PRIVATIZATION OF COUNCIL WATER SUPPLY SERVICES : AN EVALUATION OF PERFORMANCE, EFFICIENCY AND EFFORT BY THE NEW WATER PROVIDERS TO IMPROVE SERVICE DELIVERY: THE CASE STUDY OF LUSAKA WATER AND SEWERAGE COMPANY

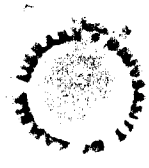
BY

FRED BANDA

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF PUBLIC ADMINISTRATION.

THE UNIVERSITY OF ZAMBIA

FEBRUARY 2010



Declaration

I, Fred Friday Denis Chulu Banda, do hereby declare that this dissertation represents my own work, and that it has not previously been submitted for a degree at this University or any other University.

Signature---------- Date----------01-03-2010

Certificate of approval

This dissertation of Fred Banda has been approved as partial fulfilment of the requirements for the award of the degree of Master of Public Administration.

0279152

Name of supervisor DR WESTON MAFULEKA

Signature Mafuleka Date 25/02/10

Name of Internal Examiner PROF JOTHAM C. MOMBA

Signature Date 25/02/2010

Name of Internal Examiner Dr. M.C. Bwalya

Signature Date 01/03/2010

Abstract

The purpose of this dissertation was to evaluate the effort, efficiency and performance of private water utilities to improve service delivery in Chawama Township, by Lusaka Water and Sewerage Company (LWSC). 200 household heads who were selected using systematic sampling, were interviewed in addition to the Lusaka City Council Engineer and Lusaka Water and Sewerage Company's Director of Corporate Affairs. To evaluate performance and efficiency, benchmarks set up by NWASCO were used. Key findings are that Lusaka Water and Sewerage Company did not improve service delivery in Chawama. The following benchmarks were not met:

(1) Unaccounted for water has not been reduced.

(2) Hours of supply have not improved.

(3) Water coverage has not improved.

(4) Sanitation coverage is non-existent

(5) Lusaka Water and Sewerage Company has not invested in water infrastructure, this in turn contributes to unaccounted for water.

(6) Lusaka Water and Sewerage Company has not improved its staff efficiency, there are 15 workers to 1000 connections.

(7) Collection efficiency has not improved as well.

In order to improve service delivery in Chawama, Lusaka Water and Sewerage Company should invest in water infrastructure given that its infrastructure is old and dilapidated so that unaccounted for water is reduced and water supply is improved. Lusaka Water and Sewerage Company should reduce its workforce in order to reduce operational costs so that the money that is saved can be channelled into service provision.

Acknowledgement

I would want to thank God for helping me complete my research and MA. I would also like to thank my supervisor, Dr. W Mafuleka, for guidance along the way; my wife Emelda, my two sons, David and Solomon, for their emotional support and my sister, Margaret, for her encouragement and support. I would also like to thank the interviewees, for their time and effort.

Fred Banda

Dedication

I dedicate this thesis to my wife, Emelda, my two sons, David Mutendele and Solomon Madaliso Saviour, my sister, Margaret, including members of the extended family, for their inspiration.

Acronyms

CHWSC	Chambishi Water and Sewerage Company
CWSC	Chipata Water and Sewerage Company
DISS	Department of Infrastructure and Support Services
DTF	Devolution Trust Fund
GRZ	Government of the Republic of Zambia
KWSC	Kafubu Water and Sewerage Company
LCC	Lusaka City Council
LGWSC	Lukanga Water and Sewerage Company
LWSC	Lusaka Water and Sewerage Company
MLGH.	Ministry of Local Government and Housing
MWSC	Mulonga Water and Sewerage Company
NWASCO	National Water And Sanitation Council
NWSC	Nkana Water and Sewerage Company
NWWSC	North Western Water and Sewerage Company
SWSC	Southern Water and Sewerage Company
WWSC	Western Water and Sewerage Company

List of figures

List of tables

Research layout

The dissertation is divided into five chapters. Chapter one provides the introduction, background of the study, problem formulation, objectives, conceptual framework and literature review. Chapter two looks at factors that are critical in sustainability of water supply. Chapter three evaluates the performance of water utilities in Zambia. Chapter four evaluates the performance of Lusaka Water and Sewerage Company. Research results are presented and discussed in Chapter four. Conclusions and recommendations on how to improve service delivery are presented in Chapter five.

Table of contents

CHAPTER ONE

1.0 INTRODUCTION

The dilapidated state of municipalities and the near total collapse of municipal infrastructure and services in several countries have put greater emphasis on the need to privatize council services. It has been generally argued that privatization of municipal services provision would ensure greater efficiency and effectiveness. Consequently, many countries including Zambia have in recent years embarked on some of these processes.

Privatization is an accepted strategy to improve the economic efficiency and quality of services provided by municipal councils. A lot of studies on the performance of private water utilities have been carried out in the developed countries, but few in the developing countries. Thus the impact of using the private market to allocate public resources has not been adequately researched in the developing countries. Literature on privatization seems to suggest that privatization is influenced by political and economic conditions of a country. The literature further suggests that no model of privatization has universal solutions for all problems of privatization.

This dissertation has attempted to provide an insight in water privatization in a developing country with a weak economy by evaluating effort of Lusaka Water and Sewerage Company to improve service delivery in Lusaka. The perceptions and experiences of residents of Chawama Township a peri urban area, regarding the performance of Lusaka Water and Sewerage Company have been analyzed.

Since the 1990s, following USA and UK experiences, both developing and developed countries have accelerated the privatization of traditional municipal water supply services. This has been necessitated by the belief that the private sector is more efficient than the public sector in the provision of water. Water privatization is increasingly widespread in Sub-Saharan Africa, and it is now on the agenda in most countries, including Zambia.

1.1 Background of the Study

Unlike many other countries in the region Zambia has more than adequate water resources. The annual rainfall in Zambia averages between 1400 mm in the north and gradually reduces to 700 mm in the south. The country is rich in rivers, in addition to lakes Tanganyika, Mweru and Kariba. It has a well distributed system of perennial rivers, streams, lakes and swamps throughout the country. The surface water resources are estimated to cover 45,000 square kilometers.

Zambia enjoys favourable ground-water conditions compared to most countries in Southern Africa with regard to storage capacity, depth, available yields and exploitation potential. The exploitation of ground water resources in the country is not regulated or monitored. This is because groundwater has always been regarded as privately owned. There are significant regional differences across the country with regard to place and time when water is available. Also groundwater availability is unevenly distributed. During the dry season water resources may be scarce, especially in the southern part of the country.

It is estimated that only 1.5% of the annual renewable water resources are being used at present. Therefore the main problem is not availability but inadequate access. Data on coverage varies depending on source (especially due to differing criteria), but approximately 65% of the urban (only 45% of Peri-Urban) population and 40% of rural inhabitants have access to clean drinking water. Sanitation coverage is around 50% for urban areas (down to only 10% in Peri-Urban areas) and 60% for rural areas. According to the baseline study on water supply and sanitation in Zambia conducted in 2005 about 2.4 million out of 3.8 million people in peri-urban and low-cost areas alone, did not have access to sustainable water supply. Without significant interventions this figure could go up to about 4.7 million at current growth rate by 2015.

Zambia, in the tropics of Sub-Saharan Africa, is a landlocked country sharing the borders with Namibia, Malawi, Tanzania, Zimbabwe, Botswana, Mozambique, Angola and the Democratic Republic of Congo. Its population is close to twelve million, with 60% living in rural areas. The capital city, Lusaka, has roughly 3.1 million people.

Over the years residents of city of Lusaka have experienced a continuous deterioration in the quality and level of service delivered owing to the following reasons:

- Poor management of the networks due to insufficient qualifications of key managerial and operational staff and sheer incompetence.
- Non adherence to minimum basic maintenance standards.
- Using inappropriate technology.

The Government of Zambia embarked on reforming the water sector in 1997 in order to address these concerns. The reform process involved the enactment of the Water Supply and Sanitation Act No.28 of 1997. This Act provides for the establishment by local authorities of water supply and sanitation utilities, to provide for the efficient and sustainable supply of water and sanitation services under the general regulation of the National Water Supply and Sanitation Council.

Infrastructure maintenance is one of the biggest challenges confronting the water supply sector in developed and developing countries. Another challenge for developing countries such as Zambia is to extend the network in order to expand the coverage of the consumers. Both network maintenance and network extension require huge investments, but the funding of such investments poses major problems in both developed and developing countries. The most common solution proposed consists of market-based reform, which includes operating the system on a full cost-recovery principle, preferably private sector participation.

The water industry being a natural monopoly is not free from problems. These are associated with lack of competition regardless of who owns or operates the system. The problems may include charging higher tariffs, or lowering production costs by decreasing

the quality of service. In such circumstances, government intervention, either through appropriate regulation or public provision of the service, is proposed.

Privatization is an accepted strategy to improve the economic efficiency and quality of services provided by municipal infrastructure. However, the impact of using the private market to allocate public resources has not been adequately researched. One of the key criticisms of the private sector is the price increase that occurs once water supply is transferred into their hands. Often times, a key component of public resistance to water privatization is anger at price rises. For example, privatization in Conakry, Guinea, saw a 500 per cent increase over five years – an unacceptably high price that led to the government not renewing the initial ten year contract.

In Cochabamba, Bolivia, privatization led to an immediate 68 per cent rise and, as the water company sought to maintain its profits in the face of non-payment, people were charged for collecting rainwater. As in many other countries, this price increase led to massive protests, including demonstrations by hundreds of thousands of people. This eventually resulted in the termination of the contract. Similarly, in Tuchman province, Argentina, a doubling in water rates led to a non-payment campaign and re-nationalization.

In view of this background, the aim of this research study was to evaluate efforts of privatization of water supply services in Lusaka's Chawama Township. The evaluation was based on a detailed review of water privatization literature, water reports by NWASCO and primary data collected from residents of Lusaka's Chawama Township, Lusaka Water and Sewerage Company and Lusaka City Council.

1.2 Statement of the Problem

Cities and towns in developing countries face major urban management problems that are impacting negatively on their efforts to provide social services in a sustainable manner. Rapid population growth, urbanization and continued rural-to- urban migration have led to uncontrolled urban growth, proliferation and entrenchment of illegal settlements, and subsequently inability of councils to provide adequate urban and social services, particularly water service.

Like other forms of public infrastructure, water-supply systems are experiencing management and operational problems. Whether it is the neglected and leaking water system of large urban cities like Lusaka or Kitwe, the inability of many councils to finance the rising cost of meeting environmental standards, or the water-supply reliability crisis facing several councils, the evidence suggests that an important source of the problem is institutional, it concerns the ownership and regulatory structures governing water-supply systems.

The problems that plague municipal water-supply systems become especially significant when it is realized that the larger part of water-supply infrastructure is owned and operated by councils and hence does not face any form of competition to improve performance. Moreover, under severe fiscal pressure, local governments increasingly lack the financial and technical resources to efficiently operate and maintain these systems.

Hence, not only are many public water-supply systems in poor physical condition, but local governments lack both resources and incentive to properly repair them.

On account of this, the Zambian government transferred the traditional municipal function of water and sewerage provision to new commercial utility companies. The Devolution Trust Fund (DTF) was established in 2001 by government to finance projects for private water utilities to extend their services to peri-urban areas. The aim was that 80% of the urban and peri-urban population by 2010 should have access to safe and adequate water supply and 70% should have access to proper sanitation systems (FNDP, p. 190).

In 2002 total investments in water and sanitation were estimated at US$ 33.5 million, this included US$ 33 million by donors and NGOs (98%) and US$ 0.5 million (2%) by the government using its own resources. Government capital expenditures had been budgeted at US$ 6.1 million for 2002, but only 9 percent of that amount was actually invested.

However the Baseline Study from 2005 indicates that about 65 percent and 72 percent of the residents of peri-urban and low-cost areas, respectively, did not have access to sustainable water supply and acceptable sanitation. In Lusaka, residents have over the years experienced a continuous deterioration in the quality and level of service.

Hence the question that needs to be answered in this proposed study is:

What efforts have the new Water providers made to improve service delivery?

1.3 The Aim of the research study

The aim of the study was to find out what private water utilities have done to improve service delivery in Chwama Township.

1.4. The General 0bjective

In order to achieve the above aim, the following objective was identified:
To evaluate effort privatized water agencies have made to improve water supply in Lusaka, particularly in Chawama Township.

1.4.1 Specific Objectives

1. To find out measures put in place by the Lusaka Water and Sewerage Company to improve the quality of water for Chawama residents.
2. To investigate what the Lusaka Water and Sewerage Company has done to reduce the cost of maintaining water infrastructure.
3 To evaluate performance, efficiency and effort of Lusaka Water and Sewerage Company to improve service delivery.

1.5 Rationale

The significance of this study is that the findings will be used by future students as sources of literature to establish existing gaps in knowledge relating to their proposed studies. Policy makers can also use recommendations of the study to improve water delivery.

1.6 Methodology

This study involves carrying out a survey in Chawama Township, a peri urban area of Lusaka. Chawama Township was chosen because it is one of the biggest peri- urban areas in Lusaka which solely depend on LWSC for its water needs. The residents were interviewed about what efforts the company had put in place to improve water service delivery. A Council official and a LWSC official were also interviewed. Water Sector supply and sanitation reports prepared by NWASCO were also perused.

1.6.1 Sample Size and Sampling Procedure

The size of the sample was 202. It comprised 200 residents of Chawama who are household heads, the Lusaka Water and Sewerage Company Director of corporate affairs and Lusaka City Council Director of Engineering. The sampling frame was a list of Chawama households with permission to develop, generated by Lusaka city council the Planning Authority. Systematic random sampling was used to select 200 household heads to establish what efforts the company has put in place to improve water service delivery. Every twentieth house on the list was picked. The first household was randomly selected. Purposive sampling was used to select the Lusaka Water and Sewerage Company Director of Corporate Affairs and Lusaka City Council Director of Engineering because they are key persons in their respective organizations. The sample size of 200 was adequate to generalize the findings to the entire population of Chawama.

1.6.2 Methods and Techniques of Data Collection

The UNZA Library and NWASCO were used as sources of secondary data which included documents relevant to the proposed study. Oral interviews were used to collect data from the officials of Lusaka Water and Sewerage Company and the Lusaka City Council. Questionnaires were administered to collect data from residents of Chawama. For detailed information relating to the design of the questionnaires, samples are attached to the thesis as appendix from page 89 to 101.

1.6.3 Data Analysis

Data was collected, organized, examined and reviewed using quantitative and qualitative analyses. Quantitative data was coded and entered into the computer using SPSS. Percentage tables and figures were done. Cross tabulations were also done. Qualitative data was analyzed using analytical comparison. A method of agreement and differences forms the basis for analytical comparison. The researcher first compared responses of each respondent against other respondents, and second, he compared the primary data

against public choice and market theories and literature review. Similarities and differences between the collected data and theory were at the core of qualitative data analysis.

1.6.4 Research Limitation

Although the findings of the study are valid, a lot of problems were encountered during the study. Respondents were evasive when answering questions. They thought that the researcher was an employee of LWSC. Because of this, they tended to give information that was not factual. Others thought that since they paid rentals to the landlord they were not obliged to pay for water to Lusaka Water and Sewerage Company.

A few were not cooperative because they were very disappointed with Lusaka Water and Sewerage Company on account of its poor service, and therefore did not want anything to do with Lusaka Water and Sewerage Company's study. Similarly, the information given by LWSC and LCC did not tally with the information appearing in water reports which are prepared by NWASCO, the regulatory authority. It was also difficult to get an appointment with the key persons in the two institutions. This led to the prolonged duration of the study. Financial constrains were also encountered owing to the elongated period.

1.7 Conceptual Framework

This study will be guided by two theoretical constructs. These are market theory and public choice theory. The two theories provide the theoretical framework for the study. Public choice theorists argue that the lack of competition in the public sector shows that the public sector is inherently inefficient. If competition for public goods occurs between the public and private, or among private providers, the individuals can make their own choice. Thus, the competition might serve the individuals' best interests and save some money. Market theorists argue that private agents produce much better outcomes than their public counterparts if the ideal conditions are created. Service delivery therefore for local public goods has been shifting from the public sector to the private sector.

According to Greene, (2002), government plays a watchdog role for good performance for services under contracting out (contracting).

1.7.1 Market Theory

The primary focus of this theoretical construct is an assumption that private agents produce much better outcomes than their public counterparts if the ideal conditions are created for the free markets such as various competing agents, free entry to the markets and information exchange. The key reason behind this logic is that market's power can be transferred through contracting (Greene, 2002,). The underlined notion is that contracts may as well serve to balance off the trades between costs and quality of services. However, this theory fails in explaining how such idealized model can best meet public's other values and preferences such as equity, effectiveness, and accountability.

1.7.2 Public Choice Theory

Many scholars argue that much of the theoretical background for privatization comes from *public choice theory* (Buchanan & Tollison, 1972; Greene, 2002; Miranda, 1994; Schawartz, 1994). By employing the major public choice assumptions through laissez-faire individualism and free market mechanisms, Niskanen claims that the competitive market-place produces goods efficiently, while public monopolies are viewed as inefficient and unresponsive (Niskanen, 1971, 1975). Utility maximization of the bureaucrats (budget-maximizing bureaucrat) (Miranda, 1994; Niskanen, 1971) is a major assumption of public choice theory.

Public choice theorists argue that the lack of competition in the public sector shows that the public sector is inherently inefficient. (Niskanen, 1971). If competition for public goods occurs between the public and private, or among private providers, the individuals (taxpayers) either can participate in policy process (voice), or 'vote with their feet' (exit) and move to the communities that offer the best bundle of services/costs (Peterson, 1981; Tiebout, 1956).

