
BY

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A Dissertation Submitted to the University of Zambia in Partial Fulfilment of the Requirements for the Degree of Master of Public Administration.

THE UNIVERSITY OF ZAMBIA
LUSAKA

2013
DECLARATION

I Carol Emma Mweemba declare that this dissertation:

a) Represents my own work;

b) Has not previously been submitted for a degree at this or any other University; and

c) Does not incorporate any published work or material from another dissertation.

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APPROVAL

This dissertation of Carol Emma Mweemba is approved as partial fulfilment of the requirements for the award of the degree of Master of Public Administration by the University of Zambia.

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ABSTRACT

Like in many counties, the provision of quality water supply and sanitation has been a major concern of the Zambian government and has received significant attention in terms of funding from governments and donor agencies with the aim of improving livelihoods. However, the actual delivery of water supply and sanitation services has generally not matched the concern, leaving gaps in effectiveness and consumer satisfaction. This research assessed performance of water supply and sanitation service provision in Lusaka District from 2006 to 2011, following the 1994 Water Sector Reforms in Zambia. The study covered a random sample of six community locations of Lusaka District representing high income, middle income and low income, respectively, namely Northmead and Handsworth, Chelstone and Kabwata, and Kalingalinga and Chaisa. Purposive selection of household respondents, service providers and other institutions with a stake in water supply and sanitation was used. Performance of water supply and sanitation was assessed by questionnaire based interviews and observation. The aim was the assessment of people’s perceptions of the quality of water supply and sanitation services from 2006 to 2011. Results obtained indicate that although there has been an increase in numbers of people in high and middle income communities accessing clean water and supply hours at points of connection between 2006 and 2011, households in low income communities had less access to such services because of little investments in water supply and sanitation resources in low income communities.
To my children Musonda and Andile
ACKNOWLEDGEMENTS

I thank the almighty God for giving me an opportunity to pursue a Masters Degree. Gratitude goes to Dr. Mulenga C. Bwalya – my supervisor, Prof. Imasiku A. Nyambe and Dr. Mikkel Funder for their tireless mentorship and encouragement to upgrade and excel in my academic levels. I thank my mother Mrs. Beatrice Mwiinga Mweemba who gave me the opportunity to attain the most unthinkable levels of education through her endless support in all aspects and encouragement. Gratitude goes to my husband Mr. Hilary Sibanda and my two lovely children, Musonda and Andile, for their support and continuous encouragement in pursuit of this academic paper, as well as their patience in my time of absence from home pursuing this academic paper.

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<th>Full Form</th>
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<tr>
<td>CBMT</td>
<td>Competence Based Modular Training</td>
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<td>CBO</td>
<td>Community Based Organisation</td>
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<td>CCO</td>
<td>Commercial and Customer Orientation</td>
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<td>CP</td>
<td>Cooperating Partners</td>
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<td>CU</td>
<td>Commercial Utility</td>
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<td>CSO</td>
<td>Central Statistics Office</td>
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<td>DANIDA</td>
<td>Danish Development Assistance</td>
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<td>DFID</td>
<td>Development Financing International Fund</td>
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<td>Danish Institute for International Studies</td>
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<td>DISS</td>
<td>Department of Infrastructure and Social Services</td>
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<td>DKK</td>
<td>Danish Kroner</td>
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<td>DTF</td>
<td>Devolution Trust Fund</td>
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<tr>
<td>DWA</td>
<td>Department of Water Affairs</td>
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<td>DWAF</td>
<td>Department of Water Affairs and Forestry</td>
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<tr>
<td>FNDP</td>
<td>Fifth National Development Plan</td>
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<tr>
<td>GRZ</td>
<td>Government of the Republic of Zambia</td>
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<tr>
<td>GTZ</td>
<td>German Technical Cooperation</td>
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<tr>
<td>IWRM</td>
<td>Integrated Water Resources Management</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<tr>
<td>KfW</td>
<td>Kreditanstalt fur Wiederaufbau</td>
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<tr>
<td>LA</td>
<td>Local Authority</td>
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<tr>
<td>LCC</td>
<td>Lusaka City Council</td>
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<tr>
<td>LWSC</td>
<td>Lusaka Water and Sewerage Company</td>
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<tr>
<td>MEWD</td>
<td>Ministry of Energy and Water Development</td>
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<td>MFNP</td>
<td>Ministry of Finance and National Planning</td>
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<td>Acronym</td>
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<tr>
<td>MLGH</td>
<td>Ministry of Local Government and Housing</td>
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<tr>
<td>NRW</td>
<td>Non Revenue Water</td>
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<td>NRWSSP</td>
<td>National Rural Water Supply and Sanitation Programme</td>
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<td>NTU</td>
<td>Nephelometric Turbidity Units</td>
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<td>NUWSSP</td>
<td>National Urban Water Supply and Sanitation Programme</td>
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<td>NWASCO</td>
<td>National Water and Sanitation Council</td>
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<td>NWP</td>
<td>National Water Policy</td>
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<tr>
<td>O and M</td>
<td>Operations and Maintenance</td>
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<td>PEAP</td>
<td>Poverty Eradication Action Plan</td>
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<tr>
<td>PROSPECT</td>
<td>Programme of Support for Poverty Elimination and Community Transformation</td>
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<tr>
<td>PSP</td>
<td>Private Sector Participation</td>
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<td>PSRP</td>
<td>Public Service Reform Programme</td>
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<td>PPURSS</td>
<td>Promoting Peri-Urban Sanitation Services</td>
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<tr>
<td>RWSS</td>
<td>Rural Water Supply and Sanitation</td>
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<tr>
<td>SI</td>
<td>Statutory Instrument</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organisation</td>
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<tr>
<td>UWSS</td>
<td>Urban Water Supply and Sanitation</td>
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<tr>
<td>VIP</td>
<td>Ventilated Improved Pit latrine</td>
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<tr>
<td>WASH</td>
<td>Water Sanitation and Hygiene</td>
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<td>WDC</td>
<td>Ward Development Committee</td>
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<td>WFD</td>
<td>Water Framework Directive</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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<td>WRM</td>
<td>Water Resources Management</td>
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<td>WSP</td>
<td>Water Supply Programme</td>
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<td>Abbr.</td>
<td>Description</td>
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<tr>
<td>WSS</td>
<td>Water Supply and Sanitation</td>
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<tr>
<td>ZMK</td>
<td>Zambian Kwacha</td>
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<tr>
<td>ZS</td>
<td>Zambia Standards</td>
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<tr>
<td>ZWS</td>
<td>Zambia Water Standard</td>
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CHAPTER ONE

INTRODUCTION

Water is essential to livelihoods and a prerequisite to development because it is the most crucial element in supporting life, agriculture and industries. Based on this understanding, there have been increased efforts to effectively manage the water resources and improve the performance of the water sector in many countries. This is mainly reflected in the many water sector reforms currently taking place, especially in developing countries (DIIS, 2006). Decentralisation (devolution, deconcentration and delegation) of power and authority has been part of the changes incorporated in the reform process.

In Zambia, numerous initiatives such as separation of Water Resources Management (WRM) from Water Supply and Sanitation (WSS) and devolution of authority from Central Government to Local Authorities (LAs), among others, had been introduced in water resources management to improve the performance of the water sector after the realisation of poor performance in the sector. The Water and Sanitation Chapter of the Fifth National Development Plan reports that in the late 1980s and early 90s, government began a sector review and realised then that the issues constraining effective development and management of the water sector in Zambia were:

- Weak or inadequate legal and institutional framework for the Water Resources Development and Management and also for Rural Water Supply and Sanitation (RWSS);
- Inadequate data and information systems for water resources and RWSS;
- Inadequate human resource capacity;
- Inadequate stakeholder participation, particularly in WRM;
- Lack of Integrated Water Resources Management (IWRM);
- Inadequate and unpredictable sector funding, and relatively lower and declining share in budgetary allocation;
- Large population without water supply and sanitation services in urban poor communities and rural areas, and;
- Insufficient sustainability and self financing (cost recovery) in the Urban Water Supply and Sanitation (UWSS) sub sector (MFNP, 2006).

The weaknesses identified in the water sector all pointed to too much centralisation of activities by central government. There was no separation of authority to enhance efficiency. The government, therefore, needed to come up with policies that would improve coverage of service delivery while upholding efficiency at minimum costs. Private sector participation was also recognised as an important tool to bring in new capacity and resources to the water sector.

Curtailing the weaknesses in water supply and sanitation services in the Zambian water sector saw a birth of a number of institutions and modification in roles and responsibility for others to streamline the sector. Through the Water Supply and Sanitation Act, enacted in 1997, the National Water Supply and Sanitation Council (NWASCO) was established and started operating in 2000 to regulate the Water Supply and Sanitation sub sector in Zambia; and Commercial Utilities (CU) under the custody of the Local Authorities were established to offer water supply and sanitation services in the urban and peri-urban areas in Zambia. Focus of the Water Supply and Sanitation Act of 1997 was on commercialisation, Private Sector Participation (PSP), regulation and delimiting of service area as well as the establishment of Devolution Trust Fund (DTF).
With new initiatives put in place to improve water supply and sanitation sector performance, this study examined whether or not there had been significant and positive enhancements in performance of the water supply and sanitation sector in selected communities of Lusaka District.

**STATEMENT OF THE PROBLEM**

Substantial amounts of financial and human resources are provided to improve service provision of water supply and sanitation, yet there seemingly to be less improvement occurring. Misappropriation and misdirection of funds tends to be the order of the day. As a consequence, marginal improvements are recorded that do not even match the amount of resources allocated for such developmental projects. Water infrastructure in terms of pipes and channelling systems throughout the country has continued to deteriorate to such extents that over half of the water supplied is lost through mismanagement before reaching the consumer (Mbilima, 2008). The quality of water produced is a health hazard because it lacks proper purification and is subjected to unclean piping system before reaching the consumer. Equally, sanitation coverage is still low with many people lacking public sewerage and the sewage is virtually untreated. The results are a constant threat to the health of the entire population, a perpetuation of unmet basic needs of the poor, and a steady deterioration of the environment (Mbilima, 2008).

