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OPPORTUNITIES AVAILABLE FOR COMMERCIAL WATER UTILITIES IN ZAMBIA A CASE STUDY OF SOUTHERN WATER AND SEWERAGE COMPANY LIMITED

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To my Wife and Children, and to my Mother and to the lovely memory of my late Father

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Let me say, "Thank You God for another exposure of academic life."
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ACRONYMS AND ABBREVIATIONS

ADB:	Asian Development Bank
CSO:	Central Statistical Office
CUs:	Commercial Utilities
DTF:	Devolution Trust Fund
DWA:	Department of Water Affairs
GIZ:	Germany International Cooperation
GRZ:	Government of the Republic of Zambia
HHH:	Heads of Households
ICSID:	International Centre for the Settlement of Investment Disputes
IMF:	International Monetary Fund
KFW:	Germany Development Bank
KPI:	Key Performance Indicators
NRW:	Non-Revenue Water
NWASCO:	National Water and Sanitation Council
NWCPC:	National Water Conservation and Pipeline Corporation
O & M:	Operations and Maintenance
PCU:	Programme Coordination Unit
PSP:	Private Sector Participation
SPSS:	Social Package for Social Scientists
SWSC:	Southern Water and Sewerage Company
UK:	United Kingdom
UN:	United Nations
UNDP:	United Nations Development Programme
USA:	United States of America
WAZ:	Water Aid Zambia
WRM:	Water Resource Management
WSC:	Water and Sewerage Companies
WSS:	Water Supply and Sanitation

Abstract:-

OPPORTUNITIES AVAILABLE FOR COMMERCIAL WATER UTILITIES IN ZAMBIA

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Water commercialization/privatization has been a controversy in Africa and world-over in urban and peri-urban areas from the time of its inception to date. Though the objectives have been good in terms of efficiencies, it has some good non-efficiencies reasons for intervention by governments and other partners such as social and political ones. Many commercialization/privatization of water utilities have been formed out of pressure either by donors or from pressure resulting from market economy. Each commercialized/privatized water utility has/had its own experience. This case study of the opportunities available for commercial water utilities in Zambia focused on investigating opportunities available for exploitation for Southern Water and Sewerage Company Limited and describing factors that influenced performance. The research involved a review of secondary data and discussions with key informants. The study used a descriptive approach in its investigation from 10 districts found within the service area of Southern Water and Sewerage Company Limited of Zambia. Even though commercialization/privatization has continued in other parts of the world today, the controversy or resistance had continued. Variables that were look at are from the social, economic, environmental and political dimensions. Social variables looked at accessibility and affordability; economic variables are; investment, financing, revenue collection, unaccounted-for-water, metering ratio, labour productivity, service coverage, number of connections, operations and maintenance cost coverage, hours of supply, water production and sanitation coverage; environmental variables are sewerage coverage, water quality, policy and regulations, and political variables are the government, stakeholders, civil societies etc. The result of the study revealed that social, efficiencies, environment and political variables are significant in explaining the influence of the opportunities available for commercial water utilities in Zambia with respect to Southern Water and Sewerage Company Limited. All the variables under the social, economic, environment and political are important and depend on each other if a viable water supply and sewerage company has to grow. Ignoring one of them results in social and economic problems. Despite the huge challenges identified in the water supply and sewerage, surprisingly the challenges were turned into opportunities available for business exploitation. The positive relationship among the social, economic, environment and political factors is that they all contribute to company growth. The Southern Water and Sewerage Company has to make water accessible and affordable to society in urban and peri-urban areas of Southern Province because water is a human right and has to provide water in an efficient way in order to make profit. The environment has to be conducive for the water utility to operate. It also depended on partners to fund most of its infrastructure development. Therefore, growth of water supply and sewerage services would depend on the available opportunities identified from the four social, economic, environment and political factors of the

water governance. Therefore, strengthening policy that would include the social, economic, environment and political factors will quickly transform the water supply and sewerage services delivery in the ever increasing demand areas of urban and peri-urban of Southern Water and Sewerage Company Limited.

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CHAPTER ONE
INTRODUCTION
1.1 Background

Prior to 1993, the Department of Water Affairs (DWA) under the Ministry of Energy and Natural Resources then, was mandated to undertake the role of providing water supply services in the small towns in the country. Further, the provision of sanitation services was a mandate of the Ministry of Works and Supply. In Cities and big towns, the mandate for both water supply and sanitation provision was with the City and Municipal Councils, respectively. However, in 1997 an Act of Parliament "The Water Supply and Sanitation Act No. 28 of 1997" was enacted by the Parliament of the Republic of Zambia, to foster the formation by local authorities, of water supply and sanitation utilities (commercial water 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 (NWASCO). The first step was that of transferring the water schemes under the Department of Water Affairs to District Councils in the year 2000.

The National Water Supply and Sanitation Council (NWASCO) regulates water supply and sanitation service providers for efficiency and sustainability in the water supply and sanitation service provision. NWASCO is mandated to balance the social and commercial interests, protect consumers from exploitation and providers from undue political interference. The regulator links water and sanitation prices to sustainability of systems and performance of providers. At the same time, NWASCO ensures that social interests are taken into account as well as preventing consumers from paying for the inefficiencies of the service providers.

The reforms of the water sector were a response to the poor performance of the institutions charged with the responsibility of water supply and sanitation service provision then. This performance was a result of a number of factors including the unclear roles and responsibilities of institutions, low investment in the sector, low cost recovery, and overstaffing with personnel not adequately qualified. In summary, the institutional arrangements for the water sector before the reforms were characterized by a lot of confusion, (NWASCO-Water Sector Reform in Zambia, 2004).
The key problems in the water sector prior to the reform were:

i. Lack of a comprehensive sector policy or strategy to guide sector organisations in the performance of their tasks.
ii. Unclear roles and responsibilities for the water sector leading, either to duplication of efforts or gaps in some areas.
iii. Deteriorating infrastructure as a result of poor maintenance and lack of new investment, with most of the investment being provided by external support agencies.
iv. Erratic and insufficient funding through Government, with little impact of government institutions on the ground.
v. Increasing pollution of water resources among other environmental problems, particularly in the mining areas.
vi. Non-existence of comprehensive legislative framework for managing water (no sector policy on Water Resources Management (WRM) and Water Supply and Sanitation (WSS); the Water Act of 1948 was outdated and did not cover WSS). vii. Lack of stakeholder involvement and ownership by consumers and users.

With the advent of the market economy or with the guidance of the invisible hand, resultant of change in Government in 1991, it was incumbent upon the new government to reform public structures to respond to the new economic strategy. This included water sector reforms that were aimed at resolving problems that existed then.

The vision of the Government of the Republic of Zambia for the water sector reform was:
The WSS sector shall be developed to improve the quality of life and productivity for all people by ensuring an equitable provision of an adequate quantity and quality of water supply and sanitation services at acceptable cost and on sustainable basis.

To achieve this vision, seven sector principles were adopted to guide the implementation of the reforms as follow:

i. Separation ofWater Resources Management (WRM) and Water Supply and Sanitation (WSS).
ii. Separation of regulatory and executive functions within the water supply and sanitation sector.
iii. Devolution of authority to Local Authorities (LAs) and private enterprises.
iv. Full cost recovery on the long run.
v. Human Resource Development leading to more effective institutions.
vi. Use of technologies appropriate to local conditions.
Vii. Increased funding by the Government of the Republic of Zambia (NWASCO - Water Sector Reform in Zambia, 2004)

By the year 2009, Zambia had eleven (11) commercial water utilities established. Other than the Copper belt Province, where there are three (03) utilities, the rest of the provinces have one utility each, providing water supply and sewerage services. Figure 1 shows all the provinces of Zambia covered by utilities for water supply and sanitation services provision.

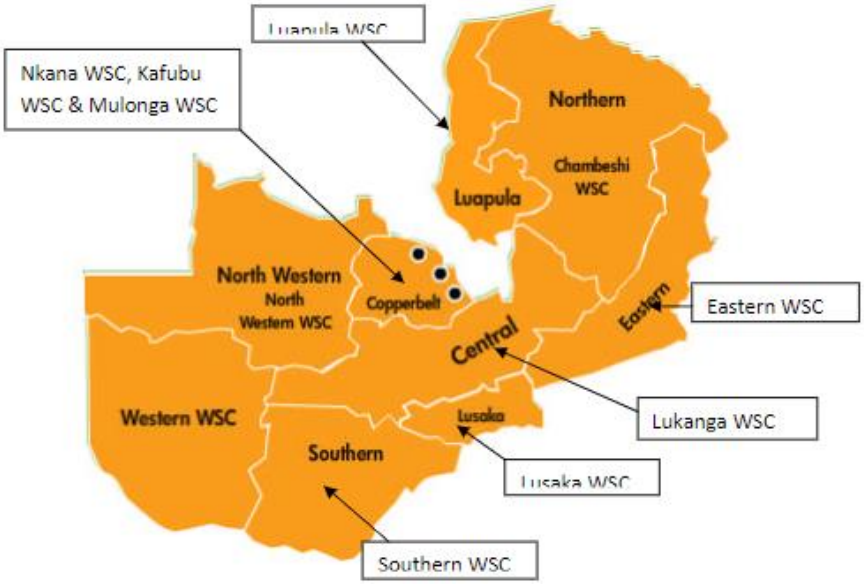


Figure1: Map of Zambia showing commercial utilities

Source: The National Water Supply and Sanitation Council of Zambia (NWASCO)

Southern Water and Sewerage Company Limited (SWSC) was established in September 2000 alongside other Commercial Water Utility Companies. The company since inception has been striving to implement the Water Sector Reform of 2004 and trying to survive as an independent commercial entity. The Company is mandated to provide water supply and sewerage services to the urban and peri -urban population of Southern Province of Zambia. It is expected, with the formation of SWSC, that service delivery will improve and enable the company to be profitable by seizing the available opportunities in the service area.

Taking into consideration the extent of water as a right (UN World Water Development t, 2006) where it is alleged that variables such as economic, environmental, political and social dimensions should be considered in the water supply and sewerage services. The analysis of all such dimensions will help the company to identify available op opportunities. Studies so far on private or commercialized water and sewerage utilities have most agreed that in order for such utilities to be viable, all the dimensions should be included. There are studies where the private sectors have done well (Cote d'ivoire, Senegal etc) and others where they have faced social protests (Bolivia, Trinidad, Tobago etc) leading to a situation where operations have been handed back to public authorities (UN 2006). In the Uganda case, in the time of political instability and economic hardships (1970s and early 1980s) during the regime of Idi Amin, the relationships between donors and government soured resulting in no financial aid to Uganda. The National Water and Sewerage Cooperation in its infancy also suffered the consequences of reduced financial resource due to the impasse between donors and government. Worse still the government of Uganda failed to push in seed financial resources into the cooperation to enable it operate effectively and efficiently. Studies by Dr William T. Muhairwe (2009) in Uganda revealed that the successes or failures of a public enterprises or utilities depended very much on the social, political and economic environment. This study, therefore, tried to find out the available opportunities within the identified dimensions of social, political, economic and environment for Southern Water and Sewerage Company Limited (SWSC) to grow.

1.2 Problem Statement

Very little is known in Zambia about running a Commercial Water Utility (CU) of a social nature as a limited private company whose goal, among others, is to make profit (NWASCO 2008/2009).

In Zambia, not much has been studied on the available opportunities for Commercial Water Utility. GkW consultants (2004/05) studied willingness to pay for the services and provision of services to the urban poor (peri-urban). They concluded that people were willing to pay for the efficient services and that the peri-urban areas could be serviced by low cost technology like water kiosks. The issue of available opportunities in the GkW study was silent, yet the opportunities present an avenue for growth.

Similar studies conducted on commercialization or privatization of water and sewerage services in the past from outside Zambia, from many different countries (UN World Water Development, 2006) have placed much emphasis on economic efficiency issues such as connection rates, billing and collection of revenue and no or little mention on the available opportunities, yet they are the sources of all the successes or growth within the company.

In other countries, researches on successes and failures of privatization have been recorded whilst in other countries failures have been recorded (UN, 2006). In both successes and failures of commercialization or privatization of water and

sewerage services, nothing has been alluded to opportunities that led to the mentioned successes as modern businesses rely on exploitation of opportunities. No wonder when privatization was promoted, multinational companies that rushed into the water sector had to pull out in many countries (UN, 2006) because there were no business opportunities in the water sector in those countries. All the studies were and are biased towards specific challenges or constraints in the privatization/commercialization of water utilities, but do not take a SWOT (Strength, weaknesses, opportunities and threats) or comprehensive analysis of the sector. In contrast to these studies, this case study of SWSCO examined the performances and opportunities available for exploitation.

With the picture given above, this research paper looked at the opportunities available within the political, economic, social and environmental for Southern Water and Sewerage Company Limited to exploit. Understanding these opportunities would allow the company to exploit these opportunities.

1.3 Research Objectives

1.3.1 General Objectives

To find out what opportunities are available for Southern Water and Sewerage Company Limited to grow.

1.3.2 Specific Objectives

1) To find out the performance of Southern Water and Sewerage Company Limited for the past 10 years.
2) To find out the factors that influenced the performance of Southern Water and Sewerage Company Limited in the past ten (10) years.
3) To compare the level of revenue contribution of different metered customer categories
4) To find out the relationship between metering and billed revenue

1.4 Research Questions

The main research questions in this study were:

1) What opportunities are available for business exploitation?
2) What has been the performance of Southern Water and Sewerage Company Limited for the past 10 years?
3) What factors have influenced the performance of Southern Water and Sewerage Company Limited in the past ten (10) years?
4) What is the level of revenue contribution by the different customer categories?
5) How does metering influence revenue?

1.5 Theoretical/Conceptual Framework

In order to understand opportunities for growth in the water sector in Zambia, it was better to build a theoretical/conceptual framework with a particular reference to Southern Water and Sewerage Company Limited. The dimensions of water governance (Troop, 2005) was adopted and adapted, in order to understand the available opportunities in water supply and sewerage services provision. According to Uma Sekaran (2003), the conceptual or theoretical framework is a model of how one theorizes or makes logical sense of the relationships among the several factors that have been identified as important to the problem. Since access to safe and clean drinking water and improved sanitation has become a human right under the United Nations (2010), world governments have now an obligation to provide the commodity to its citizens equitably and affordably. Ademola et la (2004) have also concluded that water is a necessary commodity and a right and therefore, must be made available to people as a matter of right. The UN resolution was as a result of deep concern that estimated 884 million people lack access to safe drinking water and more than 2.6 billion people do not have access to basic sanitation. It also indicated that 1.5 million children under the age of five die each year and 443 million school days are lost due to water and sanitation related diseases.

Tropp, 2005, has identified four (04) dimensions namely economic, social, political and environmental in water governance. Therefore, the basic framework of this study is built around the conceptual model below, which is adapted from Tropp, 2005 (See Figure 2). Southern Water and Sewerage Company Limited (SWSC) in Zambia is the organization studied. But the interest in this research is on the opportunities the Company (SWSC) is seizing for its growth. The Company growth therefore represents the dependent variable that lends itself for investigation.

The independent variables that influence the dependent variable (Company Growth) are the dimensions of water governance that are at play in the management of commercial water utility. These are the Social, Economic, Environmental and Political dimensions.