Tiebout (1956) argues that the communities with stronger tax bases can compete very well in this competitive market. Thus, the competition might serve the individuals' best interests and save some money. Yet, if the poor communities cannot compete, they have

to find new ways to deliver services efficiently and to attract newcomers to the lower tax based municipality.

In the face of fiscal and economic pressures due to limited local resources, combined with decreases in Central Government funding in developing countries, many local government policy makers are turning to privatization as an alternative service delivery strategy. This has opened up the debate on whether local governments should remain a direct service supplier, or whether they should change their role into one of a service broker and monitor through managed contracts with outside vendors. The core questions in this debate have been about the effectiveness and quality of the services provided by the private utilities, as well as about the local governments' ability to exercise and maintain constant control on the quality of the service in their areas of jurisdiction.

While many countries have privatized the water sector, Zambia has not fully privatized water provision. It has only commercialized the sector in order to improve service provision. Commercial Water utilities are not owned by private individuals. They are owned by Municipal councils. Municipal councils are the sole shareholders in the water utilities, they appoint the Boards of Directors, which recruit and oversee the performance of senior management of the companies. Private investors have not been attracted to invest in the sector because of low cost recovery. The commercial utilities are funded by donors and government through Devolution Trust Fund to enable them extend service to peri-urban areas. This study will thus examine the efforts water utilities have made to improve service delivery in Zambia using privatization as a strategy to improve service delivery.

This paper approaches the issue of water privatization through public choice and market theories framework. Privatized water supplies have spread internationally as a means to improve service delivery. This study will examine the efforts private water utilities have made to improve service delivery using the two theories.

1.8 Definition of Terms

Privatization. A form of public-private partnership in which ownership rights to an operational government asset, facility or facilities are transferred to a private sector company by a governmental agency either by sale or long-term lease.

Public-Private Partnership. A contractual relationship through which responsibility for any, or all of the financing and construction, operations, or maintenance of public sector facilities or services is transferred to a private sector company.

Water Utility. An entity created for the purpose of providing potable water and/or wastewater collection and treatment services to a group of customers who are typically residential or commercial in nature. Water Utilities may be privately owned (subject to governmental regulation of rates and quality of service), or publicly owned and operated as an enterprise of municipal, regional or state government.

The term 'privatization' according to Gleick et al. "involves the transferring of some or all of the assets or operations of public water systems into private hands".

Although a quite loose definition it serves its purposes and explains the process of increasing private sector involvement in the management of water and/or sewerage away from public control/ownership. Another commonly used term is 'private sector participation' (PSP) and that usually refers to the participation of private companies in water management, in contrast to small-scale operators that are still also considered to belong to the private sector.

1.9 Types of Private Sector Participation

Service contract

Public enterprise retains overall responsibility for operations, maintenance and capital investments required for the network except during the execution of single function contracts, which focus on specific services only.

Lease contract

A private operator leases or rents the assets of the utility from a public authority. The private operator assumes full responsibility of management, operation and maintenance of the entire system while government retains responsibility for financing and planning for new investments and major rehabilitation of the physical infrastructure.

Concession

The private operator assumes responsibility for operation, management, and maintenance and capital investment for the whole utility during a specific period.

Build Operate own Transfer (BOOT)

The private assumes responsibility for financing, building, operation and management of the facility. The assets are transferred to the public authority after an agreed duration, normally after capital costs and reasonable investment are realized.

Build Operate Transfer (BOT)

Government may invite the private sector to participate in the operation of a particular part of the network. The private sector may undertake the construction or rehabilitation of a specific component of the network, operate it for a specific period and relinquish all rights to the state at the end of the contract period.

Divestiture

The private operator assumes responsibility for operation, management, maintenance and capital investment. The assets are transferred to the private operator.

For the purpose of this thesis, I shall use the term 'privatization' to encompass all of the above mentioned definitions, since it is the principal shift from public to private water management that is the focus of this research study, not the management type.

In many low-income economies, investment needs in the water sector are colossal and the affordability of rising water tariffs is usually a problem. Hence, neither full privatization, nor public–private partnerships which do not involve substantial transfers from the public sector, are attractive for the multinational investors who dominate the water sector (Kirkpatrick and Parker, 2006; Lobina, 2005). As a result, the commercialization of services under public corporations has become very attractive in many countries such as Zambia. Indeed, current trends in the low-income economies are increasingly being determined by corporatization of existing public suppliers and commercialization of services (Estache et al., 2005; Prasad, 2006; Smith, 2006). This is sometimes used as an intermediate step before further privatization, as in the case of water supply in Zambia.

The stated aims of commercialization in the water sector are cost recovery and improved access to water (McDonald, 2002). Apart from organizational changes, under the new framework, private water utilities are required to improve their billing and revenue collection rates, reduce overstaffing and rationalize tariffs in an effort to achieve full cost recovery. In practice, in low-income countries enduring a prolonged period of economic

austerity, the commercialization of water services has been an instrument for governments to relinquish their responsibility for funding investments in network expansion. While, in general, water sector reforms for improving efficiency, service quality and access are welcome, heavy reliance on tariff rationalization without paying much attention to investment and maintenance needs could be a serious problem.

1.10 Water Privatization Experiences

The move toward the privatization of water services raises many concerns, as well as strenuous opposition in some places. Opposition arises partly because of a fundamental distrust of corporate players and worries about the transfer of profits and assets outside of a community or even a country, and mostly because of doubts about whether purely private markets can address the many different social aspects of water. There is little doubt that the rapid pace of water privatization in recent years has failed to address some of the most critical issues and concerns about water, including protection of the environment and public participation in decision-making efforts.

The profit motive may provide private water companies with incentives to avoid conservation and efficiency measures since profits depend upon volumes of water sold. Also, the privatization of water utilities has posed risks of rate hikes, inadequate customer service, and reduced local control. Rates have increased as a way for private water companies to maximize profits in many USA communities where water has been privatized. Since the company is under little pressure to respond to consumer concerns, this may result in poor customer service.

Private water suppliers are accountable to their stockholders rather than to the public, and may not have economic incentives to make long-term investments in infrastructure and water quality monitoring. Once water rights have been signed, very little can be done to ensure that the private company will work in the best interest of the community. After being exposed to these risks, major cities in Georgia, Indiana, Illinois, Kentucky, and

Louisiana have cancelled water management contracts with private companies, or taken steps to buy back the assets of these companies.

During the 1990s there was increased water privatization activity, stimulated by donor agency pressures, and in 1997 the total figure for private investment had risen to $25bn. By the end of 2000, at least 93 countries had privatized some of their piped water services, including Argentina, Chile, China, Colombia, the Philippines, and the transition economies of Central Europe, as well as Australia and the UK (Brubaker, 2001).
Taking the period from 1990 to 2002, there were 106 such projects in Latin America and the Caribbean and 73 in East Asia and the Pacific region. By contrast there were only seven projects in the Middle East and North Africa and 14 in sub- Saharan Africa. In terms of the amounts invested, Latin America and the Caribbean and East Asia and the Pacific accounted together for over 95% of the total investment (calculated on the basis of data from the World Bank PPI Database). Clearly, a small number of countries accounted for most of the privatization of water services, and within these countries figures were dominated by a few large contracts. Indeed, one project, Aguas Argentinas, accounted for US$4.9bn or 20% of the investment in the whole of Latin America; while five Philippines contracts accounted for 38.4% of the total private investment in water services in East Asia.
The private sector's profit motive impels them to rapidly expand the level of billing and installation of meters. Unfortunately, increasing connections and investing in the network is less of a priority. Many poor people do not have access to networked services because the cost of connection may be as high as tariff levels. In some of the poorest regions, the connection tariff is so high that it is prohibitive for poorer consumers. For example in Buenos Aires, unconnected customers in the poorest regions were asked to contribute almost 20 per cent of their income to water connections, installations or maintenance.

1.11 Summary

This section has tried to look at water privatization experiences. While many private water providers have invested massively in water infrastructure in developed countries, a lot of concerns have been raised about private water utilities in developing countries with

weak economies. The first concern is that private water suppliers are accountable to their shareholders rather than to the public, and may not have economic incentives to make long-term investments in infrastructure and water quality monitoring. The second concern is that the private sector's profit motive impels them to rapidly expand the level of billing and installation of meters. Increasing connections and investing in the network however, is less of a priority. Many poor people do not have access to networked services because the cost of connection may be as high as tariff levels.

1.12 Public Versus Private Water Utilities

There has been a lot of debate on which type of model is efficient and effective in water service delivery. There have been several studies which have either supported private utilities or public water companies. A Study by Bhattacharyya, Parker, and Raffiee (1994) presents empirical evidence on the issue of efficiency of the private and public sector, examining costs of 225 public and 32 private US water utilities, using the data from a 1992 survey on the water industry. The statistical findings provide evidence that public water utilities are more efficient than private utilities on average, but are more widely dispersed between best and worst practices.

On the other hand, Foster (2005) and Crain and Zardkoohi (1978), investigating economic efficiency in public and private companies using data on water utilities in the United States, found that operating costs are significantly higher in water utilities that are publicly owned.. They use a cross-sectional sample consisting of 112 firms, 24 being private, and 88 being public, from 38 states in 1970 and estimated a cost function. Further, they showed that lower productivity per unit of labor input in the public firms showed that relatively more employees would be required for any given expansion of service than in private firms.

Byrnes, Grosskopf, and Hayes (1986) however found no significant difference in efficiency across ownership types. Their sample comprised 68 government owned and 59 privately owned water utilities operating in the US in 1976. Similarly, Fox and Hofler (1986) concluded that, in terms of aggregate cost, no statistical difference could be found between technical efficiency estimates for public and private firms, although allocative

efficiency differences were observed. The authors used US cross-section data for 1981 with a sample of 156 publicly and 20 privately owned utilities.

Other studies carried out by Willner and Parker (2002) on the question of private versus public efficiency, in both developed, developing and transition countries, observed that there was no consistent conclusion to be drawn. Some studies showed greater private sector efficiency, while others showed greater public sector efficiency or no difference at all. They therefore concluded that the evidence available suggested that a change of ownership from public to private was not necessarily an answer for an under-performing organization. Feigenbaum and Teeples (1983) found that despite differences in production technology of water operations, there was no difference in cost-of-service equations for public versus private water companies. They used data for 1970, which included 57 USA private and 262 US public water companies.

In the water sector specifically, research suggests that the private sector is no more efficient or effective than the public sector. Consequently, one research article concluded that the results showed that efficiency was not significantly better in private companies than in public ones. Another report concluded that there was no compelling evidence to date of private utilities out-performing public utilities, or that privatizing water utilities led to improvements in performance.

Research in Europe has demonstrated that public operators in countries such as the Netherlands are as efficient as their private sector counterparts in England and Wales. On the critical issue of leakages, they significantly out-perform the UK private companies. For example, in 2003, the average leakage rate across the water sector in the Netherlands was 5.4 per cent. In England and Wales, the leakage rate was 23.3 per cent on average, and 32.9 per cent for Thames water, the UK's most internationally active water company. The second fundamental flaw in the privatization of water and sanitation is the problem companies have in extending networks.

Evidence suggests that the privatization of monopolies produces ambiguous results in terms of improving economic performance (Megginson and Netter, 2001). The existing

case study evidence on the results of water privatization presents a mixed picture with some improvements in the reliability and quality of services and population served. Instances of high water charges and bouts of public opposition leading to cancelled water schemes also abound. This evidence is reviewed in Kirkpatrick and Parker (2004). Turning to the few published papers that have attempted a statistical or econometric analysis of the effects of water privatization in lower-income economies, these too present mixed results.

The earliest such study was undertaken by Estache and Rossi (1999). They compared private and public water companies in the Asian and Pacific region, using 1995 survey data from the Asia Development Bank, and found that private operators were consistently more efficient than state-owned ones. The data included 50 utilities and a stochastic cost frontier method was adopted. In stark contrast, however, a follow up study by the same authors came to exactly the opposite conclusion.

Estache and Rossi, (2002), using again stochastic cost frontier modelling and this time applying error components and technical efficiency effects models, but seemingly with data from the same 1995 survey by the Asian Development Bank, they concluded that efficiency was not significantly different in the private and state water sectors. Fifty water enterprises were included in their study from 29 Asian and pacific-region countries, with 22 having some form of private sector participation.

Yin Fang Zhang et al (2006) reviews the econometric evidence on the effects of water privatization in developing economies and presents new results. The analysis fails to show evidence of better performance of private utilities in comparison to state-owned utilities in Africa. Among the reasons why water provision could prove problematic in lower income economies are the technology of water provision and the nature of the product, transaction costs and regulatory weaknesses.

1.13 Summary

This section has tried to discuss private versus public water utilities. It has tried to look at both efficiency and effectiveness of private water providers in service provision. Studies carried out on the question of private versus public efficiency, in both developed, developing and transition countries, observed that there was no consistent conclusion to

be drawn. Some studies showed greater private sector efficiency, and others showed greater public sector efficiency or no difference at all. Thus, the evidence available suggests that a change of ownership from public to private is not necessarily the answer to an under-performing company.

1.14 Water Privatization in Sub-Saharan Africa

The privatizations are overwhelmingly dominated by the same French MNCs - Saur, Suez and Vivendi - that control the world's private water supply (Hall 2002). Africa is particularly important to Saur, where the company earned about one fifth of its revenue in 2001. The company has four long term contracts (Senegal, Cote d'Ivoire, CAR and South Africa as well as Guinea. The company is also involved in separate electricity projects in Guinea and Cote d'Ivoire. Vivendi has three big contracts in Gabon, Chad and Niger. Suez has just one long-term contract in Queenstown in South Africa. The company's other contracts are short term (Uganda – 2 years; South Africa – 5 years) and they now have two construction contracts in the water sector (Burkina Faso, Senegal).

Despite the French dominance, two other firms managed to move into the region. UK firm, Biwater, in March 2002 managed to secure a contract in Congo and the Portuguese government's Aguas de Portugal has contracts in Cape Verde and Mozambique.

Four of the enterprises privatized are joint electricity and water utilities (Gabon, Mali Chad and Cape Verde). Thus rather than unbundling before privatizing, these are sold intact. This can provide economies of scale but also ensures that the enterprise is of sufficient size to be of interest to investors (as was the case, for example, with the sale of the water and electricity utility in Gabon (Samuel 1999). So far, privatization has been carried out to some degree in fourteen Sub-Saharan countries. Some countries have been attempting to privatize for years but without success. There are also some that have terminated privatization contracts.

1.14.1 Planned Privatization

Several governments have announced plans to privatize their water. For example, in Burundi, the Privatization Minister reported in February 2002 that the privatization of the National Water and Power Distribution and Production Company (REGIDESO) was in an advanced stage. In Nigeria, the World Bank is assisting with establishing a regulatory framework for privatizing the sector through a concession contract In Rwanda, a management contract for the electricity and water utility, Electrogaz, was scheduled to be completed in 2002.

The Ugandan water authority has a management contract with Suez subsidiary, Ondeo, with a view to eventually establishing a lease arrangement separating responsibilities for operating the water supply from developing the infrastructure. In Zambia, the World Bank assisted privatization of the Lusaka Water and Sewerage Company. In Kenya, the Bank is developing plans for privatizing water supply and sewerage in Mombassa and the coastal region. It is also providing technical assistance for the preparation of a privatization strategy for the water supply and sewerage in Nairobi. Assistance for an assessment to privatize water sector in Blantyre and Lilongwe is also being provided by the bank.

1.14.2 Slow Privatization

Some governments have intended to privatize but have found the process to be slow. Despite lengthy negotiations, privatization processes have been running for years sometimes with no conclusion in sight. These experiences show the difficulties that privatization presents. Delays are usually due to inadequate investor interest, or to weak institutional capacity.

In Tanzania, the privatization of the poorly performing Dar es Salaam Water Supply and Sewerage Authority (DAWASA) was one of the preconditions given for Tanzania to qualify for the Highly Indebted Poor Countries (HIPC) initiative of the World Bank and the IMF. The government began the privatization process in 1997 when international operators were invited to pre-qualify for participation in DAWASA. However, no

contract was awarded and a subsequent bidding round for a lease contract took place in 1999. Two companies (Saur and Vivendi) submitted bids but their financial bids were found to be unsuccessful. Bidding was re-done in 2001. In 2002, bids were received from Biwater (UK) and Gauff (Germany) for the contract. Suez and Vivendi both withdrew, despite pre-qualifying. The privatization is intended to take the form of a lease contract for the first ten years before it becomes a concession contract.

In 1995 there were reports of planned privatization of the Electricity and Water Company of Guinea- Bissau. However in February 2002, it was reported that a direct sale of the company was favoured following the withdrawal of some companies and fresh interest displayed by others. Attempts to privatize the water supply in Cameroon have failed. The sale of the water company to Suez was reported in May 2000. The motivation to privatize was to meet conditions set by donors for the receipt of aid. However, some two years later the negotiations failed on account of low price.

In Ghana, bids have been invited for two leases for the national water supply which has been divided into two 'business units.' One lease will run for 30 years and another for 10 years. An earlier attempt in 2000 to involve the private sector failed when the World Bank withheld financing of $100m on account of the lack of transparency surrounding the award of a contract to Enron subsidiary, Azurix. In 1999, UK Company, Biwater, after extensive negotiation withdrew from a water privatization project in Zimbabwe on the grounds that local consumers could not afford tariffs that were sufficient to generate an adequate commercial return for the company.

1.14.3 Failed Privatization

In the Gambia, Kenya and South Africa, privatization contracts have been terminated. In the Gambia in 1993, a subsidiary of Generale des Eaux (now known as Vivendi) was, awarded a 10 year contract for the operation of water and electricity services. After the

1994 military coup the private company initiated an aggressive campaign to disconnect non-payers which was not supported by government (Kerf 2000). In 1995 members of staff were arrested for alleged contractual failures. The successes that were scored during the contract, in respect of increases in connections and reductions in un accounted for water, were not due to the privatization but to the implementation of a donor funded project by the public authorities, the study observed (Kerf 2000).

