. The potential private operators, pre-qualified from the list of firms that expressed interest were invited to bid for the contracts. The consultants and the CWSA selected the best-evaluated bidder. With the assistance of the consultants, the WSDB and the District

Assembly negotiated with the operator. The WSDB and the Private operator then entered into an agreement, which was witnessed by the district assembly and the CWSA. The WSDB did not play a significant role in the procurement of the operator. Their involvement was minimal.

Bekwai PSP implementation phase

Contract details

The contract with the private operator was signed in April 2002 and work commenced in May 2002. At the start of the Private Operators operation, the civil engineering contractor for the rehabilitation work still had responsibility for a one-year defects liability period. The PSP arrangement is a Management contract, where the private operator is responsible for operations and maintenance. The contract duration is five years. The parties to the contract are the WSDB and the private operator whilst the CWSA and district assembly acted as witnesses.

The remuneration for the parties are as follows: The private operator retains 75% of water revenue for operations and maintenance and profit, and the 25 % is given to the community and District Assembly for renewal of boreholes and tanks (10 %), extension of the system (5 %), small scale sanitation project (10 %).

The contract also has a tariff adjustment formula, which is:

Pm = Po [0.2 + (0.2 Em/Eo) + (0.4 Wm/Wo) + (0.2Fm/Fo)]

Where:

Pm = revised tariff

Po = previous tariff

Em = price of KWh of electricity for the domestic consumer for the considered year

Eo = value of same prices for the last year

Wm = price of minimum daily wage for the considered year

Wo = value of same prices for the last year

Fm = price of a gallon of diesel for the considered year

Fo = value of same prices for the last year.

There are also penalties for poor performance. There is a performance guarantee, which is 5 % of planned income for the first year and would be given back to the operator at the end of the contract if all facilities were in good condition. The other penalties are shown in Table 8.3

Table 8. 3 Penalties for non-performance within the contract.

Description	Penalty
Non justified total interruption of the service for more than 12 hours	100,000 cedis/hour of interruption (US $ 15/hr)
Non justified interruption of the service to one or several distribution points for more than 12 hours	100,000 cedis/hour of interruption (US $ 15/hr)
Non submission of reports	10 million cedis (US $ 1600)
Non adherence to water quality standards and reporting	15 million cedis (US $ 2500)

Water pricing

The agreement/contract with the private operator (contractor) has a price adjustment formula for automatically adjusting the tariff to reflect changes in the input e.g. (electricity, labour rates etc.). However, as indicated in Table 8.4, the tariffs were reviewed on two occasions in the first six months of the operation.

After one month's operation in June 2002, the operator realised that the water bills for the customers with private connections were rather high even though the contract allowed for that. The private operator therefore initiated the process to review the tariff to lower levels indicated in the Table 8.4. Another (second) review of the tariff also became necessary after the Public Utilities Regulatory Commission (PURC) approved tariffs for the urban water sector was released. The customers in Bekwai argued that the tariff for Bekwai small towns system was far higher than the PURC tariff and demanded redress. To address the issues, the private operator, the WSDB, district assembly, CWSA met to discuss the issue and the outcome was the reduction of the water tariff in September 2002.

Table 8. 4 Comparison of Bekwai water tariffs with GWCL tariffs

	Start of PSP (May 2002)	1st review (June 2002)	2nd review (Sept 2002)	PURC approved tariff for GWCL (2002)
Stand post	100 cedis/ 18 litre bucket	100 cedis/ 18 litre bucket	100 cedis/ 18 litre bucket	50 cedis[7]/ 18 litre bucket
House connec-tion 0-10 m^3	6500 cedis/m^3	6500 cedis/m^3	5500 cedis/m^3	3000 cedis/m^3
10- 20 m^3	15,000 cedis/m^3	10,000 cedis/m^3	5500 cedis/m^3	3000 cedis/m^3
> 20 m^3	15,000 cedis/m^3	10,000 cedis/m^3	5500 cedis/m^3	4500 cedis/m^3
Connec-tion fee	750, 000 cedis plus 200,000 cedis deposit against non payment of tariff			

WSDB and District Assembly relationship

The Bekwai community members selected the WSDB members in 1997. The WSDB worked on the project for about four years before the completion of the water system rehabilitation in 2002. In the year 2000, there was a change in government and some customers who perceived the WSDB to be affiliated with the previous government wanted the WSDB to be changed. However, changing the WSDB after change in government was not only peculiar to Bekwai but to other small towns' systems as well.

It started after the system rehabilitation handing over to the private operator in 2002 with customer complaints about high tariffs and the perception that the WSDB members belong to the political party of the previous government. A group of so-called concerned citizens threatened to embark on a demonstration. In response to the proposed demonstration threat in September 2002, the District Chief Executive called a District Security Council meeting and invited CWSA and the consultants. Even though CWSA and consultants were not in agreement, the meeting decided that the WSDB should be dissolved. The District Chief Executive (DCE) therefore informed the WSDB of their decision.

The intervention of the traditional authority, the Bekwai Chief (based on his investigation) managed to help resolve the impasse between the WSDB and the district assembly after which the WSDB was re-instated. However, during the six (6) months when the WSDB was not working, the operations of the water system did not come to a halt as the operator provided the service and earned his money.

[7] US $ 1 = 6000 Ghanaian cedis in 2002.

Conclusion

Prior to the rehabilitation of the water system, GWSC/GWCL water supply to Bekwai was not readily available and water shortages especially during the dry season were not uncommon. As a result, some community members were buying water at 2 to 5 times the GWCL tariff. With the local PSP for the Bewkai small towns' water system, all customers surveyed indicated that the water services had improved significantly. Water is always available and planned interruptions are announced. Because long interruptions go against the private operator, interruptions are minimal and occur for short durations.

Other initiatives for PSP in the small towns water supply

Following the EU initiative for PSP in Bekwai, there has been another initiative to build on local PSP for the small towns' water supply delivery. The CWSA with support from Public-Private Infrastructure Advisory Facility (PPIAF) carried out a study in 2000 to assess the technical, financial, and managerial issues related to small town water supply and considered the justification for increased private sector participation [101]. PPIAF is a multi-donor technical assistance facility that has the aim of helping developing countries improve the quality of their infrastructure through private sector involvement.

The CWSA/PPIAF study was based on a survey of 12 small towns, consultations and interviews with stakeholders. The first phase of the study concluded that there was justification for PSP in the small towns [101]. This was based on the findings that the capacity of some Water and Sanitation Development Boards were low, oversight from District Assemblies is weak, stakeholders are in agreement on the need for PSP in small towns. However, the extent to which the private sector should be involved differed among respondents.

As a follow up to the study, the second phase of the project on the "Development and Implementation of pilot PSP in small towns' water supply systems" was conducted. The objective of the second phase of the PPIAF/CWSA project was to develop and implement pilot projects to test PSP arrangements by involving local private enterprises, in partnership with WSDBs. The second phase of the project, resulted in pilot PSP project for Wasa Akropong and Enchi small towns' water supply. In addition, materials were developed to guide other small towns' interested in implementing PSP in small towns' water supply [114]. These include the following:

- Sample water system-reporting format (monthly, annual)
- Sample determination of performance indicators for the small towns' water systems
- Templates for procurement (bid document, generic/model agreements and bye laws
- Generic outline of information memorandum

- Generic management contract for operations and maintenance of Small Town Water Supply
- Generic Operating License for a Privately-Financed Small Town Water Supply Scheme
- A sample Byelaw for the Management of Small Town/Community Water Systems.

As a result of this project, CWSA has included local PSP with District assembly and community for small towns water supply delivery as an option in its policy.

Summary of the Small Towns Water Supply Sector

The small towns water supply delivery is better organised compared to the urban water supply using the sustainability, efficiency, effectiveness, and equity. Sustainability of the small towns is enhanced through the use of community management of the water facility through the gender balanced WSDB, sense of community ownership achieved by community contribution to capital cost. Financial sustainability remains a problem particularly for recovery of capital cost whilst most systems are recovering all operational cost.

The efficiency of the small towns water supply systems can be assessed based on parameters such as the cost per cubic meter, BCE, NWR etc. Unfortunately, most of these indicators are dependent on the technology in use, topography and also the ration of standpipes to house connection, size of the network. Another important point is that these factors cannot be compared to GWCL indicators because of the size, age of infrastructure and the nature of the system. As such the efficiency indicators could not be compared for the systems used.

The effectiveness of water supply in this case referring to water coverage is highly influenced by support from the external support agencies since they provide the bulk of the capital cost. Other important factors are the community interest and demand for the project, which should reflect in the community contribution to capital cost. The community contribution also presents a challenge especially for poor community.

The small towns water supply delivery has better arrangement based on local situation to address the needs of the vulnerable and poor consumers. The WSDB also community representative are also the manager and in consultation with the community member can institute pro-poor measures. In the selection of communities for water supply projects there are other criteria apart from community demand including poverty situation and prevalence of water related diseases that are used for selecting the communities.

The relatively good performance of the small towns water systems is not explained from the NPM style reforms and the functioning of the service providers.

The NPM factors

The NPM style reforms are more advanced in comparison to the situation in the urban water supply. The development of the drinking water sector started with GWSC for both rural and urban water supply. In 1986, as part of the ERP, market style reforms were initiated in the drinking water sector by increasing user fee significantly, introducing performance contract, and initiating steps for further reform. As the community water sector was being established it was incorporated into the decentralised administrative system which was good unlike the urban water supply.

The community ownership and management concept incorporates a number of the NPM elements. The WSDB and the district assembly have a high degree of autonomy and can institute measures necessary for the smooth running of the water system without external influence. There are sufficient accountability relationships within the small towns water supply sector. These include the accountability relationship between WSDB and the district assembly, WSDB and CWSA, WSDB and the community. Customer orientation is an integral part of the COM where the WSDB are required to hold community meetings twice a year to discuss the activities of the small towns system. Customers are also free to make complaints or suggestion to the WSDB at any time. What is missing is an effective mechanism to ensure that obligations of the actors in these relationships are executed. For example, who will ensure (enforce) that the community and the WSDB meet twice a year, reports are submitted to the DAs, CWSA etc? Clearly these enforcement mechanisms are not in place, thereby affecting the performance of the systems.

The market orientation is usually limited to service contract and the four management contracts where the remuneration of the private sector is based on output of their work (results). The systems with management contracts have a number of performance targets and accountability system with clear incentives. The oldest management contract in Bekwai is performing well due to the clear incentive mechanisms for the private operator to perform.

Local PSP for small towns water supply

The local PSP in the small towns water supply sector are relatively new. The most recent are the pilots implemented under CWSA/PPIAF initiative, which are too early to have useful lessons. The management contract in Bekwai, which has operated for some time is able to give some lessons based on the period of operation for delivery of services. The pilot PSP is able to provide lesson on the design and implementation of PSP.

The different approaches used in designing the PSP revealed that increased community involvement by explaining and involving the WSDBs in the selection of the private operators increased community ownership of the process, which is important for the sustainability. This was not the case for Bekwai and Atebubu under the EU project. During initial phase of implementing the PSP in Attebubu, the community blamed the DAs/CWSA for the choice of the operator when there were problems. Thus indicating that the community was not involved in the section of the

operator. In the case of the CWSA/PPIAF support PSP the selection was done by the WSDB with the support of the local consultants.

The Bekwai PSP, which is a management contract, has improved the performance of the water system. It has enhanced the New Public Management factors especially the accountability mechanisms through appropriate incentives system in the contract. The autonomy of the service provider is high. The political interference that resulted in the temporary dissolution of the WSDB did not affect the performance significantly.

A weakness in the Bekwai management contract is the lack of clarity on the responsibilities for major maintenance. The issue is where to draw the line between maintenance and rehabilitation to be able to know the responsibilities of the operator and the WSDB when it comes to some types of repair or maintenance. Fortunately, the system is new and for the first year of operation the civil works contractor was still responsible for defects (i.e. during the defects liability period). Hopefully this would be addressed in the next phase of the contract in the year 2007.

The CWSA/PPIAF study developed the PSP further especially on the design and implementation of the PSP process. In addition, the study has incorporated systems to enhance the community (represented by the WSDB) participation and involvement in the PSP process.

The small towns water service providers

The performance assessment of ten (10) selected small towns' water systems revealed the main challenges as financial sustainability and capacity of the actors at the small towns level.

Only 10 % of the service providers examined were recovering all the operational cost and most of the capital cost. Majority (90 %) of the systems were recovering only the operational expenditures, which means the systems are very susceptible to breakdowns, as the revenue from the systems cannot fund some repairs. The Bekwai water system, which is doing well, has a management contract in place with clear incentives systems incorporated to make the private operator deliver.

The human resource capacity of the WSDB and the operating team (technical managers, accountants) were found to be generally low. The selection criterion of WSDB does not include qualifications or previous experience as a pre-requisite for selection. As such, some WSDB members (including the chairman) are illiterate, which affect the performance of the systems to an extent. In addition, the relatively low remuneration for the operating team clearly does not help attract qualified staff. The low capacity of the operating staff has reflected in the poor record keeping for both the operators and the accountants of the operating team. In recognition of this, CWSA in collaboration with Kwame Nkrumah University of Science and Technology (KNUST) has prepared training programmes for the relevant actors in the small water supply sector.

Conclusions

The performance of the small towns water supply sector is better is comparison to the urban water supply sector. The assessment of the small towns performance revealed inadequate coverage, low capacity of the WSDB and the operation team, inadequate tariffs levels and revenue from the operations to achieve financial sustainability, flexible mechanism based on local circumstance to address the needs of vulnerable consumers, inadequate mechanism to target poor communities for water facilities, clear provisions to address the gender needs.