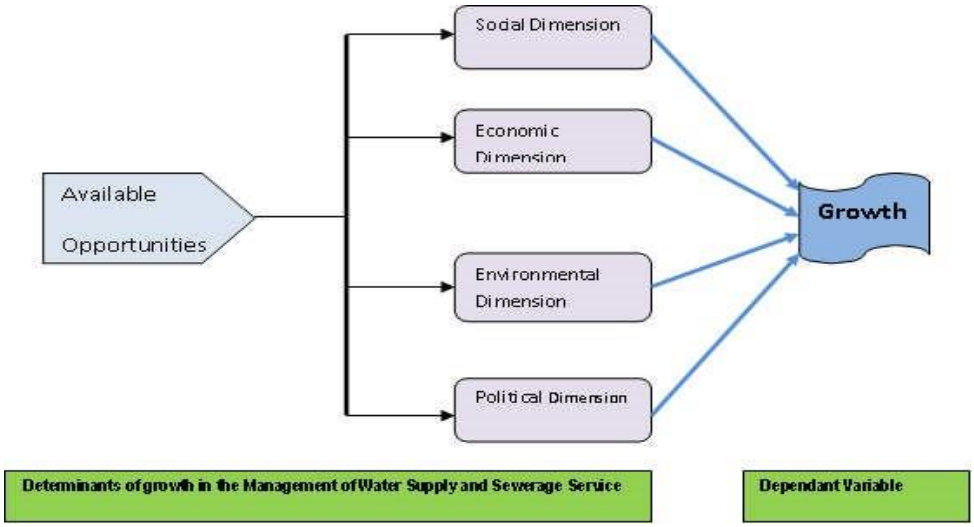


Figure 2: Conceptual Model of the Available Opportunities for Growth in the Social, Economic, Environmental and Political Dimensions

[Source: Adapted from Tropp, 2005]

The above dimensions need to be considered in running a water supply and sewerage facility whether publicly, commercially or privately since water is a human right. Not only a human right but also still remains an area that is generally heavily dependent on public investment and regulations in developed and developing countries alike (UN, 2006). Hence the available opportunities for growth stemmed from the four identified dimensions;

(a) The Social Dimension: With water being a human right, accessibility and affordability become critical factors in the distribution to the citizens in the urban and peri-urban areas as in the case of Southern Water and Sewerage Company limited. This in itself must present an opportunity for the Company in terms of water sales that should look at types of customers available in the Southern Water and Sewerage Company limited that cannot be over-looked. Under this dimension, population growth is a variable that was considered for exploitation by the Company. With population growth, due to urbanization (UN World Water Development, 2006), comes with the inevitable increase in residential structures being constructed in urban and peri-urban. Whether, Southern Water and Sewerage Company limited or Government of the Republic of Zambia like it or not, water being a right has to be provided in urban and peri-urban areas in this regard. Whether not being provided among the urban poor or elite in other new up-coming towns, people trek to other townships and compounds in search of water. This becomes an opportunity for those connected to piped water supply to charge exorbitant prices to the people in need of water. This results in commercial water utilities loosing colossal amounts of income. In 2007, Citizen Report Card survey in Kenya revealed that the poor, in particular, especially women and girls spent significant amount of time fetching for water in both rural and urban areas. It was also revealed that on average these women and girls fetch water 4-6 times per day. Therefore, considering water as a necessary commodity and a right, Southern Water and Sewerage Company limited, if it has to survive, these social considerations must be exploited at an affordable rate.

(b) Economic Dimension: This draws attention to factors such as efficient production and distribution systems. Private sector utilities, whether social or economic considerations are taken into account, are very good at achieving efficiencies. This economic assumption has been promoted by those economists and universities (Chicago) that are anti-government intervention. The assumption is that private sector is more efficient when it comes to resource allocation and levels of efficiencies are increased. No doubt, Southern Water and Sewerage Company limited being a commercial entity, born under water sector reform programme, can rise to the occasion in meeting economic efficiencies, though being a government monopoly with its disadvantages associated with monopoly in the sector. With the reform programme, the company is expected to record good revenue collection, good level of non-water revenue, good metering ratio, good labour productivity, good coverage levels etc. If these indicators are not met, the company will fail to make profit and consequently fail to grow. This will result in poor performance song that has been sung by governments before commercialization or privatization of water utilities. Another indicator that can be incorporated into the economic efficiency is that of finance. Indicators in this category are cost recovery and tariffs. Cost recovery is cardinal in any business venture. In order for a business to survive, it needs to recover costs. Therefore, Southern Water and Sewerage Company limited has no choice but to stand on its knees and rise to the occasion to recover costs. In the water utility, operation and maintenance cannot be ignored, as it is the blood that carries life for survival. The second indicator in the financial indicator is tariff level and adjustments. Investment is another indicator that looks at how much funds are put aside for long-term investment. Southern Water and Sewerage Company limited, has invested in the neighbourhood of ZMK10, 000,000,000 in water supply and sewerage systems for the past 10 years. This investment funds has been a share of government and the donor community in the water utility. The last one in this category is financing. Since its inception, the Southern Water and Sewerage Company limited's main source of funding are: government amounted to ZMK21, 750,000,000 and donor (KfW) contribution amounting to ZMK128, 250,000,000 as grants. The huge funding from government of the Republic of Zambia justifies

the criticality of government involvement in the provision of water supply and sewerage services. The company received external support from the Devolution Trust Fund (DTF) of ZMK10, 104,411,250 and from Water Aid Zambia a sum of ZMK1, 135,000,000. Therefore, economic and financial indicators included all those variables discussed such as non-revenue water (NRW), billing levels, revenue collection efficiency and operation and maintenance cost coverage (O & M) etc.

(c) Environmental Dimension: This looked at the environment in which the Company operates such as political, social, economic and administrative policies that directly and indirectly affect the use, development and management of water and delivery of water and sewerage services in the Company's service area. The other angle that was looked at in this dimension was the sustainability of the physical environment. In this sector the sustainability of the environment is critical to public health that is prevention of diseases. One major factor that was looked at seriously was the management of sewerage system. Most newly constructed residential houses and other infrastructures are not connected to the main sewer system, therefore, if not monitored will cause health problems to these areas resulting in what economists call public health failure in the sector. Therefore, Southern Water and Sewerage Company limited has to find an opportunity in servicing these areas in the near future. The quality of water is another environmental factor that can cause health hazards to the environment and society through public health. The policy and regulations are also looked at as they influence the environment in which SWSC operates.

(d) Political Dimension: The political dimension looked at granting water and sewerage stakeholders and residents in the service area at large equal democratic opportunities to influence and monitor political processes and outcomes. Political dimension is one factor that is important in any economy. World governments are more of politics in all their decision-making in all economies, whether private sector-led economy or government-run economy. Governance in the water sector goes beyond government (UN, 2006, it includes stakeholders such as civil societies and private sector etc. The role of government is clear, as it is the policymaking body, providing enabling environment and legal framework in the water supply and sanitation sector. It is the role of governments worldwide to accept the declaration by the United Nations (2010) that safe and clean drinking water is a human right. This declaration makes water a special commodity that now as a matter of right it should be made accessible and affordable to all its citizens. Hence, accessibility and affordability of water must be guaranteed by the government (Ademola et la, 2004). It becomes the responsibility of governments to put infrastructures in place in order to increase access to all groups of people. Investment in the water and sewerage infrastructure is expensive that the private sector cannot manage unless water is fully in the hands of the private sector. This will make water exorbitant, resulting in poor people being left out. Private sector advocates for efficiencies and finances in the development of water sector. Their key argument is on the efficient allocation of resources and economic turnover for the sector. The civil society organisations advocates for so many issues as stakeholders. These civil societies must be seen to be active in the water sector and be able to monitor services delivered to all groups of societies in making sure that water is accessible and affordable. They can also become watch-dogs in monitoring government policies in water sector, providing information to customers within the region (aware of their water right declaration), whether customers are responsible for paying water bills and making sure that company infrastructures are looked after. The absence of stakeholder involvement can be detrimental to society as most companies are more interested in making profit. Therefore, this factor cannot be overlooked in the management of water and sewerage services. This concludes that analyzing opportunities available in the water sector depends on the four dimensions especially with the advent of the UN resolution of water as a human right. Simply, in quantitative analysis, the formula could have looked like;

$$Y = B_oX_o + B_1X_1(a_1+a_2) + B_2X_2(b_1+b_2+b_3+b_4+\ldots+bn) + B_3X_3(c_1+c_2+c_3) + B_4X_4(d_1+d_2+d_3) + e'$$

That is;

Y= Growth which is a dependable variable

B= Slope of the regression line

B_oX_o = Point at which the regression line crosses the Y axis (growth) and represents the value of Y when X is equal to zero.

B_1X_1= Social dimension which is an independent variable and, a_1, a_2 are its instrumental variables (sub-variables that depend on social variable) such as population growth and affordability etc.

B_2X_2 = Economic dimension which is an independent variable and, b_1, b_2 etc are its instrumental variables (sub-variables that depend on economic variable) such as unaccounted for water (UFW), billing levels, revenue collection efficiency and operation and maintenance cost coverage (O & M) etc.

B_3X_3 = Environment dimension which is an independent variable and, c_1, c_2, c_3 are its instrumental variables (sub-variables that depend on environmental variable) such as sewerage and policy etc.

B_4X_4 = Political dimension which is an independent variable and, d_1, d_2, d_3 are its instrumental variables (sub-variables that depend on political variable) such as stakeholders in water sector.

e' = Error term or simply all those variables not included in social, economic, environmental and political.

1.6 Rationale

Obtaining and understanding information pertaining to available opportunities in the water sector in Zambia cannot be over emphasized. This, therefore, will help SWSC, water consumers and government to understand various interventions in the water sector and how to respond to various factors that affect water governance. If these available opportunities are not identified, it will be difficult to exploit them and service delivery may be compromised to the detriment of the consumers. The study of available opportunities in the water and sanitation among consumers, government, private sector and SWSC was important. It helped to obtain enough information on how available opportunities are identified and exploited. The generation of such information is important to especially policy makers, because their decision in policy making affect consumers of water in urban and peri-urban. That is the rights perspectives and the perspective of the poor are considered to be of central importance to this global development policy (UNCESCR, 2002). The availability of information on available opportunities could high light important messages to enable our policy makers and government to facilitate policies which make consumers, SWSC, private sector (or would be water suppliers) better off as these are usually affected by water policies. Therefore, more information needed on the subject matter.

1.7 Scope of Study

The study was conducted in Southern Province of Zambia. Ten districts were considered in this study. The districts are Siavonga, Mazabuka, Monze, Choma, Livingstone, Kazungula, Namwala, Kalomo, Gwembe and Sinazongwe. Secondary data was used and key informants interviewed using check lists.

1.8 Organization of the Report

This report starts with chapter one which highlights the background information about the subject. It covers the problem statement, objectives, scope of study, and rationale of the study. Chapter two focuses on literature review looking at the background of relevant similar studies on the opportunities available for commercial water utilities. The section reviews some positive and negative results of commercialization/privatization of water utilities.

Chapter three takes a look at the methodology that was employed or used for the study. It comprises the design of the research, description of the data collection procedure, sampling design and data analysis. Chapter four throws some light on the findings and interpretation of the results of the study in question and the Chapter five discusses the findings of the study. Chapter six looks at challenges and opportunities. The last Chapter looks at conclusion, recommendations and policy implication.

CHAPTER TWO
LITERATUREREVIEW

2.1 Introduction to Literature Review

This chapter looks at the background of relevant similar studies on the opportunities available for commercial water utilities. The section starts with introducing key words, and reviewing some positive and negative results of Commercial/privatization of water utilities.

2.2 Defining Key Words

Keywords: Opportunities, Water Supply, Sewerage, Water customer, Commercialization, Privatisation, Water Governance, Sanitation

- Opportunities: Are favourable factors or trends in the external environment that the company may be able to exploit to its advantage (Philip Kotler and Gary Armstrong, 2007) or are positive external options that a firm can exploit to accomplish its mission, goals, and objectives (Thomas W. Z, Norman M. S and Doug W., 2008)
- Commercialisation: Incorporating private sector principles in the management of public institutions (NWASCO, 2010)
- Water Privatisation: Private Sector participation in the provision of water service and sanitation.
- Water governance: Is the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes and institutions through which citizens and groups articulate their interest, exercise their legal rights, meet their obligations and mediate their differences (UNDP, 2001)
- Water customer: Is a person, institution, industry or business entity that legally accesses water supply services from the water supply network of a water utility.
- Water supply: Is the provision, in this regard, of clean and safe drinking water, through connections of properties, premises and kiosks to a piped water network.
- Sanitation: Is a broader term covering all aspects of public health e.g. solid waste management, sewerage, cleanliness etc.
- Sewerage: Is the collection and safe disposal of human excreta and gray water through a pipe network system. It also involves the use of vacuum tanker truck from the on-site sewerage facilities to collect and dispose of the human excreta and gray water into the treatment facilities.

2.2.1 Privatization of water and sewerage services

During the last decade, the roles of governments worldwide have changed from that of being providers of services to that of providing enabling environment, policy framework and legal framework (Killick, 1990). As development takes place, the water sector has not remained dormant. According to UN (2000), about ninety-three countries had started privatizing

their water and sewerage services. According to Ademola et la (2004), the privatization of water services had accelerated by 1999 in Africa mainly as a result of pressure put on developing countries undergoing economic reforms and acknowledged that water privatization had met intense resistance in Africa than any part of the globe. This resulted in a number of effective campaigns against water privatization in Sub Sahara Africa notably Ghana, Kenya and South Africa. This pressure on economic reforms did not leave the government of Zambia in joining developing countries in the world in privatizing their economic and social utilities by 1991. It was after 1991 that profound reforms in the water sector took place in Zambia as a response to the poor performance of the institutions charged with the responsibility of water and sanitation service provision then. Specifically, the following Institutions building and legal reform process was instituted by the Government of the Republic of Zambia (GRZ):

- In March 1993, the Government of the Republic of Zambia (GRZ) established the Programme Co-ordination Unit (PCU) to elaborate proposals for the reform of the water supply and sanitation sector throughout Zambia.
- In 1994 a new National Water Policy was adopted by Government of the Republic of Zambia with the following service sector principles:
  - Devolution of authority of Water Supply and Sanitation Services to the local authorities and private enterprises
  - Separation of Water Resource Management from Water Supply and Sanitation
  - Separation of regulating and executive functions
  - Achievement of full cost recovery for Water and Sanitation Services through user charges
  - Human Resources Development in the Sector o Use of appropriate technologies o Increased Government spending to the sector
- In 1997, the Water Supply and Sanitation Act No. 28 was enacted defining the new institutional set-up for Urban Water Supply and Sanitation Service Provision.
- In 2000, the regulator - National Water Supply and Sanitation Council (NWASCO) was established.
- In 2000 and 2001, six commercially managed water companies - including Southern Water and Sewerage Company Limited - were formed (in addition to the two already existing ones, Lusaka Water and Sewerage Company Limited and Chipata Water and Sewerage Company Limited (now Eastern Water and Sewerage Company Limited) each regrouping several towns. Therefore, the assets were transferred to the newly formed CU's. The Government of the Federal Republic of Germany through the Germany Development Bank (KFW) and Germany Development Corporation (GTZ – now GIZ) supported the whole reform process.

2.2.2 Similar Studies on the Privatisation/Commercialisation of Water and Sewerage Services

- Examinations on many a case study on commercialization or privatization of water and sewerage services have revealed mixed feelings from different researchers. The results are mixed as far back as the time of commercialization or privatization. Some studies have recorded successes whilst others have recorded failures (UN, 2006). More studies have concentrated their effort on high tariffs, that have either made these private companies succeed while others have failed that is reverting back to public utilities. Those that have been successful like Uganda in Africa have combined social, political and economic environments in their effort to succeed (Muhairwe, 2009). The UN (2006) noted in its findings that the private sectors in water and sewerage services are good at efficiency in water distribution systems and not good at equity. In all the studies on private sector participation, less attention or none has been devoted to the study of the available opportunities for such sectors, yet opportunities present a set of factors to be exploited in any business. Most studies have also blamed governments for failure to provide financial injection into the businesses resulting in run down infrastructures. This has forced some governments to go for privatization or commercialization of such services (NWASCO, 2001). Even when governments allow commercialization, the issue at hand is that water sector still needs public investment there by allowing the social aspect to come in, in order to provide water equitably.

2.2.2.1 Privatization

In England before the reign of the then Prime Minister Margaret Thatcher, private owned water and sewerage companies existed. Before 1989, there were about six private utility companies that were mandated to provide water services. The study revealed that towards the 1900, the market shares in these private companies fell significantly to about 10%. Most shareholders withdrew their shares slowly. This entails that government had no obligation, but to turn to public sector as in the case of other states in the United Kingdoms. It was during 1989, when Margaret Thatcher, then Prime Minister of UK who facilitated the privatization of all water and sanitation services in England. This was also facilitated by funds from World Bank and its sister companies the IMF and coupled by the advent of the market driven economy. After privatization in 1989, the private sector driven water privatization experienced significant increase and improvement in water tariffs levels, profits and investment. In this privatization of water and sanitation in England, these studies failed to categorise types of opportunities available in England, yet they present avenues for growth in a private sector.