With these identified problems that are symptoms of deep seated problems which expose the fragility and inadequacy of public operated water supplies and sanitation systems, this study assessed performance of water supply and sanitation\(^1\) between

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\(^1\) In this study, the assessment of sanitation was restricted to the use and coverage of toilet facilities and treatment of the resultant waste
2006 and 2011. To date, despite the large quantity of studies, the available empirical evidence is less robust than one would hope for, both in quality and in scope.

PURPOSE OF THE STUDY

MAIN OBJECTIVE

The main objective of the study was to assess the performance of the water supply and sanitation service provision in six selected communities of Lusaka District, from 2006 to 2011.

SPECIFIC OBJECTIVES

1. To examine the performance of water supply and sanitation coverage in the study areas;
2. To determine levels of consumer satisfaction of water supply and sanitation service provision in the study areas;
3. To establish the enhancements and challenges in water supply and sanitation service provision.

SIGNIFICANCE OF THE STUDY

The water sector in Zambia had been going through a number of legal and institutional changes since the attainment of independence, with notable major changes starting in 1994 after the adoption of the National Water Policy. While the process had been an ambitious one to improve performance in the water sector, it is very important to acknowledge that even though the programmes and initiatives such as power devolution are designed to achieve certain objectives, it is not automatic
that implementation of such programmes always yield the intended outcomes, hence the justification for this study. The extent to which power devolution from Central Government to Local Authorities and Commercial Utilities has improved performance is not fully known. Though having been studied widely, knowledge gaps still exist on the authentic performance of the water supply and sanitation sector in the study areas and the comparative nature of the study brings out levels of actual performances in each community and informs the research where improvement is required.

Generally, this study assessed the performance of the water supply and sanitation sector in six selected communities of Lusaka District, as a result of power devolution from Central Government to Local Authorities and Commercial Utilities to contribute its findings to the body of existing knowledge. Further, the understanding of empirically based knowledge is, therefore, seen to have significant implications for future legal and administrative changes taking place, which if inadequately informed may cause such initiatives to be ineffective rather than improve performance or achieve the intended objectives.

CONCEPTUAL FRAMEWORK

There is a growing trend among governments worldwide to engage in transformation of the water sector as a response to inefficiency and low service delivery in the sector. This transformation, more often than not, decentralises power and responsibilities to the Local Authorities. All this is based on the notion that decentralised management works better when it operates closer to the people it is intended to serve. Decentralisation simply means the transfer of power from central governments to sub-national government (Ekpo, 2008). Sayer et al (2004), also defines decentralisation as the process by which the agents of central government
control are relocated and geographically dispersed. In principle, decentralisation is perceived as a means of improving the efficiency and responsiveness of the public sectors. By transferring decision making to levels of government that are close to beneficiaries, decentralisation can give citizens greater influence over the level and mix of government services they consume and greater ability to hold their officials accountable (Ekpo, 2008).

Decentralisation offers an open, predictable and transparent policy making in the implementation process of any programme. It offers effective community participation in decision making, development and administration of their local affairs, while maintaining sufficient linkages between the centre and the periphery. Cheema and Rondinelli (1983) also assert that decentralisation to regional or local levels allow officials to disaggregate and tailor development plans and programs to the needs of heterogeneous regions and groups. The mainstay of decentralisation is basically to:

(a) Empower local communities by devolving decision-making authority, functions, and resources from the centre to the lowest level with matching resources in order to improve efficiency and effectiveness in the delivery of services; and

(b) Design and implement mechanisms to ensure a “bottom-up” flow of integrated development planning and budgeting from the districts to the central government. This is important for efficiency because the implementation of any works is informed with adequate data obtained from the inventory of needs assessment done locally. Also, there is greater understanding of which specific areas in the water sector require attention.

In terms of provision of the water supply and sanitation services, the decentralised government level is the most important. The notion behind such decentralised
management system is that the water utility companies have the ability to be financially viable and offer an efficient service to the people, whilst achieving full cost recovery for the sustainability of the companies. Ideally, the water companies would be comprised of professionals with the know-how of how a water supply and sanitation system works thereby ensuring economic viability in the way the companies are run. Still, decentralised units may need less professionalism and may engage manpower from the community. By so doing, administration costs will be lower and procedures made simpler (Ekpo, 2008). However, challenges of implementing activities of water supply by Local Authorities and Private Enterprises are far from being satisfactory. For Local Authorities, this is mainly due to interference from Central Government and low finance flow to water supply and sanitation. Central Government must, therefore, be willing to give up control and recognise the importance of lower levels of government in service delivery and commit necessary or required resources to realise intended results – improve service delivery. Ekpo (2008) asserts that the lower levels of government can deliver services such as water, education, sanitation, health etc effectively because they are more aware of the needs of their community and would be more responsive to providing such services. Preferences of local populations are better known at lower levels of government.

Unfortunately, however, stakeholders, particularly in rural areas, do not yet realise their new role and often are not even aware of it. This hinders participation at local level and proper development of rules guiding effective water management. Whilst the World Bank (2000), denotes correctly that decentralisation allows for local participation in matters affecting local people, especially that it facilitates for good governance, the problem arises when local people are not aware of the benefits to support such a decentralised system.
With respect to Commercial Utilities, problems arise from deciding on coverage for supply systems. Being a business venture for the utility companies, it is a major challenge for them to provide a service, if it is not seen to be lucrative. Yet, water supply and sanitation service provision is cardinal for survival. As earlier connoted, water is essential for livelihood, particularly because of its central role in uses such as drinking and household uses, crop production, and electricity generation and recreation purposes among others. Consequently, water supply and sanitation services are only part of the more general term “water service”. By definition water services are all services that provide, for households, public institutions or any economic activity: a) abstraction, impoundment, storage, treatment and distribution of surface water or groundwater, b) wastewater collection and treatment facilities which subsequently discharge into surface water (WFD, 2000). The definition, water services, incorporates both the activity to use water for irrigation, water transfer, water for hydropower, and drinking water supply and sanitation (Schouten, 2009). Moreover, according to the definition it does not matter whether individuals or third parties provide the service. Hence also self-supply by individuals is included.

However, water supply and sanitation service is more restrictive, as it only concerns the supply of drinking water and the collection and treatment of wastewater by authorised water supply and sanitation service providers (Schouten, 2009). Self-supply is excluded. Water supply and sanitation services relate to the ‘small’ cycle (Schouten, 2009). Water is abstracted by an authorised provider from a river, an aquifer or in some cases even the sea. This water is treated and pumped into underground pipes, ending up at the premises of consumers where it flows out of their taps (Schouten, 2009). The wastewater that comes from the shower pit, the latrine and sometimes from the drains in the street flows into another underground piping system, ending up at a wastewater treatment plant (Schouten, 2009). There, the materials that really harm the environment are removed before the wastewater is
discharged into the environment. WSS service providers, all over the world, have managed this cycle for more than 100 years, and the fundamentals of the processes remain largely untouched (Thomas and Ford, 2005).

Arguments have been advanced to suggest that the water supply and sanitation sector has characteristics that make it unique compared to other sectors. The unique nature of the water supply and sanitation sector is often argued by pointing out the diverse characteristics (Schouten, 2009). For instance, there are various characteristics underlying the special position of water, as identified by Savenji (2002) and he connotes that: water is essential, water is scarce, water is fugitive, water is a system, water is bulky, water is non substitutable, water is not freely tradable and water is complex. The combination of characteristics makes the provision of water supply and sanitation services as a class of its own, and also with problems and solutions of its own. Individually these characteristics are applicable to many goods and sectors, but their combined applicability makes the water supply and sanitation sector unique from other sectors.

LITERATURE REVIEW

This section reviewed literature relevant to this study. It started by reviewing literature on water supply and sanitation sector reforms – a perspective of the decentralised management of the water sector in general and water supply and sanitation in particular. The study also reviewed literature on the performance of water supply and sanitation sector.
WATER SUPPLY AND SANITATION SECTOR REFORMS – A PERSPECTIVE OF DECENTRALISED MANAGEMENT

Decentralised management of water, as a resource and as a service, is one of the major areas of institutional reform in the water sector. The main argument driving such ideas of the reformation process has been that shifting decision making and finances from Central to Local Government leads to better delivery of services assessed in terms of their fit with local needs, quality and unit cost (Helmsing, 2001). This assertion is valuable to this research because it offers the basis for the study. However, there is little consensus within the literature on whether decentralisation has actually been effective. There are inconsistencies observed by the researcher with devolving water supply and sanitation to local governments in that much as local governments may have appropriate knowledge of local needs necessary for improvement, their funding and human resource are mostly inadequate for improved water supply and sanitation, as is the case in most Zambian Commercial Utilities. Appropriate knowledge of local needs may not always be sufficient to engage lower levels in service provision because inefficiency still sets in if not adequately equipped with required human and financial resources.

In addition, opponents of decentralisation argue that local governments are too susceptible to elite capture, and lacking in capacities and resources to provide efficient and effective services (Faguet, 2003). In some places, decentralisation has created more dependency than self-reliance, and it may have suppressed civil society initiatives (Helmsing, 2001). In societies with traditional community level institutions the empowerment of local government may also represent centralisation from the point of view of citizens. Toulmin and Gueye (2003) argue that in West Africa the establishment of local councils with powers over land and other resources represented a centralisation of power away from village hands. There, setting up a new local government structure has added to the confusion created by multiple and
contested sources of authority, especially between local chiefs, and the elected
district assembly (Toulmin and Gueye, 2003). In the water sector, traditional African
institutions and laws at the community-level are also widely ignored as potentially
effective governance structures (van Koppen et al, 2005).