The achievement of universal coverage requires adequate provision of water facilities and ensuring that the delivery of service from the water facilities would be sustainable. The provision of water supply facilities is donor driven, dictated by the amount of funding available for the external support agencies. An additional requirement is the community's willingness and ability to demand for services with the appropriate community contribution towards capital cost. The willingness and ability of the government to increase its funding to the water supply sector will go along way to improve coverage. The study identified inadequate financial sustainability with respect to the recovery of capital cost to ensure timely repair and replacement of major equipment as a major issue.

The NPM style reforms in the small tows water sector are more advanced and works better compared to that in the urban water supply. The small towns water delivery emphasis community ownership and management concept in a decentralised system, where a number of the NPM factors are active. The small towns' water supply delivery has a number of accountability relationships existing between the key actors. However, some of the accountability relationships lack clear incentive or enforcement mechanism required to make it effective. Customer orientation is high whilst market orientation is generally low and limited to service contract (for routine maintenance of electrical and mechanical equipment) and the few management contracts that are being piloted with potential for replication.

The Bekwai water supply system, which is being managed by a private entity under a management contract, is performing well. The management contract is characterised by performance-based remuneration with penalties for non-performance. It has increased and improved accountability relationships between the WSDB and the private operator. It also provided technical expertise for efficient operations and introduced some level of immunity against local politics and political interference.

Capacity of the small towns actors, the WSDBs, DAs and operating staff are essential for improved services. With respect to the NPM style reforms, particular the introduction of private sector participation, capacity of the actors in design, implementation and monitoring of the contracts is very important and should be addressed in the reform process.

Chapter Nine

Water supply pricing

Contents

Introduction

The previous chapters (seven and eight), on the water supply service providers made it clear that one of the factors contributing to the poor performance of the water supply sector is inadequate investment for extending services and funding for sustainable operations of the water system. A reliable source of funds is the water revenue that is dependent on the water price or tariff. The pricing of water is also a versatile management tool capable of promoting a number of objectives, such as economic efficiency, equity and fairness, resource conservation and income redistribution [115].

This chapter is focused on water pricing of drinking water supply sector in Ghana. The role of informal water service providers and impact of water supply to the urban poor is also highlighted. It is based on three water supply providers, which are the GWCL, the Alternative Service Providers (ASP) in the urban areas and the small towns water service providers. The objective is to determine how water pricing affects the broader water supply sector objectives of ensuring financial sustainability, equity, efficiency and effectiveness of water supply in Ghana. The specific objectives are to:

- Examine the activities of the ASPs and their prices for water services
- Analyse the impact of the GWCL lifeline tariffs
- Determine the effect of GWCL tariff structure on different income groups
- Examine the small towns water system tariffs

The next section addresses the functioning of the ASPs based on information collected from the water vendors, tanker operators and independent producers on their activities and prices of services. The subsequent sections presents water pricing for GWCL services and pricing of the small towns water supply services based on the results of the survey described chapter four.

The Alternative Service Providers

The "Alternative Service Providers" are the other service providers apart from GWCL that provide water services to customers in the urban water supply area. They serve about 40 % of the urban water supply customers, who are not served or underserved by GWCL. In Accra for example, majority (53 %) of the households rely on the alternative service providers [8]. The alternative service providers are the vendors and the tanker operators acting as secondary or tertiary providers relying on GWCL sources, and the independent producers who do not rely on GWCL water source.

Water vendors

Water vending is a practice where individuals sell water either from domestic taps or from home-built tanks and reservoirs, which are supplied with water from private

water tankers or GWCL system. There are a lot of vendors in the urban water supply areas receiving water from GWCL as domestic users and re-selling to neighbours and other customers. Water vending is a feature of low-income communities where residents who cannot afford direct connection to GWCL network (where they exist) or dwell in informal settlement, obtain their water supply needs. In some of the old townships where the yard connection exists, some landlords and caretakers sell water to tenants and neighbours on "Pay As You Fetch" basis.

The vendors using GWCL sources do not have the approval of GWCL even though the regulation on new service connections does not allow re-selling without prior approval by GWCL [116]. The prices of the services of these vendors vary from US $ 1.2 to 6 /m^3, depending on the location (Accra or Kumasi), source of water – whether from GWCL directly or through water tankers - as shown in Table 9.4. In Accra, the geology does not encourage the use of ground water easily as in the case of Kumasi, which makes the prices in Accra more expensive.

The activities of the vendors are considered as informal enterprises. The prices of the services by the vendors are subject to the market forces. There are no mechanisms in place to regulate the quality of the water delivered. However, water quality could deteriorate through storage, handling and transportation of water to the end user [12]--[13]. There are also no measures from GWCL or PURC to enhance the activities of the vendors such that the low-income consumers would ultimately benefit from improved access to safe and affordable water services. However, the need to enhance the services of the "Alternative service providers" has recently attracted the attention of PURC [94] but the strategies for its implementation are yet to be developed.

Tanker operators

Water tanker operations refer to individual water tankers (with water capacity varying from 1500 – 4000 gallons) owners who have arrangements with the utility, GWCL to sell water to vendors and other consumers in unserved and under-served areas. There are about 400 water tankers in Accra serving low income, peri –urban and some high-income areas [117]. The tanker owners have formed associations with recognised executives. GWCL has an arrangement with the tanker associations. GWCL bill the tanker operators on the basis of a special tariff, which recognise to an extent the bulk water use for the underserved and un-served areas. The GWCL tariff to the tanker operators is set at the production cost of the water, which is comparable to the tariff for the connected customers. The agreed prices for the services from the tanker operators are available on notice boards at filling points and there is no limitation as to where one can provide service.

The arrangement between GWCL and tanker operators started in the early 1990s when the tanker operators came together to discuss with GWCL the need for a special tariff. This was to ensure that the price of water would not be beyond the reach of low-income populations. Before the agreement with the tanker operators, the Tanker operators were paying bulk water tariffs based on the increasing block tariff structure and were paying the rate for the highest block. The new tariff for the tanker operators

is based on the production cost and approved by PURC. This is much better than the previous tariff level but still higher than the lifeline tariff. As such the end user prices are dependent on the bulk water price from GWCL and the haulage cost, which still makes it more expensive as indicated in Table 9.4. The services of the Tanker operators in Kumasi are mainly used for construction purposes whilst many of the residents without GWCL services rely on hand dug wells.

With respect to water quality, there is a memorandum of understanding between the Tanker association and GWCL, which stipulates sanctions against the tanker association if a member uses the tanker for another product other than potable water. For example, when the water tankers take raw water from streams for construction purposes and do not clean the tanks thoroughly before using it for drinking water purposes contamination may occur. The tanker associations are aware of this and do educate their members. However, the monitoring system to ensure that customers get water of acceptable quality is inadequate.

PURC has identified the regulation of tanker operators as an issue and are in the process of preparing guidelines for tanker service operators. The policy has been formulated but not yet implemented. Some of the considerations are to [94]:

- Ensure GWCL provide more filling points to reduce haulage distance of the tankers
- Compare tanker prices between areas and regions
- Establish procedures for handling of complaints against operators either by GWCL or the tanker association
- Institute mechanisms to prevent the formation of cartels.

Independent operators

The independent water producers usually rely on boreholes as their source of water and are independent of GWCL. They usually construct ground and overhead reservoirs for their business. Their clients include water tanker operators, individual users and vendors. The price of water from the independent producers is also not regulated. However, majority of the independent producers use the price of the GWCL services as a guide and charge comparable rates especially to the tanker operators.

The independent producers are required to obtain abstraction rights from the WRC. From the interviews many of the independent producers were not aware of this requirement. Some of the independent producers were willing to build a small network of pipes to supply interested customers in their area. They indicated the absence of modalities and procedures as a barrier for the independent producers. The institutional arrangement has no provision for issuing licenses for water service provision in the urban water system in addition to GWCL. This may have been due to the original idea of having GWCL as the sole utility for achieving universal service in the urban areas.

The independent producers and suppliers pointed out their fear of what could happen to their investment in future, for instance, when the proposed PSP is

implemented. Also, they were concerned about protection of their investment since the master plan of where and when facilities would be provided does not exist. They were of the view that, since the government is not supporting their activities knowing very well that, they are delivering what GWCL has failed to do, there is the need for the government recognition and support.

The Ghana Standards Board has standards for drinking water quality, but there is no agency to check and monitor the quality that is delivered by the independent producers. Some independent producers are not even aware of this requirement.

Survey of Urban Poor Residents in Kumasi and Accra

Two communities Sodom and Gomorrah in Accra and Ayigya in Kumasi were used for empirical evidence on service to the urban poor. Questionnaires were administered to 50 households in the two communities, 25 in each community in 2004 for information on socio-economic profile and nature of service to the urban poor communities.

Description of the Urban Poor Communities

Sodom and Gomorrah

Sodom and Gomorrah is a slum settlement located in the central commercial district of Accra along the Korle lagoon. The settlement is densely populated. The size of the settlement is comparable to the size of a large city park and is home to between 150,000 to 200,000 people. Residents live without legal recognition and in constant fear of government-led bulldozing of the humble wooden structures they call home. All infrastructural improvements are therefore viewed as temporary. “Streets” within the settlement are narrow and more like footpaths instead. The layout of the settlement is haphazard.

The area now called Sodom and Gomorrah was formerly known as Fadama. The people of Fadama were displaced by floods in the early 1980s and were relocated to the place now called New Fadama. Part of the vacated land served as a market yard (Konkonba Market) and temporal home for yam farmers from northern Ghana who brought their produce to Accra to sell. With time, the market gradually became home to many immigrants from northern Ghana who came to Accra in search of greener pastures. The urbanization led to the rapid expansion of the area all the way along the Korle lagoon leading to its present slum status. Amongst the early settlers includes displaced Konkonbas from northern Ghana due to the Dagomba-Konkonba unrest in the mid ninety’s and displaced Konkonbas from the Timber Market in Accra due to the ripple effect of the unrest. The name Konkonba Market became no longer appropriate; the area was turning into a residential one! The settlement became known as Sodom and Gomorrah, which in a sense is linked to its impoverished living environment.

Ayigya Zongo

Ayigya Zongo unlike Sodom and Gomorrah is a formal settlement located at a usual residential site in the Kumasi metropolitan area. The area is an old densely populated settlement with low quality structures and low-income level. Ayigya Zongo is an offshoot of Ayigya and is popularly referred to as Zongo. Residents of the area predominantly immigrants from the northern part of Ghana and typically live in compound houses. The compound houses on the average provide shelter for 10 households. Water and sanitation service within the settlement is inadequate.

Socio-economic profile of the communities

The household size ranges from 4 to 5 for the two communities. Majority of the respondents were between 25 to 40 years of age. The educational levels of the respondents varied widely with about 20 % being illiterates without formal education, 20 % had completed primary education and the rest had some level of secondary education. Majority of the households or respondents were employed.

The female residents of the area are mostly hawkers. The other females are working as dressmakers, hairdressers and potters. The males are working as mechanics, tailors, scrap dealers, carpenters, masons, drinking bar operators and shower operators. The most profitable venture one could engage in is shower or toilet ownership. A shower or toilet owner in Sodom and Gomorrah earns on the average 150,000 cedis a day and is assured of his income everyday. Not so for the remaining majority, who are not assured of their daily wage and sometimes go without income for days. Average income for the households are 5.5 US $ per day in Sodom and Gomorrah and 3US $ per day in Ayigya.

The residential status of the households was different for the two communities. In Sodom and Gomorrah all the inhabitants are squatters whilst majority of the inhabitant in Ayigya are tenants (77 %). In comparison, Sodom and Gomorrah is more densely populated and appears to be impoverished than Ayigya Zongo. Unemployment rate on the hand at Ayigya Zongo was estimated to be slightly higher than Sodom and Gomorrah. Table 9.1 shows the detailed socio-economic profile of the respondents in the communities.

Table 9.1 Socio – Economic Profile

Parameter	Value	Percentage (%)	
		Sodom & Gomorrah N= 25	Ayigya N = 25
Sex	Male	52	42
	Female	48	58
Age (Yrs)	Below 24	12	10
	25-29	44	46
	30-40	32	36
	Above 40	12	8
Educational level	Illiterate	18	22.5
	Primary	18	20
	Secondary	64	57.5
	Tertiary education	0	0
Employment Status	Employed	92	85
	Unemployed	8	15
Income (cedis[8] (¢)/day)	Less than 10,000	8	-
	10,000 - 20,000	8	15
	20,000 - 40,000	4	32.5
	40,000 - 60,000	40	17.5
	60,000 - 100,000	20	7.5
	100,000 - 200,000	8	15
	Above 200,000	12	-
Family Size	Number of persons in a household	4	5
Residential status	Squatter	100	-
	Private house with family only	-	5
	Landlord with other tenants	-	17.5
	Tenant	-	77.5

Source: Fieldwork

Nature of water supply to the Communities

Residents in both communities mostly buy water from neighbours. In Sodom and Gomorrah, its difficult to use wells because of salinity, whilst hand dug wells are common in Ayigya as alternative water sources, which are reasonable priced. In

[8] 1 US $ = 9000 cedis

comparison also, households at Ayigya spent less income assessing water than households at Sodom and Gomorrah. Some resident in Accra buy water at high prices, such as ¢1000 per bucket (18 litres), whilst the maximum prices is Kumasi was ¢ 300 per bucket.