In July 2001, the government of Kenya suspended a controversial water contract with Vivendi subsidiary, Sereuca Space, following protests from civil society over procedural irregularities which came to light. In South Africa, the contract for Fort Beaufort (Nkonkobe) water was nullified in December 2001, effectively cancelling the contract with Suez subsidiary, WSSA following protests from civil society over procedural irregularities.

1.15 Literature Review

1.15.1 Introduction

This section reviews literature on water privatization. It has reviewed studies on the performance of private water utilities. It has reviewed studies in Latin America, Europe, Asia, Africa and Zambia.

The rapid expansion of the public sector raises many important questions about the appropriate role of the government in a market economy. Concern over the cost of excessive government ownership of industry led to the gradual privatization (then known as denationalization) efforts of the Adenaure government in Germany in the early 1960s and the Margaret Thatcher government in the United Kingdom in the early 1980s. The perceived successes of Germany and British privatization efforts attracted worldwide attention and encouraged similar privatization in France, Italy, Spain, Japan, Chile, Mexico, the former Soviet bloc and elsewhere.

Most of the literature surveyed in studies in both developed and developing countries shows strong support of private participation. Studies which research into the effects of privatization both in developed and developing countries over time (for example, Ramamurti [1996], Ros [1999], Ros and Banerjee [2000], Estache and Rossi [2002] and

Andre et al [2006]), all testify to the fact that private sector participation is associated with a decrease in labour force, an increase in labour productivity, output, coverage, efficiency and quality. The above studies are relevant to this dissertation because they provide insight into water privatization. However, given that no similar study has ever been carried out in Zambia, the intention of this study is to focus on what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap that exists in literature.

A study of water supply in Africa in the mid to late 1990s by Clarke and Wallsten (2002) reported greater service coverage under private ownership. On average, they found that supplies for lower-income households were smaller where there was a state-sector operator. Clarke and Wallsten (2002), therefore, concluded that private participation in water schemes leads to more supplies to poorer households than where there is a reliance on state-owned suppliers. Their study suggests that privatisation can improve service provision. However, the study observed that there may be offsetting service difficulties especially higher charges when supplies are privatized.

The above studies are relevant to this dissertation because they provide insight into water privatization. However, given that no similar study has ever been carried out in Zambia, the intention of this study is to focus on what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap that exists in literature.

Another study, by Estache and Kouassi (2002), used a sample of 21 African water utilities for the period 1995/97. They estimated a production function from an unbalanced panel data set and used Tobit modelling to relate resulting inefficiency scores to governance and ownership variables. The study concluded that private ownership *is* associated with a lower inefficiency score. However there is one weakness to this study, only three firms in their sample had any private capital. Levels of corruption and governance were far more important in explaining efficiency differences between firms than the ownership variable.

1.15.2 France

Balance and Taylor (2005), reported on a study of water prices in May 2001 by the French ministry of Agriculture and the French Environment Institute. The study was based on a survey of 5000 municipalities and covered 68 percent of the French population. They found that, on average, water delivered by private companies was 27 percent more expensive than that delivered by public operators.

The most important point from Ballance and Taylor's report is that private water utilities charge more than public water utilities. This essentially means that privatization of water leads to high tariffs. This study is therefore relevant to this dissertation because it provides insight into water privatization. The study did not however, look at the efforts the private companies had made to improve service delivery. Hence the importance of this study.

1.15.3 India

(Zerah 2000), carried out a study in India on how much people in unplanned areas were willing to pay to support a policy, which provided them with better and reliable water supply. The results revealed that households in India's unplanned areas, despite their poverty were willing to pay amounts significantly higher than the current tariffs for improved water services. The most important point to learn from Zerah's study is that many households in developing countries with strong economies like India are able and willing to pay for water and sanitation services if the water utilities are able to improve water services.

There is however one weakness to this study. The study did not look at the efforts the private companies had made to improve service delivery in India. Despite this weakness, the study provides evidence that in spite of privatization, many poor households in developing countries with strong economies are able and willing to pay for water and sanitation services if the water utilities are able to improve water services. This study is therefore relevant to this dissertation. The focus of this study is to find out what efforts private water companies have made to improve service delivery in Zambia.

This is necessary because no known study has ever been carried out in Zambia that evaluated effort of private water utilities to improve water service delivery.

1.15.4 Cambodia

In another study, Garn et al. (2000), compared the performance of private water utilities in four small towns in Cambodia to municipal water utilities in four other randomly chosen similar towns. The private utilities performed far better on all measures of performance (related both to technical and financial performance and to consumer satisfaction). A study of towns in Cambodia found that consumer satisfaction and service continuity was higher (however prices were higher and not affordable for all).

The following factors were identified for the good performance of private companies:

- Private utilities had a slightly smaller permanent staff than public utilities. This reduced costs.
- To supplement the permanent staff, private utilities, unlike public utilities hired temporary workers who assisted with the maintenance and tariff collection in different localities, thereby maximizing bill collection and infrastructure maintenance.

All utilities, except the utility in Svay Rieng, had metered all their connections and bill customers on a monthly basis based on meter readings so as to reduce water wastage and improve their revenue.

The study by Garn et al showed that the private utilities performed far better on all measures of performance (related both to technical and financial performance and to consumer satisfaction). The above study provides some useful lessons for this dissertation. However, given that no similar study has ever been carried out in Zambia, the intention of this study is to find out what efforts private water companies have made to improve service delivery in Zambia and fill the gap that exists in literature.

1.15.5 Chile

In another study, Bitran and Valenzuela (2003) compared the performance of the privatized and public water systems in Chile. The findings were that private utilities had increased investment and labour productivity more than public companies, although they

had also increased their rates by more, and had performed worse in dealing with unaccounted for water.

The study by Bitran and Valenzuela looked at the performance of private water utilities in comparison to municipal water utilities in Chile. The study showed that private water utilities had increased investment and labour productivity more than public companies, although they had also increased their rates, and had performed worse in dealing with unaccounted for water.

The most important point from Bitran and Valenzuela's study is that privatization in Chile leads to increased investment and labour productivity, although private water utilities also tend to increase their rates, and perform worse in dealing with unaccounted for water. However, given that no similar study has ever been carried out in Zambia, the intention of this study is to find out what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap that exists in literature.

1.15.6 Argentina

Galiani et al. (2003) looked at the effects of privatization on child mortality, using data from Argentina in the 1990s. They found that child mortality fell eight percent in regions that privatized their systems, and that the effects were largest in the poorest areas. The study showed that after privatization, physical, chemical, and bacterial quality improved. The most important point to learn from Galiani's study is that physical, chemical, and bacterial quality improved following privatization.

There is however one weakness with this study. The study did not look at the efforts the private companies had made to improve service delivery. Despite this weakness, the study is relevant to this dissertation, because it showed that after privatization, water quality in Argentina improved. This study therefore seeks to evaluate effort of private water utilities in Zambia to improve water service delivery.

1.15.7 Guinea

(Menard and Clarke, 2000) carried out a study on impact of privatized water utilities in Guinea. Their findings were that almost everyone agreed that water quality had improved in Guinea after privatization. Customer service had also improved. Unaccounted for water was still high at about 47 percent.

The important points from Menard and Clarke's study is that privatization in Guinea has led to improved water quality and improved customer service, although unaccounted for water tends to be high. This study is therefore relevant to this dissertation because it shows that privatization led to improvement in water quality and customer service in Guinea. However, it departs from the path of this study which looks at actions taken to improve the delivery of water services by private companies.This study is therefore necessary.

In another study, Brook Cowen, (1999) carried out a study on new connections in Guinea. The findings were that, extension increase was minimal, increasing from about 38 to 47 percent. The limited increase was due partly to the high price of water and connection costs. The low connection rate meant that water -related health problems remained a major issue due to the large number of customers who consumed unsafe water. Water was still high at about 47%.

Brook Cowen's study showed that privatization did not result in increase in new connections due to high water tariffs and connection costs. It is the intention of this dissertation therefore, to find out the general performance, efficiency and effort of private water utility firms to improve water service delivery in Zambia.

In another study, (Menard and Clarke, 2000) carried out a study on the financial performance of the private water utility (SEEG). The financial position of the private operator improved rapidly as a result of improvements in billing and large increases in tariffs. One of the first effects of privatization was a massive increase in the extent of metering. In 1996, the company made profits of $3.2m

After privatization, government agencies in Guinea do not pay their bills thus the financial well-being of the water sector is undermined by the non-payment of water bills by government agencies. Despite disappointing results, the company, SEEG, still made a profit. The financial position of the private operator improved rapidly as a result of improvements in billing and large increases in tariffs. In 1996, the company made profits of $3.2m (Menard and Clarke 2000).

There is one weakness to this study. Menard and Clarke did not look at the efforts the company had made to improve service delivery in Guinea. Despite this weakness however, the study showed that after privatization, the financial position of the water utility firm improved as a result of improvements in billing, large increases in tariffs and massive increase in metering. The focus of this study therefore, is to find out what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap in literature.

In another study, Kate Blysse, (1999) carried out a study on impact of privatized water utilities in Guinea. Her findings were that:

- **Service improvement:** Almost everyone agreed that water quality had improved in Guinea after privatization.
- **Customer service also improved:** It became easier to complain, register faults and get repairs done.
- **Rapid metering:** before reform about 5 per cent of customers had working meters. By 1996, 98 per cent of private customers were metered and 100 per cent of administration connections were metered.
- **Improved bill collection from private customers:** But this fell when the price increased. SEEG, the water utility does cut off supplies to consumers who do not pay their bill for three consecutive months.
- **Higher labour and total factor productivity:** the number of connections per workers increased dramatically following the layoffs at the time of reform but failed to increase significantly after that.
- **Price increment:** Prices increased more rapidly than planned and made it difficult for even wealthy people to pay. Prices in Guinea are higher than average

in Africa and Latin America. Costs are also higher. Tariffs are high by industrial as well as African standards.

- **Collection rates:** Still low because government still does not pay its bills and because of the weak legal environment which means that even where people do not pay there is little the company can do beyond cutting them off.

Important points to draw from this study are that connection rate rose from 38 percent in 1989 to 47 per cent in 1996. Labour productivity rose at the time of reform from more than 40 to 20 employees per 1,000 connections. Water quality increased, consumer service improved and metering levels rose dramatically.

There is one weakness to this study. Kate Blysse's study focused on the performance and efficiency of a private water utility, SEEG, in Guinea. The study did not look at the efforts the companies had made to improve service delivery. It did not state what type of measures were taken to improve service delivery in Guinea. The focus of this study therefore, is to find out what efforts private water companies have made to improve service delivery particularly in Zambia.

1.15.8 Senegal

In another study carried out in Senegal by (Tremolet et al 2002) on performance of private water utilities, the findings were that the utility company's financial position was overshadowed by non-payment of water bills by government agencies and low water tariffs. In Dakar, about 80 percent of the population had access to safe drinking water in 1994. This increased slightly to 82% four years after privatization. Bill collection was also good before privatization but it improved from 91% to 97 % due in part to government starting to pay their bills, as well as adopting a strict disconnection policy.

In 2002 it was reported that as many as 12% of existing connections were not in service in the area of operation in the capital, Dakar. The rate outside Dakar was even higher. Senegalaise des Eaux the utility company has exceeded targets for water quality since 1999 and customer service has improved. Leakage was cut from 31% to 22% (although this is still higher than the 15% target set in the contract.

There are several lessons to be learnt from this study. These are that, water privatization in Senegal has led to high quality water, improved customer service and a decrease in unaccounted for water. There is one weakness to the study by Tremolet. Tremolet et al (2002) looked at the performance of private water companies in Senegal. The study did not however, look at the actions the private companies had made to improve service delivery. Despite this weakness however, the study gives insights in water privatization and is therefore relevant to this dissertation. The focus of this study therefore is to find out what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap in literature. This justifies the study.

1.15.9 Cote D'ivoire

A study carried out in Cote d'Ivoire by (Kerf 2000) had these findings:

In Cote d'Ivoire the water utility SODECI was privatized in 1960. Operational performance has always been very good (until recently). There has been high water quality, a high collection rate from private users (although not from public users), high labour productivity (8 workers per 1000 connections in 1987); low levels of Unaccounted for water (about 15% in 1987 – similar to Western Europe). In 1987, the sector suffered a severe financial shock when an ambitious expansion programme coincided with macroeconomic shock and depressed demand for water large industrial users which were paying the highest rates sharply reduced their water consumption, meanwhile poor consumers increased theirs but they paid less so while the total number of consumers was unchanged the total revenue fell. SODECI's remuneration was about the same for all tariff levels but the revenue available to government was reduced substantially.

There are several lessons to be leant from this study. These are that, water privatization in Cote d'Ivoire has led to high quality water, high collection rate, high labour productivity, improved customer service and a decrease in unaccounted for water.While this study is relevant to this dissertation, it does not examine issues of effort made by private organizations to improve water service delivery for the consumers. Kerf.s focus was on

the performance of the water company only. This thesis therefore intends to focus on the efforts private water companies have made to improve water service delivery in Zambia.

Another study carried out by ((Menard and Clarke 2000). found that the utility company SODECI, was reported to be providing high quality water in the early 1980s, and met 99% of WHO water standards in 1997. In Abidjan, the connection rate declined from 81% in 1980 to 74% in 1986 but rose again to reach about 84% in 1996 (Menard and Clarke 2000a). Menard and Clarke in their research, assume 13.5 people per connection.). In Cote d'Ivoire, Unaccounted for water has been consistently less than 20% in Abidjan since the early 1960s and was about 16% nationally.The utility SODECI has remained profitable since 1986 and profits were approaching $4m in 1996 (Menard and Clarke 2000).

There are several lessons to be leant from this study. These are that, water privatization in Cote d'Ivoire has led to high quality water, improved connection rate, a decrease in unaccounted for water and high profits for the private company. This study is therefore relevant to this dissertation. The weakness of the study however, it did not evaluate effort of the utilities to improve service delivery. Given that no similar study has ever been carried out in Zambia, the intention of this study is to find out what efforts private water companies have made to improve service delivery particularly in Zambia and fill the gap that exists in literature.

(Tremolet et al 2002), reported that, revenues for the water utility, have been stagnating and profits have been reduced. The State remains a bad payer and collection rates have gone down with the recent economic crisis and. lack of accountability for overall performance. Government agencies in Cote d'Ivoire do not pay their bills thus financial well-being of the water sector is undermined by the non-payment of water bills by government agencies. Standards had also begun to decline and a third of the production centres, many of them in the interior, no longer met the WHO's water quality standards. Following recent social tensions in the country, the figure for Unaccounted for water is reported to be increasing and now stands at about 23% of water production.The study of Tremolet showed that profits had reduced and water quality had also reduced.

Though this study is relevant to this dissertation, it has one weakness. The study of focused on the financial performance of a private water utility, SODECI in Cote d'Ivoire. The study did not look at the efforts the companies had made to improve service delivery. in Cote d'Ivoire. It did not state what type of measures were taken to improve service delivery. This dissertation therefore, seeks to focus its attention on efforts by private companies to improve service delivery in Zambia.

1.15.10 Zambia.

A study was done by Ian Nzali Banda (2004) whose concern was private sector participation in the water and sanitation industry. He found that private water utilities had not met most benchmarks and had not invested in water infrastructure. There is one important point to learn from this study. This is that, water utilities in Zambia have not invested in water infrastructure.

Because of this, the water utilities have failed to provide quality service. However, there is one weakness with this study. Ian Banda's study looked only at the opportunities and constraints of water utilities in Zambia. The study did not look at the efforts water utilities have made to improve service delivery. This justifies this study.

Another study by Hulya Dagdeviren (2005), found that water utilities in Zambia were not able to attain cost recovery because the utilities were not only unable to reduce unaccounted for water but failed to improve their collection efficiency. In addition many consumers were not metered, they just paid a fixed rate irrespective of the water consumed. The fixed rate though low, when compared to other countries, was not affordable by many consumers. She concluded that all water utilities except Chipata Water and Sewerage Company had water infrastructure which was over forty year old and needed either rehabilitation or replacement.

There is one important point to learn from this study. This is that, water utilities in Zambia do experience low cost recovery. Because of this, the water utilities have failed to provide quality service. This study is therefore relevant to this dissertation because it provides insight into water privatization in Zambia. However, there is one weakness with this study. Hulya Dagdeviren's looked at cost recovery of water utilities. The study did

not look at the efforts water utilities in Zambia have made to improve service delivery. This study is therefore relevant.

1.15.11 Conclusion

This section has tried to review literature on performance of water utilities. Studies in developed countries so far reviewed indicate that private water utilities have improved water quality. The utilities have made massive investment in water infrastructure. They have also increased connection rates. Unaccounted for water has also reduced.

However, studies in developing and transitional economies, showed that water privatization may reduce access to water for low income groups on account of increased water tariffs. Water utilities do not invest in infrastructure because of low cost recovery. Unaccounted for water is not reduced because of old water infrastructure which has not been rehabilitated. Water utilities are often overstaffed leading to immense operating costs which impinge on service provision.

These studies are useful to this dissertation because they have shown that there is no model of privatization which would offer universal answers and solutions for all the problems of privatization, and that no model implemented alone is ideal. Their combination is the most reasonable economically and socially. It is for this reason that this study is relevant because it seeks to fill the gap in literature.

CHAPTER TWO

FACTORS WHICH INFLUENCE SUSTAINABILITY OF URBAN WATER SUPPLY

2.0 Introduction

This chapter discusses critical factors that are perceived by consumers and water providers to improve service delivery. These are policy, social and economic factors.