The researcher is of the same opinion with sentiments by Faguet (2003) and
Helmsing (2001) in that decentralised water management, despite being advocated
for particularly in Zambian rural areas, has for a long time been managed poorly –
with inadequate financial resources and limited capacity to provide for effective
water supply and sanitation service. In Namwala District for instance, the Local
Authority was for a long time managed by personnel with no technical training until
most recently when an individual with a technical background was appointed to work
in the District to improve water supply and sanitation. In fact, the situation was
similar for most Local Authorities in Zambia. However, sentiments by Helmsing
(2001) suggesting that decentralisation creates more dependency and suppresses civil
society initiatives are not authentic, as evidence has shown that decentralised
management creates opportunities for local institutions to apply relevant skills based
on identified community need. The fact that decentralised management occurs in
close proximity to the community needs tends to be advantageous. Additionally, just
as suggested by van Koppen et al (2005) the researcher recognises traditional African
institutions and laws as important governance structures for effective management
and service of water supply and sanitation. Only through their cooperation can there
be improvement because of their close contact with people on the ground. In short,
traditional leaders form part of the communities they live in and have better
understanding of community needs and water requirements. Their involvement,
therefore, in decision making over water supply and sanitation service provision has
high likelihood of offering the exact service as required by the end users.
Venkaiah Naidu (2002) observed that in order to improve sustainability of water resources and systems in the water sector, the government of India embarked on the ambitious programme of letting community and Local Government to plan, implement, operate and manage water supply schemes. In addition, there has been a shift of State Government from the role of service provider to facilitator. Communities and local institutions are allowed a considerable degree of flexibility in choosing the appropriate institutional model for service delivery suited to their own specific local context. By introducing this Naidu (2002) argues that the programme has challenged the traditional top-down model of delivery of water supply services by State Government owned Engineering Departments and Agencies. Further, experience has shown that delivery by agencies that are far away from users leads sometimes to the creation of unsustainable schemes that are, more often than not, unsuited to meeting the requirements of those whom they are designed to serve and, therefore, unsustainable.

Naidu’s observation glorifies the ability of community and Local Authorities to plan and implement water supply and sanitation locally. This assertion may not be conclusive, in that he does not clearly delineate the boundaries of Local Authorities and that of the State Government. State Government, as facilitator, is also responsible for funding the programme. It would, therefore, be a fallacy to assume that top-down model of delivery of services has been challenged completely because programme implementation relies on State Government funding. The State still has a bigger role to play in deciding how much should be channelled to the water supply and sanitation programme, making the community and Local Authorities still highly reliant on State Government. Further, having to obtain funds from State Government requires that community and the Local Authority be accountable to the state. Therefore, there is not much autonomy as Naidu (2002) assumes, to exercise their
authority because programme implementation would still be stipulated by State Government.

Experiences of the decentralisation process have also been highlighted by Bustamante et. al (2004) who assert that the decentralisation process was embarked on with the aim to decrease inflation and stabilize the economy after long periods of dictatorship rule in Bolivia. Changes “of the second generation” in the period 1993-97 included shifts in the role of the state and civil society linked to: creating greater space for private sector participation in the economy, redefinition of administrative boundaries with greater decentralisation towards regional and municipal level, and new conceptions about natural resources (land, forest, water and biodiversity) management.

According to Bustamante et. al, decentralisation was important for the reduction of inflation and stabilisation of the economy. This assertion, however, does not explain how decentralisation was going to achieve this. What is important in this case is to create a link on how inflation would be reduced with the involvement of private sector, redefinition of boundaries and new conception about natural resource management. Otherwise, the assertion still remains inconclusive.

Bustamante et. al (2004) further assert that decentralisation in Bolivia, involved the delegation of new responsibilities to Municipalities and the broadening of their duties from only urban to rural areas within its territory. According to the “Municipal Law” (1999), Municipalities acquired new responsibilities in relation to local development such as to: Comply and make compliant with rules on the use of land, the underground, the water and natural resources (Art. 8, I, 7); Build, set the equipment
and maintain the infrastructure in the sector of micro irrigation; Give concessions to
the private sector and to set the mechanisms for funding the building, equipment and
maintenance of infrastructure and services related to basic sanitation; and provide
water and sewage services directly whenever the conditions to give concessions do
not exist.

Bustamante et. al’s assertions are highly valued by the researcher because they
consider an increased scope of operation of the Municipality both in urban and rural
areas; hence there is an improved autonomy in decision making which is one cardinal
aspect in devolution of authority. However, the researcher deems that there is a
difference in focus of this type of devolution as the focus of the study also includes
private enterprises which are business entities responsible for urban water supply and
sanitation, while the Local Authority takes the sole responsibility in acting as
custodians to the business enterprises and be responsible for rural water supply and
sanitation in Zambia. This difference, therefore, enhances the need for the researcher
to undertake the study in order to draw a comparison on the results in light of these
dissimilarities.

There is a general consensus that devolving responsibilities from Central
Government to Local Authorities and private enterprises has positive effects on water
resource management. For instance, based on an extensive meta – analysis of the
literature, Shyamsunder et. al (2005) have found that increased local control indeed
motivates local interest in the long term investments, creates space for local decision
making and can increase accountability and management performance. They also
conclude that decentralisation has ambiguous effects on poverty. On the one hand, it
provides opportunities for better private incomes, better access to public goods and
better control of resources where as on the other hand it can also lead to higher costs.
Furthermore, they find that decentralisation leads to a reduction in the fiscal burden on national governments (Shyamsunder et. al, 2005). Shyamsunder et. al (2005)’s assertions are of value to this study because they represent the premise for decentralised management applied in the study areas for this research. Whilst it has been established that local decision making ensures that correct and required services are offered, decentralised management tends to increase opportunities for better access to services which can easily be negotiated within people’s locality.

UNESCO (2005) also asserts that water supply and sanitation requires participatory approaches that aim at strengthening collaboration among key stakeholders, to include governments (national government, local governments and municipalities) and the private sector (national and transnational businesses, formal and informal enterprises). This collaboration is seen in this context as an effective means to establish cooperation between public and private actors and to bundle their financial resources, know-how and expertise to meet the challenges facing service provision. This assertion is in accord with views of the researcher. The involvement of different players in water supply and sanitation has made it a success in the Zambian context. Fund deficiencies which could not be covered by service providers are often covered by Cooperating Partners in the water supply and sanitation sector. Similarly, the operations and protection of both consumers and utility companies have been achieved successfully through the involvement of independent regulating agency. Thus, the success of service provision is owed to applied participatory approaches that aim at strengthening collaboration among players in the water supply and sanitation sector.

Devolution of authority from Central Government to Local Authorities was implemented by the Zambian government, as one of the measures put up to improve
performance of the water sector. This involved the separation of the service provision of Water Supply and Sanitation from Water Resources Management (GRZ, 1994). The Water Supply and Sanitation are now a responsibility of the Local Authorities. This resulted in the decision to transfer all small towns’ water supply schemes from the Ministry of Energy and Water Development to the Local Authorities under the supervision of the Ministry of Local Government and Housing. This decision was arrived at after the realisation that top government was heavily laden with responsibility and service delivery was dwindling.

GRZ (1994) supports that power devolution as a form of decentralisation ensures efficiency and improves service delivery in the water sector. However, while this approach promises several benefits, experience shows that involving private actors in the provision of basic services needs to be carefully planned and monitored if the benefits of such a model are to be fully realised and the numerous potential drawbacks avoided. One of the most challenging aspects facing participation of both government and Private Enterprises remains the need to reconcile two competing aspects. Governments need to find ways to fulfil their socioeconomic responsibilities for ensuring services to all citizens, on one hand, while striving to preserve the interests of private investors on the other. Also, an important factor is that private companies operating in the sector need to be convinced that investing in any particular water supply project offers more attractive returns than other available investment opportunities in the country. It is such controversy that the researcher feels the topic of devolution of authority from Central Government to Local Authorities should be investigated further to show a link of how this process is harmonised between parties involved.
Other scholars, for example, Agrawal and Ostrom (2001) assert that many decentralisation proposals limited to the assignment of operational rights continue to be held by government agencies, including collective and constitutional choice rights. Absent these rights, they argue, there is little incentive for sustainable management among resource users. Yet, only in few cases, are water resources management functions devolved to Local Government level and Private Enterprises. The main reason for that is that water resources management implies dealing with externalities. The territorial unit of a local authority is often not the appropriate scale for dealing in an institutional way with these externalities. Besides, decentralisation of water resources authority functions to Local Authorities and Private Enterprises may not be desirable, because they are also often a water user and polluter with particular responsibilities for water supply and sanitation services. Putting water services and water resources management responsibilities under the same authority would risk placing Local Government in the role of ‘judge’ and ‘jury’.

Agrawal and Ostrom (2001)’s assertions are very valuable to this review because they present the basis for separation of WRM from WSS in the Zambian context. Local Authorities are responsible for WSS, while the Central Government manages water resources because of the externalities involved when dealing with the water bodies. The researcher, however, does not consider it correct to say Local Authorities and Private Enterprises are water users and polluters, hence should not be given the authority to manage water resources because, awarding them such a responsibility would improve conscious levels of wanting to safeguard the resource. Lacking this responsibility reduces the ability of Local Authorities to purify waste waters before disposing them in natural water bodies.
Still importantly, it should be pointed out that decentralisation has limitations in its application. Several key limitations of decentralisation most affect natural resource management and service provision. These limitations relate to the limited scope of powers devolved to the lower levels of authority, the calibre to which the powers are devolved, and the tendency of Central Government to retain major resources such as finances that are needed to effectively carry out devolved functions by the lower level authorities. Yet, it is noted that an increased involvement of private parties and the stimulation of competition advance a pronounced shift in the traditionally public and monopolistic character. This shift has spurred a body of research on the value and effects of how the new institutional changes have impacted on the performance of the water supply and sanitation sector in the study areas.