Table 9.2 Accessibility to Water supply

Parameter	Value	Percentage (%)	
		Sodom and Gomorrah (N= 25)	Ayigya N = 25
Main source of water	Private pipe connection	16	10
	Buy from vendors	84	82.5
	Shared yard connection	-	7.5
Cost of water	250 cedis/bucket (1.5 US $/m^3)	-	90
	300 cedis/bucket (1.9 US $/m^3)	-	10
	700 cedis/bucket (4.3 US $/m^3)	90	-
	1000 cedis/bucket (6.2 US $/m^3)	10	-
Preference for water supply	Private pipe connection	10	10
	Shared yard connection	30	30
	Pay-as-you-fetch	50	50
	No response	10	10
Quantity of Water used per Household (litres)	36 litres (2 buckets)	20	10
	54 – 90 litres (3-5 buckets)	36	37.5
	108 -126 litres (6-7 buckets)	16	32.5
	144 -162 litres (7-9 buckets)	24	15
	180 (10 buckets)	4	5
Benefits of improved water service	Easy access to water	72	77.5
	Save more money	28	22.5
Water problems perceived by users	Unreliability of water supply	76*	87.5
	High cost of water	60	65
	No response	12	42.5

Note: where sum of percentages is more than 100% suggests respondents ticked more than one value. For example; 48% of respondents identified both unreliable supply and high cost as problem associated with water supply in the area.

Parameter	Value	Percentage (%)	
		Sodom and Gomorrah (N= 25)	Ayigya N = 25
Suggested improvements in water supply service	Regular flow	80	90
	Price reduction	68	-
	Increase number of water points	-	80
	Shared yard connection		20

The primary source of water for the people of Sodom and Gomorrah is from water vendors in the community who have connected to the utility mains several hundreds of meters away. Characteristically, almost all the water vending compounds in Sodom and Gomorrah have commercial shower rooms (bathrooms) and pit latrines attached to it. The water use at the shower rooms includes washing and bathing. Residents also use the water for drinking and cooking purposes. The water vending points and bathrooms in the community are so many that there is no cause for residents to queue for water any time of the day. On a good day therefore, time and distance associated with accessing water is not an issue.

Fifty percent of respondents preferred to fetch water with the bucket and pay on a daily basis as they fetch. For them, such a system affords them the opportunity to buy water when they really need water. Also, the preference for the "pay as you fetch" was due to cost sharing problems that arise in the case of shared yard or house connection by multiple households. The problem of cost sharing according to respondents lies in the difficulty of determining the amount of water used. In the case of the tenants in Ayigya, their residential status as tenants restrained their choice for a private connection since it is only the landlord who knows what is good for his house.

The amount of water used by the households varies from 36 litres to 180 litres per day. Given that the household size is 4 in Sodom and Gomorrah and 5 in Ayigya, the per capital consumption ranges from 7 l/c/d to 45 l/c/d, whilst the minimum requirement for basic needs is estimated to range from 20-50 l/c/d by WHO. The main problems with the water supply identified by the respondents are the unreliability of the water supply.

The water services to the urban poor residents are poor. Over 80 % of the urban poor do not have access to direct GWCL services and buy from the vendors. A significant percentage, 50 % of the urban poor prefer to buy by the bucket on pay as you fetch basis. However, the cost from the vendors is exorbitant going up to about 15 times the GWCL lifeline tariff. The quality of water for the urban poor relying on the vendors is also doubtful or questionable as research has shown that even when the water quality is acceptable, handling and storage could result is water quality

deterioration [13]. Water consumption for about 50 % of the respondents were below 20 l/c/d, which is the minimum required for basic needs to ensure public health.

Effect of GWCL Lifeline Tariff System

The effect of the GWCL lifeline tariff was determined using a survey of water bills for households in different housing types, which was described in section 4.5.4 The lifeline tariffs refers to the first block of the increasing block tariff meant for providing basic water needs for all users. The housing stock in Kumasi was classified based on the number of households in each house. Housing type I has more than ten households per house representing the low-income group. Housing type II has two to ten households per house representing the middle- income group and housing type III has one household per house and represents high-income group. Three suburbs were selected at random from the housing types and 5 % of the houses in the three randomly selected suburbs from each housing type were used for the study. The commercial department of GWCL Kumasi provided historical records on the water consumption and billing for the selected houses for the year 2002, whilst visits conducted to the selected houses and households provided information on the housing characteristics. The results of the survey are presented and analysed in the subsequent sections.

Housing characteristics

The number of households (HH), which is the number of families in a house, varies from one (housing type III) to 25 (housing type I) as shown in Figure. 9.1. The average number of households (HH) in a house for Housing Types I, II, III are 19.40, 4.48, and 1 respectively.

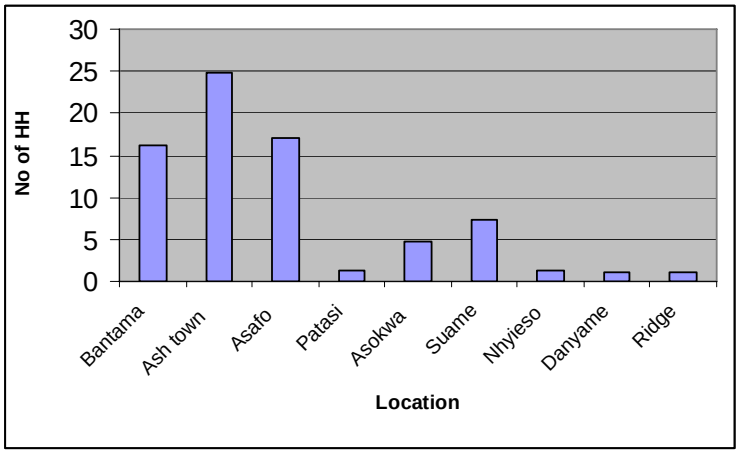

Figure 9.1 Average number of households (HH) in a house

From figure 9.1, the household size varies from two people in Ashtown to seven people in Nhyieso. The housing types I (Bantama, Ash town, Asafo) has the lowest household size (Figure 9.2).

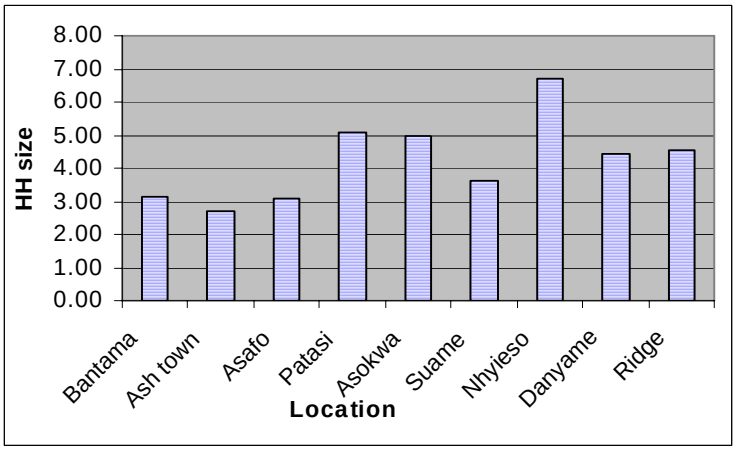

Figure 9.2 Household sizes

Water consumption

The average monthly household consumption varies from 4 m^3 for housing type I to 21 m^3 for housing type III whilst the consumption for each connection (house) varies from 20 m^3 for housing type III to 104 m^3 for housing type I (see Figure 9.3).

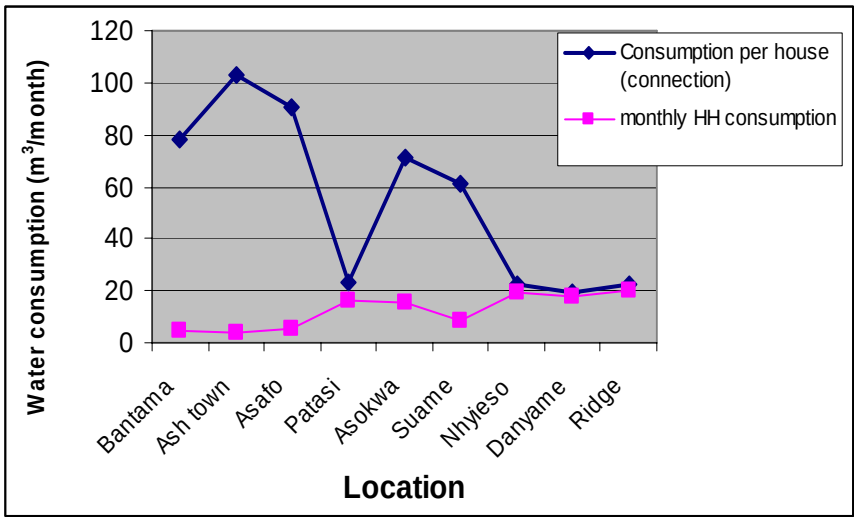

Figure 9.3 Water Consumption

It is evident that the average household (HH) consumption for the housing type III (with individual household meters) is 19.1m^3, which is close to the first/lifeline block of 20 m^3. The per capita water consumption for housing type I is about 50 litres per capita per day (l/c/d) and that for housing type III is over 100 l/c/d (Figure 9.4). Almost all the households in housing type III with over 100 l/c/d consumption pay the lifeline tariff, which is heavily subsidised. This provides opportunity for the high-income consumers to use the resource inefficiently. The lifeline block of 20 m^3 can be reduced to minimise the subsidies for housing type III. The lifeline of 20 m^3 is rather unfair to consumers in housing type I (with average number of 19 households per house) who consume between 80 to 104 m^3/month, whilst the average per capita consumption is about 50 l/c/d which is just sufficient for basic needs.

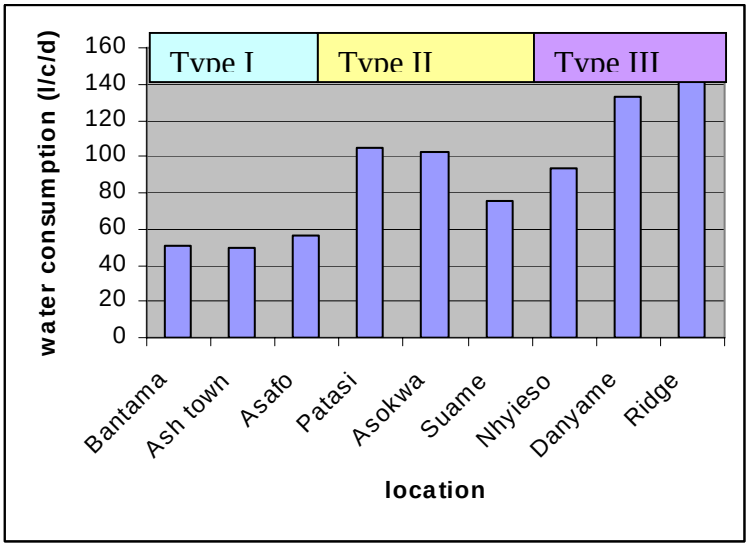

Figure 9.4 Per capita water consumption

A house in housing type I with 19 households in a house and a household size of three using 25 l/c/d will consume 42.75 m^3/month, which is higher than the current lifeline block of 20m^3/month. This suggests that the existing lifeline is not suitable for Housing type I, which is made up of multiple households in dwellings with collective meters. The tariff structure rather penalises residents in Type I houses.

Average water tariffs

The average tariffs for consumers in the various housing types are indicated in Figure 9.5. The range of the tariffs is from US $ 0.38 /m^3 for households in Nhyieso to US $ 0.48/m^3 for households in Ashtown. The mean tariffs for the housing types are US $ 0.40 /m^3 for housing type III, US $ 0.45 /m^3 for housing type II, US $ 0.48 /m^3 for housing type I. Thus, the low-income customers in housing type I pay 21% higher than the high-income customers in housing type III due to the tariff structure.

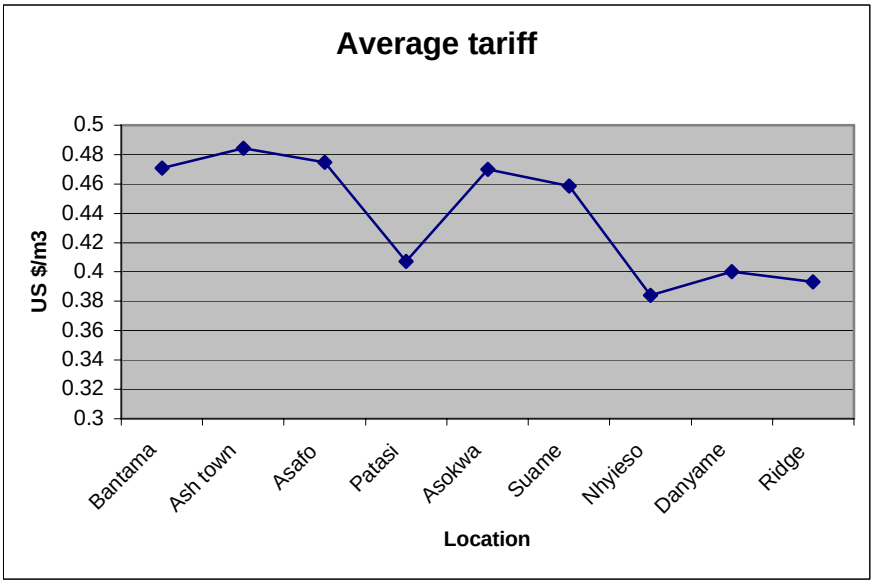

Figure 9.5 Average tariffs for domestic customer in various locations

Subsidies for the households

A conservative cost estimate for water supply service delivery to the customers in Kumasi was calculated based on historical cost approach, to recover the capital and operational expenditure, as well as achieve a 1 % rate of return on the assets. The PURC tariffs aims at achieving a small (< 1 %) rate of return on capital employed. In the United Kingdom, water utilities even when they were publicly owned were required to earn a 5 percent rate of return and then later when they were privatized, they earned higher rates of return than when they were publicly owned [118]. The cost of the water service was estimated to be 0.6 US $/m^3 (5000 cedis/m^3) and compared reasonably well with previous estimate of US $0.7/m^3 (5800 cedis/m^3) in 1998 for the urban water sector, as part of the proposed public private partnership arrangement [29]. GWCL estimates for the urban water supply for 2001 was US $ 0.53 to achieve 2.5% rate of return and US $ 0.78 to achieve 8 % rate of return [119].