In Manila Philippines water privatization took place in 1997 in which concession of contracts for the Eastern and Western Manila was awarded. The study revealed that these concessions represented the largest population served by private operators in the developing world (World Bank, 2009). These two concessions were given to two different private companies that is dividing the city into two halves. As of 2010, the concession in Eastern Manila is highly successful and has led to significant improvements in access, service quality and efficiency. The share of customers with continuous water supply increased and non-revenue The concession in Western Manila failed when the company Maynilad went bankrupt in 2003. It was sold to new investors in 2007 and performance has improved since then. The share of the

population with access to piped water in Western Manila increased in 2006 and the share of customers that enjoys 24-hour water supply increased from in 2011. In this study, no opportunities were identified that led to the successes.

2.2.2.2 Public-Private Partnerships

An extensive examination of various existing literature on how developed countries run their water and sewerage utilities has found that most developed countries have not transferred water and sanitation services completely into the hands of private hands. Hall (2001) in his study on water and sanitation sector argued that public sector ownership is not in itself a cause of inefficiency or an inferior basis for providing water and sanitation. He went on explaining that many a citizen of developed countries depend on public sector in providing water and sanitation services to its nationals. Examples are given in the United Kingdom and France, where the public sector runs the water and sewerage utilities within the context of European Union. In USA, Canada, Japan, Australia, and New Zealand, the scenario is the same that privatization with public-private partnership is implemented in the water and sewerage sector. These research studies stressed more on government involvement in the sector in making sure that water and sanitation is provided with a human face. This shows that there is combined strength in public and private sectors in the provision of water and sewerage services. Even with developed countries, identification of opportunities in the water and sanitation sector have not been explained or largely ignored in their privatization programme, yet they present an avenue for business and growth.

A research that was carried out in Guinea, Senegal and Cote d'ivoire in 2002 by Asian Development Bank (ADB) on the privatization of water and sewerage services revealed a successful story in the water and sanitation sector revitalization. These three countries did not completely privatize their water and sewerage services. Instead, they agreed on contractual agreement ranging from medium term lease to long-term lease. Findings of the contracts were similar in all the three countries ranging from increasing connection rates, improvements on billing, increasing of revenue collection. This resulted in increased tariffs that benefitted only the elites and disadvantaged the poor in society. The poor were disconnected as a result of failing to pay for the services. It was argued that the benefits of privatization did not trickle to the poor in society and that providing such a service to them was a high-risk venture without economic returns to the firms. It was also concluded that the poor are always excluded from the benefits of privatization. Henceforth, governments have been partners in the provision of water and sanitation services in all privatization programmes.

Cartagena is one of the Colombian cities whose water supply is provided by a public private company arrangement. Between 1996 and 2007, public-private partnerships for water and sewerage services in more than 40 Colombian cities were entered into, serving more than 20% of the country's urban population. Most of the contracts were awarded in municipalities with highly deteriorated infrastructure, such as Barranquilla and Cartagena, Colombia. The central government financed most investments through grants, thus reducing the need to increase tariffs. Water privatization in Colombia was largely home-grown, adapting models used elsewhere to the particular circumstances and culture of Colombia. A model introduced from Spain, the mixed company with a majority stake by the municipality and a minority stake by a private operator, was particularly successful. Foreign water companies won some of the early contracts, but quickly sold a majority of their shares to Colombian operators. There was a significant increase in access under private contracts. For example, in Cartagena water supply coverage increased from 74 percent to almost universal coverage, while sewer coverage went up from 62 percent to 79 percent between 1996 and 2006. Half a million people gained access and 60 percent of the new connections benefited families in the poorest income area. To achieve universal coverage, the operator made extensive use of community bulk supply schemes that provide safe water to the many illegal settlements that were expanding on the city's periphery. In Cartagena, tariffs declined substantially, indicating that the operator passed on efficiency gains to consumers.

In another study by Jerome (1999), on Nigeria's privatization of water utility, poor performance of public utility services was a subject of considerable discussion. Since 1970, when the economy had recorded remarkable economic growth due to the oil discovery, the water and sewerage services, and other public utilities declined significantly. The problems reached an alarming rate where water taps became dry many a time. The prolonged problems of these utilities including water utility impacted much on the wellbeing of the whole economy. This resulted in the mushrooming of many expensive utilities that impoverished the Nigerian citizenry and many people and business houses ended in self-provision of basic utilities (Lee et la, 1996). In economics, substantial self-provision of basic utilities is a norm for low-income consumers. Jerome (1999) also noted that when the public sector fails to provide these basic services, relief comes from the informal sector. In his study, he singled the private water vendors who had to draw water for distribution at a high cost. This resulted in many poor households failing to afford water at an exorbitant price. The poor had to go back to their natural sources of water such as streams and other unhygienic sources. In 1981, the situation worsened as oil prices collapsed and the activities of public enterprises attracted more attention and underwent closer scrutiny, much of it cantered on poor performances and the burden they impose on government finances (Ademola et la, 2004). Against this historical background, pressure mounted for privatization of basic utilities including water utility in Nigeria. All these researches on water privatization or commercialization paid attention or focused on poor efficiencies, poor performances, economic burden on government and pressure of the international donors to privatize public utilities, with no attention paid on opportunities for businesses that can attract the private sector to invest in water utilities.

The Lagos State Water Privatisation

A case study of Nigeria by Afeikhema A. ET la (2004) was undertaken to investigate the state of water supply in Nigeria. It was revealed that not more than 50% of its citizens received piped water supply and 30% are able to pay for the water received both in rural and urban areas except Lagos and Abuja. Urban communities did not have waterborne sewerage systems in place reason being that water supply is inadequate. This resulted in various health problems especially the poor and women who have to trek for long hours to find the commodity. This forced the government to combine the efforts of tiers such as Federal, State and Local Governments to get involved in the provision of water and sanitation. But even with the combined efforts, various problems resurfaced such as increased demand-gaps due to overlapping functions and massive wastes in public expenditure. Another problem was that of inefficiency by the State Governments mandated to provide water to the urban and peri-urban in Nigeria. These states involve agencies in the provision of water. These agencies have their own problems such as, resource constrains, lack of independent decision-making, inadequate budgetary allocation and severe political interference. They also lacked ability and willingness to fix and collect tariffs and failure to persecute illegal connections. All these resulted in poor performances in water provision to the customers. The report indicated that the majority of Nigerians are not connected to piped large-scale systems of water supply. These largely depend on traditional forms of supply that is from natural sources such as streams, rivers, and wells or boreholes sunk by government.

In response to the above performances, the State of Lagos whose population is fast growing and estimated to reach 25 million by 2020 pioneered privatization in the water sector. The government entered into concessionary arrangements for private provision of water for the wealth or elites in Victoria Islands and Lekki Peninsula. The other arrangement was for the low income and poor communities in which cross subsidy will be provided in the provision of water in the mainland areas. This arrangement was implemented and made possible by the International Finance Corporation through the World Bank since 2002. Afeikhema A. et la (2004) found out that the major focus was on institutional and financial reforms in the water sector consisting of efficiency, restructuring, cost recovery, increased revenue generation and elimination of poverty. As a result of such major changes, Lagos State Water Corporation (LSWC) recorded some drastically improvements in the water sector in water service delivery. According to Kalu, (2003), the overall objective of Lagos State initiative was to promote Private Sector Participation (PSP) in which ownership belong to the government and management and operation services to the private sector. The objectives of this Private Sector Participation were,

a) Bringing technical and management expertise and new technology into the water sector;
b) Improving economic efficiency in the sector both in operating performance and the use of capital investment by adopting commercial principles and practices;
c) Injecting large-scale investment capital into the sector or gain access to private capital markets to free government funds for other projects;
d) Making the water sector more responsive to customers' needs and preferences.
e) After the implementation of the above programme, the Lagos State Water Corporation recorded significant improvements in revenue collection; lower operational costs; improved efficiency and profit ability. With the successes of this PSP, the government of Nigeria has been happy and recommendation for privatization has been made. In all these successes, little or no attention to opportunities has been alluded to, yet the private sector looks for opportunities to exploit their businesses.

2.2.2.3 From Public to Private and back to Public Sector

A research that was carried out in Bolivia, Trinidad and Tobago (UN 2006) on the privatization of water and sewerage services revealed that these countries failed in their first attempt to privatize water and sewerage services. For example, Bolivian government was under pressure to privatize water and sewerage services in a town called Cochabamba (UN, 2006), leaving the city of Santa Cruz where some improvement in water and sewerage services were realized with the help of the World Bank. Despite the fact that the World Bank provided huge investment in the water and sewerage sector in Cochabamba, the city experienced various problems such as decrease in piped water supply services, high water losses and supply was reduced causing more expenses and hardships to the citizens of the city. The privatization of water and sewerage services had caused price to go up resulting in social and political unrest. When prices of water went up, the poor people faced problems of disconnections and the few urban elite benefitted. These high prices of water in Bolivia ended up in violent protests by the general populace. In Trinidad and Tobago, the public protested against increasing user fees or private firms' performance. This protest led to the governments taking back the water utilities to public authorities. The private companies had to hand over back to the government. The governments have not been in favour of going back to privatization.

Water supply in Buenos Aires was provided by a private company from 1993 to 2006.Water privatization in Argentina began in 1992 as part of one of the world's largest privatization programmes. Concessions were signed in 28% of the country's municipalities covering 60% of the population. After the 2001 economic crisis the government concessions were terminated, including in Buenos Aires in 2006. The impact of the concession remains controversial. The government and critics argue that the concessionaire failed to achieve the targets set under the concession contract in terms of expansion of access, investment and service quality. Proponents concede that targets were not reached, but argue that a freeze in tariffs at the time of the devaluation of the Peso during the Argentinean economic crisis in 2001 violated the contract and thus made it impossible to achieve the original targets. According to the Argentinean economist Sebastian

Galiani, the public company OSN had invested only US$25m per year between 1983 and 1993, while the private concessionaire Aguas Argentinas increased investments to around US$200m per year between 1993 and 2000. According to the private concessionaire Suez, during the 13 year-duration of its concession it extended access to water to 2 million people and access to sanitation to 1 million people, despite the economic crisis. In July 2010 the International Centre for the Settlement of Investment Disputes (ICSID) ruled that the Argentinean government unfairly refused to allow the private concessionaires to raise tariffs during the period after the devaluation of the Argentine peso in 2001 and that the private companies are entitled to damages. The private companies announced that they would seek US$1.2bn in damages.

According to Hall, Bayliss and Lobina (2002) a good number of countries that had privatized their water and sewerage services and later withdrew were as follows and each with a special reason given:

Gambia: MSG private company was engaged to manage the water and sewerage services in Ghana. The government of Gambia withdrew from water privatization. The reasons were based on bad relations between the private company and the government of Gambia; this was just at the beginning of implementation, citing aggressive disconnection campaign. This frustrated the citizens especially the poor. The point of profit motivation was key to the company in order for the company to survive, also proving the point that private sector are good at efficiencies and financial issues and poor at equitable of water and sewerage services (UN, 2006). This necessitated the termination of the contract with the company in 1995, and the government took over the running of the water utility. The issue of privatization of water and sewerage was seriously being discussed in Gambia.

Ghana: Azurix, a subsidiary company of Enron won the tender for providing water and sanitation to the Ghanaians. The contract was later withdrawn because the World Bank stopped funding the sector due to lack of transparency in contract award. This in it-self was not a problem because water business does not have many competitors that should provide competition to the sector. Ariyo (2004) had found out that a number of countries did not have many companies that tendered for the business. Examples such as Czech Republic, Hungary, Poland, Cote D'Ivoire, Argentina and Bolivia awarded contracts without competitive bidding. This explains why total dependency on private sector to provide the commodity will not result in anticipated advantages of competition henceforth; water governance will include stakeholders' participation such as government, private sector and civil organisations.

Guinea: SEEG, a subsidiary company of Saur/Vivendi was given the tender for providing water and sanitation in Guinea. The contract was later withdrawn citing breakdown in contract renewal negotiations between the company and the government.

Kenya: Seureca Space, a subsidiary company of Vivendi was given the tender for providing water and sanitation in Kenya at the on-set of water privatization. The contract was later suspended as a result of an outcry over contract terms. The World Bank had to come in to commission some study of alternative privatization in Kenya.

In Kenya, during the transitional period of 1980 to 1992, and 2002 to today, a lot of reorganization of water institutions emerged from time to time. In 1980 to 1992, the government of Kenya was constrained by financial problems that made water provision difficult and costly to its citizens. In the same year, the National Sanitation Council was formed to guide the municipal councils on water related matters. The Council failed to accomplish its terms of references. In 1983, a survey was undertaken by SIDA on water use. It was discovered that the operation and involvement of government was unsustainable. It recommended decentralization of water use as well as removing operation and maintenance responsibilities from the government. This was done to improve performance and efficiency, and reducing financial burden of the water sector. In 1988, the National Water Conservation and Pipeline Corporation (NWCPC) was formed. This organization was formed to supply water still under the government on a commercial basis. In this commercialization programme, the issues of business opportunities or the customers' potential to pay are silent in the water sector as business is about opportunities not just efficiencies and performances.

Mozambique: Aquas de Mozambique, a subsidiary company of Saur was given the tender for providing water and sanitation in Mozambique. The contract was later withdrawn. The reasons for withdrawal were not made available to the public.

South Africa: Fort Beaufort, a subsidiary company of Suez was given the tender for providing water and sanitation in South Africa. The government later nullified the contract.

Zimbabwe: Gweru, a subsidiary company of Saur was given the tender for providing water and sanitation in Zimbabwe. Negotiations between the company and the government were suspended in 1999. Another company called Biwater was awarded the tender for providing water and sanitation in Zimbabwe. The contract was later withdrawn citing commercial reasons in the sector.

2.2.2.4 Opportunities for the Private Sector in the USA

In the USA, opportunities in the water sector have been identified in some quarters.

According to Usha Srinivasan (2003) in his case studies of the State of America's Public Water Systems, the ASCE (American Society of Civil Engineers) published a document called the "2003 Progress Report for America's Infrastructure" rating the condition of the nation's roads, bridges, drinking water systems and other public works. The overall ratings given for America's infrastructure was a "D+", with the drinking water and wastewater infrastructures graded at "D". This called for more attention than ever before in directing at the water needs and infrastructure condition of the communities around the United States. And also to bring in efficiency in the existing practices to allow for better water management.

With the increased competition for limited federal funding available to the utilities to meet their structural, technological upgrade and other demands, many have been looking for support from the private sector. Contrary to the belief that public private partnerships are detrimental to the communities stemmed mainly due to few bad apples in the mix, municipalities have realized that a well thought out contract between the public and private sector is beneficial in the long run.
This is evident in the outcome of the private-public partnerships that came up for renewal between 1998 and 2001; out of 489 systems that were up for renewal after their 10 to 15 year contracts, 91% chose to renew their contracts. Of which 75% renewed with the same company after negotiation and, other companies renewed 16% through competition and 6%. See figure 4 below.

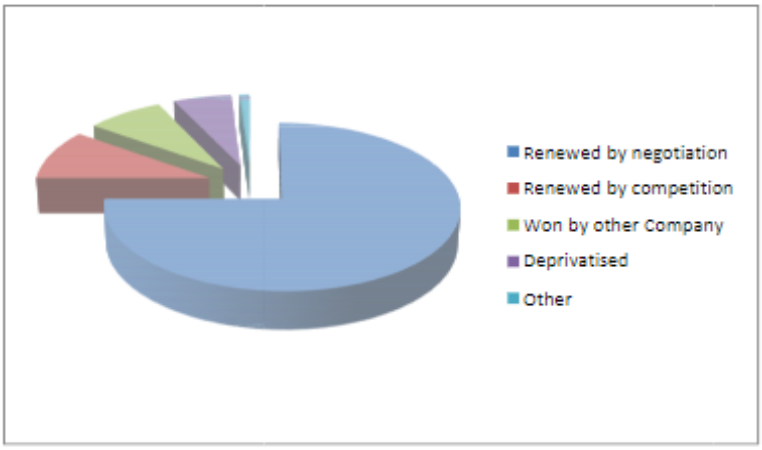


Figure 3: shows the outcome of water/wastewater privatization contract renewals 1998– 2001
[Source: Public Works Financing]

With increased efforts towards consolidation and partnerships, many of the public systems are mimicking the already existing private sector's efficient water management practices. Also such system partnerships open up new areas in which the private sector can assist the municipal utilities whether it is at a technical, financial or managerial level.