**PERFORMANCE OF WATER SUPPLY AND SANITATION SECTOR**

The water supply and sanitation sector the world over has undergone changes triggered by the need to remove identified inadequacies in the sector. In Yemen, the transformation of water supply and sanitation sector was triggered by the break down of the critical equilibrium of available water resources and domestic water use which had existed for centuries (GTZ, 2009). It was mentioned that, there was an absence of an effective regulatory capacity and a system of tradable water rights for domestic water use resulting into overdrafts of groundwater and no conservation. At the same time, demand for domestic water use, particularly in towns, was rising due to rapid population growth and rural-urban migration. Yet, the response of Urban Water Supply and Sanitation (UWSS) sector institutions in the country was inadequate in dealing with water shortages and increasing domestic demand. Meanwhile, the sector structure was evolving in a chaotic manner with two contradictory trends: namely, a wide dispersion of agencies being responsible for water on the one hand, and over-centralisation of UWSS on the other. Productivity and efficiency in urban service delivery were of secondary importance, while service coverage expansion was
reaching the limits of institutional ineffectiveness. Moreover, the Yemen water sector was highly influenced by political interference (GTZ, 2009).

The basis for institutional and legal changes in Yemen’s water supply and sanitation sector, as observed by (GTZ, 2009), relates substantially to what triggered the need for the sector reforms in Zambia, hence its importance for this study. Understanding of the breakdowns in critical equilibrium of the water sector in Yemen and dwindling supply systems for increased populations is important for this study because it illustrates inadequacies in service provision in other counties that caused reformation of the Zambian water sector. In addition, just like in Yemen, the importance of planning for increases in population growth in developmental projects including water supply and sanitation has been seen to be significant in Zambia. Therefore, this study has to show and recommend appropriately how increases in populations can be included in service provision. Rapid population growth minimises improvements in coverage of water supply and sanitation, therefore, projections of population growth could be worked on in accord with available human needs to ensure that future populations are planned for in advance. Only then, would coverage and access of water supply and sanitation match the rate of population growth.

The researcher is also agreeable with sentiments made by GTZ (2009) suggesting that political interference contributes to poor delivery of services. Politicians have tended to interfere with how the supply of water and sanitation is made available to the masses without getting a complete understanding of technical implications that come with production of the water resource for instance. Sadly also, budgetary allocation to water supply and sanitation in Zambia is also low due to the less attention given to the sector – large amounts of money go to sponsor personal political desires and expensive trips abroad. Consequently, a lot of people still lack
access to water and sanitation, as one would hope for, especially in peri-urban and rural areas.

In Yemen, following the transformation of the UWSS sector, obviously, positive results in terms of performance were noted. A number of people with access to safe water supply and sanitation had increased. UWSS sector had advanced to cover about 95 percent of the urban population served by local public utilities (GTZ, 2009). Further, GTZ (2009) reported that, the proportion of the urban population connected to the water supply increased in the period from 2002 to 2007 from 47 percent to 56 percent, that is, from 2.4 million (in 2002) to 3.6 million (in 2007). With respect to sanitation, coverage increased from 25 percent to 31 percent in the same period, which in actual figures this meant an increase from 1.3 million (in 2002) to 2.1 million (in 2007).

GTZ (2009) suggest increases in coverage in terms of percentages served by local public utilities. Whilst increases in coverage of populations with access to water and sanitation are quiet impressive, the researcher reckons there is too much simplicity in the presentation of figures for the percentages of populations with access to water supply and sanitation. The urban populations in most countries include different social economic groups which include low income areas, middle income areas and high income areas. It would be important to show which parts of urban populations i.e. low, middle and high incomes had the most enhancements because experience has shown that some parts of the urban populations receive more services than others. Summing up figures for the entire urban populations does not give a comprehensive picture of actual situations.
In Uganda, substantial investments had been made for the improvement of the provision of rural and urban water supply and sanitation services. This was after realisation that poor performance of previous investments illustrated the magnitude of the task implied by the Poverty Eradication Action Plan (PEAP) targets, and sector reviews had identified further constraints to progress, including: insufficient sector funding; ineffective sector co-ordination; inadequate local capacity; inefficient resource use; and supply-driven project approaches (WSP, 2002). Recognition of the challenges inherent in the ambitious PEAP targets, and the sector’s structural constraints, made reform of the water and sanitation sector an urgent requirement (WSP, 2002).

Whilst substantial changes had been made to improve water supply and sanitation sector in Uganda, a Joint Sector Review conducted to evaluate performance revealed that the number of water points provided per year had not increased significantly over a period of four years, despite the massive increases in sector funding. Similarly, operation and maintenance subsidies for rural water supplies remained high, yet approximately 30% of the facilities were non-functional (WSP, 2002). Sanitation provision was lagging behind water supply, thus threatening the expected health benefits of the major investments being made. Both investment in sanitation and its coverage targets were considerably lower than those for water supply. These shortfalls could be explained by the government’s decision that household latrine construction would not be subsidised, and that, instead, government funds would be directed towards the less easily measured tasks of hygiene promotion and technical assistance. Regrettably, this approach appeared to have reduced the importance of, and attention to, sanitation in the sector reform process (WSP, 2002).
The Ugandan situation, as observed by WSP (2002), is similar to most African countries and the researcher deems it necessary to extensively evaluate the Zambian situation particularly in the study of communities of Lusaka District. Substantial amounts of resources are provided to improve service provision of water supply and sanitation, yet there seems to be less improvement occurring. Misappropriation and misdirection of funds tends to be the order of the day. As a consequence, marginal improvements are recorded that do not even match the amount of resources allocated for such developmental projects. The understanding of challenges in improving supply and coverage of water supply is important for this study to offer solutions through lessons learnt from other countries.

The Water Act Cap 372 of the Kenyan Government, in force then, with regard to policy formulation, regulation and service provision functions was seen to have bottlenecks to include inadequate funds for development, operations and maintenance of water supplies; institutional weaknesses, especially the scarcity of qualified manpower and lack of skills to properly operate and maintain water supplies; unavailability of water resources due to its uneven distribution in space and time; poor choice of technology in water supply and sewerage development, and inconsistent project selection criteria which resulted in adoption of technologies and delivery mechanisms which were not well suited to sector development; lack of proper coordination of various actors and sectors; and lack of proper inter-linkages with other related sectors (Richards et al, 2008). All these inefficiencies influenced the reform of the water supply and sanitation sector in Kenya.

Richards et al (2008)'s assertions are in accord with driving factors for reforming the water supply and sanitation sector in the Zambian situation, hence significant for this study. The gaps identified relating to operations and maintenance, uneven
distribution of water resources in space and time and lack of proper coordination, among others, are significant factors that could be measured in this study to show whether or not the adoption of new measures has had positive impacts on water supply and sanitation service provision.

Remarkably, there is a high consensus with the Zambian reforms that the water supply and sanitation sector reforms were triggered by institutional weaknesses, lack of or inadequate financial and human resources in the sector, over centralisation of responsibilities and duplication of effort among others. This is of high value to the Researcher’s study because it gives wide dimensions of situations that influenced the reform processes in many countries, yet at the same time such dimensions trigger the mindset to try and understand if the intended purposes for such changes have really been achieved. It is worth assessing more carefully the potential efficiency improvements that should result from the much emphasised reforms. This is important to allow for qualitative assessments of the potential improvements in the overall use of new structures put in place through the reform process and a more analytical discussion of the most advantageous scale of operation. Both potential sources of efficiency gains could be set as targets for the restructured sectors and go a long way in cutting the financing requirements of the sector.

Moreover, despite the Tanzanian government introducing a ‘latrinisation’ campaign under the programme called “Mtu ni Afya” (You are your health) aimed at ensuring each household would have a latrine, very little has been achieved in improving basic sanitation (WaterAid, 2005). Cholera remains endemic to Tanzania. Outbreaks were frequent in urban areas, particularly the larger cities and in rapidly expanding unplanned areas. Piped sewerage systems covered less than 20% of urban households with the rest having to resort to onsite solutions, predominantly pit latrines
(WaterAid, 2005). In poorer areas people often did not have access to basic sanitation. The houses they lived in were often rented and there was no space to build a latrine. Disposal of faeces in polythene bags – “flying toilets” – was not uncommon. Flooding due to inadequate storm drainage exacerbated the problem spreading the contents of poorly constructed latrines around whole neighbourhoods. Cholera also got exported to rural areas with fatal consequences. This was despite the fact that over 80% of rural households had latrines and was evidence that much more needed to be done to promote basic hygiene practices and improvement of existing facilities (WaterAid, 2005). Furthermore sanitation facilities at public institutions, particularly schools and health centres, were often inadequate, for example, not even meeting the basic government guideline of 25 students per latrine.

As observed from findings by WaterAid (2005), the challenge of poor sanitation and water supply still exists in some cases despite major changes having taken place. The researcher, therefore, deemed it important to investigate further the extent to which levels of performance of the WSS sector have been achieved since the initiation of the reforms in Zambia. Obviously, it is not automatic that reforming the water supply and sanitation sector has scored significant changes in all aspects. Additionally, very little is mentioned as to how far reaching the institutional weaknesses have been eradicated, financial and human resources made sufficient and decentralisation achieved. The research, therefore, has brought out actual figures of how much of financial and human resources have been improved and decentralisation achieved in the Zambian case.

Still, it should be pointed out that despite remarkable changes having taken place in water supply and sanitation in many countries, there are still some limitations experienced.
There are a number of challenges facing the water supply and sanitation sector to the extent that the sector performance has been below expectation. These challenges can be categorized into financial, commercial, operational and institutional challenges. Several authors suggest that the water supply and sanitation sector has characteristics that make it relatively unique compared to other sectors. Pargal (2003), based on an econometric assessment of private investment flows and data from Latin America, concludes that: despite decades of reform, cost recovery still eludes the commercial water utilities whose tariffs are generally at least 30% below the cost of operation and maintenance (Pargal, 2003). Cost recovery is almost nonexistent in RWSS where most communities do not pay anything for their water supply and sanitation service provision.