With the conservative estimate of US $0.6 /m^3 (5000 cedis/ m^3) as the cost of water service, a low income household (in housing type I) using 5 m^3/month receives an annual subsidy of US $ 5.1 (42,600 cedis) compared to a high income household (in type III) using 20 m^3/month who receives US $ 42.45 (352,800 cedis). Clearly most of the subsidies end up with the high-income dwellers. Therefore, the lifeline tariff rather benefits customers in housing type III (high income households) instead of customers in housing Type I & II, who are relatively poor and deserve the lifeline (or social tariffs).

Small Towns Water Supply Pricing

Price setting

In the small towns' water supply sector, the District Assembly (DA) is responsible for regulating water tariffs. The WSDB sets the tariff based on Community Water and Sanitation Agencies (CWSA) guidelines, after which it is presented to the community for approval. The CWSA guidelines stipulate recovery of the supply cost, which is the recovery of both capital and operational cost [88]. The WSDB then submit the tariff that has been accepted by community to the district assembly for approval. From the field visit we learned that approval from the district assembly has normally been a formality except in few cases where the district assembly did not approve the tariff or delayed it unduly because it was perceived as being high. In practices, most of the WSDB do not follow the CWSA guidelines, as the tariffs are much lower than the required tariff based on CWSA guidelines (see chapter eight).

Small towns water tariffs and financial viability

A survey of the water prices in selected small towns is shown in Figure 9.6. It shows that tariffs are not uniform and differ for the house connection and the standpipes. The mean tariff at the standpipes is US $ 0.60/m^3 (ranging from US $ 0.31 – 0.92/m^3 with a standard deviation of US $0.13). The mean tariff for the house connection is US $ 0.55/m^3 (ranging from US $ 0.18 – 1.11/m^3 with a standard deviation of US $0.2). Figure 9.6 also shows that in some cases, the house connection tariff is higher than the standpipes whilst it is the reverse for some towns.

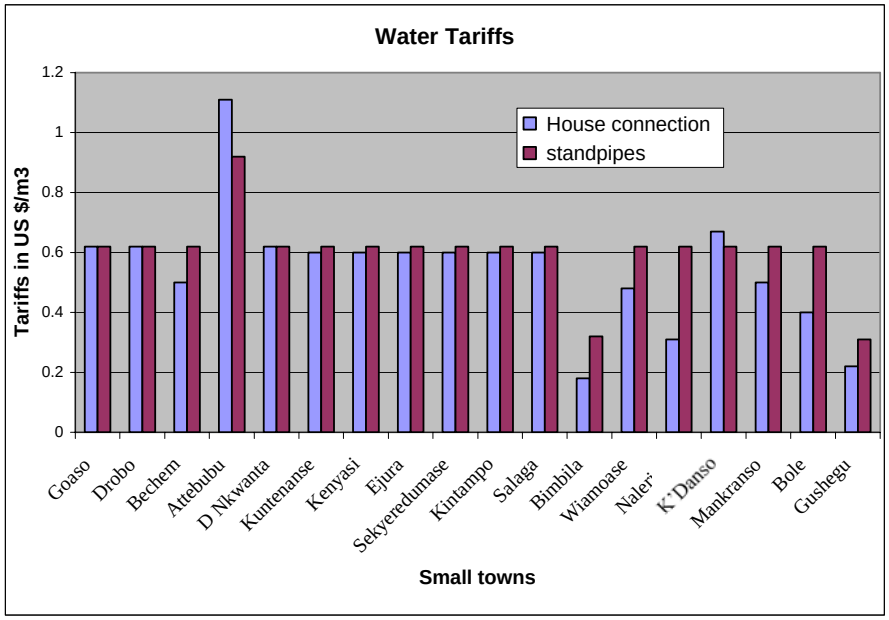

Figure 9.6 Water tariffs for house connection and stand pipes

The water tariffs in Attebubu are relatively high. The tariffs for the house connection even exceed the upper limit recommended by CWSA of US $ 1/m^3. The water system in Attebubu is relatively complex. It consists of mechanised boreholes and a convention treatment plant situated some kilometres from the township. In addition, the management of the water system in Attebubu has been delegated to a private operator through a management contract.

The financial sustainability analysis conducted in chapter eight, revealed that most of the water systems are recovering only the operations and maintenance cost. Out of the ten systems examined only one, was recovering all the operational cost and most of the capital expenditure. This implies that the user fee cannot sustain the water systems. The situation will soon become very critical, as the systems are getting old. Unfortunately, there are no mechanisms in place to address this issue.

Analysis of Water Pricing

The price setting mechanisms and the effects of water pricing on the water supply sector are analysed in the next sections.

Urban water supply

GWCL water prices are governed by guidelines provided by PURC for setting water rate that is based on full cost recovery for efficient operations [120]. Tariffs are reviewed based on request submitted by GWCL to PURC for consideration and approval. For the tariff reviews, PURC invite comments from the users through a consultative process that takes customer views into consideration in coming up with the tariffs. Between major tariff reviews, tariffs are adjusted by an automatic adjustment (indexation) formula, which is based on changes in end-user electricity price (with a weight of 0.84) and Consumer Price Index (with a weight of 0.16).

Table 9.3 Water Tariffs for GWCL for 2002 -2003

Category of Service Monthly Consumption (1000 Litres)	Effective August 1,2002	Effective March 1,2003
	Rates (cedis per 1000 litres)	Rates (cedis per 1000 litres)
a. Metered Domestic 0-20		
20 and above	3,000	3,500
b. Commercial/Industrial Flat Rate	4,500	4,800
c. Public Institutions /Govt. Departments Flat Rate)	5,500 5,000	6000 5,400
d. Un-metered Premises-Flat rate per house per month	22,000	25000
e. Boreholes, wells, hand pumps-Flat rate per house per month	4,000	5,000
f. Premises without connection (Public stand pipes) per 1000	3,000	3,500
g. Reconnection fee:		
(i) Domestic	20,000	25,000
(ii) Commercial/Industry	75,000	80000

Source: PURC

GWCL uses a uniform tariff structure for all customers throughout the country. The tariff structure is an Increasing Block Tariff (IBT) structure as shown in Table 9.3 for domestic users.

Tariffs approved by PURC aims at achieving full recovery of efficient operating and capital maintenance cost and providing a small (<1 %) return on capital [109]. PURC target for GWCL was to reduce physical and commercial losses from 50 % to 40 % of water produced and increase collection of bills from 77 % to 95 % from 1998 to 2003 [109]. Unfortunately GWCL could not achieve the targets set by PURC. The actual performance were physical and commercial losses 57 % and collection of bills

75.5 %, which means that the tariffs did not recover the full cost [109]. Therefore the revenue is inadequate for maintaining existing system and expanding services to the un-served or the underserved. GWCL tariffs according to [14] recover only 45 % of the cost of water supply service.

For the alternative service providers they operate as informal enterprises where their water prices are not regulated but rather subject to the market forces. The prices are relatively high compared to prices from GWCL as shown in Table 9.4.

Table 9.4 Prices of urban water supply service in 2004

	Average Prices in US $/m3				
	GWCL lifeline	GWCL standpipe	Private standpipe	Vendor	Tanker
Accra	0.44	0.6	2.4	2.4 - 6	4.4 - 6
Kumasi	0.44	0.6	1.2	1.2	2.2 -3.6

Source: Fieldwork.

The water price of the ASPs ranges from 5 to 14 times the GWCL lifeline tariff. The tariff structure for GWCL favours the household with meters (usually the high income class), as the lifeline block is 20 m^3 per month. Multi-occupancy houses with collective meters (usually the low income) pay 21 % higher than those with individual meters per m^3 of water.

A key factor why GWCL tariffs have been held down or low is the social concerns especially for the poor. The argument supporting the social concerns is that, the poor cannot pay the price based on the true cost of service delivery. This same reason has justified the use of the lifeline tariffs across board, which is rather benefiting the well to do at the expense of the low income and the poor. Therefore, low GWCL tariffs, inefficiency in GWCL, coupled with inadequate government allocation means the significant proportion of the inhabitants without access to GWCL services have no hope of getting access and would have to rely on the alternative service providers. Thus, water pricing in the urban water supply sector is not appropriate for achieving the objectives of the sector.

The state of the water system, which has suffered from the accumulated effect of the lack of maintenance and rehabilitation over the years, requires substantial investment to bring the water system to an appropriate state. This is one of the reasons why GWCL could not achieve its performance target. The major and long awaited funds for the urban water project from the World Bank is US $ 103 million, which GWCL will be using for rehabilitation and investment. The GWCL annual revenue for 2003 was about US $ 47 million dollars [109]. Considering the wide range of the tariffs between GWCL and the other service providers, it appears there is scope for improving GWCL services through tariff increase, efficient operations especially through the reduction of un-accounted for water and increase bill collection efficiency.

Small towns water supply delivery

The small towns' financial challenges are also two fold just like the urban water supply sector. First, investment is required to provide water supply for those currently without access to safe water supply. The financial arrangements are based on community contribution of 5 %, District assembly contribution of 5 % and the external support agencies contribution of 90 % [77]. Clearly, most of the investment is coming from the external support agencies meaning there is more room for government financial commitment to the sector.

The second challenge is to ensure financial sustainability of the water systems that has been provided. The average small towns water supply tariffs for standpipes is US \$ 0.6 / m^3, which is slightly higher than the GWCL tariffs but less than the tariff from the alternative service providers in urban water supply area. The CWSA policy and guidelines recommends that systems should be designed such that tariffs would not exceed US \$ 1/m^3. The small towns' water supply systems are decentralised and each operates as self-accounting unit. The tariffs are generally adequate to cover operational expenditure but not all the capital expenditure. From the previous chapter, only one out of the ten small towns system examined was recovering all the operational expenditure and majority of the capital expenditure. This means that with time as the water systems become old the cost of repairs and replacement of key components such as generators or pumps cannot be met from the user fee or tariff.

The income levels in the urban areas are generally higher than that in the small towns, whilst the small towns' water tariffs are higher compared to GWCL tariff (Table 9.4). In one of the small towns Bekwai, the community members raised concerns about the high tariffs, after PURC approved tariff for GWCL was released. After a series of deliberations between the District Assembly, WSDB and the community, the reason for the relatively higher tariff was justified on the grounds that the water supply services in Bekwai was reliable and requires higher tariffs in comparison with GWCL.

The CWSA guideline advocates for cost recovery tariffs and makes no room for subsidies for keeping the systems in continuous operation [88]. However, most of the systems are not financially sustainable from the user fee alone. This calls for clear mechanisms to ensure the achievement of financial sustainability. This is even more important for system that would rely on surface water because of non-availability of ground water, which are expensive.

Effect of water pricing on the water supply

GWCL is not recovering the supply cost, meaning the services are subsidised and operations are not optimal. The financial sustainability of the selected small towns' water supply systems examined in chapter 8 also indicated that the small towns are not recovering all the supply cost. The alternative services providers by the nature of their services have no choices but to recover its cost fully from the beneficiaries.

Comparison of the water prices from the water services providers in Ghana reveals a wide variation as illustrated in Table 9.5.

Table 9.5 Comparisons of water prices in Ghana in 2004

	Average drinking water prices in US $/m^3						
	GWCL lifeline	GWCL 2nd Block	GWCL standpipe	Private stand pipe	Small towns WS	Vendor	Tanker
Accra	0.44	0.50	0.6	2.4	0.31 – 1.11	2.4-6	4.4-6
Kumasi	0.44	0.50	0.6	1.2		1.2	2.2-3.6

Source: Fieldwork

The urban population (about 40 %) relying on the alternative service providers pay 5 - 14 times GWCL lifeline rates. The other 60 % of the urban population having direct access to GWCL services pay the lowest rate per unit volume of water. The GWCL customers in the high-income areas, with single household in a house consuming around 120 litres per person per day whilst paying the lifeline tariff that is heavily subsidised. The other GWCL customers also receive subsidies but not as high as those with individual meters. Meanwhile, the urban population relying on the ASP do not receive any subsidy.

Given that the annual revenue of GWCL in 2003 as 47 million US dollars [109], the World Bank facility of US $ 103 million for the urban water supply for the next five years, and the price differences in the water supply sector, it appears that there is scope for increasing GWCL tariffs. Increasing GWCL tariffs could help improve the system in a number of ways. First, revenue would increase to enhance operations and possibly investment for the unserved. Secondly, some customers may conserve water, which will free water for the currently unserved and under served.

Conclusions

The water tariffs for water supply services vary for the various service providers. The tariffs of GWCL are the lowest of all the water service providers, followed by the small towns water supply (up to 2.5 times GWCL lifeline) and then the Alternative Service Providers (5 to 14 times GWCL lifeline tariff). The water prices and quality (water quality) of the services from the alternative water providers are not regulated.
Within GWCL customers there are price differences for the households arising from the tariff structure and the housing types. The existing GWCL lifeline does not favour households in Housing type I, which is made up of multiple households in dwellings with collective meters. The low-income customers in housing type I paid 21 % higher tariff per m^3 than the high-income customers in housing type III in the 2002. Also, the high-income customers residing in single-family houses pay the lowest rate per meter

cube (m^3) of water whilst consuming the highest quantity per person (120l/c/d), which is clearly more than necessary for public health benefit. Meanwhile, the low-income customers residing in multi-occupancy houses pay the highest rate per meter cube of water whilst consuming the lowest quantity per person (50 l/c/d), which is just sufficient for the public health benefits. Furthermore, the high-income households with single meters receive more subsidies per household than the low-income household with collective meters. Thus, the lifeline tariff rather benefit customers in housing type III (high income households) instead of customers in housing Type I and II, who are relatively poor and deserve the lifeline (or social tariffs).