CHAPTER THREE
RESEARCH METHODOLOGY
3.1 Introduction
This chapter covers the study area and shades some light with regard to data collection methods and tools used to analyze the study. It is mainly a descriptive study and the main instruments used to collect data were check lists of variables needed to review secondary data. A large amount of data came from the annual reports and financial reports of SWSC and the sector reports by the sector regulator NWASCO.

3.2 Description of Project Area
This research study was carried out in Southern Province of Zambia that is in ten districts where the company operates. The service area is classified into two, namely urban and peri-urban areas. Southern Province covers a surface area of 85,283 square km and quite wide in geographic spread. There are 11 districts out of which 10 are serviced by SWSC with water supply and sewerage services. Further, there are 19 towns within the 10 districts served by SWSC, with a current estimated population in urban and peri-urban standing at 340,000.

Why is Southern Province chosen? The area is where the researcher has been working for a good number of years and a lot of development projects are taking place. Figure 3 below is a map showing the study area:

Figure 4: Shows SWSC Service Area

[Source: SWSC Data]

3.3 Study Population and Sampling Procedure.

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran, 2003).

The sampling frame for the districts was not large enough that selection was easy to implement. The SWSC itself is a population to be studied that is 19 towns; that are within the ten districts in the province where the company provides piped water supply and sewerage services. It provided data on all its expenses, revenues, production, billing, segregated staffing levels, number of water and sewerage connections, etc.

This population helped to have an idea on the extent of service coverage (water and sewerage), water production levels, water loss rates, revenues (billed and collected), cost coverage, population trends and demand trends in the service area of SWSC in Southern Province. This is because the study is limited to this area.

The regulator National Water Supply and Sanitation Council (NWASCO) was chosen because it is the sector regulator that house information on key performance indicators (KPI) for all the commercial water utilities in the country. NWASCO is also a haven of information in general about the water sector in Zambia.

3.4 Scope of the Study

This study was limited to the available opportunities for growth for the SWSC in Southern Province of Zambia. It however, relied only on the variables shown in the conceptual framework, i.e. the social, economic, environmental and political dimensions.

However, this research did not delve into the areas of household sizes, percentage of the water and sewerage charges of the customers' budgets and annual population growth rates as secondary data was reviewed to cluster types of customers in the service area.

Further, the geographical scope of this study was strictly limited to the administrative boundaries of the service area of SWSC.

3.5 Justification of the Samples Size and Sample Selection Method

There are 10 districts with 19 towns (urban and peri-urban) in the service area for the SWSC that comprise the study population for the case of this research.

The table of the sample size for a given population size as provided by Sekaran (2003) was used to determine the minimum sample size. As per this table, the minimum sample size for a population of 10 is 10 in case of districts. With regards to towns, the minimum sample size for a population of 20 is 19 and since the towns are 19, the research considered all the 19 towns for a minimum sample size. Therefore, all the secondary data for 19 towns will be reviewed with regard to the agreed variables.

The income of three different categories of customer namely low, medium and high costs will be sampled from urban and peri-urban areas of the 19 districts. In order to arrive at 380 heads of households from the low, medium and high costs, a total of 12,446 from low HHHs, 4914 from medium and 3561 customers were added together. A ratio was used to find the total for each category. From low cost, 226 (HHHs) were sampled, 89 from medium cost and 65 from high cost. The sampling procedure used was called convenient sampling. This was just at random in order to have a feel of the

situation. SWSC has currently a total number of connections standing at 31,535 from different customer category such as high, medium and low costs, commercial and industrial, institutions and kiosks systems both from the metered and unmetered. For a population of this margin, the minimum sample size is 379 (Uma Sekaran, 2003), but for this research the minimum sample size of 380 used. However, the minimum sample size was segregated proportionally into the existing customer categories.

With regards to the sample size of the other populations, i.e., the NWASCO and SWSC, few people will be chosen.

3.6 Identification and Specification of all Information Items Needed

The Water Supply and Sanitation Act No. 28 of 1997 was identified first as a key input in the water sector. This is a policy that provides guidance for the sector with the help of the general regulation of NWASCO (NWASCO -Water Sector Reform in Zambia, 2004).

Pursuant to this Act, SWSC was established among other Commercial Water Utilities in 2000. SWSC was thus mandated to provide water supply and improved sanitation, commercially, to the residents of urban and peri-urban areas in Southern Province of Zambia.

To start up the Company, GRZ arranged for investment funding from the cooperating partners to the tune of euro 30 million. GRZ and other donors like DTF and WaterAid Zambia have also funded the Company for investments. Other sources of information include:

- The SWSC audited Financial Reports from the inception of Company in 2000: These documents were helpful because they provided useful information on the amount of money received from the various sources and expenses of SWSC;
- The Annual Reports of SWSC were also provided with information about the revenues, expenses, production figures, billed volumes figures, population (both total and served) in the service area of SWSC, Non-Revenue Water, sanitation coverage, Staffing levels;
- NWASCO Water and Sanitation Sector Report provided information on key performance indicators for not only SWSC, but also other Commercial Water Utilities in Zambia;
- Project reports provided information on the level of investments and sources of investment funds.

3.7 Data Collection Methods

Triangulation method was used in order to maintain the validity of findings by discussions with few key informants of water consumption and other official workers from where secondary data was obtained to help in checking the reliability of information and data sources. This enabled the views and opinions of diverse individuals to be solicited and compared. Specific instruments used included:

a) Secondary data: A lot of secondary data were perused through. These include documents data from; The Water Supply and Sanitation Act No. 28 of 1997, NWASCO, Department of Water Affairs, Central Statistical office (CSO), District Councils and Southern Water and Sewerage Company Limited. The secondary data allowed the researcher to have access to information and review of the existing literature such as: policy frame work, infrastructure development, partnership, human resources, population growth, number of customers connected to the water reticulation; revenue collection, billing rates, unaccounted for water, stakeholder participation, etc.
b) Key informant interviews: key informants from where the secondary data was obtained were interviewed. These key informants were also customers who were knowledgeable and experienced in areas where they live.

3. 8 Data Analysis Methods

The study is a descriptive approach that is systematic collection and presentation of data to give a clear picture of the situation. Once data was collected, it was organized and summarized that the main characteristics are understood or grasped. Organization took a number of forms that is by way of graphical and numerical techniques. Various graphical techniques were used such as bar charts, trends and tables that enabled the description of the situation. It is concerned with quality of description that is accurate and precise as well as generalization. It is also concerned with answering questions such as who, what, where and when. This was against quantitative methods that are good at analyzing impacts. Data analysis was done using Excel and Statistical Package for Social Scientists (SPSS-version II). These instruments were used to generate trends, graphs, percentages, tables and charts. The interpretation of the data was done with SWSC officials through discussions. Secondary data was collected that is free from heteroskedasticity and multicollinearity problems that is, common in cross section data when analyzed in quantitative analysis, therefore no need to correct the result from biasness.

3.9 Practical Approach for Identifying Individuals for Data Collection and Discussions

A check list of the four dimensions namely social, economic, environmental and political as discussed in details in the conceptual framework were listed in order to make things easier for collection of data. The staffs of SWSC and NWASCO who were involved in gathering data were taken through the paces of the check lists of secondary data required. The information gathered was further checked by the researcher in order to avoid some mistakes.

The staffs of SWSC and NWASCO who were chosen for discussions were mostly persons or managers believed to have some information on the performance of SWSC.
A focus group (Management Team) of SWSC was used to discuss the fortunes and future outlook of SWSC. Discussions were cantered on the strategic plan for SWSC.

3.10 Constraints and Limitations
Time was a major constraint or there was insufficient time for this study. Secondly, discussants were not willing to release all the information for fear of the unknown.

CHAPTER FOUR
DATA ANALYSIS AND FINDINGS
4.1 Introduction
This chapter provides an overview of what has been obtained on the ground in the study after reviewing all the necessary secondary data. A number of social, economic, environmental and political indicators or factors of interest were analysed and results were found. From variables of different dimensions, challenges and available opportunities were identified and discussed.

In the economic dimension of water governance, indicators or variables such as investment, financing, revenue collection, non- revenue water, metering ratio, labour productivity, service coverage, number of connections, operations and maintenance cost coverage, hours of supply, water production and sanitation coverage were considered. Other than one intervening variable–labour productivity, the rest are independent variables.

In the social dimension of water governance, indicators or variables such as population growth in relation to accessibility and affordability have been analysed.

In the environmental dimension of water governance, the management of sewerage systems is looked at. Variables such as policy and regulation, sanitation coverage and water quality are analysed.

Political Dimension: In the political dimension of water governance, governance is looked at in terms of stakeholders such as civil societies, government and private sector participation.

4.2 Findings/Results
This section provides results on a number of economic efficiencies, social, environmental and political that contributed significantly towards available opportunities in the commercial utility company. The performances of those variables within the four dimensions have been examined for the past ten years to determine whether the SWSC has performed to its expectation or not.

4.2.1 Social factors
4.2.1.1 Accessibility
A comparison was made between total population in service area and total population served in service area or having access to piped water. It was discovered that the total population in service area from 2001 to 2010 was increasing significantly whilst the total population served in service area was not increasing at the same time. The total population served in service area was lagging behind that of total population in service area. Figure 5 shows the results. In 2001 to 2004, the population increased from 275,000 to 310,000 and in 2005, the population fell down to about 290,000. From 2006 to 2010, the population increased from about 305,000 to 340,000 respectively in the service area of the utility company. Figure 5 shows that the total population in the service area was lowest in 2005 at about 205,000 and was highest in 2010 at about 340, 000. The population served in service area was lowest in 2003 at 120,000 whilst the highest was at 310,000.

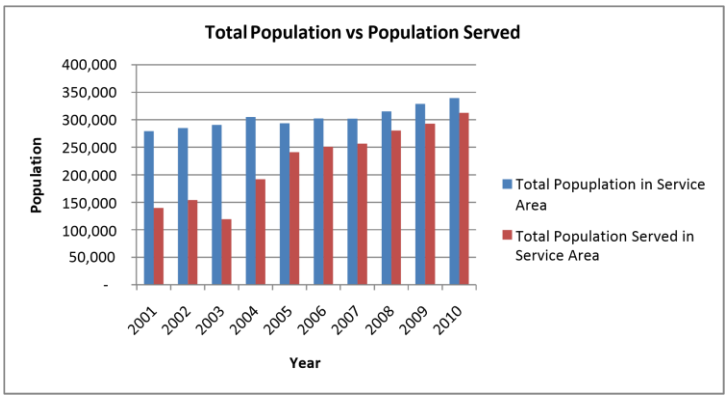


Figure 5: Total Population in service area and population served. [Source: Author]

4.2.1.2 Affordability

Total metered connections in the service area was segregated according to their categories to find out the number customers, average income levels, how much they are willing to pay for the service and their contribution to the total revenue. Results revealed that the following categories: Domestic (high cost, medium cost, low cost), commercial and industrial, government and institutions, churches and kiosks.

Of the above, the interest was on domestic metered connections because they provide a sensible analysis. The findings on the domestic metered connections revealed that;

- ✓ 12,466 of low cost contributed K325, 156,460.00 as expected revenue from metered connections per month.
- ✓ 3,561 of medium cost contributed K1225, 605,575.00 as revenue from metered connections per month.
- ✓ 4, 914 of high cost contributed ZMK304, 775, 418.00 as revenue from metered connections per month.
- ✓ 123 of low cost earned an average income levels of ZMK1,000,000 to K3,000,000, 99 earned K100,000 to K1,000,000 and 4 earned ZMK3,000,000 to K6,000,000. Figure: 6.3 confirms.
- ✓ 52 of the medium cost earned an average income level of between ZMK1,000,000 and K3,000,000, 17 earned between K3,000,000 to K6,000,000 and 9 earned between K6,000,000 to K10,000,000, 8 of them earned K10,000,000 to K15,000,000 and 3 above K15,000,000. Figure: 6.3 confirms.
- ✓ 5 of the high cost earned an average income level between ZMK1,000,000 and ZMK3,000,000, 7 earned between ZMK3,000,000 to K6,000,000 and 11 earned between K6,000,000 to ZMK10,000,000, 16 of them earned ZMK10,000,000 to ZMK15,000,000 and 26 above ZMK15,000,000. Figure: 6.3 confirms.
- ✓ 187 of the low cost customer consumed water and sewerage services on worth average between ZMK10,000 and ZMK50,000, 39 between ZMK51,000 and K100,000. Figure 6.3a depicts this.
- ✓ 39 of the medium cost customer consumed water and sewerage services on worth average between ZMK10,000 and ZMK50,000, 34 between ZMK51,000 and K100,000 and 16 between ZMK101,000 and ZMK250,000. See figure 6.3a.
- ✓ 5 of the high cost customers consumed water and sewerage services on worth average between ZMK51,000 and K100,000 and 43 between ZMK101,000 and ZMK250,000 and 17 above ZMK250,000. See figure 6.3a.
- ✓ 226 of the low cost customers are willing to pay for water and sewerage services an average amount of between ZMK10, 000 and ZMK50,000. Figure 6.3b depicts this.
- ✓ 52 of the medium cost customers are willing to pay for water and sewerage services an average amount of between ZMK10,000 and ZMK50,000, 28 between ZMK51,000 and K100,000 and 9 between ZMK101,000 and ZMK250,000. See figure 6.3b.
- ✓ 8 of the high cost customers are willing to pay for water and sewerage services an average amount of between ZMK10,000 and ZMK50,000, 19 between ZMK51,000 and K100,000 and 38 between ZMK101,000 and ZMK250,000. See figure 6.3b.