2.1 Policy Factors

Policy factors are critical in improving service delivery of urban water supply because they provide a framework in which urban water supply is implemented. These are policy context, legal framework and institutional capacity.

2.1.1 Policy Context

The policy context within which urban water supply system is developed and implemented is critical to providing an enabling environment which ensures long term sustainability. Without a comprehensive policy, different players employ different implementation approaches and technologies which can result in a fragmented and unsustainable urban water supply.

Therefore in order for policies to be effective in fostering change, they must be developed and formulated with the involvement and participation of all stakeholders. The development of unambiguous policies attract foreign investment in water sector because this safeguards their investment portfolio. Policies also facilitate programme implementation and help to define accountability measures.

2.1.2 Legal Framework

A legal framework in the water and sanitation sector which contains unambiguous policy statements pertaining to water and sanitation provides guidance to all agencies working in the sector. Sound water policies and laws are also critical for an integrated water resource management. It is also important to ensure that institutions are developed to support the enforcement of the laws.

2.1.3 Institutional Capacity

The institutional capacity of a water provider is a critical factor in improving water supply. Institutional weakness is invariably cited as one of the reasons for failing to provide water service. The water provider should have the capacity to finance and maintain its water system. Organisational framework and the quality of staff also influence institutional effectiveness.

2.2 Social Factors

Sustainability of urban water supply is also influenced by social factors such as demand-responsiveness, community participation, community organization and willingness to pay.

2.2.1 Demand-Responsiveness

Urban water supply can only be sustainable if it is demand driven. It is therefore important that before a water facility is constructed, communities must request for the construction or improvement of a water facility. Water supply providers should ensure that water projects which are based on demand should be given first priority. Water supply providers should determine what a community wants, and is able to support and sustain, instead of providing water facilities that have not been requested. The community should also be consulted about the design and level of water service they require. This helps consumers to define what is acceptable and affordable.

2.2.2 Community Participation

Community participation refers to an active process whereby beneficiaries influence the direction and the execution of the development project as opposed to merely receiving a share of project benefits. (McCommon &Yahalem 1990: 6), Brikke (1993:6), state that in order to increase the chances of the water supply system to meet the needs of users, community participation should begin as soon as possible in project development.

Community participation should in fact commence as soon as a community has requested a water supply facility. Community participation does not only imply willingness to pay for tariff, but also involvement in the operation and maintenance of the water supply system, which is a key to long term sustainability. Community participation cannot take place in the absence on information. Community members should therefore have access to information, so that they can make informed decisions.

Consumer representation and protection in a commercialised monopolistic environment becomes a critical requirement particularly for water and sanitation which are basic human needs. As a way of establishing its presence on the ground, National Water And Sanitation Council has set up voluntary consumer groups known as Water Watch Groups in some areas serviced by Commercial Water Utilities The Water Watch Groups' main objectives are to represent consumers' interests on the ground, explain consumer obligations, ensure satisfactory resolution of complaints and provide adequate information on service delivery to the Regulator.

2.2.3 Community Organization

Community participation can only be sustained when there is a system for organizing a community. Community organization therefore dictates that a community has the institutional capacity to manage the development and operation of the water supply facility. Because of this, water supply providers require that communities establish water committees to coordinate local management of new water supply systems. The importance of water committees is that they act as a medium in a community to manage the water supply.

2.3 Economic Factors

2.3.1 Economic Ability To Meet Operation And Maintenance Costs

Lack of participation of local community in operation and maintenance has contributed to system failure. Community participation in Operation and Maintenance requires that users should meet the full operation and maintenance costs. However due to poverty levels of most consumers in peri-urban areas, most users are not able to afford the tariffs.

2.3.2 Willingness To Pay For The Service.

In order for the community to meet the cost of maintenance, community members must be willing to pay for the service. Before a water project is started, a survey should be undertaken to determine willingness to pay.

2.4 Technological Factors

2.4.1 Operation and Maintenance

The improvement of urban water supply depends on effective maintenance. Although Operation and Maintenance are critical to the sustainability of the water supply facilities, analysis of water supply systems has revealed that inadequate attention to operation and

maintenance is the principal causal factor for poor water service delivery. Very few water utilities regard operation and maintenance a major priority. Construction of new facilities and system expansion is perceived to be the major priority.

2.4.2 Technology Choice

Technology choice is crucial to sustainability of the water supply sector because the type of technology chosen affects operation and maintenance (Taylor and Mudege 1996:10). Technology is considered suitable if it is socially acceptable, economically sustainable technically effective and environmentally sound. Water utilities should therefore choose a technology that is appropriate, affordable, acceptable and sustainable.

2.4.3 Availability of Spare Parts

Lack of spare parts has been a major constraint in the sustainability of water supplies and improved water service. It some cases it has led to the complete abandonment of the water supply system (Brikke et al 1995 : 16; Roark et al 1993: 14) If sustainability is to be achieved, it should be ensured that after appropriate technology is chosen, spare parts for the type of technology are readily available. Water providers should use technology that is locally available so that in case of a breakdown, spare parts are readily available. For example, water kiosks for peri-urban areas are a better choice because the technology is not complicated and is readily available.

2.5 Summary

This chapter has tried to present the factors that are perceived by the consumers and water providers to contribute to improvement in urban water supply in Zambia. It has tried to show that if those factors are not clearly elaborated and addressed, service provision cannot be improved.

CHAPTER THREE

OPERATION AND PERFORMANCE OF PRIVATE WATER UTILITIES IN ZAMBIA: A NATIONAL CONTEXT

3.0 Introduction

This chapter discusses the national water sector framework, water sector institutional set-up, legal framework and the performance of water utilities in Zambia.

In many low-income economies, investment needs in the water sector are colossal and the affordability of rising water tariffs is usually a problem. Hence, neither full privatization, nor public–private partnerships which do not involve substantial transfers from the public sector, are attractive for the multinational investors who dominate the water sector (Kirkpatrick and Parker, 2006; Lobina, 2005). As a result, the commercialization of services under public corporations has become very attractive in many countries such as Zambia.

Indeed, current trends in the low-income economies are increasingly being determined by corporatization of existing public suppliers and commercialization of services (Estache et al., 2005; Prasad, 2006; Smith, 2006). This is sometimes used as an intermediate step before further privatization, as in the case of water supply in Zambia.
The stated aims of commercialization in the water sector are cost recovery and improved access to water (McDonald, 2002). Apart from organizational changes, under the new framework, private water utilities are required to improve their billing and revenue collection rates, reduce overstaffing and rationalize tariffs in an effort to achieve full cost recovery.

Prior to the 1990s, municipal authorities were responsible for the operation and delivery of urban water and sanitation. The infrastructure was owned, maintained and extended by council. Zambia Copper Mines owned and operated the water utilities on the Copperbelt and supplied water to the mines and all residents in the mine townships. Water tariffs in

all the urban areas of Zambia were heavily subsidized. Charges were paid as part of rentals and were mostly minimal.

Economic down-turn took its toll on essential services, including water supply. The crisis in the sector deepened when financial constraints facing the municipal water providers, which arose from low billing and low revenue collection, were accompanied by cuts in central government funding following a general economic down-turn after the 1970s. This meant that access to water by the urban population could not be extended; in fact, it has declined slightly since the early 1990s. The ageing infrastructure in many urban centres inflated the unit cost of accounted water, partly through rising 'unaccounted for' water rates over time .The policy of cost recovery under such conditions had negative implications for water tariffs.

Reform initiatives in the sector were considered as early as 1976 and continued into the 1980s. Most notable were the reforms aimed at commercialization and attempts at privatization: pilot schemes started with the water supply and sanitation system in Lusaka in 1989 and in Eastern Province in 1992, and similar programmes followed in other provinces after 2000.

The process involved a number of legislative and institutional changes from 1992 to 2000, including the establishment of a regulatory authority, the National Water and Sanitation Council (NWASCO). The primary objective of commercialization has been to achieve cost recovery in water services. While water companies have been required to improve their operational efficiency (billing and collections) for this purpose, the emphasis of the reform process which started in 1992 has been on hiking tariffs.

By November 2006, there were ten commercial water and sanitation utilities in the major urban centres of Zambia which contain 90 per cent of the country's urban population. Municipal councils are the sole shareholders of these water utilities. They appoint the Boards of Directors, which recruit and oversee the performance of senior management of the companies.

In 2004 only 58% of the population of Zambia had access to an improved source of water supply and 55% had access to adequate sanitation. Concerning water supply, there is a

stark contrast between urban areas (90% access) and rural areas (40% access). For sanitation, access rates are similar for urban (59%) and rural (52%) areas. In urban areas, only 41% have access to water connections in their house or yard and 49% rely on water kiosks and standpipes. Concerning sanitation, only 29% of the urban population are connected to sewers while 30% are served by septic tanks or improved houeshold latrines.

3.1 National Water Sector Reforms

The national water sector framework is based on The National Water Policy (NWP), 1994 and the old water Act (1948). The National Water Policy covers water resources development and management for all users including urban and rural populations. It aims at promoting sustainable water resources development, in order to facilitate equitable provision of adequate quantity and quality of water for all competing user groups at acceptable costs and ensuring security of supply under varying conditions.

3.2 Institutional Framework

The main actor in Water Supply and Sanitation is the Ministry of Local Government and Housing (MLGH). Other major players are ministries of Finance and National Development, Environment and Health, and Ministry of Energy and Water Development. The department of Infrastructure and Support Services (DISS) under the Ministry of Local Government and Housing, has the prime responsibility for water supply and sanitation, infrastructure planning and resource mobilization. Local Authorities, under the Water and Sanitation Act, have the overall responsibility of providing water supply and sanitation services to areas under their jurisdiction. MLGH/DISS is responsible for facilitating planning, development and management of water supply and sanitation services.

Under the existing policy framework the Ministry of Energy and Water Development through the Department of Water Affairs is responsible for Water Resources Management. The National Water and Sanitation Council (NWASCO) is the regulatory agency. It has powers to regulate the provision of Water Supply and Sanitation services

in the country. The functions of NWASCO are to develop policies, set standards and guidelines, license water and sanitation utilities and monitor their performance.

The government has especially since 2000 facilitated the establishment of Commercial Utilities to provide water & sanitation services to the urban areas. The purpose of establishing Commercial Utilities is to commercialize the provision of services in view of the fact that local authorities did not perform satisfactorily. All provinces have established Commercial Utilities apart from Luapula Province. Commercial Utilities are established by transferring existing water supply & sanitation systems of engineering departments of municipal councils to a registered company owned by the local authorities. Often the Commercial Utility is established without further capital leaving them hampered in terms of operational sustainability.

The Devolution Trust Fund was set up by GRZ in 2001, to provide a basket mechanism for funding of Peri-Urban Water Supply and Sanitation. The continued development of this fund is envisaged to provide a vehicle for basket funding of development activities in the peri-urban sector.

3.3 Legal Framework for Water Provision in Zambia

The National Water Supply and Sanitation Council was established through an act of parliament No 29 of 1997 to provide for the establishment, by local authorities, of water supply and sanitation utilities; to provide for the efficient and sustainable supply of water and sanitation services under the general regulation of the National Water Supply and Sanitation Council; and to provide for matters connected with or incidental to the foregoing.

The functions of National Water and Sanitation Council are spelled out in section 4 of this act.

4. (1) Subject to the other provisions of this Act, the functions of Council shall be to do all such things as are necessary to regulate the provision of water supply and sanitation services.

3.3.1 Functions of Council

(2) Without prejudice to the generality of subsection (1), the functions of the Council shall be to -

(a) advise the Government on water supply and sanitation matters;

(b) advise local authorities on commercially viable institutional arrangements for the provision of water supply and sanitation services;

(c) licence utilities and other service providers as well as other activities relating to the provision of water;

(d) develop sector guidelines for:-

(i) the provision of water supply and sanitation services;

(ii) the establishment of water supply and sanitation utilities;

(iii) the technical and financial management of utilities; and

(iv) the setting of tariffs for the provision of water supply and sanitation services;

(e) establish and enforce standards for:-

(i) water supply or sanitation services;

(ii) the management of utilities and other service providers;

(iii) the design, construction, operation and maintenance of water supply and sanitation facilities;

(f) advise utilities and other service providers on procedures for handling complaints from consumers;

(g) disseminate information to consumers on matters relating to water supply and sanitation services; and

(h) carry out any other activities relating to the regulation of water supply or sanitation services which are necessary or conducive to the better performance of its functions under this Act.

Section 9 of the act gives power to a local authority to establish a water supply and sanitation utility.

9. (1) A local authority may resolve to establish a water supply and sanitation utility as a company under the Companies Act as follows:-

(a) as a public or private company;

(b) as a joint venture with an individual or with any private or public company;

(c) as a joint venture with another local authority or several other local authorities.
Provided that the majority shares shall be held by the local authority.
(2) The articles of a utility incorporated in accordance with subsection (1) shall state that the utility's primary business is to provide water supply and sanitation services.
10. (1) Notwithstanding any other law to the contrary and subject to the other provisions of this Act, a local authority shall provide water supply and sanitation services to the area falling under its jurisdiction, except in any area where a person provides such services solely for that person's own benefit or a utility or a service provider is providing such services.
(2) Notwithstanding sub-section (1) and any other law to the contrary, and subject to the other provisions of this Act, where a local authority is unable, for whatever reason, to supply water and sanitation services to a locality within it s jurisdiction, and no such services are being provided by any service provider, the local authority may contract any person or other service provider to do so.
(3) A utility or service provider contracted to provide services under sub-section (2), shall have power to enforce by-laws relating to the provision of water supply and sanitation services as may be issued by the local authority.

The main principles for the water sector reforms implied by the Policy and the Act are:

- Separation of water resources management from water supply and sanitation.
- Separation of regulatory and executive functions.
- Devolution of authority [from central government] to local authorities and private enterprises.
- Achievement of full cost recovery for the water supply and sanitation services through user charges in the long run.
- Human resources development leading to more effective institutions.
- The use of technologies appropriate to local conditions.
- Increased Government priority and budget spending to the sector

Because of this law the following water commercial utilities were formed:
Asset Holding Company (AHH), Municipal Mining Services Company, Mulonga Water and Sewerage Company, Nkana Water and Sewerage Company, Lusaka Water and

Sewerage Company, Kafubu Water and Sewerage Company, North-Western Water and Sewerage Company, Southern Water and Sewerage Company, Chambeshi Water and Sewerage Company, Chipata Water and Sewerage Company, Lukanga Water and Sewerage Company and Chambeshi Water and Sewerage Company covering the whole Northern Province except for Mbala and Luwingu. It is against this background that Zambia is implementing a major water sector reform programme.

3.4 The Performance Of Water Utilities In Zambia

This section evaluates the performance of water utilities in Zambia. Water reports by NWASCO will be used for this evaluation. The following abbreviations will be used in this section.

NWASCO	National Water And Sanitation Council
LWSC	Lusaka Water and Sewerage Company
NWSC	Nkana Water and Sewerage Company
NWWSC	North Western Water and Sewerage Company
MWSC	Mulonga Water and Sewerage Company
KWSC	Kafubu Water and Sewerage Company
CWSC	Chambishi Water and Sewerage Company
SWSC	Southern Water and Sewerage Company
CWSC	Chipata Water and Sewerage Company
WWSC	Western Water and Sewerage Company
LGWSC	Lukanga Water and Sewerage Company

In Zambia, a considerable proportion of the urban population lives in unplanned settlements. Water supply in these peri-urban areas is a serious problem due to the well-known problems associated with absence of legal titles to the land occupied by the households (Komives et al., 2005; UNDP, 2006). Most households in these areas depend on boreholes, communal or public taps built by commercial utilities, NGOs and donors. Various arrangements exist for the operation of such schemes: some are managed solely by communities, some are managed by communities in co-operation with public utilities and others are run by vendors (Dagdeviren, 2007). The small size of these schemes

reduces the cost effectiveness of operations. Cash collection at water supply points is often problematic (World Bank, 2003).

The commercial suppliers in the formal sector are reluctant to provide water in these areas because the financial returns are negligible, while the independent supply systems set up by NGOs and donors suffer from serious capacity and management problems. Communities lack the capacity to deal with breakdowns and other sorts of supply failures. Public utilities are often brought in to tackle such problems.

The quality of water in peri-urban areas is known to be poor. Ground water contamination through lack of proper sanitation facilities is part of the problem. Water supply in these areas is limited, often a few hours each in the morning and in the afternoon. There are also limits on the amount of water households can draw every day. Depending on the supply arrangement, a fixed fee is paid on either a daily or monthly basis. According to the World Bank (2002), some poorer households do not participate in water supply systems in the compounds but share the water cards of participating households, while others accumulate arrears or find sources of illegal supply.

Access and water supply problems in peri-urban areas are currently receiving considerable attention because of the agenda set by the Millennium Development Goals (MDGs). The response of the regulatory agency, NWASCO, to the MDG for water, is to promote access in peri-urban areas through 'water kiosks' that are run by individual operators for a commission and maintained by the commercial utilities (NWASCO and DTF, 2005). This strategy is advocated for its feasibility in the medium term, as water kiosks involve low-cost technology and provide for an affordable service.

While the urgency for access to safe water in unplanned settlements and the impetus given by the MDGs justifies such low-cost interventions, there are a number of reasons for caution. The kiosk concept is not radically different from existing systems, such as communal taps whose commercial viability has been problematic.

3.4.1 Performance of Water Utilities.

The purpose of this section is to show how other private water providers have faired in terms of general performance, efficiency and effort to improve service delivery. Several

benchmarks formulated by National Water Supply and Sanitation Council will be used for the evaluation.

- **Unaccounted For Water**

As shown by the table below, during 2006/2007, all the utilities did not achieve the benchmark of less than 20%. Similarly during 2006/2007, all the utilities did not achieve the benchmark of less than 20%. All the commercial utilities in Zambia have failed to reduce unaccounted for water. The reason for this is that, the water infrastructure for most utilities is dilapidated. The capacity to maintain the infrastructure is not there as well.