For the small towns' water supply systems, the user fees alone are not sufficient to make the systems financially sustainable. Thus without additional funding the water supply system would be susceptible to frequent breakdowns, which could render the systems non-functional. Unfortunately, there are no clear mechanisms or strategy in place to fill this financial gap to enhance the long-term financial sustainability. This is a serious concern since most of the systems are relatively new or have been rehabilitated recently and in the very near future as the systems become old the issues will become critical.

Chapter Ten

Summary and Implications for the Theoretical Framework

Contents

Introduction

The analysis and its implications for the theoretical framework are discussed for the urban and the small tows water supply sector with respect to the specific objectives and the hypotheses formulated at the end of chapter two. The subsequent section discusses the performance of the drinking water sector, the role of the national macro environment and the task environment. This is followed by the functioning of the service providers, role of drinking water pricing and finally the drivers for the performance of the water supply sector, which sets the way forward for improved water supply.

Performance of the drinking water sector

The performance of the drinking water sector measured by, effectiveness, equity, efficiency and sustainability indicators revealed poor performance with significant room for improvement.

Water Supply Coverage

The water supply coverage is low, 60 % for urban water supply and 50 % for community water supply. Over the years the coverage in the small towns water sector has progressively increased whilst that in the urban water supply has remained constant. The factors contributing to the low coverage include inadequate investment, low revenue, over reliance on external support agencies for investment, inadequate policies and strategies to ensure universal coverage.

Equity and Pro-poor

The delivery of drinking water services in Ghana fails on equity and pro-poor criteria in both the urban and the community water supply. Within the urban water supply, there are some water consumers with direct access to GWCL connections and those without. The problem is how to ensure easy access to all consumers. There is no particular mechanism to discriminate among users except for those in illegal settlement where approved layouts are not available for the utility to provide services. In the urban areas majority of the poor and low income pay exorbitant prices (up to 15 times GWCL lifeline tariff) for water because they access water service from the alternative water service providers. Those without GWCL services are not limited to only the poor, as some of the financially better off potential customer do not have GWCL connections. Effort to improve the situation has eventually resulted in a social policy to make the service pro-poor in the urban areas, but the strategies are yet to be implemented.

In the case of the small towns, the issue is that there are small towns with service and those without. The reason why some do not have safe water services is link to the coverage problem, which is attributed to limited funding to extend services and

inability of some small owns to effectively demand for water services. For small towns with water facilities, there is no particular mechanism to exclude sections of the town. Notwithstanding, the decentralised nature of the service provision allows the adaptation of mechanisms for vulnerable groups to benefit from the water services based on local situation. However, in most cases, provision is made for the elderly and not just for the financially poor.

Efficiency
The study assessed the efficiency in urban water supply to be low based on bill collection efficiency around 80 % and unaccounted-for water around 50 %. A number of factors contributing to the poor performance include lack of adequate funding for investment and operations, low levels of water tariffs, poor customer orientation, uncertainty in the reform process, negative political interference in GWCL functioning, inadequate incentive systems to drive efficiency, inadequate autonomy of GWCL and poor accountability of GWCL to its client and users.

Sustainability
The delivery of water supply services in Ghana raises concerns about sustainability particularly, financial sustainability. Water services delivery in both the small towns and GWCL are unable to recover the cost and ensure financial sustainability from user fee or tariffs.

Effect of the national macro environment

One of the objectives of the study was to assess the effect of the macro-environment on water supply sector in Ghana. The research question posed was "What has been the effect of the national macro environment (political, socio-economic, international factors) on the water supply provision in Ghana?". The study confirmed that the macro-environment plays an important role in the drinking water sector. The effects of the macro-environment are found in water supply sector reforms and political interference in the drinking water sector. The study also found the socio-economic conditions to be important in ensuring a well performing drinking water sector.

Effect of economic development process on water supply reforms
The efforts to improve the macro-economic performance as expected have influenced all the sectors of the economy. The ERP/SAP embarked on by government of Ghana in the 1980s to improve the economic situation affected the drinking water sector. Specific effects on the then GWSC were 130 % increase in tariff, retrenchment of staff, introduction of performance contract and corporate planning, which marked the beginning of market style reforms in the drinking water sector. Further reforms in the drinking water sector, namely, the separation of community water from urban water, decentralisation in community water supply, increased private sector participation are

all traced to the initiatives in the national macro-environment particularly initiatives to improve the national economy.

Political Interference in the water supply sector

The study identified political interferences to be adversely affecting the drinking water sector but acting differently in the urban water supply and community water supply.

In the urban water supply, the study revealed that political interference adversely affects GWCL performance. Political interference manifests in the appointment of top management of GWCL, GWCL Board members and in tariff setting. It was indicated in chapter five that from 1992 to 2001 all the substantive chief executives or Managing Directors of GWCL were fired before the end of their term without recourse to the GWCL Board. The nature of the political interference in this case shows inadequate organisational autonomy. The effect of this negative political interference on the appointment and tenure of the MDs of GWCL creates a sense of insecurity for the top management, encourages top management to maintain the status quo and does not encourage innovation for tackling GWCL problems. Another effect of the political interference in the appointment of Board members is that it makes them (Board members) more accountable to the political system rather than the water customers. When interest of the public and the politicians don't converge decisions are made in the interest of the politicians.

Before the establishment of Public Utilities Regulatory Commission (PURC), tariffs were subject to ministerial approval and highly influenced by political considerations. In chapter six, we saw instances where tariff proposal took three years for it to be implemented at a time when inflation had eroded the tariff increase. The establishment of PURC has significantly reduced political interference in tariff setting. However, there were occasions after the establishment of PURC where GWCL did not seek tariff increase because of political considerations. For instance, in the year 1996 and 2000, which were election years, there were no tariff increases even to match inflation, as GWCL did not request for tariff increase. This suggests that the reason for not requesting for the tariff increases could be politically motivated.

With regards to Small Towns Water Supply, there are political interferences but manifest differently from that in the urban water supply. It was realised that the level of decentralisation achieved in Ghana currently does not encourage political interference from the national macro-environment in small towns water supply. However, there are local political interference from district assemblies and traditional authorities that hinder the performance of the small towns water systems. In chapter six, these forms of interferences were identified in relation to tariff setting, politicisation of WSDBs and misuse of water revenue. The presence of these negative political interferences also shows the low level of organisational autonomy of the WSDB. This underscores the importance of increasing organisation autonomy for improving sector performance.

Referring to the hypothesis, there is strong evidence that GWCL operations are

negatively affected by political interference, which does not allow GWCL to be autonomous. The presence of undue political interferences points to inadequate autonomy of GWCL and its Board on one hand and lack of clear transparent procedures for appointment of Chief executive of GWCL. In Guinea, political interference manifested differently when the private operator came on board. Its was noted by [59] that political interference in the running of SONEG, the state holding company in Guinea responsible for planning and financing investment was a problem as different ministries sought to impose their priorities upon the company, either directly or through the Board members which they designated. Thus in the case of PSP in Guinea political interference took a different form, not interfering in the functioning of the utility per se but rather through the functioning of the asset holding company.

The findings in the Ghanaian case corroborates the assertion by the Global Water Partnership and Worlds Water Council that Political interference is a significant factor negatively affecting the water supply sector in developing countries [6]. The study found negative political interference to be working in the Ghanaian case but noted the role of the government requires political intervention, which is essential to contribute towards the achievement of efficient, effective, equitable and sustainable services. Positive political intervention requires a high political will and commitment to improve the water sector. The challenge for the drinking water sector in Ghana is how eliminate the negative political interference and to enhance positive political intervention for the benefit of the public.

Socio-economic factors

The macro-economic performance of the country is essential for improved water supply delivery. First, it could influence the behavior of the external support agencies, which determines the support for investment in the water supply sector. Secondly, it dictates the amount that the government can spend in the water supply sector. Thirdly, it affects the exchange rate which is important for the sector since some input are imported and some loans are dominated in foreign currencies. Finally, it is related to the income levels, which also influence household ability to pay for services.

The macro-economic situation in Ghana, a low-income country with about 49 % of the population living below US 1 $ a day and 78 % of the population living below US 2 $ a day [36] has implication for the water supply sector. The average cost of a new service connection to GWCL system is US $ 200. As such many inhabitants simply cannot pay to access GWCL connections when available. The service from the alternative service providers is expensive and would limit or influence the amount of water that can be purchased and expose the poor to health risk. The cost of the services can also erode the potential saving of the poor customers. Full cost pricing for all users would not work, as some users cannot pay for the full cost. Therefore, full cost pricing with subsidies clearly earmarked for the poor and vulnerable is required to improve service delivery [30]. On the contrary, a framework for targeting subsidies for the poor and vulnerable does not exist in Ghana as the subsidies are

across board for all consumers receiving service from GWCL in the urban water supply areas. Thus the socio economic situation affects the drinking water sector. A study on water utilities in Africa revealed that income level explains only 40 % of the difference in water coverage suggesting that there are other factors beside income levels affecting coverage [121].

Effects of the National Water Supply Related Institutions

The study examined the effect of the task environment from the perspective of the current institutional arrangement and also from water sector reform process and outcomes. The reform led to separation of policy formulation from provision of services, differentiation of service provision for urban and community water supply, introduction of PPPs and independent regulatory bodies, which are consistent with the NPM style reform.

Water supply sector reforms

The outcomes of the reforms are separation of functions, establishment of different service providers for community and urban water supply, and establishment of independent regulatory bodies.

Separation of the functions in the sector has resulted in a situation where the ministry (MWH) is focused on policy formulation and monitoring, service providers are responsible for water service delivery, a dedicated facilitating agencies for community water supply, independent regulation for urban water supply. This has improved the allocation of responsibilities for the water related institution, which intends provides a framework for improving transparency and accountability relationships between the actors involved in water supply delivery. The reform has increased the NPM elements in the water supply sector, which is important for improved performance.

The use of different approaches and service providers for the community water supply (rural and small towns' water supply) and urban water supply delivery has given both sectors the required focus as well as the opportunity to use appropriate approaches for water service delivery. The community water supply delivery, which occurs within the framework of decentralisation, is employing a demand driven approach and the community ownership and management concept, which has improved the sustainability of the community water supply sector. The sector reform in the urban water supply is supposed to have increased commercial orientation and hence financial viability, but this is yet to be realised.

Regulation is expected to enhance accountability, protect the utility and the consumer. A complimentary public regulatory regime is also a requirement for the success of PPPs [60]. The introduction of independent regulation in the drinking water sector has reduced the extent of political interference in tariff setting. PURC presence is also acting as a driver for GWCL to improve its performance. PURC has also come up with a social policy to enhance water supply delivery to the urban poor.

However, PURC falls short of the requirement of good economic regulation using the framework of [62]. The short fall is in the following areas: ensuring targeted subsidies, getting voice of customers particularly the urban poor in decision-making and requiring service providers to provide assets management plans linked to the achievement of universal service. Discussions are ongoing to have customer representation and involvement in water supply affairs. The introduction of water resource regulation by WRC has been positive. GWCL in collaboration with WRC has started education and discussions on the abatement of pollution within the catchment areas of GWCL raw water sources.

Another objective of the reform was to ensure that poor household have access to safe water. The reform process raised interest in the water supply for the poor and generated a number of potential mechanisms such as having a social connection fund for free connections. These initiatives were focussed on the urban poor because of the concern that the reform would hurt the poor. Eventually the effort resulted in the social policy for urban water supply by PURC.

Urban Water PPP

From the theoretical framework the reasons for using PPP were given as the efficiency of the private sector through competition and availability of private investment [34]--[32]. These reasons were also cited as part of the objectives of the PPP in the Ghanaian case. However, the management contract does not make room for private capital for the sector, as the government is responsible for investment. The Ghanaian urban PPP case with a single operator essentially guarantees competition for the urban water market and not competition in the urban water supply market. This is also in contrast to the original PPP proposal of having two operators to benefit from comparative competition.

The efficiency of the private sector could not be ascertained in the Ghanaian urban water PPP case mainly because it has just been implemented and the absence of comparative competition. Experience from solid waste management in three Ghanaian cities provides some insights PSP. According to [122] contracting with private agents for solid waste management resulted a gradual shift towards cost recovery and technology infusion as the positive elements. On the other hand, there was little to show for improvement in efficiency of the local government personnel and managers, cost saving did not happen, commercial and customer orientation were absent in the arrangement and finally there were problems related to transparency and accountability within the local government [122].

In chapter six, the introduction of the PSP in urban water supply delayed due to lack of autonomy of the Water Sector Restructuring Secretariat that allowed political interference in the process, inadequate public education that contributed to the lack of sustained political will, campaign against PSP by civil society and the periodic change in the PSP option. The fourth hypothesis formulated was that: the water supply reforms have not yielded the desired results because of delay in the implementation of the private sector participation for service provision. The delays in the reform process

occurred in the urban water supply sector. As mentioned previously the urban water supply reforms had many components including the implementation of PSP. Therefore the results of the reform cannot be tied only to an aspect of reform, the implementation of the PSP per se but to all the key ingredient of success that are incorporated in the reform. These success factors include separation of policy making from implementation, differentiation of service, use of approaches for the urban and community water, etc. The delay in the implementation of the PPP in the urban water supply affected the sector negatively. However, it could be argued at another level, that the PSP process was reasonable within the particular socio-political context, giving due credence to the various stakeholders concerns and accepting the various mistakes along the way, whilst continuing to search for a valid solution. The Ghana PPP process in the urban water supply confirms the assertion made in the Camdessus report that the PPP process can be long and difficult for countries without experience in PPPs [6]. The experience of the water supply PPP in Guinea revealed presence of political interference affecting the functioning of the asset holding company and not the water utility.

Urban water supply

Performance or results orientation is a key element of the NPM that is required for successful delivery of water services [47]--[48]. The effectiveness of the results orientation is achieved through a system of incentives, sanctions and rewards that drives performance [50]. The lack of incentives for performance for the utilities or service provider is cited as one of the reasons for the many problems in providing water services [24]. Based on the NPM framework this study on the Ghanaian case shows that there are insufficient incentive mechanisms for GWCL to serve all customers as required of them to ensure universal coverage.