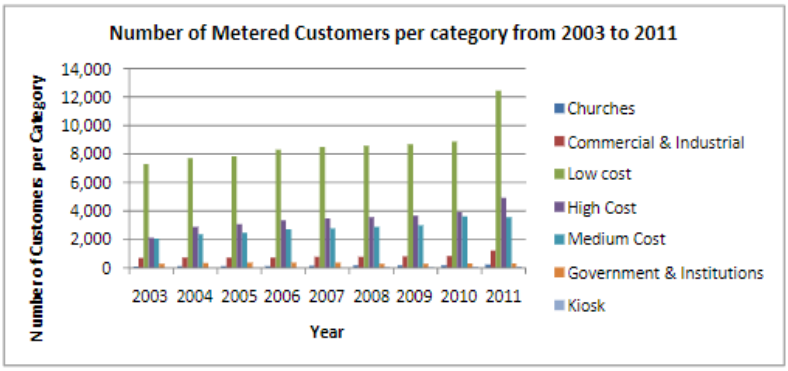


Figure 6: Types of Customers

Source: Author

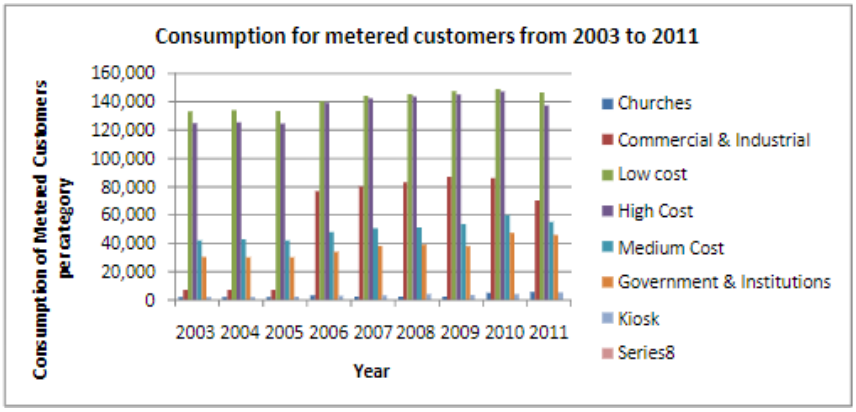
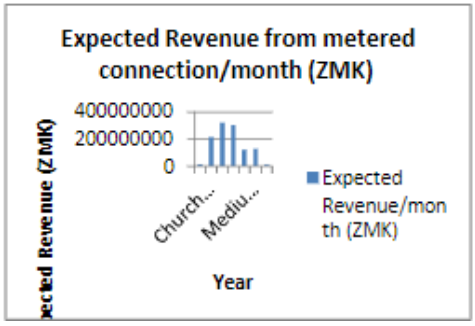
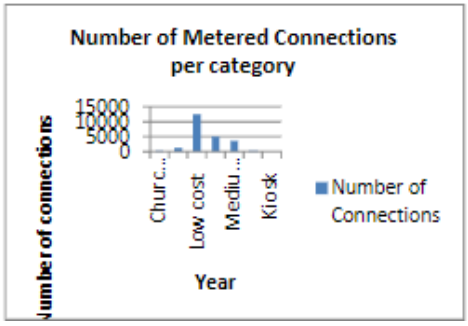


Figure 6.1: Types of Customers

Source: Author





Figures6.2a: Expected Revenue **Figures6.2b: Metered Connections**

Source: Author

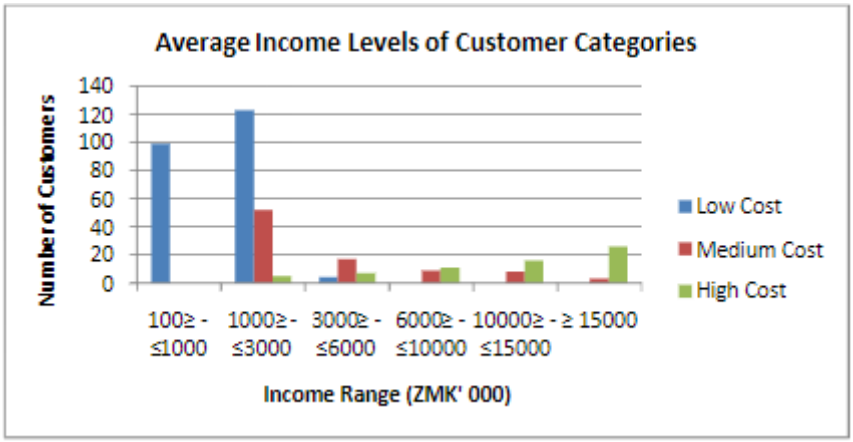
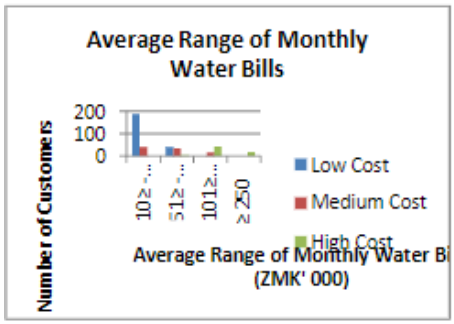


Figure 6.3: Average Income Levels

Source: Author



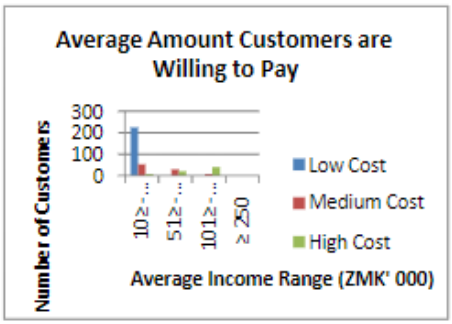


Fig.6.3a: Average Range of Monthly Water Bills **Fig.6.3b: Average Amount Customers are willing to pay**

Source: Author

4.2.2 Economic Efficiencies

4.2.2.1 Water Services Coverage

In 10 districts the average water service coverage was recorded from 2001 to 2010 respectively. This is the ratio of urban population with access to safe and reliable water. It was discovered that in 2001, the water service coverage was at 50%, followed by 55%, 40%, 62%, 81%, 82%, 83%, 90%, 92% and 94%. Figure 7 shows the water service coverage trends from 2001 to 2010.

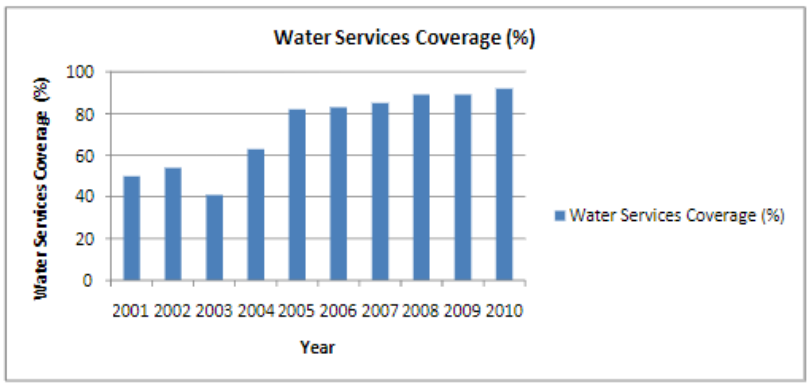


Figure 7: Shows Water Services Coverage

[Source: Author]

4.2.2.2 Sanitation Services Coverage

The ratio of urban population with access to adequate sanitation service in the 10 districts where the Water Utility operates is shown on Figure 8. The data was plotted on the graph from 2001 to 2010. The results revealed that in 2001, 45% was achieved in sanitation service coverage and 50% in 2002. From 2003, the results revealed that 25% was achieved in sanitation service coverage, followed by 23% in 2004 and 22% in 2005. In 2006 to 2010, the trend rose from 23% to 61% respectively.

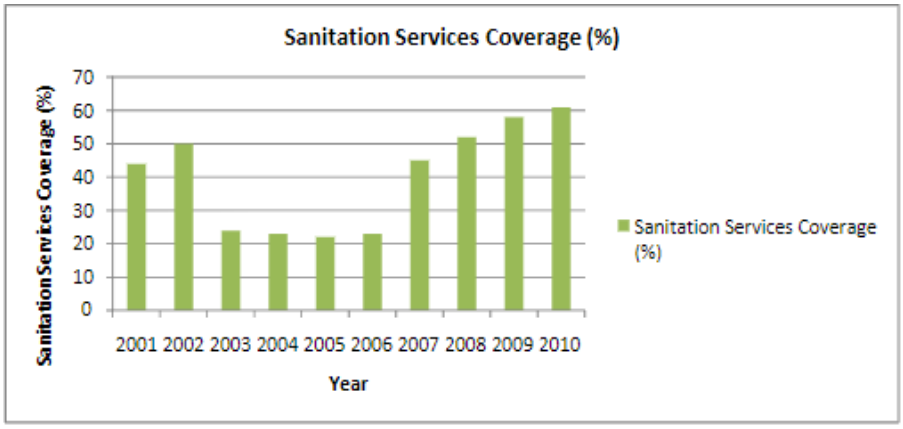


Figure 8: Shows Sanitation Coverage

[Source: Author]

4.2.2.3 Hours of Supply

Information was obtained and plotted on water supply hours per day and hours to attend to customers per week. From the hours of supply point of view, 8 hours was reached in 2001, followed by 12 hours in 2002, 15 hours in 2003 and 2004 respectively. In 2005, 18 hours was reached and, 2006 and 2007, 12 hours was reached. In 2008, 18 hours was recorded followed by 20 hours in both 2009 and 2010. Figure 9 above confirms the above information.

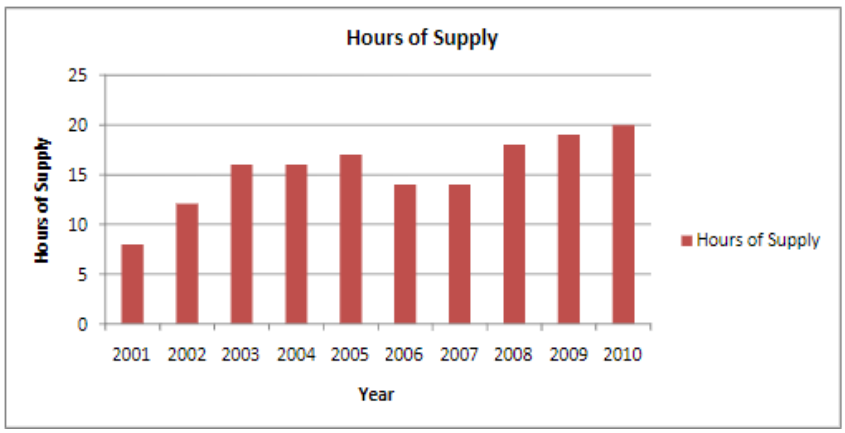


Figure 9: Shows Hours of Supply

[Source: Author]

4.2.2.4 Number of Staff per 1000 connections

Information on staff efficiency was obtained and graphed. It was discovered that the number of staff per 1,000 connections in 2001 to 2003 was reached at 12, 10 on average in 2004 to 2008, 2009 to 2010 it fell to 8 respectively. Figure 10 confirms the status.

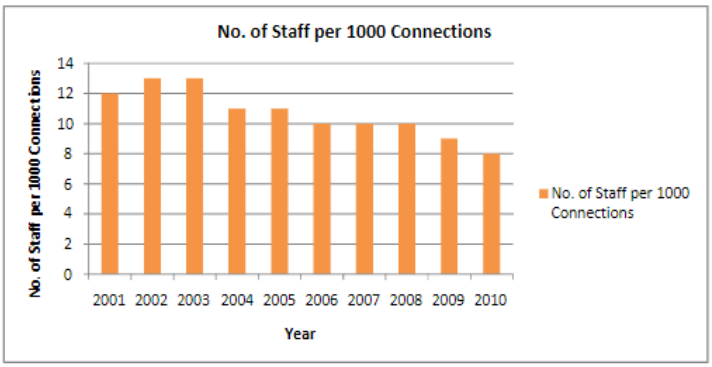


Figure 10: No. of Staff per 1000 Connections

[Source: Author]

4.2.2.5 O & M Cost Coverage

The extent to which the level of collection was made and able to cover all operational costs was obtained and findings were plotted. Figure 11 gives the results on O & M Cost Coverage by the SWSC from 2001 to 2010. From 2001 to 2003, O & M cost coverage was at 80%, 70% and 52%. The trend fell significantly from 2001 to 2003. From 2004 to 2008, the trend increased from 62% to 110% and 2009 to 2010 the trend was at 105% respectively.

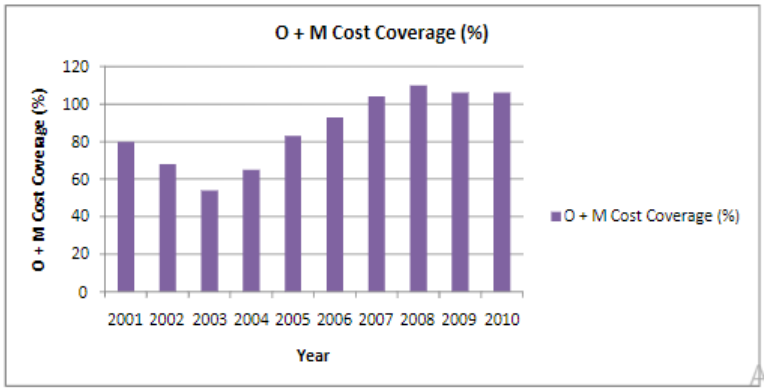


Figure 11: Shows O + M Cost Coverage

[Source: Author]

4.2.2.6 Connections

Analysis on the number of total connections, including metered and unmetered was done.The total connection that is metered and unmetered is shown on figure 12. From 2001 to 2010, total connections rose from about 18, 000 to 32,000 in the service area. The relationship is shown on Figure 12 between metered and unmetered connection. Metered connections rose significantly whilst unmetered connections declined from 2001 to 2010.

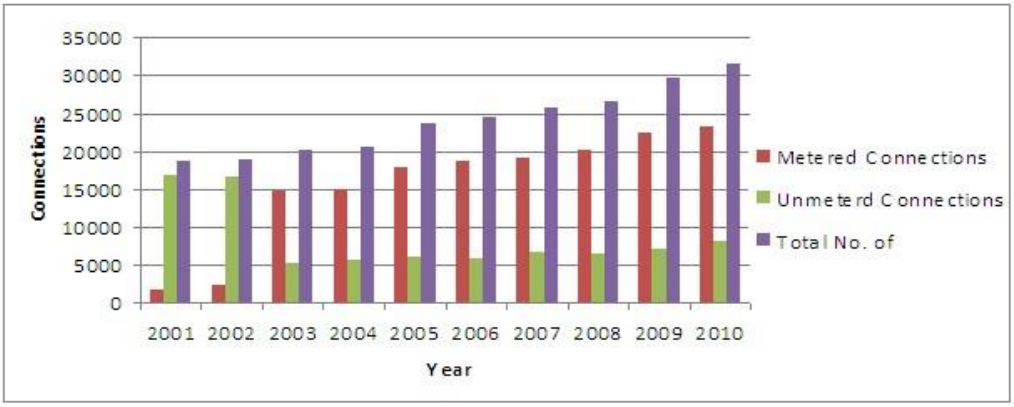


Figure 12: Showing total No. of connections, metered and unmetered connections.

[Source: Author]

4.2.2.7 Metering Ratio

Figure 13 shows the metering ratio of the CU. This is the proportion of the metered connections compared to the total connections. This is a tool for measuring the amount of water being consumed and facilitates charging the consumer for the amount consumed. Since its inception, the metering ratio was improved. Figure 13 shows the trend from 2001 to 2010. In 2001, 10% was reached and 2002 the percentage rose sharply to 74%.

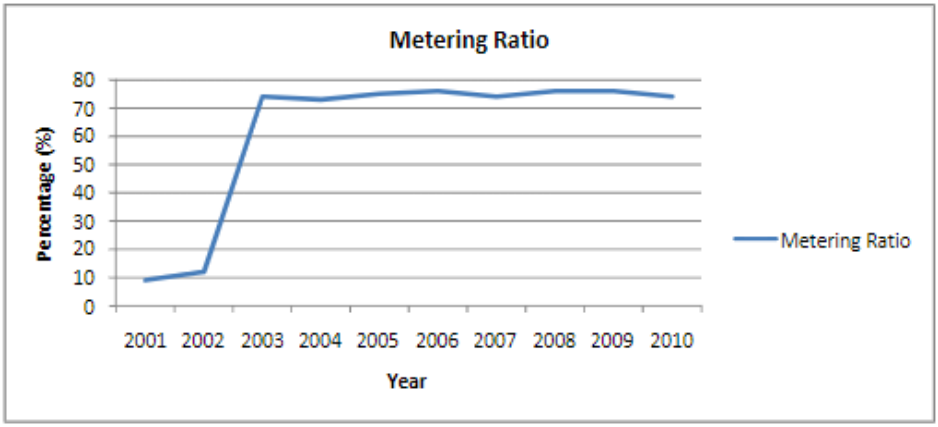


Figure 13: Showing progression in metering

[Source: Author]

In a sample case of Kazungula Township under SWSC, it was discovered that revenue billed significantly improves with increased metering. Table 1 shows the relationship between metering and billed revenue.

Table 1: Shows the relationship between billed revenue and increased metering

MONTH	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08
Metered Connections	18	17	17	17	17	17	17
Unmetered Connections	117	118	118	118	123	146	146
Total Billing	4,260,400	4,203,500	4,189,700	4,015,600	4,789,400	5,115,400	5,115,400
Total Collection	3,400,000	3,850,000	5,013,000	4,572,300	3,388,600	7,769,250	7,769,250

MONTH	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09
Metered Connections	160	186	198	193	193	196	199
Unmetered Connections	36	19	16	18	20	23	19
Total Billing	13,072,600	11,741,200	12,091,200	13,889,500	13,096,600	13,765,400	13,971,000
Total Collection	8,940,400	11,186,400	11,524,300	10,773,200	15,589,500	10,516,300	12,855,300

4.2.2.8 Educational Level of SWSC Employees

Analysis on the number of total staff employed was done and segregation was done in terms of qualifications in the CU. This measure the output of personnel in relation to various aspects of operations such as billing, connections and personnel costs It was difficult to find information for first two years of the company's existence i.e. years 2001 and 2002. Results on figure 14 shows that in the initial years (2003) of the company, 85% had some formal (Basic) education, 5% had tertiary education and 10% secondary education. See figure 14 below. Though fluctuates, the diploma/degree employees increased by 2010 as compared in 2001, the certificate employees had also increased from 2001 to 2010 and basic education employees had fallen significantly from 85% in 2003 to 50% in 2010.