Table 1 Indicator: Unaccounted for water

Utility	2006/2007	2007/2008
NWSC	35	50
LWSC	51	40
KWSC	58	48
SWSC	43	42
LGWSC	61	58
MWSC	56	40
WWSC	47	53
NWWSC	36	33
CHWSC	54	42
CWSC	31	30
Average	47	47

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

Benchmark for UFW

Good	<20%
Acceptable	20-25%
Unacceptable	>25%

- **Loss of Revenue due To Unaccounted For Water.**

As shown by the table below, all utilities lost huge amounts of money due to unaccounted for water .Lost revenue continues to increase due to poor maintenance of water infrastructure and low metering of customers.

Table 2 Indicator: Loss of revenue due to unaccounted for water.

Utility	Metering ratio	UFW	UFW (In million)	Total billing (In million K)
NWSC	35%	35.25%	36,969	67,762
LWSC	97%	51.3%	69,122	65,569
KWSC	11%	58.1%	39,981	28,887
SWSC	1%	43.4%	8,025	93,34
LGWSC	45%	61.3%	8,025	5,058
MWSC	22%	56.1%	13,607	10,627
WWSC	43%	42.6%	1,907	2,568
NWWSC	100%	36.5%	2,913	5,070
CHWSC	76%	54%	3,318	2,826
CWSC	21%	30.7%	1,689	3,812
Average		47%		

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Water Service Coverage**

Benchmark for water coverage.

Good	>90%
Acceptable	80-90%
Unacceptable	<80%

Table 3 Indicator: Water service coverage

Utility	2006/2007	2007/2008
NWSC	85%	82%
LWSC	64%	67%
KWSC	92%	88%
SWSC	83%	85%
LGWSC	40%	42%
MWSC	91%	84%
WWSC	47%	55%
NWWSC	60%	58%
CHWSC	47%	50%
CWSC	59%	68%
Average	70%	

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Sanitation Coverage**

In terms of sanitation coverage, most water utilities did not achieve the benchmark. As shown by the table below, during 2006/2007 only Mulonga Water and Sewerage Company achieved the benchmark of above 70 percent. Similarly during 2007/2008, only Mulonga Water and Sewerage Company achieved the benchmark of above 70

percent. North Western Water and Sewerage Company had the lowest sanitation coverage.

Benchmark for sanitation coverage

Good	>80
Acceptable	70-80%
Unacceptable	<70%

Table 4 Indicator: Sanitation Coverage

Utility	2006/2007	2007/2008
NWSC	69%	47%
LWSC	9%	9%
KWSC	67%	52%
SWSC	32%	45%
LGWSC	17%	8%
MWSC	86%	72%
WWSC	24%	8%
NWWSC	4%	4%
CHWSC	10%	23%
CWSC	33%	45%
Average	34%	

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Hours of Supply**

As shown by the table below, Most commercial utilities failed to achieve the benchmark, only Chipata Water and Sewerage Company, North Western Water and Sewerage Company and Nkana Water and Sewerage Company achieved the benchmark of 20 hours during 2006/2007. During 2007/2008, only Chipata Water and Sewerage Company and North Western Water and Sewerage Company achieved the benchmark of 20 hours. The rest failed to achieve the benchmark of 20 hours.

Benchmark for hours of water supply

Good	20-24 hours
Acceptable	16-20 hours
Unacceptable	<16

Table 5 Indicator: Hours of supply

Utility	2006/2007	2007/2008
NWSC	20	16
LWSC	15	16
KWSC	15	15
SWSC	14	14
LGWSC	15	17
MWSC	17	17
WWSC	8	8
NWWSC	20	20
CHWSC	9	11
CWSC	24	22
Average	34	15.5

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Water Quality Compliance**

Water quality compliance is critical to water provision. Water quality compliance requires that all tests for water quality should be done. According to World Health Organization, the benchmark for water quality is 100 percent. As shown by the table below, during 2006/2007, all the utilities did not achieve the benchmark of 100 percent. Similarly, during 2007/2008, all the utilities did not also achieve the benchmark of 100 percent.

Benchmark

Good	100%

Table 6 Indicator: Water quality compliance

Utility	2006/2007	2007/2008
NWSC	70%	81%
LWSC	80%	79%
KWSC	93%	93%
SWSC	69%	93%
LGWSC	15%	70%
MWSC	8%	95%
WWSC	13%	85%
NWWSC	69%	97%
CHWSC	10%	31%
CWSC	58%	20%
Average	49%	74.%

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Staff Per 1,000 Connections**

Benchmark for staff per 1,000 connections

Good	<5
Acceptable	5-8
Unacceptable	>8

As shown by the table below, during 2006/2007 only Nkana Water and Sewerage Company, Kafubu Water and Sewerage Company and Mulonga Water Sewerage Company achieved the benchmark of 8, while during 2007/2008, only Mulonga Water and Sewerage Company and Kafubu Water and Sewerage Company achieved the benchmark of 8.

Table 7 Indicator: Staff per 1,000 connections

Utility	2006/2007	2007/2008
NWSC	8	9
LWSC	13	12
KWSC	8	8
SWSC	10	10
LGWSC	18	18
MWSC	8	7
WWSC	13	15
NWWSC	12	13
CHWSC	19	15
CWSC	19	13
Average	13	

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Staff Efficiency**

Benchmark for staff efficiency per 1,000 connections

Good	<5
Acceptable	5-8
Unacceptable	>8

As shown by the table below, staff efficiency for Lusaka Water and Sewerage Company, Southern Water and Sewerage Company, Chambeshi Water and Sewerage Company, Lusaka Water and Sewerage Company, Western Water and Sewerage Company, Chipata Water and Sewerage Company and North Western Water and Sewerage Company is poor. Only Nkana Water and Sewerage Company, Kafubu Water and Sewerage Company and Mulonga Water and Sewerage Company have acceptable level of staff efficiency.

Table 8 Staff efficiency for 2007/2008

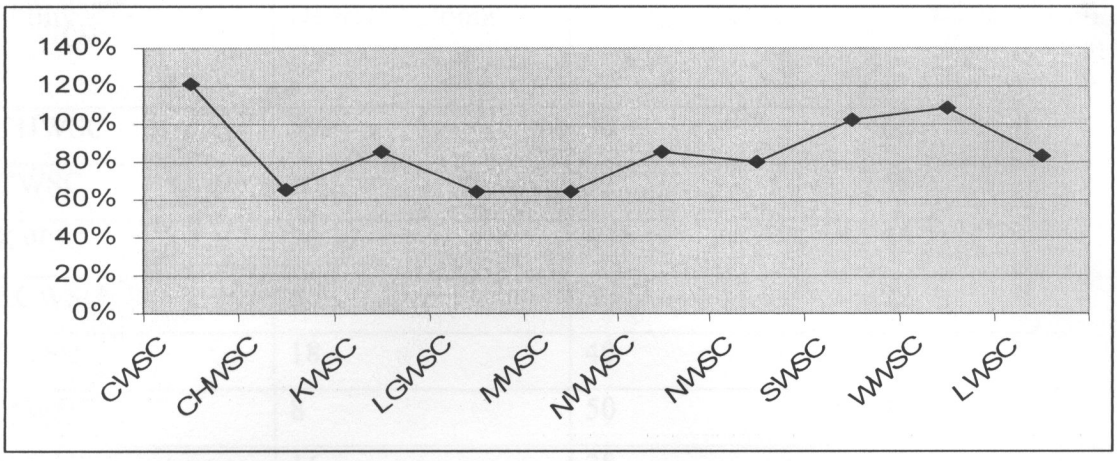
Utility	No-of staff	Staff/1000 connections	Av Personnel cost /staff/month (in million K)	Billing/staff/month (in million K)	Collection/ staff/month (in million K)
NWSC	625	8	3.22	9.03	7.24
LWSC	627	13	4.1	8.71	7.23
KWSC	294	8	2.56	8.19	7.00
SWSC	255	10	2.08	3.97	3.77
LGWSC	188	18	0.93	2.24	1.50
MWSC	177	8	1.11	5.00	3.43
WWSC	93	13	1.84	2.30	2.55
NWWSC	68	12	3.55	6.21	5.47
CHWSC	182	19	0.60	1.29	6.18
CWSC	66	12	3.06	4.81	6.18

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Collection Efficiency**

As shown by the table below, the figures show various levels of collection efficiency of several water utility organizations. There was an increase in collection due to government dismantling outstanding debts. Western Water and Sewerage Company, Southern Water and Sewerage Company, Chipata Water and Sewerage Company, Kafubu Water and Sewerage Company and North Western Water and Sewerage Company met the acceptable benchmark. Collection efficiency will ensure that the company runs efficiently and effectively. The table below shows that on average the collection efficiency was 80 percent. This means that only 80 percent of billed water was collected.

Figure 1 Collection efficiency for 2007/2008



Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

Benchmark for collection efficiency

Very Good	>95%
Good	90-95%
Acceptable	85-90%
Unacceptable	< 85%

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Personnel Qualifications**

The calibre of personnel influences the type of service provision to the community. As shown in the table below, only Kafubu Water and Sewerage Company, Lusaka Water and Sewerage Company, North Western Water and Sewerage Company and Nkana Water and Sewerage Company, had the highest number of degree/diploma holders.

Table 9 Personnel qualifications

Utility	Degree/diploma	Certificate	Basic education
CHWSC	5%	30	65
CWSC	10	32	58
KWSC	20	5	75
LGWSC	5	3	92
LWSC	18	40	42
MWSC	8	50	42
NWSC	16	28	56
WWSC	2	36	62
SWSC	8	8	84
NWWSC	18	57	25

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

Unit Operation Cost and Average Tariff

In order to operate effectively and efficiently, the company needs to realise profit from its investment. The amount of profit will thus determine how much money will be invested in infrastructure. The operational cost of water has a bearing on the tariff that the customer will eventually pay.

However, as shown by the table below, only North Western Water and Sewerage Company which had a tariff of K2, 310.00, exceeded its operation cost of K2, 000.00, and Mulonga Water and Sewerage Company, which had a tariff of K969.00, exceeded its operation cost of K800.00. Lusaka Water and Sewerage Company's tariff of K1, 433.00 was equal to its operation cost per unit of K1, 433.00. Chipata Water and Sewerage Company, Western Water Sewerage Company, Southern Water and Sewerage Company, Nchanga Water and Sewerage Company, Lukanga Water and Sewerage Company, Kafubu Water and Sewerage Company and Chambishi Water Sewerage Company operation costs per unit exceeded the average tariff. This meant that these utilities were operating at a loss. This in turn affected the level of service.

Table 10 Unit operation cost and average tariff for 2007/2008

Utility	Unit operation cost	Average tariff
CHWSC	K7,000.00	K 656.00
CWSC	K2,400.00	K 1,981.00
KWSC	K1,000.00	K 947.00
LGWSC	K780.00	K761.00
LWSC	K1,433.00	K1,433.00
MWSC	K800.00	K 969.00
NWSC	K750.00	K 731.00
WWSC	K1,000.00	K797.00
SWSC	K1,300.00	K 1,200.00
NWWSC	K2,000.00	K 2,310.00

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

- **Lost Revenue Due To Unaccounted For Water**

As shown in the table below, water utilities lost billions of Kwacha due to unaccounted for water during 2007/2008. Lusaka Water and Sewerage Company topped the list. Lusaka Water and Sewerage Company lost K82, 603, 000, 000 in unaccounted for water. It was followed by Nkana Water and Sewerage Company which lost K41,418, 000, 000 in accounted for water. Kafubu Water and Sewerage Company lost 29, 498, 000, 000 in accounted for water. Mulonga Water and Sewerage Company lost K21, 292,000,000 through unaccounted for water. The lowest loss was recorded by Chipata Water and Sewerage Company which was K1, 749, 000, 000.

It is evident that these huge losses due to unaccounted for water are a reflection of the poor state of water infrastructure of the commercial utilities. It is also a reflection of lack of community participation in operation and maintenance of water facility. Community participation ensures that the community guards against vandalism of water infrastructure.

Table 11 Lost revenues due to unaccounted for water during 2007/2008

	Metering Ratio	Total Billing (in mil K)	UfW (in %)	UFW (in mil K)
LWSC	49	83,210	49.8%	82,603
NWSC	47	60,997	40.4%	41,418
KWSC	26	32,266	47.8%	29,494
MWSC	36	29,460	42.0%	21,292
LGWSC	29	6,256	57.7%	8,518
SWSC	74	12,448	39.6%	8,164
CHWSC	8	2,832	53.2%	3,224
NWWSC	100	5612	33.2%	2,788
CWSC	100	4155	29.6%	1,749
WWSC	14	2816	41.7%	2,012
TOTAL				***201,262***

Source: Urban and Peri urban water supply and sanitation sector report 2006/2007

In addition to these water utilities, there are some private water schemes which provide water and sanitation services to its residents.

Private Water Schemes

There are some private water schemes run by :

Nakambala, Sugar plc, Chilanga Cement, Kaleya Small Holders, KCM – Nampundwe, Zesco and Maamba Collieries.

- **Coverage**

All the private schemes have 100% coverage for both water and sanitation in their areas of service except for Kaleya Small Holders. Service is mainly provided through household connections and a few communal or public taps. Sanitation is provided through water borne facilities.

- **Hours Of Supply**

Average hours of supply by private schemes are mostly above 20 hours except for ZESCO and Maamba Collieries. ZESCO Kafue Gorge rations water supply to medium and low cost areas within its area of jurisdiction. Maamba Collieries transmission and supply network has numerous leaks and is therefore incapacitated to adequately provide the services.

- **Water Quality**

The water quality is the main service level focus in areas serviced by private providers. The bacteriological test results are poor with the main sources of contamination being the local sewage treatment ponds which leak sewage into the environment and undesirable land use practices. This is a particular problem at Chilanga, Kaleya and Nampundwe.

3.5 Summary

The evaluation of the performance of private water schemes, showed that the schemes have expended much effort to improve service delivery in their area of operation. NWASCO water reports show that coverage both in terms of water and sanitation is 100%. Hours of supply is above 20 hours. However the quality of water leaves a lot to be desired. The bacteriological test results are poor with the main sources of contamination being the local sewage treatment ponds which leak sewage into the environment.

The evaluation of the performance of commercial water utilities in Zambia however, has shown that most utilities performed badly on all indicators. Only Chipata Water and Sewerage Company and North Western Water and Sewerage Company achieved the benchmark of 20 hours water supply. In terms of acceptable level of staff efficiency, only Nkana Water and Sewerage Company, Kafubu Water and Sewerage Company and Mulonga Water and Sewerage Company achieved the benchmark. Generally, little effort was expended by the water commercial utilities to improve service delivery. This result seems to tally with results in most developing countries.

Most commercial utilities were using old and dilapidated infrastructure which either needed rehabilitation or replacement. They were using the infrastructure that was procured by councils a long time ago. It is evident that water utilities have not invested in water infrastructure maintenance. It is also apparent that infrastructure maintenance was

less a priority. This affected service delivery. Most water utilities performed badly on the following indicators.

- **Water Service Coverage**

During 2006/2007, only Mulonga Water and Sewerage Company and Kafubu Water and Sewerage Company achieved the benchmark of above 95 percent. However during 2007/2008 no utility achieved the benchmark of above 95 percent.

- **Sanitation Coverage**

During 2006/2007, only Mulonga Water and Sewerage Company achieved the benchmark of above 70 percent. Similarly during 2007/2008 only Mulonga Water and Sewerage Company achieved the benchmark of above 70 percent. The sanitation coverage for most water utilities is very bad.

- **Staff Efficiency**

During 2007/2008, only Nkana Water and Sewerage Company, Kafubu Water and Sewerage Company and Mulonga Water and Sewerage Company had acceptable level of staff efficiency.

- **Unit Operation Cost and Average Tariff**

Only North Western Water and Sewerage Company, which had a tariff of K2, 310.00, exceeded its operation cost of K2, 000.00, and Mulonga Water and Sewerage Company, which had a tariff of K969.00, exceeded its operation cost of K800.00. Lusaka Water and Sewerage Company tariff of K1, 433.00 was equal to its operation cost per unit of K1, 433.00.

- **Collection Efficiency**

Only Western Water and Sewerage Company, Chipata Water and Sewerage Company, Southern Water and Sewerage Company, Kafubu Water and Sewerage Company and North Western Water and Sewerage Company met the acceptable benchmark.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.0 Introduction

The aim of this chapter is to evaluate the performance of Lusaka water and Sewerage Company in Lusaka generally and in Chawama in particular.

In this chapter, the findings of the study will be presented and discussed.

Section A discusses the situation analysis of Lusaka Water and Sewerage Company as compiled by National Water And Sewerage Council. Section B presents and discusses primary data from Chawama residents.

Section A

4.1 Situation Analysis of Lusaka Water And Sewerage Company

Lusaka Water and Sewerage Company, a private company wholly owned by Lusaka City Council, is the water and sanitation provider for Lusaka. The Company is divided into 8 operational branches namely Central, Kabulonga, Kabwata, Lumumba, Chelstone, Chawama (covering all peri-urban areas in the South East of the City), George (covering all peri-urban areas in North-East of the City) and Lusaka East (covering all informal settlements in the Eastern part of the city.

It is estimated that 55% of Lusaka's water is unaccounted for, which translates into a daily loss in revenue of US$ 45 000. Lusaka Water and Sewerage Company will soon be receiving funding from the World Bank under –Water Sector Performance Improvement Project. The Water Sector Performance Improvement Project complements Lusaka Water and Sewerage Company (LWSC) own efforts to improve efficiency, and support its goals of financial recovery, and robust commercial and technical performance improvements. The heart of the project is a performance enhancement agreement with the Government of Zambia that sets out specific improvement targets that will be met over a 3 year period. This agreement covers areas of consumer service improvements and optimization of operations.