The oversight role of the MWH and the performance contract administered by the SEC lacks effective incentive mechanisms for GWCL to perform. There are no specific incentive mechanisms between GWCL and the MWH except the performance contract between GWCL and Government of Ghana where the Ministry act as the government representative. Another area that could provide opportunity for incorporating some incentive mechanism is the role of the Ministry in the appointment of the MD of GWCL and its board member and relationship between the ministry and GWCL management and board. It was realised that instead of the needed positive intervention by the government to ensure services to all, there are instance where top management seeks to please the politicians, which at times is in conflict with the public interest. The performance contract between GWCL and the Government also revealed weak incentive system, inadequate design, implementation and monitoring of the contract, reflecting inadequate capacity to design and manage contracts.

PURCs incentive regulation using economic tariff based on efficient operations adversely affects GWCL operations and ultimately the customers because GWCL is unable to meet PURC targets. Unfortunately the penalty does not directly affect

GWCL management or staff and is therefore not an active driver for performance. The evidence from the study therefore supports the second hypothesis, that the external environment does not provide sufficient incentives for GWCL to improve its performance so as to attract investments and serve all its potential customers.

Good governance mechanisms require customer/citizen involvement and participation in decision-making. The new water policy supports customer involvement but the existing institutional framework does not empower the customers sufficiently to be involved in decision-making and to demand accountability from GWCL and the other institutions involved in water supply. The policy and regulatory framework does not sufficiently empower the users, customers or beneficiaries to demand accountability from GWCL management or its Board members. The MWH does not have an effective accountability mechanisms backed with incentive system in place for the top management and the Board of Directors, which would be clearly linked to GWCL performance indicators. The lack of effective accountability mechanisms between GWCL and the actors hinders GWCL performance. The customer orientation is low and results in unsatisfied customers who are not willing to pay for services promptly. Market orientation is low, as mechanisms to stimulate market conditions do not exist. Short-term contracts as opposed to long-term contracts are not common in the Ghanaian case. Performance related salaries are not in use. Competition between service providers does not exist. The PURC by its mandate is required to promote competition within the urban water supply. But with only one utility provider, GWCL it is difficult to have effective competition that would drive efficiency. A clear framework that encourages other providers to compliment GWCL efforts could drive efficiency and improve access to water supply services. In Zambia, the economic regulator also grants license for the operators, which are renewed periodically subject to satisfactory performance. Another way of stimulating competition is the use of yardstick competition, which requires breaking GWCL into a number of units.

With reference to the third Hypothesis, the performance of GWCL is indeed negatively affected by lack of effective accountability, poor customer orientation and inadequate market orientation. However, plans are far advance for the implementation of a customer charter, which will spell out the responsibilities and rights of both the utility and the customer. Also, GWCL has recently signed a management contract for five years with a private operator Vitens, which begun operations in June 2006 and hence the results and impact of their operations are not yet available.

Small towns water supply

The literature indicates that an appropriate institutional arrangement and framework is a pre-requisite for improved water services delivery [34]--[4]]. The study identified key institutional issues affecting the performance of the Small Towns water supply sector. It was realised that CWSA looks upwards through a Board of Directors and the MWH for policy direction and then implements its policy through another ministry, Ministry of Local Government and Rural Development (MLGRD). Also, CWSA

works with the District Water and Sanitation Team, which is part of the DA, but bears only minimal allegiance to CWSA. The peculiarity of this institutional arrangement is clearly a constraint to effective water delivery. For instance, CWSA as a facilitating agency cannot force the DAs or the community (WSDB) to execute their water related activities (e.g. ensuring the submission of periodic reports, water quality monitoring and using appropriate water tariffs). As such, the weakness is the mechanism to enforce the already established accountability relationships.

At the district level, the DWSTs anchorage in the DAs structure is weak as the DWST members who have been seconded from the other department may be subject to transfers without consulting the DAs. This is part of the decentralisation process as some of the department and agencies staff are seconded to the DA. The DA, which is the implementing agency for small towns water supply delivery is the owner and regulator of the service delivery. The DA has powers to delegate functions other than legislative. The WSDB has been delegated to manage the small towns water supply (including tariff setting) subject to approval of the DAs. The regulation and monitoring of the small towns' water supply activities by the DAs is poor. This is partly due to the fact that the DA is the owner and regulator and behaves like the gamekeeper and poacher. Periodic reporting is not regular in most cases and when reports are submitted the DAs do not give feedback to improve the service. This is attributed to the low capacity of, and inadequate incentives for the District Water and Sanitation Team (DWSTs) within the DA responsible for monitoring.

The small towns' water supply systems are using the community ownership and management concept in a decentralised system, which is different from the approach for the delivery of the urban water supply. The small towns water sector is decentralised and works with local people through the district assemblies, receiving substantial support from the donors. Customer orientation is high through the regular community fora on water supply, easy access to WSBD and water supply operating team. Market orientation is usually limited to the routine maintenance of electrical and mechanical equipment and the four new management contracts. There is a potential for comparative competition between similar small towns water system. This has however not yet been formalised and implemented. Looking at the **fifth hypothesis**, the small towns service providers are more successful partly because they work in a more bottom-up way and allow for private initiatives as hypothesised. Other factors contributing to the relative success of the small towns are the high customer and marketing orientation.

The Bekwai water supply system managed by a private entity under a management contract, is performing well and recovering all the operational cost and majority of the capital cost. This makes it well placed to pay for replacement of needed equipment, repair and maintenance the water system as compared to other system when required. The management contract is characterised by performance-based remuneration with penalties for non-performance and increased and improved accountability relationships between the WSDB and the private operator. The private sector involvement in the small towns' water supply in Bekwai has introduced greater

autonomy for the service provider, made the service provider accountable to the clients and users, and increased customer orientation, in line with **hypothesis six**.

The water service providers

The urban water service providers

A number of factors were found contributing to the poor performance of GWCL were lack of adequate funding for investment and operations, low levels of water tariffs, poor customer orientation, uncertainty in the reform process, negative political interference in GWCL functioning, inadequate incentive systems to drive efficiency, inadequate autonomy of GWCL and poor accountability of GWCL to its client and users.

The currently un-served potential customers and under served customers of GWCL depend on water services from the alternative service providers, which comprises of the independent providers, tanker suppliers and vendors. The services of these alternative water providers are not regulated with respect to prices to the end users and water quality. The independent producers are clearly providing a useful service of meeting the needs of the un-served and under served urban population. There is no enabling framework for the alternative service providers to operate effectively, efficiency and sustainable. For instance, there is no institution to register or license the independent producers, stipulate their obligation as well as monitor their activities. As a result, many of the independent producers have not been able to expand their business because of the lack of clear procedures and modalities. Whilst, PURC in its social policy and water strategy has indicated its intention to establish a formal relationship between GWCL and the alternative service providers to enhance service delivery [94], it is however yet to be implemented.

Small towns water service providers

The NPM conditions for improving service delivery are the presence of autonomous service providers, accountability of the service providers, results and customer orientation [48]. The performance of the small towns water supply delivery is reasonably good. On the positive side, the service providers are autonomous, there are inherent accountability relationships with the actors and tariffs cover operational cost. On the negative side, there are inadequate incentives to make the accountability relationships effective, the capacity of the WSDB and the operation team is low, tariffs to recover the full cost of water supply are inadequate, and there are inadequate administrative systems and procedures for the operations of the small towns as they operating as semi-formal organisation. With reference to the seventh hypothesis, all the NPM factors are present but the accountability mechanisms are ineffective as accountability relationship lacks enforcement making it affect performance negatively. Hypothesis seven of the study is partly untrue as some of the NPM factors are not effective and contributes negatively to performance.

For the existing small towns' water supply systems a key challenge affecting performance is the long-term financial sustainability as most systems are not in a position to pay for repairs of system components as they fall due. Nine out of ten water systems analysed were recovering only operational expenditures. It was only one out of ten small towns systems examined which was recovering all operational and most of the capital cost.

Water Pricing, Cost Recovery and Financial Sustainability

Optimal pricing principles promote economic efficiency and equity, price transparency and good quality of service [115]. A major problem faced by the water sector is that prices and tariffs are almost universally below the full-cost of supply [123]. For sustainable and efficient delivery of services, the tariff should match the costs of supply (i.e. operations and maintenance hand capital costs), opportunity costs, economic externality costs, and environmental externality costs [123].

In contrast to this requirement for sustainable service delivery, the study in Ghana revealed that the water tariffs for water supply services do not cover cost and also vary for the various service providers. About 40 % of the urban population relying on alternative service providers' pay between 5-14 times GWCL lifeline rate tariffs per m^3 of water. The GWCL tariff is the lowest of all the water service providers and do not recover the cost of the service provision. The service from GWCL is poor as they serve only 60 % of the potential customers and the customer perception of GWCL service is poor. The tariff in the small towns water supply sector is generally higher than GWCL tariffs, going up to 2.5 times GWCL lifeline rate tariffs per m^3 of water, but not recovering all the water supply cost. This confirms hypothesis eight that tariffs are not sufficient to recover cost. The pricing of water services in Ghana is not fair to some user groups as the urban poor relying on alternative service providers pay the highest price, low income customers in tenement system pay more than high income groups in single household dwellings for GWCL services, which confirms hypothesis nine.

Water supply pricing has a number of implications for water supply delivery and accessibility. The existing GWCL lifeline tariff is not equitable for Housing type I which is made up of multiple households in house (the tenement housing system, conceptually similar to a block of flat, referred as "compound house" in Ghana) with collective meter. The high-income customers residing in single-family houses pay the lowest rate per meter cube (m^3) of water whilst consuming the highest quantity per person (120 l/c/d), which is clearly more than necessary for public health benefit. This implies that a large proportion of the 120 litres per person per day does not fulfil the merit good criteria. The low-income customers residing in multi-occupancy houses pay the highest GWCL rate per meter cube of water whilst consuming the lowest quantity per person (50 l/c/d), which is just sufficient for the public health benefits. The low-income customers in housing type I were paying 21% higher per m^3 than the high-income customers in housing type III due to the tariff structure in the year 2002. The lifeline rather benefits customers in housing type III (high income households)

instead of customers in housing Type I and II, who are relatively poor and deserve the lifeline (or social tariffs). A low-income household using 5 m^3/month receives an annual subsidy of US $ 5.1 (42,600 cedis) compared with a high-income household using 20 m^3/ month receiving US $ 42.45 (352,800 cedis). In addition the average tariff for all the housing types are less than the estimated water supply cost clearly indicating that financial sustainability is not being achieved. Referring to the last hypothesis in chapter two, indeed the tariff structure of the GWCL with a lifeline band mainly favours rich consumers.

In the small towns' water supply systems, the study found that the water tariffs are below the supply cost and that additional source of funding is required in addition to the user fee for the service to be financially sustainable. The implication of this finding is that water supply system would be susceptible to frequent breakdowns, which could render the systems non-functional. Therefore, in order to address this problem, there is the need for clear mechanism or strategy in place to fill this financial gap to enhance the long-term financial sustainability, which is not yet in place. This is a serious concern since most of the systems are relatively new or have been rehabilitated recently and in the very near future as the systems become old the long-term financial issues will become critical.

Drivers for Water Supply Performance in Ghana

Taking the macro-environments into account

The study underscored the importance of the macro-environment for drinking water supply delivery in Ghana. The study identified the key effects as the influence on the water sector reforms from the national economic development process, adverse political interferences instead of appropriate government intervention, and effects of the economic situation.

Plans to improve the drinking water delivery should consider the role of the macro-environment. The low organisational autonomy of the water related organisation should be strengthened by the Ministry of Works and Housing to insulate water supply provision from undue political interference that affects the sector negatively. Appropriate government intervention to create and enabling environment through appropriate policies are essential for improved service delivery. It is essentially a strong political will and commitment for the achievement of universal coverage in a sustainable manner for the people of Ghana. Efforts should include political commitment to be backed with financial commitment for universal coverage, as government funding to the sector is inadequate. In addition, mechanisms that support transparency, accountability and customer involvement in water supply sector decision-making and implementation is important.

The policies and strategies of the external support agencies need to be discussed and analysed for its impact in the local context. This is essential to build ownership and consensus on the way forward to improve services since global institutional changes show common patterns and clear trends. The global trends in the water sector

such as decentralisation and privatisation have been partly attributed to influences of external agencies [124]. The outcome of these institutional reforms has been mixed suggesting that unique solution based on particular social context may be relevant.

Similarly, the economic situation of the country affects the water supply sector. First, it dictates the amount that can be allocated by government to the sector. It is also related to the income levels, which are linked to the affordability of the services by the users. Moreover it affects the exchange rate, which also affects the financial performance of the sector. Therefore a stable macro-economic environment and sustained economic growth are required for improved performance of the sector.

Urban water supply, some recommendations

There is a supply gap that the alternative service providers are filling. However, they operate in a weak regulatory framework, which needs to be strengthened to contribute positively to the sector. In view of the weak regulatory framework, The MWH and the PURC should come out with procedures for registering or licensing the independent producers, and let them know of their role and obligations with respect to the various relevant agencies as well as to the customers. The introduction of registration and licensing system for the independent water producers and could be used to subject the independent producers to regulation, provide comparative competition and also compliment GWCL effort. This would help form the basis for regulating the activities of the alternative service providers currently serving about 40 % of the urban population. PURC should also implement its proposal to establish formal relationship between GWCL and the alternative service providers to enhance service delivery to the end users.