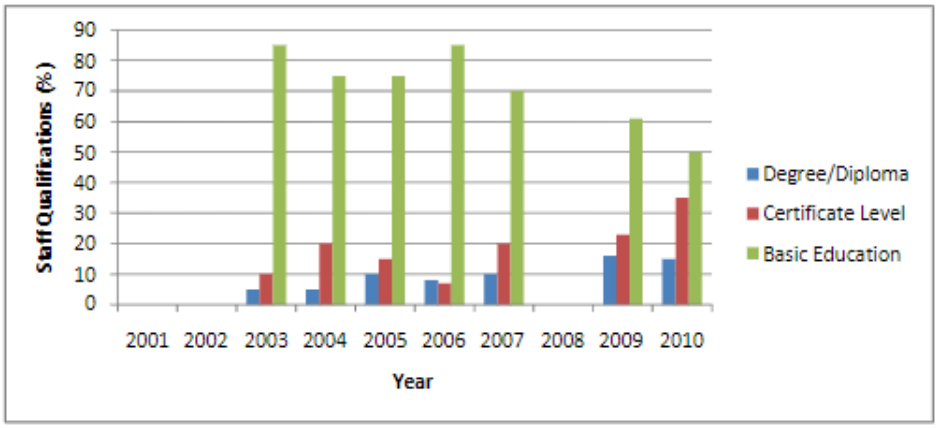


Figure 14: Showing Human Resource Development

[Source: Author]

4.2.2.9 Investment/Funding

Analysis on the number of institutions that participated in funding the CU since its inception was done as shown in table 2. Results show that five sources of funding were obtained. These contributed as flow; GRZ contributed 12.8 percent, KfW 75.6 percent, DTF 6.0 percent, Water Aid 0.7 percent and SWSC 5.9 percent. The biggest percent came from KfW and the smallest came from Water Aid. All the contributions were received in form of grants to the CU.

Table 2: Institutions Invested in water utility from 2000 to 2010 [Source: Author]

Name of Financier	Amount Disbursed (ZMK, million)	Percentage Contribution (%)	Loan / Grant	Purpose
GRZ	21, 750	12.8	Grant	Investment
KfW	128, 250	75.6	Grant	Investment
DTF	10, 104.4	6.0	Grant	Investment
Water Aid	1, 135	0.7	Grant	Investment
SWSC	10,000	5.9	Grant	Investment
TOTAL	**169,604.4**			

4.2.2.10 Collection Efficiency

The relationship between total billing and revenue collection was analysed and graphed on figure 15 and 16. That is the amount of billed collected compared to the total billed. The results revealed steady increased from 40% to a higher 120% as shown in Figure 15. Total revenue collected continued rising from 2001 to 2010 whilst total billed could fluctuate from time to time.

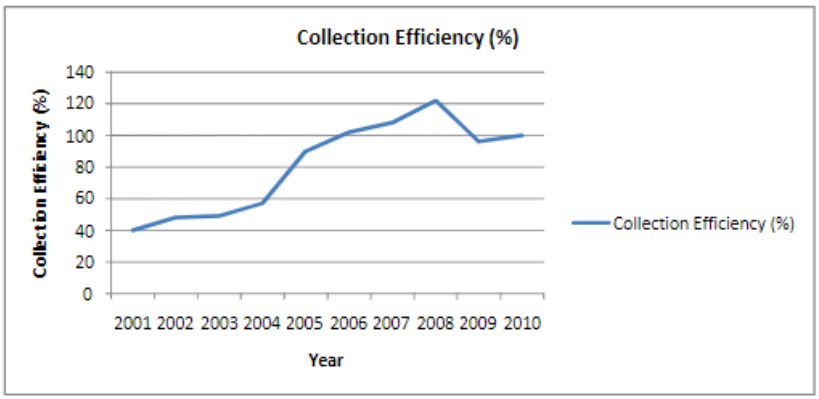


Figure 15: Collection efficiency

[Source: Author]

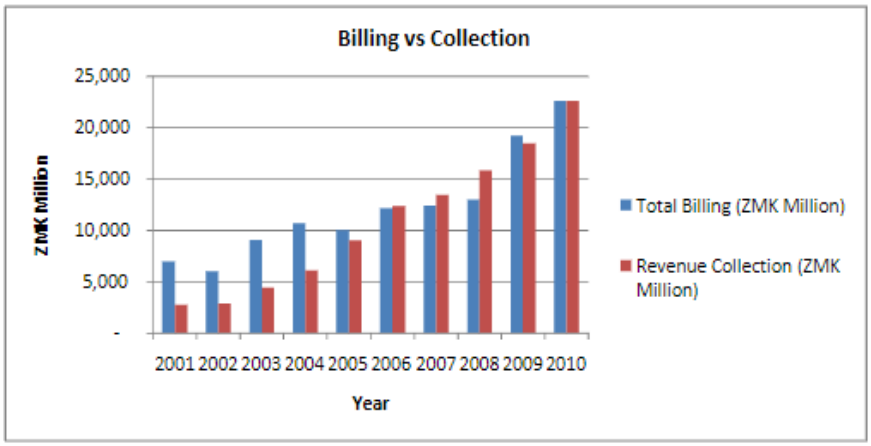


Figure 16: Showing progression of total billing and revenue collection

[Source: Author]

4. 2.2.11 Water Production

Information on water production was also collected from 2001 to 2010. This is the amount of water that is treated and distributed to the customers through the distribution network. The results revealed unsteady movement in the water volumes produced. In 2001 the production was 19.5 million cubic meters, it increased steadily to 20.6 million cubic meters in 2003 and started dropping from 2004 (20.4 million cubic meters) until 2007 (17.4 million cubic meters). It picked again in 2008 with production levels of 18.3 million meters and continued to increase steadily. In 2010 the production stood at 20.8 million cubic meters. Refer to figure 17 below.

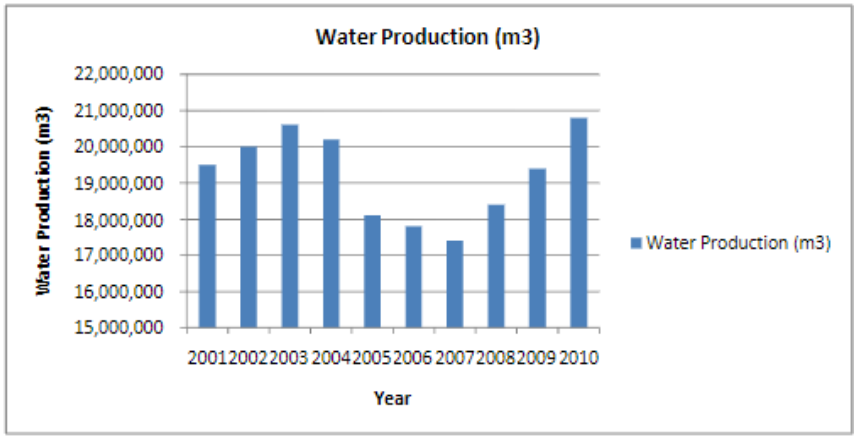


Figure 17: Shows Water Production

[Source: Author]

4. 2.2.12 Unaccounted for Water

During distribution, an amount of water is lost. This is as a result of physical losses (leakages, overflows, bursts) and apparent losses (unauthorized consumption, unregistered authorized consumption). The utility does not generate any kind of revenue from the unaccounted for water because it is either it does not reach the point of consumption or it is not captured completely. See figure 18 below.

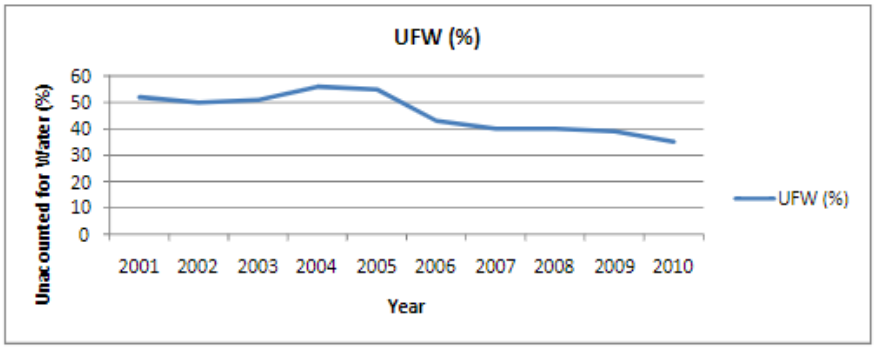


Figure 18: Shows Unacounted for Water

[Source: Author]

4.2.3 Environmental Efficiencies

4.2.3.1 Sanitation Services Coverage

The ratio of urban population with access to adequate sanitation and service where the Water Utility operates is shown in Figure 19. The results revealed that in 2001, 45% was achieved in sanitation service coverage and 50% in 2002. From 2003, the results revealed that 25% was achieved in sanitation service coverage, followed by 23% in 2004 and 22% in 2005. In 2006 to 2010, the trend rose from 23% to 61% respectively.

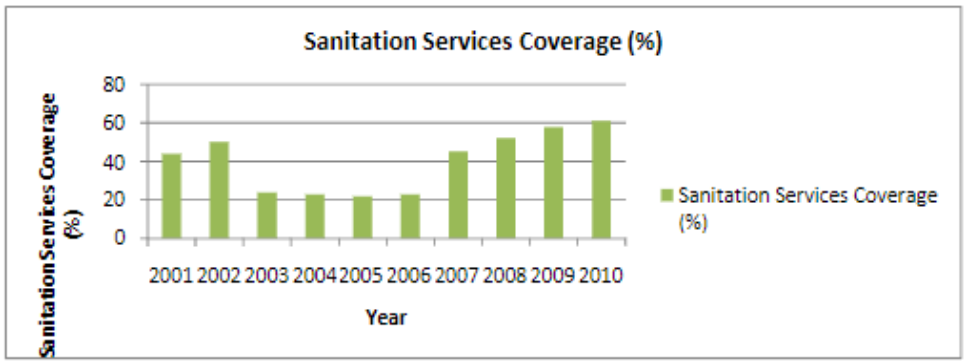


Figure 19: Showing Sanitation Services Coverage

[Source: Author]

4.2.3.2 Water Quality

All the 10 districts in the service areas were investigated in water quality indicator from 2001 to 2010. Figure 20 below shows the results of the investigation. In 2001 to 2003, water quality was not done. In 2004, about 95% was achieved in water quality, 80% in 2005, 95% in 2006 and 2007. In 2008 about 90% and 95% in 2009 and 2010 was reached.

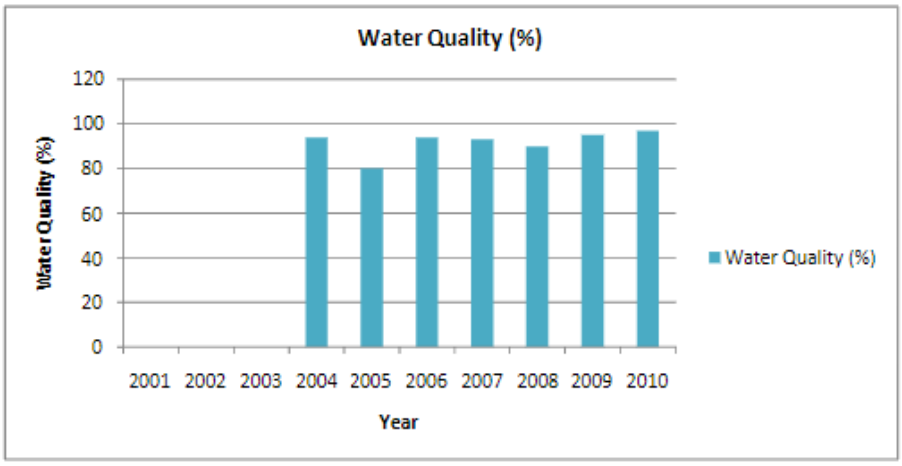


Figure 20: Water Quality Achievement

[Source: Author]

4.2.3.2 Policy & Regulations

The Company was registered under the Companies Act Cap 288 of the Laws of Zambia. Though registered, it operates as parastatal organization. It was also found that SWSC is still attached to NWASCO, the Zambia Environmental Management Agency (ZEMA), and National Water Policy under the auspices of the DWA in the Ministry of Energy and Water Development (MEWD).

4.2.4. Political Efficiencies

4.2.4.1 Stakeholders Participation

Ownership rights refer to the political, social and other benefits to which someone has a claim either morally or legally (Burley *et al.*, 2004). Each of the stakeholder has a role to play in the management of water supply and sewerage services. Out of the information available it was found that, SWSC has stakeholders such as: Government of the Republic of Zambia, NWASCO, DTF, ZEMA, Local Authorities (Councils), Customers, Donors (like DANIDA, GIZ, JICA), WAZ, Civil Societies, Employees, Zambia Sugar Plc and Suppliers.

CHAPTER FIVE
DISCUSSION

5.1 Factors Influencing Performances

Factors influencing performances in the water and sewerage supply in both urban and peri-urban areas have been taken from the four dimensions of water governance namely social, economic, environmental and political. These four dimensions are increasingly being promoted (Tropp, 2005) in the water and sanitation services as key indicators in influencing performances of water utility companies in both urban and peri-urban areas. Muhairwe (2009) in Uganda also revealed that the successes or failures of a public enterprises or utilities depended very much on the social, political and economic environment. This was after Uganda experienced hardships in the 1970 to 1980 in which financial difficulties was experienced by the Ugandan government.

5.1.1 Social Factor

(a) Accessibility

This has to do with the total population in service area and total population served in service area. A comparison was made between total population in service area and total population served in service area. It was discovered that the total population in service area from 2001 to 2010 was increasing significantly whilst the total population served in service area was not increasing at the same rate. This was attributed to population that is increasing in urban and peri-urban areas. The total population served in service area was lagging behind that of total population in service area. Figure 5 shows the results. In 2001 to 2004, the population increased from 275,000 to 310,000 and in 2005, the population fell down to about 290,000. From 2006 to 2010, the population increased from about 305,000 to 340,000 respectively in the service area of the utility company. Figure 5 shows that the total population in the service area was lowest in 2005 at about 205,000 and was highest in 2010 at about 340, 000. The population served in service area was lowest in 2003 at 120,000 whilst the highest was at 310,000.

(b) Affordability

Total metered connections were segregated into their different categories. The categories are domestic (high cost, medium cost and low cost), commercial and industrial, government and institutions, churches and kiosks.

Of the above, the interest was on domestic metered connections because they provide a sensible analysis. The findings on the domestic metered connections revealed that more customers are from the low cost (12,466), followed by high cost (4, 914) and the least was the medium cost (3,561). Refer to figure 6.2a.

5.1.2 Economic Efficiencies

These are important indicators of economic efficiencies that the water utility has tried to achieve in order to influence best practices that will woo support from its customers. According to Ward et la (1990), three conditions of efficiency are met if; resources are fully employed, resources are correctly allocated to productive enterprises, so that each activity output will be efficiently achieved and correct combination of activities output will be produced, meaning the combination that will maximize the welfare of consumers. In this regard, important economic efficiencies that have been analysed are those the company had spent enough resources in the water sector in order to have outputs that favour the company in terms of performances and customers satisfaction. Adam Smith (1776), in his great economic book agreed with the above statement that, “it is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love and never talk to them of our own necessities but of their own advantages.” No wonder the UN (2006) acknowledged that private sectors are very good at efficiencies not equity, because their efficiencies are turned into economic returns. The following results of efficiency indicators of the water utility company are discussed below;

(a) Water Services Coverage:

Fifty percent was recorded in 2001 and increased to 55% in 2002. This increase was attributed to the investment in infrastructure that facilitated the connections (Figure 12) to other customers in the service area that continued demanded the service of the utility company. In 2003 the percent went down to 40%, this was due to a number of disconnections that was effected in order to recover the money owed to the company. From 2004 to 2010, the percentage rose from 62% to 94%. This increase was due to the number of connections (Figure 12) earlier alluded to and grants that the water utility kept on receiving (Table 1) for the rehabilitation and stabilization of the company infrastructure. The increasing trend in water services coverage reflected in Figure 7 implies that the water institution is effective in mobilizing resources for investment in infrastructures development.