The project will generate resources for LWSC to increase access to peri-urban settlements and new development areas, to facilitate Zambia's efforts towards meeting the Millennium Development Goals (MDGs) The specific improvements include installation of new meters to all connections that do not have operational meters. Meanwhile coverage for water supply is about 83% through house connections, yard connections and standpipes. Service is irregular and there are significant leakages with at least 48% unaccounted for water. Further, only about 33% of consumers are metered. Sewerage coverage is much lower with only 12% as at 2005.

According to the existing billing records and database at Lusaka Water and Sewerage Company, there are approximately 47,000 registered customers accounts that are being billed monthly. It is estimated that probably more than 10,000 customers with house connections are receiving a service but not captured on the data base. This is especially the case in the informal settlements like the peri-urban areas. This represents accounts not being billed but receiving either water or sewerage services or both. The account information captures location of the premises, property owner details, consumer type i.e domestic or commercial, assessment of consumption type being metered or fixed and meter details.

4.2 Evaluation of Performance of Lusaka Water and Sewerage Company to improve service delivery in Lusaka District

This section evaluates the performance of Lusaka Water and Sewerage Company. The evaluation will be based on National Water And Sanitation Council water reports. The evaluation will look at the performance of LWSC from 2006-2008.

In Lusaka, there are over thirty informal settlement areas, known locally as 'compounds', where around 50 per cent of the capital's population live. Half of the population in the compounds is served by Lusaka Water and Sanitation Company, mostly by public taps and to a lesser extent by individual yard taps. There are no meters in this Compound. All consumers pay a fixed charge irrespective of the consumption. Lusaka Water and Sewerage Company also manages a number of water supply systems installed by NGOs.

- **Unaccounted For Water (Ufw)**

As shown in table 12 below, there was a slight improvement from 51% in 2006/20007 to 49% in 2007/2008. LWSC lost K82, 603, 000, 000 in unaccounted for water during 2007/20008 The reason why this criteria is evaluated, is because UFW leads to low cost recovery. The most important causes of unaccounted for water are leakages in the system, due to lack of maintenance and poor infrastructure. Unaccounted for water is also caused by unmeasured consumption coupled with fixed payments.

Sector specialists also mention vandalism, ineffective accounting and monitoring of customer databases as reasons for unaccounted for water. Literature reviews show that LWSC has not invested in water infrastructure. Its water infrastructure is over thirty years old. Infrastructure maintenance is also poor. This contributes to water wastage. The solution to unaccounted for water is investment, in repairs and maintenance, in renewing and extending the network, in metering, in systems of monitoring and in human resources.

- **Metering Ratio**

The reason why this indicator is measured is because metering ensures that consumers only pay for what they have consumed. Metering also controls consumption and unaccounted for water. Unmetered water contributes to water wastage because consumers are not motivated to conserve the resource. Water wastage leads to low cost recovery which in turn affects service delivery.

As shown by table 12 below, metering ratio in Lusaka district slightly improved from 44% in 2006/2007 to 49% in 2007/2008. This result shows that during 2006/2007 period, 44 percent of connections were metered. Whereas in 2007/2008, 49 percent of connections were metered. However this was below the benchmark of 100 percent. The water reports show that Lusaka Water and Sewerage Company did not invest much in metering. This result differs with studies in developed countries which show that privatization leads to 100 percent metering ratio. This result however agrees with studies in most developing countries

- **Collection Efficiency**

The reason for measuring this indicator is that collection efficiency affects the cost recovery of the utility which in turn affects how much money is invested in water infrastructure. The water reports show that Lusaka Water and Sewerage Company has not been efficient in this regard. As shown in table 12 below, the collection efficiency of Lusaka Water and Sewerage Company was 83 percent for both 2006/2007 and 2007/2008. This means that only 83 percent of the billed water was collected. However this was below the accepted standard.

- **Staff/1000 Connections**

The reason why this indicator is measured is because overstaffing leads to high production costs. As shown in table 12 below, staff per 1000 connections, slightly improved from 13 to 12. However, it was above the benchmark of 8. This result shows that the company is overstaffed. The water reports show that Lusaka Water and Sewerage Company spends more money on staff emoluments than on chemicals and other related costs. This study tallies with studies in developing countries which show that water utilities spend more money on staff expenses than on service provision.

- **Lost Revenue Due To Unaccounted For Water**

During 2007/2008, the total billing for water was K83, 210, 000, 000 while lost revenues due to unaccounted for water was K82, 603, 000, 000. The unaccounted for water is mainly due to the dilapidated water infrastructure. It is also due to the company's inability to maintain the infrastructure. This study differs with studies in developed countries which show that privatization leads to efficiency, but tallies with studies in developing countries which show that water utilities lose huge sums of money due to unaccounted for water.

- **Hours of Supply**

As shown by table 12 below, hours of supply improved from 15 hours in 2006/2007 to 16 hours in 2007/2008. This is however below the benchmark of 20 hours. Lusaka Water and Sewerage Company has not improved hours of supply. The supply is intermittent and the pressure is low. This result tallies with studies in most developing economies.

However it differs with studies in developed countries and some developing countries with strong economies which posits that privatized utilities provide water for 24 hours.

The hours of water supply in many peri-urban areas and low cost areas varies between four to five hours. Water supply in many localities in the city, is characterized by intermittent supply. In some peri-urban areas, Lusaka Water and Sewerage Company has installed water kiosks so as to enable residents purchase the commodity.

Table 12 Comparison of actual performance levels for LWSC from 2006 to 2008

Indicators	**2006/2007**	**2007/2008**	**Benchmark**	**Observations**
UFW	51%	49%	Less than 20	An improvement but below the benchmark.
Metering ratio	44%	49%		Slight improvement
Collection efficiency	83%	83%	Greater than 95%	An improvement but below the standard
Staff/1000 connections	13%	12%	Less than 5%	Slight improvement
Water service coverage	64%	67%	Greater than 90%	Slight improvement
Hours of supply	15 hours	16 hours	20 to 24 hours	Improvement but below the standard
Sanitation service coverage	9 %	9 %	80%--90%	No improvement

- **Unit Operation Cost And Average Tariff**

In order to provide quality service, a water utility needs to operate profitably. To realise this, the average water tariff should be higher than the operation cost. This will enable a

commercial utility to invest in water infrastructure and improve service delivery. During 2007/2008, Lusaka Water and Sewerage Company's tariff of K1, 433.00 was equal to its operation cost per unit of K1, 433.00. This means that the utility did not make any profit. Consequently, this has a negative effect on the performance of the water utility.

- **Water Quality Compliance**

According to World Health Organization, water quality compliance is 100 percent. This means that water should undergo several tests The water quality compliance during 2006/2007 was 80 percent. However during 2007/2008 it deteriorated to 79 percent. In both cases the company failed to meet the benchmark of 100 percent.

4.2 Summary

The evaluation of Lusaka Water and Sewerage Company was based on the standards set by National Water Supply and Sanitation Council. The evaluation showed that the company did not meet most benchmarks. Lack of investment in water infrastructure has contributed to the poor performance by Lusaka Water and Sewerage Company. The Lusaka Water and Sewerage Company has made no major investment in recent years. The water network is more than thirty years old and some pipes in the city's sewer network are more than forty years. Massive investment for the renewal and extension of the existing infrastructure is likely to be more effective in reducing the costs of maintenance and unaccounted for water. Reduction of personnel will reduce operation costs which will in turn be channelled into service provision.

Section B

4.3 Evaluation of effort, efficiency and performance of LWSC.

This section will present and discuss the findings of the study in order to evaluate the performance of Lusaka Water and Sewerage Company to improve service delivery in Chawama Township. The Township is a peri-urban area and has a population of 300,000. The majority of Chawama residents are self employed and poor. The evaluation will be based on primary data from residents of Chawama, Lusaka Water and Sewerage Company and Lusaka City Council.

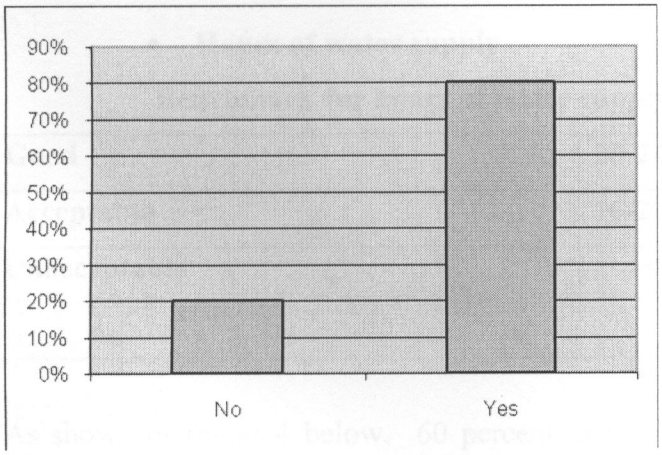
To evaluate efficiency, effort and performance of Lusaka Water and Sewerage Company, 200 house-hold heads, that represented the sample for this study were asked about the

- **Cleanliness and safety of water**

As shown in figure 2, 80 percent of respondents felt that the quality of water had improved. This result however does not tally with NWASCO water reports. The water reports indicated that for 2006/2007 period, water quality compliance was 80 percent, while for 2007/2008 period, the water compliance was 79 percent. According to the World Health Organization, the benchmark for water quality compliance is 100 percent. This means that water should be tested for several diferent tests. Water which has not undergone the required tests may not be very safe to drink. This may as a result pose a grave risk to consumers.

It is evident from the result that the benchmark of 100 percent was not achieved. The result in Chawama is therefore interesting because while residents felt that the quality of water had improved, National Water And Sanitation Council the regulator, felt that the company had not met the benchmark of 100 percent because some tests were not done. The evaluation therefore for this indicator is that while the quality of water has improved somewhat, going by the responses of Chawama respondents, Lusaka Water and Sewerage Company has not met the benchmark of 100 percent. The commercial utility must strive to meet the 100 percent benchmark before it can be certified safe to drink.

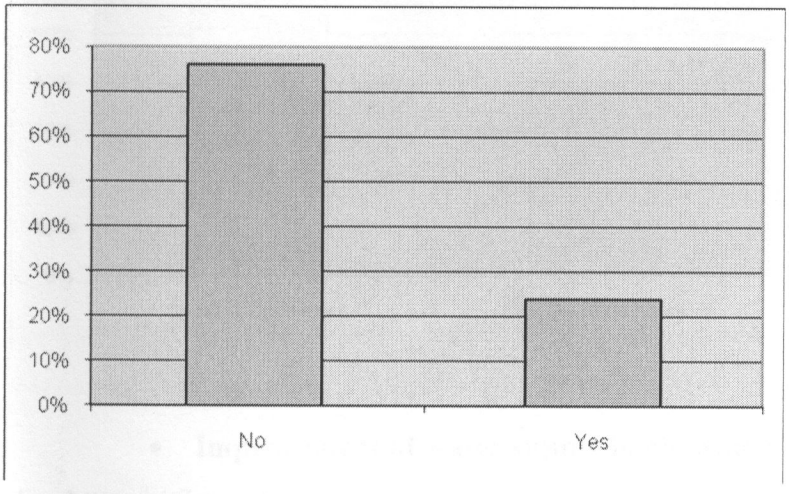
Figure 2 Is water clean and safe?



- **Regularity of water supply**

As shown in figure 3, majority of respondents (80 percent) felt that the supply of water was irregular. Some respondents claimed water was only available during the night. This forced residents either to wake up at night or stay late in the night in order to draw water. Others claimed water was only available in the morning. This forced them to go late for work so as to draw water. At times water would not be available for three consecutive days. Residents had to walk long distances to fetch water. The problem became acute during dry season. This forced residents to store water in containers for use when water was not available.

Figure 3 Is water supply regular?



- **Hours of water supply**

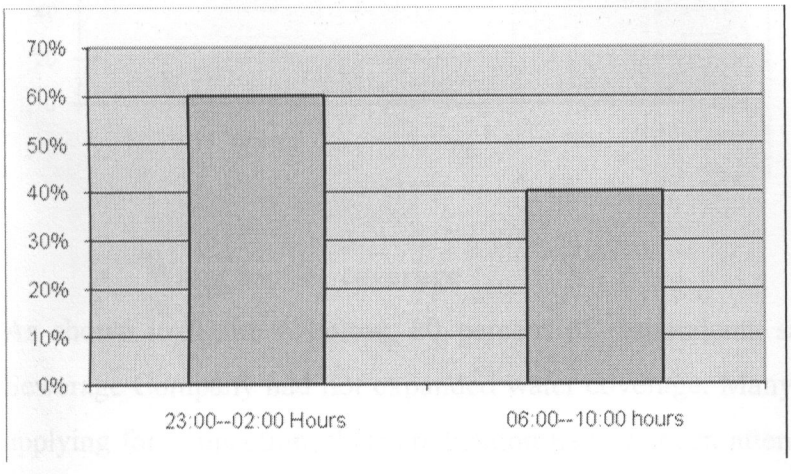
Benchmark for hours of water supply.

Good	**20-24 hours**
Acceptable	**16-20 hours**
Unacceptable	**<16**

As shown in figure 4 below, 60 percent of residents interviewed said that water was available for only 4 hours, while 40 percent said that water was available for only 3 hours. The result however, shows that water supply in Chawama does not meet the benchmark of 20-24 hours. This is further supported by water reports from NWASCO

which clearly show that LWSC has not improved water supply in Lusaka. The result also shows that water in some areas is only available at night. Some residents therefore complained that it was risky to draw water at night because they could be attacked by thieves. The evaluation is that Water and Sewerage Company has not made much effort to improve hours of water supply in Chawama

Figure 4 Hours of water supply

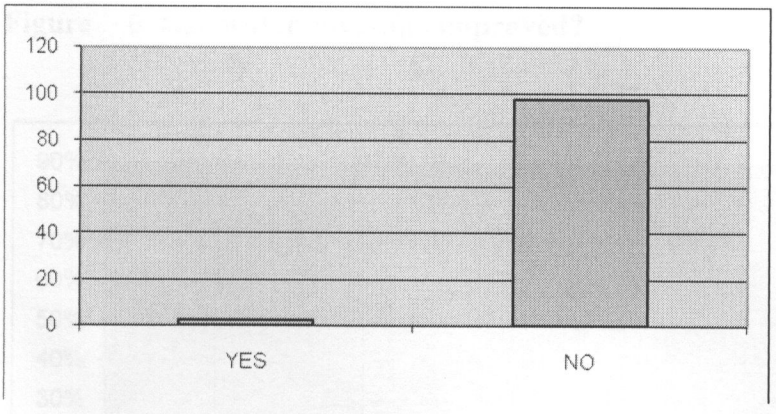


- **Improvement of water supply in chawama**

As shown in figure 5, 98 per cent of respondents stated that Lusaka Water and Sewerage Company had not improved water supply in Chawama since its inception. Residents complained about low pressure and irregularity of water supply. They further complained that water was only available between 23.00 hours and 03.00 hours. This posed a danger to residents as they risked being attacked. The scarcity of water was compounded by the fact that many stand taps were not functional. This forced residents to buy water from neighbours who were connected to the network.

The findings also showed that water infrastructure was old and needed to be rehabilitated or replaced. A lot of pipes needed either to be replaced or unblocked. This was necessary in order to increase water pressure. The findings also showed that water leakages were not promptly attended to. This, in turn, contributed to the low pressure. According to the findings, LWSC has not improved service delivery in Chawama.

Figure 5 Has water supply improved in Chawama?



- **Water service coverage**

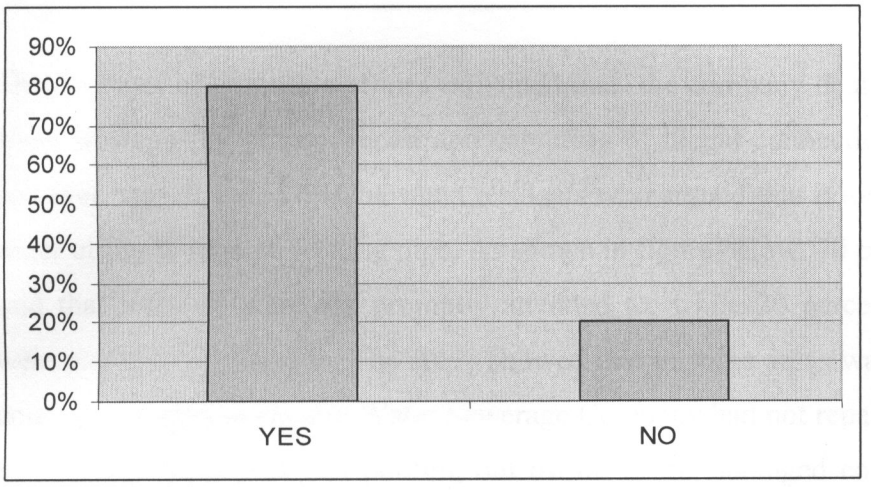
As shown in figure 6 below, 80 percent of respondents said that Lusaka Water and Sewerage Company had not expanded water coverage. Many complained that in spite of applying for connection, their application had not been attended to. They explained that neither new connections nor new pipes had been laid. No new stand pipes had been put in place either. The Lusaka Water and Sewerage Company claimed that the company had made new house-hold connections and introduced water kiosks in the city of Lusaka. He however admitted that the company was overwhelmed by the demand for new connections. He also said that the company had no capacity to sustain the demand for new connections. However, 90 percent of respondents in Chawama argued that no new connections had been made. Neither had any new water stand pipes been erected. Most of them that were there had either been vandalized or disconnected.