The NPM factors in the urban water supply delivery found to be weak should be strengthened to improve water supply sector performance. The accountability relationships between GWCL and the actors (regulatory agencies and the customers) should be strengthened with appropriate incentive mechanisms. The PURC should empower the customers by increasing customer involvement and representation in water supply decision-making and management. Corporate performance targets should translate into regional, district, departmental targets and eventually into internal accountability relationship for individual staff. GWCL should introduce benchmarking to drive efficiency. In the implementation of the benchmarking, GWCL should classify its system based on size, technology type and complexity for the benchmarking to be conducted for systems with comparable characteristics.

In order for GWCL to increase investment to extend the service, PURC should consider including some of the capital expenditure (capex) component in the tariffs by introducing a two-part tariff where the fixed component would be used for investment. Introducing the fixed fee component in the tariff could reverse the situation where the low income in multi household occupancy buildings with single meters pay more per m^3 than those in single-family dwellings, due to the nature and characteristics of the housing types, where the poor live with many in a house, while the rich live with few in a house. Similarly the proposed fixed fee would in principle

appear regressive but because of house type variation the proposal would work out progressively. In this case, the households in multi-occupancy buildings would share the fixed fee. For instance, by adding 1 US $ per connection per month could yield about US $ 200,000 a month (US $ 1.2 million a year) which can be dedicated to extending services to the urban poor.

Water supply to the urban poor is a challenge. Research on the nature of the service to and impact on the urban poor and low income, mechanism to target subsidies to benefit the poor, appropriate institutional service delivery to the urban poor and regulation of the alternative service providers should be given a priority.

Small towns water supply, some recommendations

There is the need to strengthen the many accountability relationships in the small towns' water supply by incorporating incentives and monitoring mechanisms for the actors to perform in the sector. CWSA should facilitate this process and incorporate the necessary incentive mechanism. A number of incentive mechanisms could be used. For instance, CWSA in collaboration with the DAs could establish comparative competition through benchmarking for the small towns' water supply systems. The performance indicators may be published for the systems under a district or region to drive performance through the competition. The DAs could also sign performance contracts with the WSDBs. There should be incentives system for the WSDBs to submit, meet the community as stipulated by CWSA. In view of the low capacity of the WSDBs and the operating staff, CWSA should institute training programmes with certification for the WSBDs and the operating staff.

Most water systems have not achieved financial sustainability from the user fee or tariffs. There is the need to review CWSA policy on cost recovery with respect to capital expenditure. Where user fee alone cannot achieve financial sustainability clear mechanisms to fill the gap should be put in place.

Record keeping on operations and maintenance in the small towns is poor. A uniform format for all the small towns systems is required. CWSA has developed forms for the small towns systems to use. The use of the standard forms should be enforced as well as ensuring that appropriate data is kept. CWSA should also strengthen its Management Information System (MIS) unit to enable the data to be used to improve asset management and operations and maintenance management. The database should be used to provide an early warning to the small towns systems on future capital and operational expenditures.

Areas of further research that would enhance service delivery include investigating the various management models for service delivery, mechanisms to ensure financial sustainability, Community Public Private Partnerships and the feasibility of private funding for community water supply.

Chapter Eleven

Conclusion

Contents

Conclusion

Water sector performance

The assessment of the drinking water sector with respect to effectives, efficiency, sustainability and equity criteria revealed poor performance. Using the NPM framework, the study revealed that water supply services delivery is better organized in the small towns water supply than in the urban water supply.

Role of the macro-environment

The study found the role of the macro-environment in the drinking water supply sector to be important. The main conclusions with respect to the role of the macro-environment are:

- Drinking water supply reforms in Ghana are influenced by situation and event in the macro-environment. The market style reform found in the drinking water sector can be traced to the ERP/SAP embarked by the Government of Ghana in response to the economic decline in the 1980s.
- Political interferences adversely affect the drinking water sector in Ghana. In urban water supply political interference affects tariff setting, GWCL functioning through the appointment of top management of GWCL and GWCL Board members. In the small towns, the effects were similar where political interference occurred in tariff setting, misuse of funds and tenure of WSDBs. The effects are similar but the source or influences are different. Political interference in the urban water supply is from the national levels whilst that in the small towns is from the level of the district assembly and traditional authorities.
- Performance of the economy affects the sector. Low national income negatively affects the drinking water sector through ability of government to fund the sector, consumers ability to pay for services and exchange rates.

Effect on the task environment

The institutional reforms in the drinking water sector have resulted in separation of policy formulation, service delivery and regulation for sector. Urban and community water supply has been separated allowing each sector to use appropriate approaches for water service delivery.

The introduction of independent economic regulation by Public Utilities Regulatory Commission (PURC) in the drinking water sector has reduced the extent of political interference in tariff setting in the urban water supply. However, PURC falls short of the requirement of good economic regulation to ensure universal service delivery using the framework of [62] as clear plans for network extension and asset management plans are not in place for universal service obligation.

The task environment does not provide adequate incentives for GWCL to achieve universal service coverage in a sustainable, effective, equitable and efficient manner. Mechanisms to regulate the activities of the informal service provider in the urban water supply such as tanker operators, vendors are yet to be developed.

The institutional changes points to gradual implementation of the NPM principles with the small towns water sector more advanced than the urban water sector. As customer involvement and participation in decision-making is high in the small towns water supply it is not so in the urban water sector. In the small towns the Water and Sanitation Development Boards are selected by the community members whilst in the urban water sector, specifically for GWCL the board is appointed by the president and subject to negative political influences. The performance of GWCL is negatively affected by lack of effective accountability, poor customer orientation and inadequate market orientation.

The urban water supply PPP revealed the following:

- PPP process can be long and difficult without prior experience, capacity of actors involved in the process
- Contrary to the objectives of the PPP the management contract did not bring in private capital. The management contract effectively generated competition for the urban water market without significant room for competition within the market, as there is only one private operator for urban water supply.

Functioning of the service providers

The performance of GWCL is poor with a coverage of 60 %, bill collection efficiency around 80 % and unaccounted-for water, around 50 %. The factors contributing to the poor performance include lack of adequate funding for investment and operations, low levels of water tariffs, poor customer orientation, uncertainty in the reform process, negative political interference in GWCL functioning, inadequate incentive systems to drive efficiency, inadequate autonomy of GWCL and poor accountability of GWCL to its client and users.

The performance of the small towns water supply delivery is reasonably good. On the positive side, the service providers are autonomous, there are inherent accountability relationships with the actors and tariffs cover operational cost. On the negative side, there are inadequate incentives to make the accountability relationships effective, the capacity of the WSDB and the operation team is low, tariffs are not sufficient to recover the full cost of water supply, implying that most systems are not in a position to pay for repairs of system components as they fall due.

Water pricing

Water pricing is one of the important criteria for ensuring financial sustainability. Unfortunately not much attention has been devoted to ensuring adequate, fair and sustainable prices for the urban water supply sector. The water tariffs for water supply services do not cover cost, are not fair to some user groups and also vary for the

various service providers. About 40 % of the urban population relying on alternative service providers' pay between 5-14 times GWCL lifeline tariffs per m^3 of water. The GWCL tariff is the lowest of all the water service providers and do not recover the cost of the service provision. The tariff in the small towns water supply sector is generally higher than GWCL tariffs, going up to 2.5 times GWCL lifeline rate tariffs per m^3 of water, but not recovering all the water supply cost.

The existing lifeline tariff generally does not benefit the poor. High-income customers residing in single-family houses pay the lowest rate per meter cube (m^3) of water and receives highest subsidy whilst consuming the highest quantity per person (120 l/c/d), which is clearly more than necessary for public health benefit. The low-income customers residing in multi-occupancy houses pay the highest GWCL rate per meter cube of water (21 % higher per m^3 than the high-income customers) whilst consuming the lowest quantity per person (50 l/c/d), which is just sufficient for the public health benefits.

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Appendices

Contents

Verifiable performance indicators of the utilities

Table A.1 Performance indicators for the GWCL

Parameter		Definition	Year	Year
Water production	Quantity of water produced (mld)	Gives an indication of size of operation		
	Quality water produced (No) Quality water produced (%)	No of samples analysed/month % of acceptable samples		
Water delivery	Target population (No.)	Total population (potential customers) in area		
	Service coverage (%)	% of actual population actually receiving service		
	Connections – domestic (No).			
	Connections – Ind/ comm (No)			
	Stand post (No)			
	Service availability (hrs)	Average hours/day when service is available		
Efficiency	Unaccounted for water (%)	How much water is not generating income		
Water consumption	Quantity of water consumed (lpcd)			
	Metered consumption (%)			
Effectiveness	Coverage			
Productivity	Connections/ employee			
	Percentage staff cost			
Financial sustainability	Average domestic tariff			
	Level of cost recovery			
Profitability	Operating ratio			
	Return on fixed assets			
Liquidity	Current ratio			
Credit worthiness	Debt equity ratio			
Financial Efficiency	Days receivable ratio (days)			
	Bill collection			

Parameter		Definition	Year	Year
	efficiency (%)			

Revenue and expenditure account

Table A.2 Revenue and expenditure account

	1996	1997	1998	1999	2000
Water revenue					
Miscellaneous					
Other non operating income					
Total revenue					
Personnel					
Energy					
Materials					
Chemicals					
Losses on receivables					
Depreciation					
Interest expenses					
Expenditure					
Operating surplus or deficit					
Other non operating expenses					
Net income					

Balance Sheet

Table A.3 Balance sheet

	Year	Year	Year	Year	Year	Year
Fixed assets						
Net accumulated depreciated						
Net Assets						
Cash						
Accounts receivables						
Provision for doubtful debt						
Net Accounts receivables						
Inventory/stocks						
Other current assets						
Total current assets						
Accounts payable						
Long term debt, current						
Other current liabilities						
Total current liabilities						
Net current assets						
Long term debt						
Net assets						

Activity Responsibility Matrix (ARM)

Table A.4 ARM - Urban Water Sector

Activity	**Responsibility**									
	Central Gov.	MF	MWH	PURC	GWCL	EPA	Private Sector	ESA	WRC	users
Legislation										
Budgetary/Loan Approval										
Policy development & implementation										
Sector strategic planning										
Subsidy decisions										
Research										
Project identification										
Project planning										
Pro. Design & Implementation										
Tariff setting										
Paying for Water										
O & M of water system										
Staff benefit policy										
Institutional & Human Resources Development										
Water rights										
Water Quality Monitoring										
Performance evaluation										
Other										

If more than one agency is responsible for a particular function, indicate the principal agency with number one and the other 2, 3 etc.

Please indicate in the order of importance the constraints in the institutional arrangements that hinder the sector development.

Constraint	Remark
1	
2	
3	
4	
5	

Table A.5 ARM – Small towns Water Supply

Activity	Responsibility										
	Central Gov.	MF	MWH	CWSA	MLGRD	EPA	P.S.	ESA	WSDB	WRC	users
Legislation											
Budgetary/Loan Approval											
Policy development & implementation											
Sector strategic planning											
Subsidy decisions (cap & recurrent)											
Research											
Project identification											
Project planning											
Pro. Design & Implementation											
Tariff setting											
Paying for Water											
O & M of water system											
Staff benefit policy											
Institutional & Human Resources Development											
Water rights											
Water Quality Monitoring											
Performance evaluation											
Other											

If more than one agency is responsible for a particular function, indicate the principal agency with number one and the other 2, 3 etc. Please indicate in the order of importance the constraints in the institutional arrangements that hinder the sector development.

Constraint	Remark
1	
2	
3	
4	
5	

Subjective Performance Descriptions (SPD)

General Information of Respondent

Region:

Location: Head office or Regional office

Department: Engineering or Commercial

Status: Top mgt or senior mgt

Respondents
Head Office - top management
MD, DMDs and Director – Planning, Administration, Finance, operations.

Regional office
Chief Manager, Regional engineer, Distribution Eng, Regional Finance Off and Reg commercial office.

Subjective performance descriptions (SPD)
Leadership provided by top management in Head Office
Effective leaders serve as positive role models, they are more than good managers. They provide motivation for managers and staff to perform their functions often in difficult and sometimes apparently unrewarding situations. Effective leaders help transform an institution by making it active, energetic, visionary and making the sum of the parts greater than the whole. In effective institutions, leadership does not only rest with the top manager.

Very low	Low	Medium	High	Very high
1	2	3	4	5

Provides clear sense of mission; involves people with mission; gets people excited about mission, believing in it.	
Serves as a positive role model, hard-working, demonstrates competence, is visibly interested in work, balances people needs with organisational needs	
Shows sense of dynamism, enthusiastic, has an active 'can do', problem-solving attitude	
Demonstrates personal integrity, instills sense of integrity in others, balances personal ambition with organisational needs	
Is oriented towards producing results which move work towards meeting objectives	
Identifies clear performance standards both at institutional and personal level and is strict but fair, gives positive and negative feedback where due	
Visits staff at all levels of the organisation and all districts on a regular basis	
Listens as well as instructs	
Has sufficient operational and technical knowledge to inspire trust	
TOTAL Leadership (total scores/9)	

[After "WASH"37, (Cullivan et at, 1986)]

Organisational autonomy of GWCL

Organisaitonal autonomy is the degree of the institution's independence from government. Although still subject to necessary regulatory control and political oversight, the institution requires independence so that it can carry out its affairs and meets its responsibilities in an effective manner with minimum bureaucratic or political interference and controls by other organisations or departments. Adequate organisational autonomy is necessary for the success of water and sanitation institutions.