(b) Sanitation Services Coverage:

The trend on Sanitation Service Coverage in the 10 districts where the Water Utility operates in 2001 was at 45% followed by 50% in 2002. In 2003 to 2003 it dropped to 25%. This was due to deteriorating infrastructure in place and lack of investment in the sanitation service. NWASCO (2009/2010) also revealed that for a long time the services had been neglected by various stakeholders dealing with water and sanitation supply. In 2006 to 2010, the trend rose from 23% to 61% respectively. This was as a result of organisations such as DTF and other organisations working with the SWSC. As a result of such cooperation, SWSC has invested in sanitation in order to increase the ratio of urban population with access to adequate sanitation.

(c) Hours of Supply:

The average hours of water supplied to customers by SWSC per day was below acceptable standard from 2001 to 2004, 2006 and 2007. This was attributed to a number of factors such as dilapidation of infrastructure. In 2005, 2008, 2009 and 2010, the average hours of water supplied to customers by SWSC per day reached an acceptable standard (18 hours). This was as a result of increased production and metering of customer connections (Figure 13. Benchmark for hours of supply according to NWASCO (2010/2011) is divided into three categories namely; good (20-24hours), acceptable (18-20hours and unacceptable less than 18 hours).

(d) Number of Staff per 1000 connections:

Number of staff per 1,000 connections was high at the beginning and dropped to eight in 2008, 2009 and 2010 (Figure 10). This drop to eight members of staff per 1000 water connections for SWSW was acceptable. Efficiency is measured by less number of staff per 1000 water connections. The reduction was due to the number of increased connections the SWSC experienced (Figure 12). Benchmark for staff per 1000 water connections according to NWASCO (2010/2011) is divided into three categories namely; good (5), acceptable (6-8) and unacceptable (greater than 8).

(e) O & M Cost Coverage:

Figure 11 gives the results on O & M Cost Coverage by the SWSC from 2001 to 2010. From 2001 to 2006, the SWSC reached an unacceptable standard that is less than 100% coverage. This was as a result of less collection to cover all the operational and maintenance costs such as personnel, energy, chemicals, maintenance and administrative (Figure:15). From 2007 to 2010, the SWSC reached an acceptable standard of greater than 150%. This resulted from higher collections that were able to cover all the operational costs.

(f) Connections:

Analysis on the number of total connections, including metered and unmetered was done. The total connection that is metered and unmetered is shown on figure 12. From 2001 to 2010, total connections rose from about 18, 000 to 32,000 in the service area. The relationship is shown on Figure 12 between metered and unmetered connections. Metered connections rose significantly whilst unmetered connections declined from 2001 to 2010. This increase in total connections is due to effective demand from an increasing number of people in service area (Figure 5). Connections also depended on the investment funds that were made available by the donors, government and SWSC (Table: 2).

(g) Metering ratios:

Figure 13 shows the metering ratio of the CU. This is the proportion of the metered connections compared to the total connections. This is a tool for measuring the amount of water being consumed and facilitates charging the consumer for the amount consumed (NWASCO, 2011). Since its inception, the metering ratio has improved significantly. Figure 13 shows the trend from 2001 to 2010. In 2001, 10% was reached and 2002 the percentage rose sharply to 74%. This ratio has been attributed to meter investment in the service areas supported by donors as shown in Table 2.

(h) Metering and Billed Revenues:

In a sample case of Kazungula Township under SWSC, it was discovered that revenue billed significantly improves with increased metering. Table 3 shows the relationship between metering and billed revenue. This is so because all the water that a particular customers receives is accounted for and hence billed. When not metered, the amount of water a particular customer use is not all captured by the service provider. The consumption in this case is assessed. From table 3 it can be deduced that the assessed consumption fall far short to the actual consumption of a particular customer. In the Kazungula case, the billed revenue trebbled after the majority of the connections where metered.

(i) Types of Domestic Customers and their Revenue Contribution:

Of the above, the interest was on domestic metered connections because they provide a sensible analysis. The findings on the domestic metered connections revealed that more customers are from the low cost (12,466), followed by high cost (4, 914) and the least was the medium cost (3,561). Although there were more customer connections in the low cost category, the revenue contribution was almost the equal to that of high cost customer who are about three times less. Refer to figure 6.2a. This is because the low income groups are many in society, but need water and sewerage service especially in the wake of the UN solution of 2006.

Even if the low cost groups seem to be poor, result shows that they are able to pay for the water and sewerage services consumed even at higher rates than the current ZMK 50,000. Refer to figures 6.3 and 6.3a (Relationship between water consumption and average income levels). Figure 6.3b reveals that domestic consumers are willing to pay less even though their income can support higher rates.

(j) Educational Levels:

Analysis on the number of total staff employed was done and segregation was done in terms of qualifications in the CU. Results on figure 14 shows that in the initial years (2003) of the company, 85% had some formal (Basic) education and had declined by 2010. Tertiary education had also increased by 2010 significantly (Figure 14). This increase to both certificates and, diploma and degrees has been as a result of challenges that need competencies in such area such as finances, operations and human resources.

(k) Investment/Funding:

Analysis on the number of institutions that participated in funding the CU since its inception was done as shown in table 1. Results show that five sources of funding were obtained. These contributed as follow; GRZ contributed 12.8 percent, KfW 75.6 percent, DTF 6.0 percent, Water Aid 0.7 percent and SWSC 5.9 percent. The biggest percent came from KfW and the smallest came from Water Aid. All the contributions were received in form of grants to the CU. From the above, it is clear that the SWSC requires external support for investments in infrastructure.

(l) Collection Efficiency:

The relationship between total billing and revenue collection was analysed and interpreted as follow: That is the amount of billed collected compared to the total billed. The results revealed steady increased from 40% to a higher 120% as shown in Figure 15. Total revenue collected continued rising from 2001 to 2010 whilst total billed could fluctuate from time to time. This is due to outstanding amounts that are paid during the current billing. Most outstanding amounts are from government departments that delay in paying their water bills. A number of reasons are attributed to these successes such as increase in the number of qualified personnel involved in collection and data entries, investments in metering, good customer relationships, increased hours of supply, improved water production and reduced unaccounted for water.

(m) Water Production:

This is the amount of water that is treated and distributed to the customers through the distribution network. The results revealed unsteady movement in the water volumes produced. Refer to figure 17 above. This phenomenon came as a result of the investment that was poured into SWSC by various financiers. In the beginning, the infrastructure was dilapidated thereby increasing demand (i.e. water losses and actual consumption). The production started rising after going down due increase in population.

(n) Unaccounted for Water:

During the distribution, an amount of water is lost. This is as a result of physical losses (leakages, overflows, bursts) and apparent losses (unauthorized consumption, unregistered authorized consumption). The utility does not generate any kind of revenue from the unaccounted for water because it does not reach the point of consumption or not captured completely. See figure 18 above. Logical, when this figure is reduced, the effects are that revenue increases and costs reduced.

5.1.3. Environmental factor

(a) Sanitation Services Coverage:

The trend on Sanitation Service Coverage in the 10 districts where the Water Utility operates in 2001 was at 45% followed by 50% in 2002. In 2003 to 2003 it dropped to 25%. This was due to deteriorating infrastructure in place and lack of investment in the sanitation service. NWASCO (2009/2010) also revealed that for a long time the services had been neglected by various stakeholders dealing with water and sanitation supply. In 2006 to 2010, the trend rose from 23% to 61% respectively. This was as a result of organisations such as DTF and other organisations working with the SWSC. As a result of such corporation, SWSC has invested in sanitation in order to increase the ratio of urban population with access to adequate sanitation.

(b) Water Quality:

From 2001 to 2003, there were no tests done. This means that the water quality standard was not met and such a situation has detrimental health effect on human being (NWASCO, 2010). This was attributed to the infancy stage of the water utility company and that the collection efficiency in 2001 was at 40 percent. Figure 15 confirms the results to that effect. From 2004 to 2010 over 80% of water quality was achieved indicating that the percentage had been maintained since the year 2004. This suggests some kind of consistence with regards to water quality. March and Olsen (1995) noted that for the institution to survive it has to relate to its ability to match institutionalized norms and beliefs of how it should be organized and run. An institution survives because its structures, processes, and ideologies match what society finds appropriate, natural, rational, democratic, or modern (ibd). Collection efficiency increased significantly from 2001 o 2010 as shown on figure 15. The collection efficiencies also off-set costs of tests required to undertake water quality.

(c) Policy & Regulations

The other aspect that was looked at was the environment in which the Company operates which directly and indirectly influences the operations of the water utility. The Company was registered under the Companies Act Cap 288 of the Laws of Zambia. It, however, operates as parastatal organization reporting to GRZ through the Ministry of Local Government and Housing (MLGH). The regulator NWASCO regulates the water utility under the Water Supply and Sanitation Act No. 28 of 1997. The Zambia Environmental Management Agency (ZEMA) regulates the environmental management under the Environmental Pollution Act. The abstraction of raw water is governed by the National Water Policy under the auspices of the DWA in the Ministry of Energy and Water Development (MEWD). All these have an effect on the efficiency of SWSC's revenue and operation.

5.1.4. Political Factor

They following are the stakeholders and their responsibility in operations of SWSC:

- ✓ Government of the Republic of Zambia: Provides policy and legal framework.
- ✓ NWASCO: Regulates the water and sanitation sector.
- ✓ DTF: Provides funding for servicing the urban poor.
- ✓ ZEMA: Responsible for the regulation of the environmental management.
- ✓ Local Authorities (Councils): Are the sole shareholders as at present.
- ✓ Customers: Are the recipients of the services in exchange of payments.
- ✓ Donors (like DANIDA, GIZ, JICA): Provide funding through bilateral and multilateral arrangements.
- ✓ WAZ: Provides funding for servicing of small towns and peri-urban areas.
- ✓ Civil Societies: Come in as watch dogs.

- ✓ Employees: Are the engine of the operations of the Company.
- ✓ Zambia Sugar Plc: Provides raw water at a fee to SWSC for its customers.
- ✓ Suppliers: Provide inputs to SWSC for various activities.

CHAPTER SIX
CHALLENGES AND OPPORTUNITIES

6.1 Introduction to Challenges and Opportunities

This chapter provides an overview of what has been obtained on the ground in the study visa vie challenges that should be turned into opportunities to be exploited. A number of indicators and efficiencies were analysed and results were found and grouped into four categories of opportunities. Opportunities such as, ever increasing demand for water as a result of population increasing in service area was identified. Another opportunity identified with regard to all efficiencies recorded was that of investment or financing of water supply and sanitation infrastructure development and operations in order to achieve those high efficiencies. Partnership was also identified as an opportunity. There is need for partnership with regard to so many components of water business. Local and international partnership is needed to make the CU a success. And finally, lessons learned from experiences of successful and unsuccessful privatizations become an opportunity for the CU. Each of the four opportunities identified are further discussed in details.

6.2 An Opportunity in the ever-increasing demand for water

Under this identified opportunity, population growth and urbanization are factors that have been contributed to the total population in service area to increase from 2001 to 2010. Provision for water and sanitation in urban areas has expanded much more slowly than population growth in most low-income and many middle-income nations (UN World Water Development, 2006). This has been proved from the findings in figure 5 where a comparison was made between total population in service area and total population served in service area. It was discovered that the total population in service area from 2001 to 2010 was increasing significantly whilst the total population served in service area was not increasing at the same. This is a challenge to SWSC that needs to be attended to because all those living in urban and peri-urban require water for survival. If this ever increasing demand for water must be satisfied in urban and peri-urban, the CU could take advantage of all different types of customers from low, middle and high income groups. This will satisfy the MDG target on water and sanitation and as well as acknowledging the rights of the urban and peri-urban on water and sanitation by the UN. This demand on itself presents an opportunity that must be exploited by the commercial company in this water business.

Demand for water in urban and peri-urban will continue to increase from time to time especially less developed countries. This increase is likely to continue especially Africa, Asia and Latin America (UN, 2004). The increase is as a result of so many factors such as modern economies as opposed to traditional economies, employment patterns that is service and industry as compared to traditional agriculture, good health services as compared to poor rural health services, good educational facilities to poor educational facilities, and other more good services in urban compared to poor services in rural. Thus, this trend will continue having an implication on the demand for water and sanitation.

Though the increasing demand for water and sanitation will continue posing a challenge to the government, the CU has no choice but to continue turning the challenges or constraints into opportunities in order for them to survive. Challenges such as low-income groups who are the majority customers as compared to the middle and high income groups who are few should be solved. Figure 6 shows the type of customers in the service areas. Therefore, for such a large group of customers coupled with their water rights becomes a challenge to the water utility, but though a challenge, it should be seen as a viable and exploitable opportunity, hence business looks for such opportunities.

6.3 Investment Opportunities

In order for the population to be serviced in water and sanitation, there is need for huge amount of capital to be invested in water infrastructure and sanitation. Major investments in system improvement and extension, safe water and sanitation coverage, network expansion, computers, billing software, transport and human resource development are required for the Water Utility. This in itself presents a challenge for SWSC to look for funds for investments. The UN (2006), Water Development reported that investment in improved water supply and sanitation has a strong potential to yield three to thirty-four times the original investment. In Istanbul, (Standl, 2003) reported that infrastructure changes had undergone a massive investment, and rapid extension and improvement in the past 10 years. This resulted into a highly functional system with high levels of services technology, environmental gains and public acceptance (Eroglu et la, 2001). This proves a point that without investment there is no efficiencies and economic returns to be gained.

SWSC, at the time of its inception, inherited old infrastructure from Government of the Republic of Zambia through Local Authorities in the province. The water infrastructure has been slowly expanding over the past ten years with the help of donors, GRZ and internal resources. Through investment in infrastructure and human development, the SWCS's performance has improved tremendously and ranked number two in 2007/8, number two in 2008/2009, number one in 2009/2010 and number one in 2010/2011 (NWASCO, 2010/2011).

The assets were handed over to SWSC by Local Authorities. Grants for investments were also received from GRZ, KfW, DTF, Water Aid and SWSC as indicated on table 1. This massive investment was invested in various components such as; Meters for consumer connection for the purpose of measuring water consumption which is critical revenue generation, water and sewerage pipe networks for efficient delivery of service, kiosks installation for servicing the urban poor, billing equipment and programme for accountability etc. The amount of investment is too massive that private sector cannot invest that amount and fail to recover their capital. This poses a challenge to government to continue investing in the water sector. The government can look for support for the water sector from donors and other bilateral and multilateral cooperation through its recognised, legally and mandated power. The MDGs targets on water sector can present a good opportunity for exploitation through guaranteeing donor funding to the water utility.

6.4 Partnership and Advocacy

One of the Millennium Development Goals (MDGs) is to develop a global partnership for development. In this goal, various opportunities for water and sanitation can be exploited by SWSC. This goal recognizes the fundamental role that safe drinking water and basic sanitation play in economic and social development (UN 2006). It also revealed that countries that have improved access to and quality of safe drinking water and sanitation are more attractive to employment opportunities as water supply and sanitation provision is labour intensive as well as preventing the transfer of hidden costs to the health sector.

During the past decade, there has been some partnership and cooperation in the water and sanitation services. Since its inception the SWSC has attracted a number of partners in the water and sanitation. Table 1 revealed the number of partners. Analysis on the number of institutions that participated in funding the CU since its inception was done as shown in table 1. Results show that five sources of funding were obtained. These contributed as flow; GRZ contributed 12.8 percent, KfW 75.6 percent, DTF 6.0 percent, Water Aid 0.7 percent and SWSC 5.9 percent. The biggest percent came from KfW and the smallest came from Water Aid. All the contributions were received in form of grants to the CU. Without this partnership, SWSC would not have achieved the good performances as indicated on a number of economic efficiencies that require heavy funding to the water utility.