The Researcher is very much agreeable with conclusions derived by Pargal (2003) concerning low cost recovery and service provision operating below the cost of maintenance and operation, despite substantial changes being made in the water supply and sanitation sector to improve performance. Communities in rural and peri-urban areas pay subsidised tariffs – basically billed on a social tariff which in most cases fails to meet the cost of production, operation and maintenance of the service provision. The challenge of improving service provision in such areas is seen not to be lucrative and the motivation to offer quality services overshadowed. Consequently, service provision of water supply and sanitation has tended to lag behind in rural and peri-urban areas more than that of the urban proper where full tariffs are paid for the service offered. This condition is an illustration of the prevailing situation in Zambia.

Further, the measurement of efficiency in the water sector is complicated by the nature of the production process. Complications arise from the fact that water
production is a function of many variables, many of which are exogenous to the water sector – for example household income, chemical products prices, and intra-household decisions etc. Farell (1957), drawing upon the work of Debreu (1951) and Koopmans (1951), introduced a measure of productive efficiency that avoids the problems associated with traditional average productivity measures (ratios). He proposed that efficiency relative to a best-performance frontier is determined by a representative peer group. In the Farell framework, a firm’s efficiency is measured relative to the efficiency of all other firms in the industry, subject to the restriction that all firms are on or below the frontier. A firm is regarded as technically efficient, if it is operating on the best-practice production frontier in the industry.

While this is true, to some extent, it is technically a challenge to determine performance efficiency using the yardstick of other firms in the industry particularly that the serviced areas are diverse with different water needs and social orientation. In this respect, the researcher finds a gap in Farell’s assertions because his measurement of performance efficiency is based on quantitative measures, while overlooking the qualitative aspect which includes user satisfaction and important social dynamics that guarantee water user satisfaction. Moreover, satisfaction of water users is one great indicator that a service provider has scored highly in its service provision.

**METHODOLOGY**

This study was undertaken in Lusaka District in six (6) communities namely, Northmead and Handsworth (high income areas); Chelstone and Kabwata (middle income areas); and Kalingalinga and Chaisa (low income areas). The study focused on areas with three distinct income categories in Zambia for comparative purposes.
Institutions with stakes in water supply and sanitation service provision also formed part of the sources for inquiry for this study.

**RESEARCH DESIGN**

Both quantitative and qualitative research designs were used in this study. Quantitative data was collected by use of questionnaires and qualitative information was collected through key informant interviews and observation methods.

**SAMPLING**

The sampling strategies employed were random sampling for study areas and purposive sampling for households within the selected study areas and institutional respondents.

All settlements in Lusaka District were identified and clustered according to their social economic status and income levels. In this case, three different groups were identified to include high income, middle income and low income areas (Appendix 1). Each income group represented households with similar socio-economic characteristics such as housing, social amenities and general economic situation of people living in those areas. From the stratified communities, six (6) communities (2 from each category) were selected randomly. The selection of the 6 communities was done by means of lottery – assigning each community number(s) and then randomly selecting 6 numbers corresponding to 6 communities.

From each of the selected communities, 20 respondents were selected randomly and interviewed. The total number of household respondents from the 6 communities was
The selection of household respondents was purposive, targeting respondents who had been living in the community for three or more years, though the sampling was more biased to picking respondents who had been in the community for five years from 2006 to 2011, in order to measure real change in terms of performance in the water supply and sanitation situation over the five year period.

Twelve (12) informants were selected purposively from different institutions in Lusaka District. Purposive sampling was used to select respondents from water relevant institutions targeting informants vested with information of importance to this study. Six (6) officials were selected from LWSC and the Chaisa Water Trust; and another 6 from government ministries and departments directly and/or indirectly involved in the water sector. Cooperating Partners also formed part of the institutional sources of information.

**DATA COLLECTION**

**Household Questionnaire Administration**

The household questionnaire was administered orally to the water users in Kalingalinga, Chaisa, Northmead, Handsworth, Kabwata and Chelstone communities and responses recorded in the questionnaire format. Each questionnaire lasted for about twenty minutes. Effort was made to get views from various age groups and both sexes. The study had a 100 percent response rate because non responses from the sampled population were replaced by available households and/or respondents who met the criteria for selection. The household questionnaire is given in Appendix two (2).
Questionnaire Administration to Institutional Sources of Information

Specific questionnaire (Appendix 3) was administered to LWSC and Chaisa Water Trust officials to capture their perception of performance in their service provision.

Oral interviews with other institutional sources were conducted using pre-prepared institutional questionnaire (Appendix 4) with representatives from various organisations and government departments listed below:

1. National Water and Sanitation Council (NWASCO)
2. Ministry of Energy and Water Development (MEWD) – Department of Water Affairs (DWA)
3. Ministry of Local Government and Housing (MLGH) – Department of Housing and Infrastructural Development (DHID)
4. Lusaka City Council (LCC)
5. Devolution Trust Fund (DTF)
6. Danish Development Assistance (DANIDA)

These were to identify the performance of water supply and sanitation in the study areas, establishing specific roles offered by various institutions in water supply and sanitation and problems encountered in water supply and sanitation service provision.

Secondary Data and Observation

Secondary data was obtained from relevant literature, including publications and reports on performance of the water supply and sanitation sector. Literature was obtained from libraries and archives of the government ministries and departments, NWASCO and also from the internet.
Observation of the water supply situation on the ground was undertaken to verify some of the responses given.

**DATA ANALYSIS**

Data analysis was done using quantitative methods. All information obtained from the questionnaires was recorded in excel sheets to analyse quantitative data. Excel analysed all responses of the questionnaires to bring out statistical representation of data in frequency tables and figures. Descriptive and inferential statistics were calculated to describe the responses and test the significance of associations between relevant variables. However, all information was linked to field observations during the time of research.

**LIMITATIONS TO THE STUDY**

It was challenging to find households having lived in the same community for five years from 2006 to 2011 because of continuous migration of Lusaka residents in rented houses. However, effort was made to replace households that did not meet the selection criteria of having lived in a community with those that met the criteria.
CHAPTER TWO

OVERVIEW OF THE WATER SUPPLY AND SANITATION SECTOR IN ZAMBIA AND LOCATION OF STUDY

WATER SUPPLY AND SANITATION SECTOR IN ZAMBIA

In the last two decades, the Zambian water sector has seen significant changes in the institutional and legal arrangements which started at the beginning of 1990. The Public Service Reform Programme (PSRP) that was launched in 1993 restructured the Ministry of Energy and Water Development (MEWD) with the aim of creating a lean, cost effective and efficient public service that would deliver quality services to the public. The reform of water supply and sanitation in Zambia was instigated by the National Water Policy (NWP) of 1994 whose main aim was to “promote sustainable water resources development with a view to facilitating an equitable provision of adequate quantity and quality of water for all competing users at acceptable costs and ensuring security of supply under varying conditions” (MLGH, 2008). A new institutional framework for the provision and regulation of water supply and sanitation services was approved by Cabinet in 1994, which resulted in the passing of the Water Supply and Sanitation Act in 1997 (GRZ, 2008). Cabinet decision clearly stated that “all water resources management functions were a responsibility of the Department of Water Affairs (DWA) in the Ministry of Energy and Water Development (MEWD), while functions related to provision of water supply and sanitation services in the urban, peri-urban and rural areas were a responsibility of Local Authorities under the overall supervision and support from the Ministry of Local Government and Housing (MLGH)” (NWASCO, 2004). Thus, the MEWD as the lead ministry in the sector was responsible for overall policy and water resources management, while responsibility for water supply and sanitation services was put under the Ministry of Local Government and Housing (MLGH).
In reforming MEWD, the NWP of 1994 laid guidelines under which the reorganisation of the sector would go. The reforms were to be carried out in two phases; the first phase was for the reorganisation of the water supply and sanitation sub-sector and the second phase was the repeal of the Water Bill of 1949 and replacing it with the new WRM Act (GRZ, 2008). The following were two of the seven guiding principles related to separation and allocation of functions between the MEWD and MLGH as outlined in the policy document:

i. **Sector Principle 1**: Separation of water resources management functions from water supply and sanitation functions; and

ii. **Sector Principle 2**: Separation of regulatory functions and executive functions within the water supply and sanitation sector.

Key outputs of sector principle 1 and sector principle 2 are summarised in Table 1.

Table 1: Key outputs and progress made in the Water Sector, Zambia

<table>
<thead>
<tr>
<th>SUB SECTORS</th>
<th>OUTPUTS AND PROGRESS MADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Resources Development and</td>
<td>• Nation Water Policy (1994)</td>
</tr>
<tr>
<td>Management</td>
<td>• Transfer of water supply and sanitation function from MEWD to MLGH in 1999</td>
</tr>
<tr>
<td></td>
<td>• Water Resources Action Programme (2002)</td>
</tr>
<tr>
<td></td>
<td>• Draft National Water Policy (2007)</td>
</tr>
<tr>
<td></td>
<td>• Draft IWRM Implementation Plan (2007)</td>
</tr>
<tr>
<td></td>
<td>• Transfer of 46 water services schemes as well as the responsibility for rural water</td>
</tr>
<tr>
<td></td>
<td>supply and sanitation (RWSS) from MEWD to local authorities under the</td>
</tr>
</tbody>
</table>
supervision of MLGH (1997)
- Establishment of NWASCO in 2000
- Establishment of Department of Infrastructure Support Services (DISS) in the MLGH to improve infrastructure investment
- Establishment of 10 Commercial Utilities (CUs) for urban/peri-urban water supply and sanitation
- Operationalisation of the Devolution Trust Fund (DTF) for the facilitation of extending services to low income urban areas (2002)

Rural Water Supply and Sanitation
- Establishment of RWSS Unit in DISS in 2003
- Adoption of the RWSS Institutional and Financial Framework in 2004
- Development of National Rural Water Supply and Sanitation Programme, 2006

Source: GRZ, 2008

Through the first phase of the reform process, the water supply and sanitation sub-sector was transferred from the Department of Water Affairs (DWA) in MEWD to the Department of Infrastructure and Social Services (DISS), now known as the Department of Housing and Infrastructural Development (DHID) in the MLGH. The DWA remained with the responsibility of water resources management, while DHID upheld the responsibility of water supply and sanitation service provision. This was achieved by delegating water supply and sanitation service provision to the Local Authorities and private enterprises. By 1997, the modalities of the transfer of 46 township water supply schemes, which were under the DWA were finalised and all
these schemes were transferred to respective Local Authorities by the year 2000 (GRZ, 2008). Thus the implementation of sector principle 1 was achieved.