Very low	Low	Medium	High	Very high
1	2	3	4	5

Sets own organisational objectives and changes them as necessary to provide guidance and direction in achieving the objectives of the organization	
Prepares annual capital and operating budgets linked to revenues and needs; successfully obtains approval for budgets	
Establishes and implements levels of tariffs and service charges sufficient to meet capital And recurrent costs	
Maintains control over all revenue generated	
Establishes and maintains staffing levels sufficient to meet needs	
Employs, discharges, disciplines and promotes personnel within established and approved guidelines according to institutional needs	
Establishes levels of employee compensation including salaries and benefits sufficient to Attract and maintain capable staff	
Top management is well informed about external policy, financial and regulatory issues and actions	
Top management maintains direct contact with the key individuals in all important external entities	
TOTAL **Organisational Autonomy** (total scores/9)	

[After "WASH" 3 7, (Cullivan et al. 1986)]

Management & administration of GWCL

Effective management is demonstrated by the capacity to get the most out of the resources available (human and other) in a deliberate or planned manner. Good managers have a clear sense of objectives and priorities; they know who to rely on to get job done and how to delegate to them the means to do it, An effective management climate is characterised by teamwork, cooperation and good communication among staff.

To enable managers to perform effectively an efficient administrative system is required. This is the policies and procedures, which regulate and guide and facilitate the actions of managers. A mature organisation has effective sub-systems such as personnel, budgeting, accounting, financial management, procurement, contracting out and management information.

Very low Low Medium High Very high
1 2 3 4 5

Managers have a clear sense of their own and other's roles and responsibilities	
Managers communicate roles and expectations; clearly to others and involve them in defining Their roles and responsibilities; they promote teamwork	
Managers know how to plan and delegate to achieve tasks	
Managers regularly set goals with staff and have a sense of priorities	
Departmental/section objectives and performance indicators are clear and understood by Staff and am achieved at the desired level of quality	
Staff are held accountable for getting work done according to agreed performance indicators	
Managers trust their subordinates	
Managers seek to innovate and develop new ways of achieving their objectives, through technical and managerial means	
Managers have agreed responsibility and authority levels (including signing for payments)	
Administrative systems for budgeting have been developed and are regularly used	
Administrative systems for accounting for all assets have been developed and are regularly Used	
Administrative systems for procurement and inventory management have been developed And are regularly used	
Administrative systems for personnel and staff development have been developed and are regularly used	
An effective Management Information System has been developed and is regularly used	

Technical information is routinely shared among planning, design, construction and operational units	
TOTAL Management and Administration (total scores/15)	

[After 'WASH"37. (Cullivan et al., 1986)]

Commercial orientation of GWCL

Commercial orientation is the degree to which actions in an institution are driven by cost effectiveness and operating efficiency. The performance of an organisation should be guided and disciplined by a strategy to achieve financial sufficiency at an appropriate stage of growth. This commercial orientation can be viewed at both operational and policy levels.

At the policy level, commercially oriented institutions structure and stage investments, expenditures and revenues to achieve financial equilibrium annually. At the operational level, everyday activities are guided by quality standards and by constant attention to cost factors.

The institution strives to establish a reputation as a financially well-run business in the eyes of its consumers (to promote the payment of tariffs) and in the financial and political community in order to obtain financial support for growth and to maximise financial and operating autonomy.

Very low	Low	Medium	High	Very high
1	2	3	4	5

The institution achieves a yearly balance between expenditures and revenues. Revenues may be partly drawn from subsidies which are phased out according to a planned schedule or have been assured by Government for very low income users	
Tariffs include payment for capital expenditure through depreciation of fixed assets (amortization of loans)	
Budgets are set according to negotiated priority levels for quality	
Expenditures are monitored against agreed budgets	
There are annual, published, audited financial records	
Staff actions throughout the institution are guided by cost effectiveness as well as quality standards	
Staff belief in a commercial orientation and think of their service function as a business	
Economic and financial feasibility is calculated for all projects and other institutional Activities	
Services are 'contracted out' which can be run more efficiently by private enterprise or community organisations	
TOTAL Commercial Orientation (total scores/9)	

[after "'WASH" 37, (Cullian et al, 1986)]

Consumer Orientation

Consumer orientation is organising and directing the services and output of the orgarnisation towards the demands and desires of the consumer or customer. Staff of a successful WATSAN institution sees serving consumers as their primary function. All work, all programmes and projects are directed towards greater efficiency, effectiveness and equality of service to all consumers. Every effort is made to inform and educate customers about the role of the institution and the means it is using to achieve its (the customers) objectives

Very low	Low	Medium	High	Very high
1	2	3	4	5

Staff at every level demonstrate that they are oriented towards serving consumers; when observed their decisions and actions are clearly driven by what is best for the consumer	
There are identifiable mechanisms for consumers to interact with key areas of the institution over important matters (for example, accessible district offices, emergency telephone hotline, bill disputes, service problems)	
There is clear evidence that the institution responds to complaints, emergencies and suggestions *which* consumers make	
There are identifiable, ongoing and effective measures to inform and educate consumers about institutional services and requirements	
The institution makes efforts to invite and encourage an effective level of consumer participation	
There are concerted efforts made to project a positive image of the institution to the consumer	
Efforts are made to ensure accessible services to all levels of the public	
Tariffs and/or charges are designed to be fair and equitable and understandable and affordable and payable for all levels of the public	
Consumers are also seen as customers – who pay the bills and thus the salaries	
The level of complaints from the public is relatively low	
TOTAL Consumer Orientation (total scores/10)	

[After –"WASH") 3 7, (Cullivan et all 1986)]

Legislative framework

Every services utility or institution has to work within the framework of a country's political choices, as demonstrated by the legislation passed by politicians to define the institution's roles and responsibilities. This legislative framework needs to assist and guide in a positive manner rather than hinder and restrict negatively.

Very low	Low	Medium	High	Very high
1	2	3	4	5

The institution has clearly defined responsibilities and authority	
There is an effective regulatory framework	
There is legislative framework for ensuring tariffs are maintained at suitable level	
There is a political will to ensure adherence to legislative framework	
There is a clearly defined disconnection policy for non payment	
National legislation promotes appropriate technical choice for public health	
Local bye-laws promote appropriate, technical choice for public health	
Legislation allows for community/consumer involvement in public health	
Legislation allows for private sector involvement in public health	
There are effective methods open to the institution to seek to adapt its legislative framework as its operating environment changes	
TOTAL Legislative Framework (total scores/10)	

[After "WASH" 37, (Culliivian et al, 1986)]

Organisational and staff culture

Organsational culture is the set of values and norms, which inform and guide everyday actions, which translate, into behavior, which can be observed. Although often unstated, an organisation's culture serves as a powerful means of defining and justifying organisational operations either in positive or negative ways.

The organisation with a positive culture has a clear sense of mission and identity. This is often expressed by a majority of the employees in the form of 'Iegends' about the organisation, or messages about'who we are'. In positive terms this often takes the form of a sense of pride in belonging to the group and a sense of history of the organisation which is passed on from old to new employees.

Part of the culture is the way in which staff are maintained and developed. In addition to a regular process of skills transfer (continuous learning), effective institutions provide sufficient incentives, compensation, employee benefits and promotion opportunities so there is a minimum of unwanted turnover. People are seen as the most important asset.

Very low	Low	Medium	High	Very high
1	2	3	4	5

An observable team spirit exists among the staff	
People express a sense of ownership and pride about working that is expressed in statements such as 'this is a good place to work'	
There is a clear commitment to the organisational goals at all levels of the staff, people feel involved in and informed about the institution's activities	
The commitment to personal goats is demonstrated by individuals support for the organizational goals	
Staff believe they are trusted in the organisation with responsibility and authority	
Staff are committed to improving their skills and knowledge and attitudes; people are interested in learning new things and new ways of doing things	
Line managers are committed to and involved in the development of their staff	
The organisation provides adequate salaries and incentives to maintain and motivate staff	
Active systems are in place for providing ongoing formal and informal feedback to personnel about job performance	
Individual corruption to the detriment of the organisational team is seen as unacceptable	
A clear system exists for hiring qualified personnel and firing or disciplining staff when Necessary	
Staff place a value on maintaining the facilities of the organisation, for example the offices,	

treatment plants and grounds, sign boards, so they look clean, well maintained and attractive	
TOTAL Organisational and Staff Culture (total scores/12)	

[After 'WASH" 3 7, (Cullivan et al, 1986)]

Total Score for assessment

Average for the category: Score

Leadership	
Organisational Autonomy	
Management & Administration	
Legislative Framework	
Consumer Orientation	
Commercial Orientation	
Technical capability	
Human resource Development	
Organisational Culture	
Perceived average for the institution	

Customer Perception Survey

KWAME NKRUMAHUNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA

Department of Civil Engineering
WATER SUPPLY AND ENVIRONMENTAL SANITATION PROJECT
Netherlands sponsored project in cooperation with IHE-Delft

Tel/Fax:+233-51-60235 e-mail: wsesp@africaonline.com.gh

Dear Customer,

GHANA WATER AND SANITATION SECTOR PERFORMANCE STUDY

As part of efforts to improve the Water and Sanitation sector performance, this study is being carried out to determine the sector responsiveness to her esteemed customers. Sector performance measurements from customers will be correlated with that from verifiable performance indicators.

Customer selection for the survey was achieved by random selection from customer database. This survey is an anonymous survey. Self-addressed envelopes have been enclosed for the filled questionnaire to be returned to us.

The outcome may form a basis for further improvement of services to you (customer). We kindly ask you to fill in the questionnaire and send it back to us via the self-addressed envelope.

Further information may be obtained from telephone No 051-60235 or e-mail wsesp@africaonline.com.gh.

Counting on your cooperation to help us improve sector performance.
Thank you.

Yours faithfully,

Kwabena B. Nyarko
Researcher -WSES

Customer perception survey

Date: **Region**: **Area:**
Service category: (a) Domestic (b) Commercial (c) Industrial (d) Institutional e) Government

Water services from GWCL
Please underline where applicable.

1. *Do you have access to water?* (a) Yes (b) No
2. *Is GWCL your only source of water?* (a) Yes (b) No
3. *Is your account metered?* (a)Yes (b) No
4. Is meter read regularly? (a)Yes (b) No
5. Are Bills received regularly? (a)Yes (b) No
6. *How many **hours** in a day do you receive water?*

A) less 8 b) 8-16 c) 16-24…….

7. *Are you satisfied with GWCL water service?*

(a) Yes (b) No

8. *How will you grade the level of satisfaction?*
   (a) Excellent (b) good (c) fair (d) poor (e) very poor
9. *What improvement would you like to see?*……

   ……..
10. *Have you ever made a complaint to GWCL?* (a) Yes (b) No
11. *How are complaints made?* a) Phone b) personally at the office

c) other ……

12. *Did you get a satisfactory response?* (a) Yes (b) No
13. *How will you grade GWCL's response to a complaint?*
    a) Excellent (b) good (c) fair (d) poor (e) very poor
14. *Are you notified before service interruption?*

a) Yes b) No c) Sometimes

15. *What is your impression of GWCL's notification to service interruption*
    a) Excellent b)good (c) fair (d) poor (e) very poor
16. *What is your impression about the water quality?*

- ***taste***? a) Excellent b)good (c) fair (d) poor (e) very poor
- ***smell***? a) Excellent b)good (c) fair (d) poor (e) very poor
-***colour***? a) Excellent b)good (c) fair (d) poor (e) very poor

17. *What is your impression about the water price?*

(a) Low (b) average (c) high

18. *Do you want GWCL to be privatised?*

a) Yes (b) No (c) some aspects (d) No comment

19. In your opinion, is the GWCL's services improving or deteriorating?
a) Improving b) deteriorating

20. *What is your opinion on GWCL's attitude to customers?*

a) Excellent b)good (c) fair (d) poor (e) very poor

International Sector Environment Analysis (ISEA)

This study intends to examine the impact/effect and effectiveness of the ESAs on the Ghana Water and sanitation (WATSAN) sector. This is part of a research to identify "drivers for performance" in the WATSAN sector.

Open Ended Questionnaire to ESA

1. How long has your agency been active in the drinking water sector in Ghana?

2. What is the role of your organisation in the drinking water sector in Ghana?

3. What are your policies regarding the drinking water sector in Ghana?

4. What is your perception about the ESAs contribution to the drinking water sector in Ghana?

5. Does the policies and strategies of the individual ESAs (donors) in any way hinder the sector growth?

6. Are there any conditions attached to your agencies the support to the drinking water sector in Ghana?

7. In your view, what has been the main influence of your agency on the sector?

8. What are some of the problems your agency encounter in supporting the Drinking Water sector in Ghana?

Thank you.

Assessment of the role of the macro environment

Respondents: service providers, water supply related institutions, private sector.

What is the impact of the political, economic and social cultural evolution on the water sector development?

What is the effect of the international sector environment on the sector institutional arrangement?

In what way does political interference manifest in the drinking water sector in Ghana?

What is the main driver for efficiency in UWS?

How is the sector regulated (economic and environment), what are the main mechanisms making the regulation effective?

Are there any provisions to address the needs of the vulnerable groups?

What is the level of private sector involvement in the drinking water sector in Ghana?

How is the private sector regulated in the drinking water sector in Ghana?

What are the incentives enhancing improvement of urban water supply?

What is the level of customer involvement?

What is the extent of customer influence?

Curriculum Vitae

Kwabena Biritwum Nyarko was born on the 17th August 1971 at Ho in the Volta Region of Ghana. He attended Ridge Experimental School in Sunyani. He attended Prempeh College from 1982 to 1989. He was enrolled in the Civil Engineering degree programme at the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana in 1990 and graduated in 1994 with a first class honours.

In 1996, he enrolled in the Sanitary Engineering MSc programme in UNESCO-IHE, Delft the Netherlands and graduated in April 1998. His thesis was on "Water Quality Modelling: A Case study of Kumasi Water distribution Network". In 2000, he obtained a fellowship from the Netherlands government to pursue a PHD degree within the Water and Sanitation Sector Capacity building programme in the Department of Civil Engineering, KNUST.

He is married to Dr. Alberta Biritwum Nyarko and they have been blessed with two children, a boy and a girl. He is a Christian.

He is currently a Lecturer in the Civil Engineering Department, KNUST and the Sectional head of the Environmental Quality Engineering Division in the Department of Civil Engineering.

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