The government has also provided some form of partnership in ways such as: its changing attitude towards policy formulations. In 1997 an Act of Parliament "The Water Supply and Sanitation Act No. 28 of 1997" was enacted by the Parliament of the Republic of Zambia, to foster the formation by local authorities, of water supply and sanitation utilities (commercial water 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 (NWASCO). This in itself provided an opportunity for the growth of SWSC. In this policy frame-work, an enabling environment or an appropriate institutional framework (Killick, 1990) has been provided. This has also instituted institutional change in the SWSC. This thinking is an even more departure from conventional neoclassical economics, which treated the institutional arrangements as exogenous to the economic problem. North (1990) attributed the success of the English economy in the 17th century to the government's power to grant institutional change.

With the coming of the MDGs on partnership, opportunities have already been identified in the water sector. These opportunities will automatically attract a lot of donors in the water sector. On the other side, government will continue attracting donors and even having more debts from IMF and World Bank to improve the water sector that require more investment due to population growth and urbanisation that continue posing a challenge to the water sector in third world countries.

More over the use of information dissemination such as community radios, cell phones, and customer relations have greatly improved and increased the awareness for timely and wide delivery of useful information. SWSC has launched a new service called toll free lines for its customers to have access to information.

All these new initiatives have helped customers to be empowered for them to make quick decisions that will enhance the partnership. The challenge for SWSC is to identify and find out sources of funds to improve even more the delivery of water supply and sewerage services to its customers.

6.5 Lessons from other Privatizations

The lessons from both successes and failures from other African countries and world over as discussed from various literature review affords an opportunity and gives much hope for a bright future and a greater role for SWSC in achieving full potential for growth.

The story of Uganda's water and sewerage management is one such success in Africa. Those that have been successful like Uganda in Africa have combined social, political and economic environments in their effort to succeed (Muhairwe, 2009). The management and staff of Uganda National Water and Sewerage Corporation took upon themselves the challenges at the time and put in place policies that helped turn around the fortunes of the corporation.

With these examples of successes, there is an opportunity for the Management SWSC to learn the successful story of Uganda. SWSC believes that the same can be done and achieved.

Experiences can also be drawn from a number of countries that experienced problems with privatization. According to Hall, Bayliss and Lobina (2002) a good number of countries that had privatized their water and sewerage services and later withdrew were: Gambia: MSG private company was engaged to manage the water and sewerage services in Ghana. The government withdrew from water privatization citing bad relations between the private company and the government of Gambia,

Ghana: Azurix, a subsidiary company of Enron won the tender for providing water and sanitation to the Ghanaians. The contract was later withdrawn because the World Bank stopped funding the sector due to lack of transparency in contract award. Examples such as Czech Republic, Hungary, Poland, Cote D'Ivoire, Argentina and Bolivia awarded contracts without competitive bidding.

Guinea: SEEG, a subsidiary company of Saur/Vivendi was given the tender for providing water and sanitation in Guinea. The contract was later withdrawn citing breakdown in contract renewal negotiations between the company and the government.

Kenya: Seureca Space, a subsidiary company of Vivendi was given the tender. The contract was later suspended as a result of an outcry over contract terms. The World Bank had to come in to commission some study of alternative privatization in Kenya. In Kenya, during the transitional period of 1980 to 1992, and 2002 to today, a lot of reorganization of water institutions emerged from time to time.

Mozambique: Aquas de Mozambique, a subsidiary company of Saur was given the tender for providing water and sanitation in Mozambique. The contract was later withdrawn. The reasons for withdrawal were not made available to the public.

South Africa: Fort Beaufort, a subsidiary company of Suez was given the tender for providing water and sanitation in South Africa. The government later nullified the contract.

Zimbabwe: Gweru, a subsidiary company of Saur was given the tender and negotiations were later suspended in 1999. Another company called Biwater was awarded the tender and later withdrawn citing commercial reasons in the sector.
With all these challenges from other African countries and world over as indicated in the literature review give SWSC the impetus to turn such threats and weaknesses into opportunities that can be exploited.

The failures reviewed in the literature above are many for the SWSC to learn and take advantage. Such failures are a thorn in the flesh, but present such a wonderful opportunity to seize.

CHAPTER SEVEN CONCLUSION, RECOMMENDATIONS AND POLICY IMPLICATION

7.1 CONCLUSION

Identification of opportunities in the running of commercialized/privatised water and sewerage utilities, such as SWSC is a pre-condition for take-off for achieving sustainable growth in the water and sewerage business. Despite the complexity of water and sewerage business, SWSC has the potential to achieve higher performances from the results obtained in the study. The performance of SWSC had improved tremendously since its inception (NWASCO, 2005/2006, 2006/2007, 2007/2008, 2008/2009, 2009/2010 and 2010/2011). Generally, the growth of commercialized/privatized water utilities world-over has been characterised by fluctuations as revealed in the literature studied in the research report.

This study revealed the presence of challenges in running the water and sewerage services as a commercial water utility and these challenges were equally identified as opportunities to be exploited if it means running the water and sewerage services as a commercial water utility of a social nature. The study concluded that investigations of all factors in the social, economic, political and environmental must be taken into consideration in order to remove the bottlenecks to growth of SWSC. Given the obvious constraints in the water sector, the study suggested or identified four opportunities that played major roles in the growth of SWSC in the service area such as; the ever increasing demand for water as a result of population increase, investment opportunities in the water sector, lessons from other privatizations and, partnership and advocacy.

One of the major and very critical lessons learnt of privatization/commercialization is that growth of the water sector cannot be achieved by the invisible hand alone as revealed in the failed privatizations of water and sewerage services in many countries. In the political dimension of water, the government and its corporation partners have key roles to play in revitalizing water and sewerage services and transforming the water utility (SWSC) from the traditional form to a commercial entity in urban and peri-urban areas. Government must provide an enabling environment for water reforms that is providing policies and legal framework. SWSC needs also to partner with donors in order to provide the much needed infrastructure for water and sewerage services development. It also needs to partner with other stakeholders for advocacy and timely information. The government must ensure that water is provided to all its citizens in urban and peri-urban through SWSC that is; making water accessible and affordable by making sure that different types of markets are given different tariffs. Water being a right cannot be left alone to the markets, as these markets can exploit the majority

poor. Management of SWSC has also been afforded an opportunity to learn from the experiences of other privatized water utilities. Such lessons have afforded SWSC to continue employing skilled labour and managerial abilities that meet challenges that will allow them to turn them into opportunities.

Finally, the identification of opportunities through the four dimensions namely social, economic, political and Environmental will enable other similar water utilities to identify and adopt them as modern businesses rely on Opportunities for their survival and growth.

7.2 RECOMMENDATIONS

An end of open-access to political, social, economic and environmental analysis of water supply and sewerage to urban and peri-urban areas would lead to serious economic and social problems for SWSC as well as the whole country. On the other hand, however, if the open-access condition remains in the hands of the public, poor performances will be experienced as earlier noted before privatization/commercialization. Therefore, on the basis of some of the key findings from the study, the following recommendations are made:

- ✓ Considering the social implications and water being a human right, the water market classifications must be intensified in order to charge more from the rich and taking advantage of the numbers of low cost customers who are the majority in the market. This would in turn general more money for SWSC.
- ✓ Considering huge investment needed in the water sector, the government should continue being a partner, leaving this in private hands would disadvantage the poor. The government can woo support from many bilateral and multi-lateral corporations to support water infrastructure and other operations.
- ✓ Considering the role of private sector participation through management contracts in the running of the SWSC would continue scoring higher performances and efficiencies in the water supply and sewerage services.
- ✓ Besides local radio programmes such as 'Sky Radio, Musi-ou-Tunya, Zambia National Broadcasting Corporation etc, advocacy must be given concerted efforts by deliberately sensitizing the water customers on the importance of cost sharing and responsibility.
- ✓ A comparative study should be conducted to investigate the available opportunities of other local water providers in Zambia. Results from this study could be used by policy makers when it comes to issues of tariffs. This would help to establish the opportunities available in their own localities. For instance, water utility customers whose income is from a stable sector of the economy would differ from one whose customers who rely on informal sector. Such gaps could then be used in policy making. It is, therefore, recommended that, this study should be used as a baseline for further studies aimed at identifying opportunities in water utility companies.
- ✓ A suggestion to future researchers is that they should carry out frequent surveys using primary data at household level so that much can be discovered to help policy makers. Such studies on impact of water commercialisation on household welfare and other sectors such as industries in order to enrich this sector.
- ✓ Lessons of such complex topics are supposed to be shared with other similar water utilities.

7.3 POLICY IMPLICATION

- ✓ The Water Supply and Sanitation Act No. 28 of 1997 was enacted by the Parliament of the Republic of Zambia and put into effect, to foster the formation by local authorities, of water supply and sanitation utilities (commercial water 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 (NWASCO). This act incorporated private-public partnership into the running of water utility companies that stresses the need for efficiencies. However, the policy did not articulate the importance of the social and political non-efficiency policy reasons for government intervention into the water market. Non-efficiency interventions are used to refer to any type of government policies which are designed to achieve an objective other than simply maximizing allocative efficiency and output. It does not mean that the intervention is inefficient in achieving this water objective. The social and political dimensions are non-efficient policy reasons which identified opportunities in SWSC. These opportunities vies-a-vis increasing demand for water due to population increase and investment by government due to huge infrastructures needed to be articulated in the Act. In order to encourage and make SWSC and other water utilities realize that it was government's responsibility to source/finance infrastructure in the water supply and sanitation sector and be able to meet certain basic needs of the population such as the provision of water, there was need to stress this fact. Therefore, it is suggested that government articulates such in the Act to encourage active participation so that the utilities can transform quickly in meeting the demand of ever increasing population and MDGs.
- ✓ Lessons from the study imply that water which is a necessary commodity must include issues of efficiency reasons such as the economic ones as discussed in the research paper for the survival of SWSC and non-efficiency reasons such as political and social environment. Private sector has been acknowledged by UN (2006) that they are efficient in water and sanitation while poor at equity. This is the reason why the act should incorporate the non-efficient reasons in its intervention. It is, therefore, suggested that policy provides for such non-efficient reasons. This will facilitate quick transformation in water supply and sanitation provision in urban and peri-urban areas.

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Appendix_____

Questionnaire/Interview guide for the survey on Water Governance (What are the available opportunities for Southern Water and Sewerage Company Limited to grow)

INTRODUCTION

Dear Participant,

This questionnaire is designed to collect information aimed at assessing the available opportunities, with a focus on the social, economic and environmental dimensions, for Southern Water and Sewerage Company Limited (SWSC) for growth.

It is my considered view that you are among the people that are able to give a correct assessment of what the available opportunities are in the three areas highlighted above. I therefore, kindly request your assistance in responding to the questions below. Your frank and honest responses will be highly valued. Your selection as a respondent is purely at random

Your responses are purely meant for purpose of this research and will not be attributed to you in anyway either by myself or any organization that am affiliated to academically or professionally. In order to maintain the anonymity of your responses, you are therefore not obliged to give your name or any identifying marks on this questionnaire.

Thank you very much for your time and cooperation. I greatly appreciate your help in furthering this research endeavour. Thank you,

Charles Shindaile
[Mobile phone: 095 5 923280 / 096 7 418391 / 097 7 418391. E-mail: shindailecm@zambia.co.zm]

Instructions for the interviewer:

- Introduce yourself and explain in some detail the purpose of your visit. The study intends to collect information needed to improve the water supply and sanitation situation in this part of town.
- Explain that all (personal) information respondents provide remains confidential and won't be disclosed to third parties.
- Do not read out to your respondents the alternative answers that have been formulated, but give them the opportunity to come up with their own ideas and when they do, just write on your answer sheet the corresponding numbers. Only read out the alternative answers to your respondents if they face problems answering the question. Respondents are asked to give only ***one answer per question***

PART 1: GENERAL INFORMATION

1. Date...
2. Name of town:.....
3. Which township do you reside? ☐ High Cost ☐ Medium Cost ☐ Low cost ☐ Peri-urban
4. Type of employment ☐ formal ☐ informal
5. If answer to question 4 above is formal, then what type of organisation?
   ☐ Private ☐ Government ☐ Parastatal ☐ NGO ☐ Regional or International
   ☐ Local Authority ☐ Faith based others (specify).....
6. What is your position?
   ☐ Senior Management ☐ Middle Management ☐ Supervisor ☐ others
7. If answer in question 4 above is informal then what type of business:.....
8. What is your monthly income (ZMK)?
   ☐ 100,000≥– ≤1,000,000 ☐ 1,000,000≥–≤3,000,000 ☐ 3,000,000≥–≤6,000,000 ☐ 6,000,000≥–≤10,000,000 ☐ 10,000,000≥– ≤15,000,000 ☐ ≥15,000,0000

PART 2: ENVIRONMENTAL DIMENSION (political and physical)

1. As far as you know, are there policies and guidelines in the provision of water supply and sanitation services? ☐ Yes ☐ No
2. If yes to question 1 above, what are they?.....
3. Was your institution involved in the formulation of these policies? ? ☐ Yes ☐ No

How?.....

4. Have these policies been implemented in your area of jurisdiction? ☐ Yes ☐ No
5. What is your role in the implementation of these policies?..... 6. What was your role in the formulation of these policies?.....
7. What was the objective of the water supply and sanitation Policies?

i. To improve water supply and sanitation services
ii. To improve revenue collection for water supply and sanitation services
iii. To improve access to water supply and sanitation services
iv. To prevent and fight water borne/related diseases
v.Other (specify).....

8. Has this objective been met? ☐ Yes ☐ No

Explain.....

9. What improvement has the SWSC made in service delivery?.....
10. From what you know, what technologies/initiatives is the SWSC using in service Delivery?.....
11. From your observation, what is the effect of these technologies on the physical Environment?.....
12. Are you involved in the protection of the environment?.....
13. If yes to question 12 above, are you working with other institutions? Yes No ☐ ☐
14. Fromwhat you know, what measures are in place to protect the environment?.....
15. What opportunities for growth are there for the SWSC to grow?.....

Comments

.....

.....

.....

PART 3: ECONOMIC DIMENSION

1. What is the most important source of income for this organisation (SWSC)?
   ……
   ……..
2. What do you consider to be the greatest benefit for the SWSC water supply System?.....
3. Do you think it is necessary for people to pay for water? ☐ Yes ☐ No
4. If yes to question 3 above, how much should people pay for water per Month?.....
5. How much (on average) do you spend on water per ***month***?.....
6. Has there been change in water supply and sanitation from the time that the SWSC was formed?
   ☐ Yes ☐ No
7. If yes to question 6 above, how has this affected you?.....
8. What is the relationship between your organisation and improved water supply and sanitation services?.....
9. In what area should the SWSC improve in service delivery?.....

Comments

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PART 4: SOCIAL DIMENSION

1. From your experience, how accessible are water supply and sanitation services in your Areas?.....
2. What was done to improve these services to the poor?.....
3. What is the distance to your nearest SWSC supply point?.....
4. From what you know, has there been an change in public health and hygiene with the coming of the SWSC?.....
5. Do you think water charge is affordable to ***all*** customers? ☐ Yes ☐ No
6. Has improved water supply changed your budget?
7. If yes to question 6 above, how has this changed your budget?..... ☐ Yes ☐ No
8. From your observation, what opportunities are there for the SWSC to improve access to water supply and sanitation services?.....

Comments

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Guidelines for the interviewer:

Tell all respondents and other people present that you have asked all your questions. Thank everybody for their co-operation and explain that the survey results will be used to improve the water and sanitation situation of this town.

 Ask respondents if they wish to make some comments concerning the interview or the questions asked. If respondents wish to do so, try to write down their remarks on your answer sheet. Do you wish to make any comments regarding this particular interview or the respondents that were interviewed? Write these comments on your answer sheet.

THE END