Another aspect of the first phase of the water sector reforms was the establishment of eleven commercial water utility companies (Lusaka, Luapula, Chipata, Northern, North-Western, Western, Kafubu, Chambeshi, Mulonga, Nkana and Southern) under the supervision of the Local Authorities to provide water and sanitation services. According to the Water Supply and Sanitation Act (1997), Local Authorities are obliged to provide water supply and sanitation services to the areas under their jurisdiction (GRZ, 2008). In the Local Government Act No. 22 of 1991, the Local Authorities are also empowered to make by-laws, set standards and guidelines for the provision of services. According to this Act the Local Authorities operate under the control of the minister responsible for local government (presently Minister of Local Government and Housing).

The Water Supply and Sanitation Act of 1997 also provided for the establishment of a regulator – National Water Supply and Sanitation Council (NWASCO) to regulate the provision of water supply and sanitation services delivery. As a regulator, NWASCO operates under MEWD to separate its association with MLGH which is responsible for service provision. The analogy to this was given that the ‘policemen’ and the ‘judges’ should not be in the same ministry in order to uphold the rule of law. According to Integrated Water Resources Management (IWRM) principles, water supply and sanitation delivery regulatory function is a water resources management function. This is why NWASCO was made to be in MEWD and water companies in the MLGH (GRZ, 2008).
The water supply and sanitation sub – sector was divided into two components; the Urban Water Supply and Sanitation (UWSS) on one hand and the Rural Water Supply and Sanitation (RWSS) on the other hand. The objective of the UWSS was to provide adequate, safe, and cost effective water supply and sanitation services (MFNP, 2006). The key policy measures with respect to UWSS included:

- Maintaining strategic reserves or stock pile of water treatment chemicals;
- Implementation of a well planned de-linkage of water resource management from water supply and sanitation;
- Development and implementation of a National Water Conservation Strategy;
- Creating an autonomous body to review and oversee the tariff structure of UWSS sector;
- Providing sufficient central government grants for operation and maintenance of UWSS schemes;
- Encourage investment in the rehabilitation of UWSS schemes;
- Carrying out investigations regarding regionalisation of operation and management of UWSS schemes;
- Formulating a well articulated training programme which addresses basic needs of UWSS sector;
- Enacting and enforcing Council by laws and any other existing pieces of legislation to prevent water pollution;
- Establishing a Water Sector Devolution Trust Fund to assist the transformation of local urban water and sanitation operation into commercial enterprises;
- Establish and implement tariffs based on the principle of fairness and equity;
- For consumptive uses of water such as domestic and industrial use, the pricing formula for setting out tariffs should take into account the replacement costs, operational costs, incentive for efficiency, reliability and environmental standards and return on investment (MLGH, 2008).
In so far as RWSS was concerned, the National Water Policy aimed at “increasing accessibility to safe drinking water and sanitation facilities for the rural population of Zambia” so as to achieve the overall national goal of “universal access to safe, adequate and reliable water supply and sanitation services” (MLGH, 2005). The key policy measures with respect to RWSS included:

- Ensuring that RWSS programmes were community based;
- Developing a well-defined investment programme for sustainable RWSS;
- Promoting appropriate technology and research activities in RWSS;
- Developing an emergency and contingency plan to mitigate impacts of drought and floods in rural areas;
- Developing a cost recovery approach as an integral part of RWSS to ensure sustainability;
- Development and implementation of a well-articulated training programme (MLGH, 2005).

OVERVIEW OF THE STUDY AREA

Lusaka District is situated in Lusaka Province in the central part of Zambia and lies between latitudes 15° to 30° south of the Equator and longitudes 10° to 28° east of the Greenwich Meridian (MFNP, 2005). The district shares boundaries with four other districts namely Chongwe, Chibombo, Kafue and Mumbwa.

Administratively, Lusaka District is subdivided into seven (7) constituencies and thirty-three (33) wards (Figure 1) and covers a total area of 360Km² (MFNP, 2005).
Population census report of 2000, reported that total population for Lusaka District was at 1,084,703 (CSO, 2003). The 2010 preliminary census report of Population and Housing reports that, total population in Lusaka District are at 1,742,979 (CSO, 2010). The annual growth rate for Lusaka District was at 4.9 percent in 2000 – 2010 inter censusal period. Currently, population density stands at 4,841.6 persons per square kilometre.
Economically, the general populace of Lusaka District engages in entrepreneurship, selling household groceries and food at the main market centres, small makeshift structures and on the street. A larger part of the population engages in blue collar jobs, offering paid labour as gardeners, maids, shop keepers and casual workers. Only a small fraction of the population in Lusaka District has white collar jobs.

MAIN CHARACTERISTICS OF THE STUDY AREAS

The study sites in Lusaka District are Northmead, Handsworth, Chelstone, Kabwata, Kalingalinga and Chaisa (Figure 2), and are discussed in somewhat detail below.

NORTHMEAD AND HANDSWORTH

Northmead and Handsworth areas are located along Great East Road and are deemed among the high income areas. The two communities are characterised by good housing units with all basic services such as water supply, sewerage, storm water drainage and waste disposal in place. Road networks for the two communities are favourably good. Northmead and Handsworth have low population densities.

CHELSTONE AND KABWATA

Chelstone and Kabwata areas are deemed medium density areas. The two communities are deemed middle income areas. They are characterised by favourably good housing units and improved road networks with feeder roads, leaving a lot to be desired. Kabwata and Chelstone have access to basic services such as water and sanitation, yet running water is not guaranteed throughout the day. The communities have extended housing units in the outskirts of the periphery with most houses built
by private individuals. This has put a strain on water supply and sanitation service provision. The majority of individuals with newly built housing units in the periphery of the communities resort on self supply of water and sanitation. This is mainly through drilling of boreholes and provision of “on-site” sanitation systems.

**KALINGALINGA AND CHAISA**

Kalingalinga and Chaisa Compounds are informal, largely unplanned areas with relatively high population densities and deemed as low income areas. Basic services such as water supply, sewerage, roads, storm water drainage and solid waste disposal are inadequate and/or completely lacking (MLGH, 2008). The Compounds are characterized by poor housing units and toilet facilities, high levels of unemployment, especially among the youth, and high levels of poverty. Water access is mainly at communal taps.
Figure 2: Map of Lusaka District showing locations of the study sites

Source: Generated by Author using Arc-GIS Software
CHAPTER THREE

WATER SUPPLY AND SANITATION COVERAGE PERFORMANCE

This section presents and discusses findings of the study assessing performance of water supply and sanitation coverage in the study areas.

WATER SUPPLY COVERAGE

Of the 120 households interviewed in the study areas, results show that 99.2 percent used tap water for drinking in 2006, where as 98.3 percent was recorded for 2011. The high frequency in use of taps with standpipes as the main source of water for drinking in the study areas was because LWSC and the Water Trusts had a water reticulation system that supplied water to households and also to communal taps in compounds (Figures 3 and 4).

Figure 3: Tap stand in Kalingalinga Compound of Lusaka District, Zambia

Figure 4: Household tap in Northmead residential area of Lusaka District, Zambia

Source: Pictures by Author
Of the 99.2 percent of households accessing water for drinking from taps with stand pipes in 2006, 64.3 percent used taps as single users whereas 8.3 percent accessed tap water collectively with other people in private households and 26.7 percent relied on communal taps (Figure 5). Only 0.8 percent of the households interviewed used deep protected wells for water access.

Generally, recognised and demarcated settlements, within the jurisdiction of LWSC, including the Water Trust, are provided with water supply and sanitation, as provided for by the Water Supply and Sanitation Act of 1997. Yet, with the increase in population and expansion in housing units outside the planned supply areas, water supply and sanitation service provision becomes a problem. As a result, more people come up with private water supply initiatives such as sinking of boreholes and digging of wells to get access to water. Still, these are in the minority as evidenced by this study (Figure 5).
Results of the study depicting the period for 2011 found that of the 120 households interviewed, 98.3 percent accessed water for drinking from taps with stand pipes (private or communal). Of this percentage, 68.3 were single tap users. Where as the percentage of single water users was at 64.2 in 2006 the percentage for this group rose to 68.3 percent in 2011 (Figure 6). This signifies an increase of about 7 percent of households accessing water as single users between 2006 and 2011.
Results of the study also show that 4.2 percent of the households accessed water collectively with other households from privately owned taps and 25.8 percent accessed drinking water from communal taps (Figure 6).

Where as multiple water users accessing water collectively with other households were at 8.3 percent in 2006, in 2011, the percentage for this group was at 4.2 percent. This result suggests that there was a reduction of over 90 percent of households relying on other private households for water between 2006 and 2011. Reduced reliance on other households for water access indicates that more water infrastructures had been made available for the people to use and water supply coverage improved in the study areas. The scenario of improved water supply coverage can be attributed to measures and initiatives put in place by the Zambian
government and Cooperating Partners to improve water access for the people of Zambia. Simply put, other than the primary service providers offering water and sanitation services to communities, other stakeholders and Cooperating Partners (CPs) such as Care International, DANIDA and JICA assisted, through community water projects, to increase coverage and access to water, especially in low income communities. For instance, Denmark, through the Danish International Development Assistance (Danida), supported the water and sanitation sector through the Water Sector Support Programme (2005 to 2010) under a budget of DKK 245 million which was approximately ZMK 196 billion (GRZ/ Cooperating Partners, 2009). In 2010, Care International, in collaboration with LWSC and Ward Development Committees (WDCs), had been working in Chaisa and other compounds, putting up water tap stands for the general public in communities to access clean water. The project timeline came to an end and tap stands supplying water to the communities had since been handed over to Lusaka City Council (LCC) and were then manned by the Water Trusts in the Communities under the custody of the LCC. Similarly, the Government of the Republic of Zambia (GRZ), through the provisions made in the Water Act No. 28 of 1997, issued a Statutory Instrument No. 50 of 2001 to establish the Devolution Trust Fund (DTF), as a basket fund for extension of service in the low-income areas (NWASCO, 2011). With the help of the DTF fund, more water infrastructures have been put up in low income and/or peri-urban areas to boost access opportunities of water for the communities.