Regarding water kiosks, the finding of the study showed that there were no water kiosks in Chawama Township. People depended on a few communal taps which were not enough for the growing population. Residents queued up at night for water at communal taps or bought water from neighbours who were connected to the network.

The study in Chawama showed that privatization of water in Zambia had not resulted in the expansion of water coverage, nor increased the number of connections. The assumption for this could be that Lusaka Water Sewerage Company is not motivated to

expand water infrastructure in the area because the tariffs charged in peri-urban areas are lower than those charged in low density areas. The return on water infrastructure investment is lower than in low density areas. The motivation to invest in such areas is therefore low.

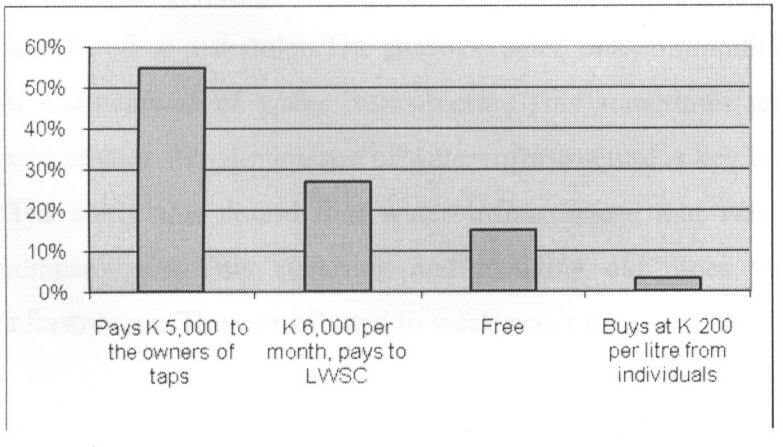
Figure 6 Has water coverage improved?



- **Water tariff**

As shown in figure7 below, the result shows that beause the company has not increased connections, residents pay K 5,000 per month for water to neighbours who are connected to the network. Only 27 percent of respondents pay K 6,000 per month to Lusaka Water and Sewerage Company for communal taps.

Figure 7 Water tariff



- **Unaccounted for water**

Benchmark for UFW

Good	**<20%**
Acceptable	**20-25%**
Unacceptable	**>25%**

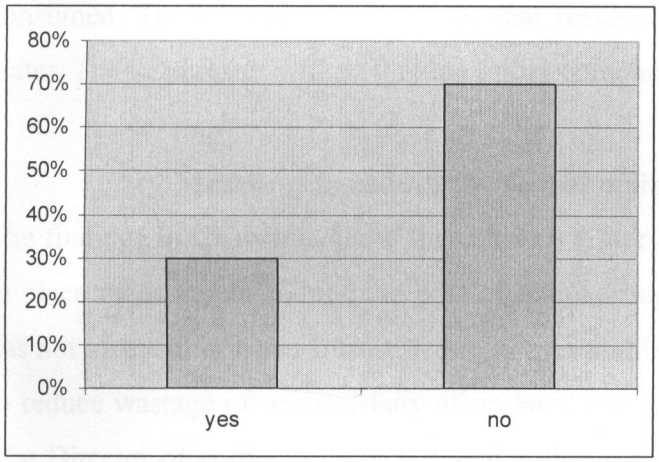
The Director of corporate affairs explained that the company dealt with the problem of water wastage by prompt repair and capturing of illegal connections. This information however, was disputed by Chawama residents who argued that it took a long time for the water utility to repair a leaking pipe. As shown in figure below, 70 percent of respondents said that leakages were not promptly attended to, while 30 percent said that leakages were promptly attended to. The study showed that in some areas water was continuously pouring out because Lusaka Water Sewerage Company had not repaired a broken pipe. In some areas, water was just pouring out owing to the damaged communal taps.In such situations it was difficult for anyone to pay for water.

The respondents further complained that it took a long time for the water utility to repair a leaking pipe and thus unaccounted for water was not controlled. The study showed that while illegal connections were not captured, legal connections were also mistakenly suspected of being illegal. It is clear from the results that the utility company needs to employ some part-time workers to boost the maintenance team.

Water wastage is a big problem in Chawama. It takes more than a week for Lusaka Water and Sewerage Company to repair a leaking tap. Some water fittings were vandalized or just stolen.The study revealed that communities did not take an active part in maintenance of water infrastructure.This sometimes led to vandalism. Community participation in maintenance of water infrastructure is key to long term sustainability.

The study also found that water infrastructure that was in Chawama was old. The company was only repairing and mending old pipes without procuring new water infrastructure.This contributed to weak water pressure.

Figure 8 Are leakages promptly attended to?



- **Measures put in place by the lwsc to enable the poor have access to water**

Regarding measures put in place by the company to enable the poor have access to water, the findings in Chawama showed that Lusaka Water and Sewerage Company had no subsidy scheme for the poor in Chawama. Poor people irrespective of their income in Chawama paid the same tariff as other consumers in the area. The Director of corporate affairs however explained that the company had a policy of cross-subsidization. He claimed that cross-subsidization would ensure that peri-urban areas would have lower tariffs than medium or high cost residential areas. The company had as a result, different monthly fixed tariffs for unmetered consumers in low cost areas and peri-urban areas. This enabled consumers in low cost areas and peri-urban areas to pay less for water compared to other consumers in other areas.

- **Meters**

The findings in Chawama indicated that all consumers were not metered. All consumers pay a flat rate irrespective of the consumption of water. Many consumers claimed that they had applied to LWSC for installation of meters but the company had not managed to

install meters on their premises. The Corporate affairs director of Lusaka Water and Sewerage Company explained that despite numerous applications from consumers for meter installation, the company had no capacity to meet the demand. The consequences of this are several. The first result is that consumers will not pay for actual water consumed. The second effect will be that residents will not be motivated to conserve water. The third result will be that the utility company will lose out on revenue

- **Measures to reduce the cost of maintaining water infrastructure**

The findings in Chawama show that Lusaka Water and Sewerage Company has not put in place measures to reduce the cost of maintaining water infrastructure. The company has not invested in water infrastructure nor rehabilitated the ageing infrastructure in order to reduce wastage of water. Many dilapidated and blocked pipes have not been replaced. The Director of corporate affairs revealed that the water utility intended to increase the tariff. He explained that the company had already applied to National Water And Sewerage Council to approve the proposed water tariff. The evaluation however shows that what may improve service delivery is not tariff hike but water infrastructure development and maintenance.

- **Collection efficiency**

The findings in Chawama show that collection efficiency in Chawama is very poor. 55 percent of respondents do not pay tariffs to Lusaka Water and Sewerage Company but rather pay money to neighbours who are connected to the network. Because of this, the company is losing huge amounts of money.

- **Water tariff and affordability**

. As shown in table 13 below, although 68 percent of respondents said their income was below K600, 000.00 per month, they said the water tariff was affordable. According to the World Health Organization, the benchmark for water affordability is five percent of one's income. Therefore, K6,000.00 per month which is charged by Lusaka Water and Sewerage Company is affordable. However, the study has shown that because the company has not increased connections, residents pay K5, 000.00 per month for water to

neighbours who are connected to the network. Only 27 percent of respondents pay K6,,000.00 per month to Lusaka Water and Sewerage Company for communal stand pipes..

Table 13 cross tabulation of affordability vs economic status vs income

Affordability	Economic Status	Income				Total
		below k350,000	k350,000-600,000	k600,000-1,000,000	above k1,000,000	
NO	Employed			0	0	0
NO	self employed	20 10%		0	0	20 10%
NO	Unemployed	20 10%		0	0	20 10%
Total		40 20%		0	0	40 20%
YES	Employed	40 20%	40 20%	4 2 %	10 5%	94 47 %
YES	Self employed	20 10%	36 18%	10 5%	0	66 33 %
Grand Total		100 50%	76 38%	14 7%	10 5%	200 100%

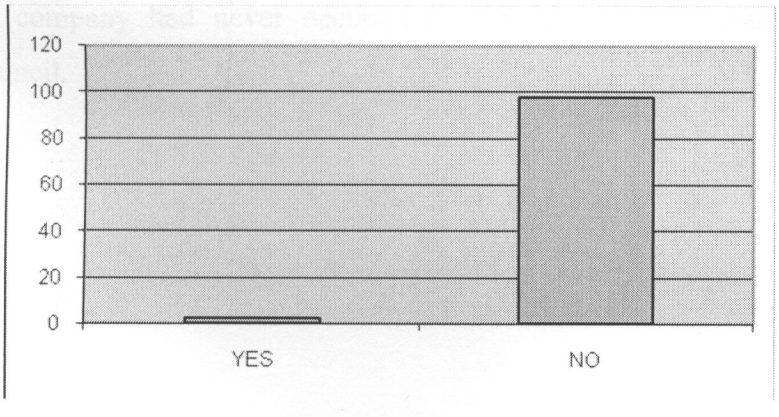
Efforts by Lusaka Water and Sewerage Company to improve service delivery in Chawama.

The Director of Corporate Affairs for Lusaka Water and Sewerage Company explained that the company had sunk boreholes to improve service delivery in Chawama. Additional boreholes would be sunk to improve water reticulation in Chawama.

However, as shown in figure 9, 98 percent of respondents felt that the company had done little to improve service delivery in Chawama. Many respondents felt that the company should have done the following:

- The company should have introduced water kiosks in Chawama as it had done in George compound.
- The company should have ensured that water supply was constant in Chawama. It should also have ensured that the pressure was not low.
- More boreholes and tanks should have been put up in Chawama.
- New pipes should have been laid and stand taps should have been constructed.

Figure 9 Has Lusaka Water and Sewerage Company made effort to improve service delivery?



- **Performance of Lusaka Water and Sewerage Company**

The annual reports generated by National Water Supply and Sanitation Council (NWASCO), revealed that the company did not meet most benchmarks. However, the

Director of Corporate Affairs for Lusaka Water and Sewerage Company explained that the company intended to improve its performance by investing in water infrastructure, training and development of its personnel.

- **Efficiency**

National Water Supply and Sanitation Council (NWASCO).annual water reports revealed that the company was not efficient in its operations due to staff and collection inefficiency. However, the Director of Corporate Affairs for LWSC explained that the company intended to improve its efficiency by metering al houses that are connected to the network, increase connections and improve on maintenance.

- **Profit**

The annual water reports generated by National Water Supply and Sanitation Council (NWASCO), revealed that the company was not making any profit because of high levels of Unaccounted for Water and bloated labour force. However, the Director of Corporate Affairs for Lusaka Water and Sewerage Company attributed this state of affairs to low tariffs. He explained that tariffs could only be increased after the approval by National Water Supply and Sanitation Council. He further explained that, this was the reason why the company had never declared any dividend to its shareholder, the Lusaka City Council.

CHAPTER FIVE

5.0 CONCLUSION

The existing literature of water privatization presents a mixed picture with some improvements in the reliability and quality of services and population served. However, the overview of the literature surveyed in studies in both developed and developing countries shows strong support of private participation. The literature testifies to the fact that private sector participation is associated with a decrease in labour force, an increase in labour productivity, an increase in output, and an increase in coverage, efficiency and quality. Notwithstanding this, the study has shown that in lower income economies like Zambia, water provision is a problem, because huge water transaction costs, regulatory weaknesses and the type of technology used in water extraction cannot sustain the demand for the resource.

The objective of this study was to evaluate the effort privatized agencies have made to improve water supply in Lusaka, particularly in Chawama Township. The performance of water utilities was evaluated based on benchmarks provided by National Water Supply and Sanitation Council (NWASCO). This was necessary in order to find out how other water utilities were performing in providing service in Zambia.

The specific objectives of the study were:

- To find out measures put in place by the Lusaka Water and Sewerage Company to improve the quality of water for Chawama residents.
- To investigate what the Lusaka Water and Sewerage Company has done to reduce the cost of maintaining water infrastructure.
- To evaluate the performance, effort and efficiency of the company.

Infrastructure maintenance is one of the biggest challenges confronting Lusaka Water and Sewerage Company. Another challenge is to extend the network in order to expand the coverage of the consumers in peri urban areas, particularly in Chawama Township. Both network maintenance and network extension require huge investments, but the funding of such investments poses major problems to the utility Company. The Company has not brought in additional investments to increase coverage, nor has it increased efficiency in

the area. It is still using the infrastructure that was built by the Lusaka City Council thirty years ago.

The study has shown that in terms of performance, Lusaka Water and Sewerage Company has not met benchmarks established by National Water Supply and Sanitation Council (NWASCO). . The study has shown that the company spends more than 50% of its resources on personnel costs. This increases its operation costs. This has contributed to the Company's inability to improve water service delivery in Chawama

In terms of effort, the study has shown that Lusaka Water and Sewerage Company has not made much effort to improve service delivery in Chawama, a peri urban area of Lusaka. Hours of supply have not improved. Water supply is erratic. Water is mostly available at night. The average hours of supply in Chawama are 4 hours. Water service coverage has not improved. There are no new connections. Water kiosks have not been constructed. Stand-pipes have not been repaired or constructed. Water quality compliance has not improved. Residents complained of brownish water. Sanitation coverage has not improved. Sanitation coverage in Chawama is non- existent.

In terms of efficiency, the study has also shown that the company is not efficient. Staff efficiency is poor. Its staff efficiency is 13 per I,000 connections is above the acceptable benchmark of 4.As a result, the company spends more than 50% of its resources on personnel costs. This increases its operational costs. The collection efficiency is poor. This has contributed to the company's inability to improve water service delivery in Chawama.

The study has also shown that Lusaka Water and Sewerage Company has failed to reduce the cost of maintaining water infrastructure in Chawama. Unaccounted For Water has not been reduced. Leakages are not promptly attended to in Chawama. Collection efficiency has not improved, residents purchase water from neighbours. Some residents do not pay at all. Metering ratio has not improved. In fact there are no meters in Chawama. Consumers pay a monthly fixed charge irrespective of water consumed.

The findings have also shown that Lusaka Water and Sewerage Company has not improved water service delivery in the city of Lusaka. For example, water coverage has not improved. Hours of supply have not improved either. The average hours of supply in Lusaka are 15 hours. Water quality compliance has not improved as well. Even sanitation coverage has not improved. The study has also shown that Lusaka Water and Sewerage Company has failed to reduce the cost of maintaining water infrastructure in the city. Unaccounted For Water has not been reduced. Leakages are not promptly attended to. Staff connections have not been reduced. Collection efficiency has not improved. Metering ratio has also not improved.

The study has shown that water tariffs in Chawama are affordable. Consumers pay a flat rate of K6, 000.00 irrespective of what they consume. However the majority of residents are not connected to the network. Because of this, many people pay K5, 000.00 to people who are connected to the network. This results in loss of revenue to the company.

The study has also shown that the company is operating at a loss. The main reason for this weak financial performance is the loss of revenues from non-revenue waters, primarily leakages, and weak bill collection mechanism in Chawama.

5.1 Summary

Political and economic conditions in most developing countries are not conducive to water privatization. As a result most consumers are not able to afford water tariffs despite the fact that the tariffs are normally lower than those in developed countries. The findings in Chawama differ from findings in the developed countries where water service delivery has improved under private utilities. The reason for this is that the utilities in developed countries have invested huge sums of money in the infrastructure. The other reason is that the politico-economic conditions in developed countries are conducive to water privatization.

The study has shown that the same model of privatization in some of the observed countries produces relatively good results, while causing major problems and difficulties in others. It is therefore clear from the study that no model of privatization can offer

universal solutions to privatization challenges, that no model implemented alone is ideal and that their combination is the most reasonable economically and socially.

The findings of the study have shown that Lusaka Water and Sewerage Company a private water utility has not improved service delivery either in Chawama or Lusaka district. The findings in Chawama tally with findings in most developing countries with weak economies. Water infrastructure in Zambia is in poor state. Investment in water infrastructure is negligible because of low cost recovery. This in turn contributes to poor performance in service delivery.

5.2 Recommendation

In order to address the unattended to problems revealed in this study, the following recommendations are tendered:

To improve its performance, the company should:

- If it is to attain sustainability over the long-term, has to embark on developing and applying the right water tariff based on volumetric consumption through increased level of water metering in Chawama.
- Adopt a strict disconnection policy so as to compel consumers to pay their bills.
- Invest considerable sums in water infrastructure in order to upgrade or replace existing water infrastructure, so as to improve water production, water distribution and quality.
- Have a subsidy scheme, where the poorest households in Chawama should pay a tariff below the average cost.
- Solicit community participation in the choice of water infrastructure so as to enable the community participate in maintenance.
- Engage the community so that water infrastructure is not vandalized.
- Have adequate qualified personnel.

B To improve its efficiency, the company should:

- Be prompt in repairing leaking pipes and capturing of illegal connections, as this would reduce the cost of maintaining water infrastructure.

- Reduce its permanent work-force in order to reduce its operational costs.
- Increase new connections in order to boost its customer base.
- Improve its bill collection by metering all houses connected to its network. It should also find an effective way of collecting bills from its consumers.

C In terms of effort, the company should:

- Repair vandalized communal stand pipes so that water supply is improved.
- Introduce water kiosks in Chawama as it has done in George compound.
- Ensure that water supply is constant in Chawama.
- Ensure that the pressure is not low.
- Sink more boreholes in Chawama.
- More tanks should be put up in Chawama.
- Put up more stand taps.
- Should [illegible] lay new pipes.
- Make more household connections.
- Explore more water sources all around the city.
- Rehabilitate or improve existing infrastructure.
- Lay another water line from Kafue River, the only source of surface water for the city.
- Develop new water infrastructure.

BILIOGRAPHY

Books

Balance, T and A. Taylor (2005), Competition and Economic Regulation in Water. The future of the European Water Industry, London. IWA Publishing.

Brook, Penelope and Alain Locussol (2001). 'Easing tariff increases: Financing the transition to cost-covering water tariffs in Guinea' in chapter 3 in Contracting for public services: Output-based aid and its applications Edited by Penelope J. Brook and Suzanne M. Smith.