Sources of drinking water by income category were stratified into income levels to show which income category of communities had better access to water in 2006 and 2011. The study found that water consumers in high income areas had better access to tap water and most accessed water privately from within their households (Figures 7 and 8). These accounted for 40 respondents in 2006 and 40 respondents in 2011 out of the 120 households interviewed (Figures 7 and 8). Households in high income
areas mostly accessed water privately within their households because of the orientation by Commercial Utilities towards infrastructure development that favoured high income areas. According to NWASCO, Commercial Utilities tended to concentrate more in high income areas in terms of service provision because there was a higher rate of return on their investments in the development and improvements of water supply and sanitation infrastructure. This orientation had to a large extent not benefited most low income communities, especially those in peri-urban areas (NWASCO, 2011). Results also show that households in low income areas mostly depended on communal sources of water for drinking in 2006 and 2011, accounting for 32 responses in 2006 and 31 responses in 2011 of the 120 households interviewed. Yet no households in high and middle income areas used communal taps to access water in 2006 as well as 2011 (Figures 7 and 8).

Figure 7: Sources of water for drinking in 2006 stratified into income levels of the study areas in Lusaka District, Zambia

![Bar chart showing source of water for drinking in 2006 stratified by income levels.]

Source: Household survey data
Figure 8: Sources of water for drinking in 2011 stratified into income levels of the study areas in Lusaka District, Zambia

Source: Household survey data

Reliance on communal taps by households in low income areas meant that people in this income group faced challenges of easy access to water because people had to queue up for longer hours to get water for household purposes. This implied that there was time wastage on the queue, time which could be used for other productive purposes. On the other hand, households with better access to water within their households spent less time accessing water.

SANITATION COVERAGE

With regards to sanitation, the main toilet facilities used in the study areas were ordinary pit latrines – in low income communities (Figure 9) and flush toilets – in high and middle income areas (Figure 10).
A similar scenario to that of water supply coverage was observed in the numbers of people with access to proper sanitation i.e. flush toilets in the study areas. The study found that 67.5 percent of the respondents used flush toilets for defecation purposes in 2006 whereas 1.7 percent used Ventilated Improved Pit latrines (VIP) toilets. Thirty point Eight (30.8) percent used ordinary pit latrine for defecation purposes (Figure 11).
This result suggests that the majority of the interviewed households used flush toilet facilities than ordinary pit latrines and VIP toilets in the sampled communities. Similarly, more people used flush toilet facilities in 2011, than they used VIP toilets and ordinary pit latrines (Figure 12). Sixty-nine point two (69.2) percent of the respondents mentioned that they used flush toilets for defecation purpose where as 28.3 percent mentioned that they used pit latrines. Only 2.5 percent of the respondents in 2011 mentioned that they used VIP toilet facilities (Figure 12).

Source: Household survey data
Where as 67.5 of the respondents used flush toilets as a source of sanitation in 2006, in 2011, 69.2 percent of the respondents used similar types of toilet facilities. This shows that there was an increase in the number of households accessing proper sanitary facilities between 2006 and 2011. In addition, there was a reduction of about 9 percent of households relying on ordinary pit latrine as a source of sanitary facility between 2006 and 2011, suggesting that more households had better access to proper sanitation by 2011.

However, stratifying types of toilet facilities by income category to show which category of communities had access to proper sanitation in 2006 established that, households in high and middle income areas had better access to proper sanitation.
mainly using flush toilets as compared to households in low income areas which depended mostly on ordinary pit latrines accounting for 35 responses (Figure 13).

**Figure 13: Types of toilet facilities stratified into income levels in 2006, in the study areas in Lusaka District, Zambia**

![Bar chart showing types of toilet facilities stratified into income levels](image)

Source: Household survey data

In 2011, a scenario like that noted in 2006 was observed. Like in 2006, the study established that households in high and middle income areas had better access to proper sanitation and mainly used flush toilets, where as households in low income areas depended mostly on ordinary pit latrines (Figure 14). However, there was a reduction on the number of households using ordinary pit latrine between 2006 and 2011. This translates to 4 households (Figures 13 and 14).
Ordinary pit latrines were the main types of toilet facilities used by households in low income areas with a few households using flush toilet facilities, suggesting that proper sanitation coverage in low income communities was very low and lagged behind that in high and middle income areas (Figures 13 and 14). The bias of improved sanitation coverage in high and middle income areas while low income areas had low coverage suggest inconsistencies in investments of sanitation infrastructure in the communities. The lack of running water for most households prevented households in low income areas to have access to flush toilet facilities. In addition, there was limited space in low income areas to construct individual water reticulation systems due to congested housing units built with no prior proper plan in place. Thus, the challenge of poor toilet facilities being used persisted.

Source: Household survey data
However, efforts had been made by service providers and Cooperating Partners to try and improve sanitation coverage, particularly for low income areas where service levels were extremely low. In Chaisa Compound for instance, a public or communal fee paying toilet had been built to cater for households without toilet facilities within their homesteads. Figure 15 shows an illustration of the fee paying toilet facility in Chaisa Community.

**Figure 15: Fee paying communal toilet facility in Chaisa Compound of Lusaka District, Zambia**

![Fee paying communal toilet facility in Chaisa Compound of Lusaka District, Zambia](image)

*Source: Picture by Author*

Initiatives such as the construction of fee paying communal toilet facilities reduce the advent of the use of ‘flying toilets’ as a means of defecation. Consequently, sanitary
conditions are improved in communities. The issue of space for building toilet facilities which is one of the major problems encountered by people in peri-urban areas, because of the crowded housing units within a small space, no longer becomes a factor. The success, however, of ensuring that households without toilet facilities make use of the fee paying ones can only be achieved with massive sensitisation, because most people would not want to pay for the service. Health and hygiene messages should, therefore, be an integral part in the sensitisation campaigns to link health benefits with the correct use of sanitary facilities. Since the implementation of toilet facilities in Chaisa Compound and educating community members on upholding health and hygiene in their lifestyles, there has been a drop in cases of diarrhoeal diseases and Cholera outbreaks, which without, doubt were attributed to the campaigns and the correct use of toilet facilities in the community (Nyambe et. al, 2010). Similarly, LWSC was promoting the use of good sanitation through the promotion of good sanitary facilities in peri-urban areas and discouraging the use of ordinary pit latrines. In Kalingalinga Compound, for example, a pilot project was launched on August 3rd 2011 to exemplify to the community the kind of toilet facilities that uphold good hygiene (Figures 16 and 17).
The toilet facilities being encouraged were flush toilets with hand washing facilities easily accessible after use of the toilet. Households without running water in low income areas, and with reasonable amount of space for constructing a water reticulation system, were encouraged to apply for connection to the water supply and sanitation reticulation system from LWSC to access such toilet facilities and eliminate the use of unhygienic ordinary pit latrines in the area. In addition, community members with property (landlords) within Kalingalinga would be provided with loans to purchase materials for equipping such kind of toilet facilities. Such loans were going to be organised and made available by LWSC.

Source: Pictures by Author
In conclusion, the assessment found that there was an improvement in terms of water supply and sanitation service provision from 2006 to 2011. There were more people accessing water as single tap users between 2006 and 2011. However, consumers in high income areas had better access to tap water and most accessed water privately from within their households as opposed to households in low income communities that accessed water collectively (at communal taps) with other households.

Similarly, the assessment revealed that there was an improvement in the number of people accessing proper sanitary facilities between 2006 and 2011. Results also revealed that households in high and middle income areas had better access to proper sanitation and mainly used flush toilets as opposed to households in low income areas that depended mostly on ordinary pit latrines for sanitation access.
CHAPTER FOUR

CONSUMER SATISFACTION WITH THE SERVICE

Consumer satisfaction of the water supply and sanitation service offered was another indicator used to measure performance of water supply and sanitation service provision from 2006 to 2011 in the study areas. Consumer satisfaction was measured by assessing hours of water supply at points of connection; number of water supply and sanitation service related complaints; and the perception of water supply and sanitation service bills by water consumers. Consumer satisfaction of the services provided shows enhanced provision of quality service and its assessment is important for the study because it shows whether or not service providers have performed according to standard and/or people’s expectations.

SERVICE HOURS OF WATER SUPPLY

In a questionnaire\(^2\) format, provision was given for household respondents to comment on the number of water supply hours they received on a daily basis at points of connection. Four categories were given to show supply hours i.e. between 18 and 24 hours, 12 to 18, 6 to 12 and lastly, less than 6 hours of supply.

In 2006, results show that 25.8 percent of the 120 households interviewed had 18 to 24 hours of water supply per day, whereas 18.3 percent had water supply for 12 to 18 hours in a day (Figure 18). Further, results show that 31.7 percent had water supply for 6 to 12 hours in a day and 24.2 percent for less than 6 hours.

\(^2\) A household questionnaire used for community respondents
Of the 120 households interviewed, the study found that water supply hours for the study areas in 2011 were mainly from 18 to 24 hours on a daily basis. Thirty-three point three (33.3) percent of the households interviewed had running water from their taps from 18 to 24 hours on a daily basis in 2011, where as 29.2 percent had water supply for 6 to 12 hours daily and 25.8 percent had water supply for 12 to 18 hours on a daily basis (Figure 19). Only 11.7 percent had water supply of less than 6 hours in a day. These results suggest that there were more people with access to water for longer hours in 2011 than in 2006.