Brubaker, E,(2001), The promise of privatization, Toronto: Energy Probe Research Foundation.

Buchanan, J. M., & Tollison, R. D. (1972). Theory of Public Choice. Political Applications of Economics. Ann Arbor, MI: The University of Michigan Press.

Galiani, S., P. Gertler, E. Schargrodsky and F. Sturzenegger (2002). "The Benefits and Costs of Privatization in Argentina: A Microeconomic Analysis", in The Benefits and Costs of Privatizations, Chong, A. and F. Lopez-de-Silanes (Eds.).

Greene, J. D. (2002). Cities and Privatization: Prospects for the New Century. Upper Saddle River, NJ: Prentice Hall.

McDonald, David and Pape, J (eds). (2002) Cost Rrcovery and the crisis of service Delivery in South Africa. Zed Press: London and HSRC Publishers: Pretoria.

Niskanen, W. A. (1971). Bureacracy and Representative Government. Chicago, IL: Aldina-Atherton.

Niskanen, W. A. (1992). Guidelines for delineating the private and the government sector, Chicago, IL: Aldina-Atherton.

Peterson, Paul (1981). City Limits, Chicago: University of Chicago Pess.

Ramamurti, R. (1996). Privatizing Monopolies: Lessons from the Telecommunications and Transport Sector in Latin America, Baltimore: Johns Hopkins University Press.

Journals

Bhattacharyya, Arunava; Parker, Elliott and Raffiee, Kambiz, "An Examination of he Effect of Ownership on the Relative Efficiency of Public and Private Water Utilities", Land Economics, 1994 May, Vol 70(2) pp 197-209.

Byners, P. S., Grosskopf, and K. Hayes, "Efficiency and Ownership: Further Evidence", Review of Economics and Statistics Vol 68(2), 1986, pp 337-41.

Crain, W Mark, and Ashgar Zardkoohi, "A test of the property rights theory of the firm: Water utilities in the United States" Journal of Law and Economics 21 (2) 1978, pp395-408.

Dagdeviren, Hulya, "Waiting for miracles: The commercialization of urban water sector in Zambia", Development and Change,Volume 39, Issue 1, January 2008.

Estache, Antonio and Rossi, Martín A., "How Different is the Efficiency of Public and Private Water Companies in Asia?" The World Bank Economic Review, volume, 16 (1) 2002, pp 139-148.

Feigenbaum, S., and R.Teeples, "Public Versus Private Water Delivery: A Hedonic Cost approach", The Review of Economics and Statistics, Vol. 65, No. 4, 1983, pp 672-678.

Fox, W., and R. Hofler, "Using Homothetic Composed Error Frontiers to Measure Water Utility Efficiency", Southern Economic Journal, No-53, Vol 2, 1986, pp 461-77.

Galian, S., "The impact of the Privatization of water services on child mortality", Journal of political economy, Vol. 113, February 2005, pp. 83-120.

Green, J. D., "Does Privatization Make a Difference? : The Impact of Private Contracting on Municipal Efficiency", International Journal of Public Administration., Vol. 17 No.7, 1994, pp 1, 299, 325.

Megginson, William L. and Jeffrey M, Netter, "From State to Market: A Survey Of Empirical Studies On Privatization", Journal of Economic Literature, No-39, vol. 39(2), 2001, pp 321-389.

Miranda, Rowan, "Explaining the privatization decision among local government ithe United States,"Research in urban policy 5 1994, 321-374.

Niskanen, W. A., "Bureaucrats and Politicians," Journal of Law and Economics,. Chicago, IL: Aldina-Atherton. No 18, 1975, pp 617-643.

Ros, Agustin, "Does ownership or Competition Matter? The effects of telecommunications. Reform on the Network Expansion and Efficiency", Journal of Regulatory Economics, 1999. Springer, vol. 15(1), pp 65-92.

Schwartz, H. M., "Public Choice Theory and Public Choices: Bureaucrats and State", Administration & Society, Vol. 26, No. 1, 1994, pp 48-77.

Tiebout, C. M., "A Pure Theory of Local Expenditures", Journal of Political Economy, volume 64 (5), 1956, pp. 416-24.

Willner J and Parker D., " A model of state enterprise and privatization under conditions of passive and active ownership", Journal of Political Economy, volume 8, December 2000, pp 250, 958–976.

REPORTS

Andre Rossi de Oliveira, "Social policies and private sector participation in water supply: The case study of Brazil", UNRISD, 2006, Geneva.

Bayliss, Kate, 'Water privatization in Africa: lessons from three case studies' SIRU Report, May 2001, http://www.psiru.org/reports/2001-05-W-Africases.doc.

Bitrán, G.A. & Valenzuela, E.P., 'Water Services in Chile: Comparing Private and Public Performance', Public Policy for the Private Sector, Note no. 255, March 2003, Washington, DC: World Bank.

Brook, Owen, Penelope, "Lessons from the Guinea Water Lease' World Bank Public Policy for the Private Sector, Note No. 78, 1999. Brook Cowen pbrook@worldbank.org.

Clarke, R.G. and Wallsten, S.J. Universally Bad Service: Providing Infrastructure Services to Rural Urban Consumers", Research Paper, 2002.

Estache, Antonio, Andres Gomez-Lobo and Danny Leipziger, "Utility Privatization and the Needs of the Poor in Latin America. Have We Learned Enough to get it Right?" World Bank Policy Research Working Paper 2407, 2000, Washington, D.C. : World Bank.

Estache, Antonio and Martin Rossi, "Comparing the Performance of Public and Private Water Companies in Asia and Pacific Region: What a Stochastic Costs Frontier Shows", Policy Research Working Paper, 2003, Washington D.C.: World Bank.

Estache, Antonio and Trujillo, Lourdes, "Efficiency Effects of "Privatization" in Argentina's Water and Sanitation Services." Working Paper, 2003, Washington, D.C.: World Bank.

Foster. W, and Yepes, T, "Is cost recovery a feasible objective for water and electricity? The Latin American experiencee" 2006 World Bank Policy Research Working Paper WPS3943, Washington DC.

Francois Brikke and Maarten, Bredero "Linking technology choice with operation and maintenamce in the context of community water supply and sanitation", 2003, World Health Organization and IRC Water and Sanitation Centre, Geneva, Switzerland.

Gairn, M Isham, J and Kahkonen, S 2002 "Should we bet on private or pulic water utilities in Cambodia? Evidence on incentives and performance from seven provincial towns, " Middlebury College Economics Discussion Paper No. 02-09.

Gleick, Peter, "The human right to water in the world"s water 2000-2001: The biennial report on fresh water resources, 2000, Washington, D.C. Covello: Island Press.

Hall, David 'The Water Multinationals'financial and other problems", PSIRU report for PSI, August 2002,http://www.psiru.org/reports/2002-08-W-MNCs.doc.

Kerf, Michel, 'Do State Holding Companies facilitate Private Participation in the Water Sector?" Policy Research Working Paper 2513, December 2000, World Bank, Private Sector Development, Washington, D.C.

Kirkpatrick, C. D. Parker and Y-F. Zhang, "State versus Private Sector provision of water services in Africa: An Empirical Analysis", Working Paper Series, PSIRU Report, Paper No 70, June 2004. University of Manchester, Centre on Regulation and Competition.

Komives K, V Foster, J Halpern and Q Wodon, "Water, Electricity, and the Poor:Who benefits from water subsidies ?" 2005, Washington, D.C; The World Bank.

Lobina, E., "Cochabamba water war: Focus on the Public services", PSIRU Report, Volume 7, Number 2 June 2000, pp 5-10 htp/www.psiru.org/reports/cochabamba.doc.

McCommon C & Yohalem D 'Community management of rural water supply and sanitation services.'UNDP World Bank Water and Sanitation Programme,1990, Washington, D.C.

Menard, Claude and George Clarke, 'A Transitory Regime: Water Supply in Conakry, Guinea' World Bank Policy Research Working Paper 2362., June 2000,Development Research Group, Washington, D.C.

Menard, Claude and George Clarke, 'Reforming Water Supply in Abidjan, Cote d'Ivoire: A mild Reform in a Turbulent Environment', World Bank Policy Research Working Paper 2362, June 2000, Development Research Group, Washington, D.C.

UNDP 2006 "Human Development Report 2006.Beyond scarcity : Power, poverty and the Global Water Crisis", Palgrave Macmillan for United Nations Development Programme, London.

NWASCO, 'Annual Report', 2005, Lusaka, Zambia.
NWASCO, 'Annual Report', 2006, Lusaka, Zambia.
NWASCO, 'Annual Report', 2007, Lusaka, Zambia.
NWASCO and DTF (2005), Reaching the Millenium Development Goals for Water Supply and Sanitation in Zambia" National Water Supply and Sanitation Council and Devolution Trust Fund, Lusaka.

Prassad Nareen, "Why is regulation insufficient insufficent? Social policies and private sector participation in water supply"United Nations Research Institute for Social Development, (UNRISD) 2006, Research Cordinator, prassad@ unirisd.org.

Roark, P Buzzard, S and Yacob, M. "Towards community management: a guide to integrating behavioural sciences and engineering technology in water and sanitation projects", Water and Sanitation for Health Project, 1989, Arlington, VA, USA.

Ros, Agustin and A. Banerjee, "Telecommunications privatizations and tariff rebalancing: evidence from Latin America", Telecommunications Policy No-20, 2000, pp 233-252.

Samuel, Brian, "A New look at African Privatization", IFC Corporate Finance Services Department, 1999.

Smith, L, "Neither Public Nor Private Unpacking the Johannesburg Water Corporatization Model, " Social policy and Development Programme Paper 27. United Nations Research Institute for Social Development 2006, htp/wwwunrid.org.unrid.

Taylor P & Mudege N R 'Sustainability: the challenge of rural water supply and sanitation in Zimbabwe', IWSD, 1996, Harare.

Tremolet, Sophie and Joanna Neale, 'Emerging Lessons in Private Provision of Infrastructure Services in Rural Areas, Water and Electricity in Gabon' Report for World Bank PPIAF, Environmental Resources Management, September 2002. Washington, D.C.

World Bank (2002) "Upgrading Low Income Urban Settlements: Zambia Country Assessment Report", Washington D.C., World Bank.

World Bank (2003) "Issues Facing Zambia"s Commercial Water Utilities: A Review based on studies from copperbelt Province", Washington D.C., World Bank.

Zerah, Marie-Helene, Water: Unreliable Supply in Dehli." 2000. Manohar, Centre de Sciences Humaines, Dehli.

Zhang, Y, F, C Kirkpatrick and C.D . Parker, "State versus Private Sector provision of water services in Africa: An Empirical Analysis", Working Paper Series, PSIRU Report, Paper No. 70, June 2004, University of Manchester, Centre on Regulation and Competition.

Government documents

Local Government Act CAP 282.

NWASCO CAP 97.

Water Act, 1948, Lusaka Government Printers.

Thesis

Banda, I, N., (2004) Private sector participation in the water and sanitation industry in Zambia: Opportunities and constraints.

APPENDIX

SECTION A

QUESTIONS FOR CHAWAMA RESIDENTS

1. Gender:

   A Female B Male

2. Age:

   A 20—30 Years

   B 31---40 Years

   C 41---50 Years

   D Above 50 Years

3. Education

   A Primary

   B Secondary

   C Tertiary

4. Economic Status

   A Employed.

   B Unemployed.

   C Self Employed.

5. Income

   A Below K200, 000.

   B K201, 000-K500, 000.

   C K501, 000-K1, 000,000.

   D Above K1, 000,000.

6. Do you get your water from Lusaka Water and Sewerage Company?

Yes	No

7. If yes, is the water clean and safe?

Yes	No

8. If the answer is no, what is wrong with the water?

Too much chlorine	Water is brownish

9. Do you have water on regular basis?

Yes	No

10. What time does water come?

06-10 hours	14-16 hours	23—02 hours

11. Is this time convenient to you?

Yes	No

12. Why is it not convenient?

It is risky to draw water at night	You need several containers to store sufficient water in.

13. How risky is it to draw water at night?

You can be mugged by thieves	You can be raped

14. Are water leakage reports promptly attended to?

Yes	No	Don't know

15. How much do you pay for your water and who do you pay this money to?

K 5,000 per month. Pays the owners of the tap	K 6,000 per month. Pays lwsc	K 35,000 per month. Pays lwsc	Free	Buys from individuals at k 200 per 20 litre

16 Is your household connected to LWSC water network?

Yes	No

17. Are water meters installed on your premises?

Yes	No

18 If the Answer Is Yes, Are You Correctly Billed?

Yes	No

19 If you do not have water meter on your premises, how do you pay your bills?

pay flat water charge to lwsc	Pays to owners of taps.	Buys water from individuals	Don't pay anything

20. If you do not get your water from Lusaka Water And Sewerage Company, Where do you get your water from?

Draw From Well	Draw From Borehole	Other Specify

21. What has Lusaka Water and Sewerage Company done to improve water service delivery in your area?

Sunk new bore holes	Increased new connections	Laid new pipes	Introduced water bills	Water Vending Kiosks introduced	Nothing

22. Do you think this is enough?

Yes	No

23. Do you think water service delivery has improved under Lusaka Water And Sewerage Company?

Yes	No

24. If the answer is no, what do you think should be done by LWSC to improve water service delivery in your area?

Ensure constant water supply	Effect new house-hold connections	Introduce water kiosks	Install more water stand taps	Repair stand pipes	Increase water pressure	Remove old pipes and lay new bigger ones	Lay new pipes	Sink more bore holes	More pipes and less tariffs

25 Should the provision of water revert back to the council?

Yes	No

26 Should there be another water provider?

Yes	No

27. Is the price of water charged by Lusaka Water and Sewerage Company affordable?

Yes	No

28 If the answer is no, why do you say so?

_____

29. How much would you prefer to be charged?

Nothing	K 1 000 Per month.	buy water from water kiosk.	Any amount as long as water supply is constant.

30 Would you pay a higher tariff if services improved?

Yes	No

31 Do you have sewerage facilities?

Yes	No

32. How many boreholes are in Chawama?

0	1	2	3	4

33. How many tanks are in Chawama?

0	1	2	3	4

SECTION B

Questions For Lusaka Water and Sewerage Company

1 Has Lusaka Water and Sewerage Company put in place any programme to improve water delivery?

---

2 If the answer is yes, what are these programmes?

---

3 Has Lusaka Water and Sewerage Company put in place any programme to improve capacity for its employees?

---

4 If the answer is yes, what are these programmes?

---

5 Does Lusaka Water and Sewerage Company motivate its employees in order to improve service delivery?

---

6. If the answer is yes, what type of motivation?

---

7 Has Lusaka Water and Sewerage Company employed more qualified employees to boost its workforce?

---

8 If the answer is yes, what type of employees?

---

9 Are these qualified employees adequate?----------

10 Has Lusaka Water and Sewerage Company increased its water production? -------

11 If the answer is yes, what is the present level of water production?----------

12 What is the present water coverage?----------

13 What has been done to improve water purity?

---

14 What has been done to increase water provision points?

---

15 Has Lusaka Water and Sewerage Company increased its new connections? -------

16. If the answer is yes, what is the percentage of the increase?

---

17 Are there no new applicants?

---

18 Why is it that the connections are not many?

---

19 Are all your consumers metered?

---

20. Why are your customers not all metered?

---

21 Do you plans to meter all your customers?

Yes	No

22. Do you have people applying for meter installation?

---

23. Does Lusaka Water And Sewerage Company promptly repair leakage points?----------

---

24. Does Lusaka Water And Sewerage Company correctly bill its customers? ----------

---

25. What has been done to improve communication between water consumers and the company?----------

26. What are the present sources of water supply?

---

27 What efforts have been expended by Lusaka Water and Sewerage Company to increase its sources of water?----------

28 Has there been any recapitalization of the company?

---

29. Do government departments pay for water?

---

30 Do you disconnect defaulting government departments?

---

30 Do you disconnect defaulting private consumers?

---

31 Do you charge economic price for your water?

---

32. Why don't you charge economic price?

---

33. Do you price your water without any political interference?

---

34 What needs to be done to improve water service delivery in the district?

---

35. What measures has your company put in place so that even the poor have access to water?

---

36 Does your company experience unaccounted for water?

---

37 If the answer is yes, how are you dealing with leakages?

---

38 What plans does your company have to improve general performance?

---

39 What plans does your company have to improve efficiency?

---

40 What plans does your company have to improve financial performance?

SECTION C

QUESTIONS FOR LUSAKA CITY COUNCIL

1 Has Lusaka Water and Sewerage Company satisfied your expectations since its inception regarding water service delivery?

---

2 Do You Think Lusaka Water And Sewerage Company has put in enough efforts to improve water service delivery?

---

3 Do you think the Lusaka Water and Sewerage Company has improved water service delivery since its creation?

---

4 Do you think the Lusaka Water and Sewerage Company has enough human and other resources to provide water service?

---

5 Do you think water service delivery would improve if it reverts back to the council?

---

6 Do you think the poor have access to clean and safe drinking water?

---

7 Do you think the poor are able to afford the price of water as charged by Lusaka Water and Sewerage Company?

---

8 Does the council interfere in the operations of the water utility?

Yes	No

9 What measures have the council put in place so that even the poor have access to safe and clean water? ----------

10 What do you think Lusaka Water and Sewerage Company should do to improve water service delivery in Lusaka?

---

11 Does the company declare any dividend to the share-holders?

Yes	No

12 If the answer is no, what was the reason?- ----------

13 What should be done to improve its financial performance?----------

14 Does the council recapitalize the company?----------

15 Do you think Lusaka Water and Sewerage Company is efficient?

Yes	No

16 What should be done to make it efficient?

---

17 What should be done by the company to improve its performance?