Whilst results show that in 2006, 25.8 percent of the population had access to water supply for 18 to 24 hours per day, in 2011 it shows an increase in the number of people accessing water for the same number of hours in a day. This accounts for 33.3
percent of the population. Results also show a reduction of people with limited access to water for less than 6 hours in a day. Whilst 24.2 percent of the population had less than 6 hours of water supply access in 2006 in a day, in 2011, only 11.7 percent of the population had less than 6 hours of water supply in a day. This suggests that there was an improvement in performance of water supply regarding hours of water supply in the study areas. This could be attributed to the measures put in place by the regulating agency to ensure that service providers supplied adequate water to consumers on a daily basis. Of importance, however, was to ensure that customers were not subjected to unplanned or unannounced supply interruptions of sewer shutoffs beyond given limits (NWASCO, 2011). It was recommended that water supply and sanitation service providers endeavoured to inform their customers in reasonable time of interruption (NWASCO, 2011).

Figure 19: Hours of water supply on a daily basis in 2011 in the study areas, Lusaka District, Zambia

![Bar chart showing hours of water supply on a daily basis in 2011 in the study areas, Lusaka District, Zambia](image)

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Respondents (N=120)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 hours</td>
<td>11.7</td>
</tr>
<tr>
<td>6 - 12 hours</td>
<td>29.2</td>
</tr>
<tr>
<td>12 - 18 hours</td>
<td>25.8</td>
</tr>
<tr>
<td>18 - 24 hours</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Source: Household survey data
The number of hours of water access on a daily basis was stratified into levels of income for the study communities to show which income categories of communities had more or less hours of water supply in 2006. Of the 120 households interviewed, 9 and 28 respondents in low income areas mentioned that they were accessing water for less than 6 hours and between 6 and 12 hours on a daily basis, respectively (Figure 20). Further, 11 and 2 respondents in middle income areas mentioned that they were accessing water for less than 6 hours and between 6 and 12 hours on a daily basis, respectively and 9 and 8 households interviewed in the high income areas had 6 hours and between 6 and 12 hours of water supply in a day, respectively.

**Figure 20: Hours of water supply on a daily basis stratified into income levels of communities in 2006 in the study areas of Lusaka District, Zambia**

![Bar chart showing water supply hours by income level](chart.png)

<table>
<thead>
<tr>
<th>Number of Respondents (N=120)</th>
<th>High income area</th>
<th>Middle income area</th>
<th>Low income area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 6 hours</td>
<td>9</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>6 - 12 hours</td>
<td>8</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>12 - 18 hours</td>
<td>15</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>18 - 24 hours</td>
<td>8</td>
<td>22</td>
<td>1</td>
</tr>
</tbody>
</table>

*Source: Household survey data*

Fifteen (15) and 8 respondents in the high income areas had water access of 12 to 18 and 18 to 24 hours, respectively, in a day where as 5 and 22 households in middle
income areas had water access of 12 to 18 hours and 18 to 24 hours in a day, respectively. Only 2 and 1 respondents in low income areas had access to water from 12 to 18 hours and 18 to 24 hours in a day, respectively.

In 2011, stratified hours of water supply by income category to show which category of community by income type had more or less hours of water access show that 29 households in low income areas mentioned that their supply hours of water were between 6 and 12. In the middle and high income areas, there were only 1 and 5 households, respectively, accessing water for the same number of hours (Figure 21).

Additionally, results show that high and middle income areas had considerably more hours of water supply; from 18 hours to 24 hours. Fifteen (15) respondents in high income areas mentioned that they had water supply of 18 to 24 hours a day. Similarly, 23 households interviewed in the middle income areas mentioned that they had water supply of 18 to 24 hours in a day. Only 2 households in the low income areas mentioned that they had water supply at points of connection for 18 to 24 hours a day (Figure 21).
Compared to 2011, supply hours were low in 2006 for high income areas. Only 8 households mentioned that their water access was between 18 and 24 hours in 2006 whereas in 2011, 15 households mentioned that their supply hours were between 18 and 24 hours in a day. This result shows an improvement in supply hours for households in high income areas between 2006 and 2011.

Generally, between 2006 and 2011, results suggest that service providers in the study areas were providing water for a good number of hours on a daily basis. The majority of households in the high and middle income areas had water access from 18 to 24 hours daily whereas low income communities had at least 12 hours of water supply. This kind of performance is commendable. Such commendable service is further
supported by NWASCO who came up with timeframes to show suitable supply hours for each community type. As provided for in their brochure, NWASCO (2011) stipulated that service providers should aim at providing their customers of a certain daily time average of water supply at connections, as well as the operating hours of public service points. The targets of water supply hours were such that big towns should have 24 hours of water supply, while small towns should have at least 16 hours of water supply. The time recommended for public standpipes posts, particularly in peri-urban areas or the so called low income communities, on a daily basis, was at least 12 hours (Table 2).

### Table 2: Suitable water supply hours as recommended by NWASCO

<table>
<thead>
<tr>
<th>Area</th>
<th>Service Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big towns</td>
<td>24 hours</td>
</tr>
<tr>
<td>Small towns</td>
<td>16 hours</td>
</tr>
<tr>
<td>Public stand posts</td>
<td>12 hours</td>
</tr>
</tbody>
</table>

*Source: NWASCO, 2011*

This recommendation was adopted in the study areas of Lusaka District where high and middle income areas had access to water for 18 to 24 hours in a day, while low income communities had access to water for at least 6 to 12 hours in a day. This guidance considers water needs and requirements for particular areas and how its absence can impact on economic activities. Service providers also need to take into account the costs and benefits of running their companies. Whilst offering a service, their profit making should not be compromised to an extent that sustainability of such companies becomes a predicament. One way of ensuring that service providers do not operate at a loss is by ensuring that water supply for high and middle income
areas is 24 hours on a daily basis. These communities pay higher tariffs on the “rising block tariff system”\(^3\) where service providers make profit. The situation is different in low income communities where water consumption is billed at a “social tariff rate”\(^4\).

However, in cases where there was still inadequate supply hours in high and middle income areas, it was mainly during the dry season when ground water sources begun to deplete or dry out. To resolve that problem, short term and long term measures had been put in place, yet others were under way to improve the erratic water supply situation during the dry season. For example, some booster pumps had been put up at the University of Zambia in the Handsworth area to improve the erratic water supply situation. Other measures that were under way suggested drilling more boreholes for the University of Zambia and Handsworth community within the University grounds. The surplus water produced could be supplied to neighbouring communities with water deficiencies. This proposition, however, was yet to be approved. But once enacted, the proposition has potential to ensure 24 hour access of water supply for Handsworth and its surrounding communities.

Service hours were fewer in low income areas, as compared to the high and middle income areas because of the nature of access opportunities available for communally owned water resources. Other than the recommended hours of supply by NWASCO (2011), less hours of water access were worsened by the poor work culture of personnel manning public standpipes in low income areas. The challenge of access was basically on poor management and failure to adhere to the 12 hours stipulated time to provide water on a daily basis. Tap attendants in the low income communities were accused of personalising the communal tap stands and keeping them locked for

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\(^3\) These are three different categories used to calculate tariff rates per meter cubic

\(^4\) This is a subsidized rate of paying for the service
most of the time in a day. Figures 22 and 23 show locking devices used on public tap stands used to access water in low income areas such as Chaisa and Kalingalinga.

**Figure 22: Locked tap in Kalingalinga Community of Lusaka District, Zambia**

**Figure 23: Locked tap in Chaisa Community of Lusaka District, Zambia**

Sources of information from the Water Trust in Chaisa Community and LWSC servicing Kalingalinga community, however, revealed that the stipulated time frame by their organisations of water supply hours in low income areas per day was between 06:00 hours in the morning to 12:00 hours at noon. The afternoon schedule was said to be from 16:00 hours to 18:00 hours on a daily basis. In total, Chaisa Water Trust and LWSC stipulate 8 hours of water supply in a day. However, it was heard that tap attendants did not follow the stipulated times and “unlocked” the tap
stands for fewer hours of about 3 to 4 hours in a day. Working hours were violated in the sense that tap attendants used working hours to attend to their personal matters. This challenged access to water for the people in low income communities and hours of access were severely reduced. As a consequence, people were forced to seek access to water elsewhere creating another problem of having to cover longer distances than necessary. In Kalingalinga community, people opted to cross over to Petroda Gas Station in Kabulonga area in search of water. In Chaisa community, people resorted to use of shallow wells for their supply.

Additionally, long queues were formed at communal taps in the event that water supply was made available at connection points because many would have no water stored at home. The limited time given to access water meant many households could only obtain little water for the day and other water needs remained unmet. Time spent accessing water was, therefore, much longer than necessary and less was spent on productive activities. As a result, poverty eradication, especially in low income communities, could still be a problem, particularly because people still concentrated on access to the most basic requirements of life’s survival rather than putting their focus engaging in economic activities to earn income. Women and children, in most cases, were greatly affected by the lack or inadequate supply of water because they had been tasked “traditionally” with the responsibility to ensure that there was water available in homes.

Concisely, in highly congested areas and where income levels were low for the communities, building water supply reticulation infrastructure for every house was not achievable, as already highlighted in the preceding sections. Firstly, it was not economically viable on the part of the water supply and sanitation service providers

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5 It is part of African tradition to see women and children more involved in searching for water and ensuring its availability for domestic use in homes, than the males.
and secondly, space for infrastructural development would be a challenge due to unplanned closely built housing units found in low income areas or peri-urban areas. Though most settlements in low income areas such as Chaisa and Kalingalinga have since been legalised, the houses and infrastructure constructed prior to the planning of the communities still challenge the development of water infrastructure. Therefore, a few communal taps to be accessed by a larger number of people are seen as a better option to ensure people’s water access opportunities are sustained. What is important in this case is to improve the work culture that deprives water consumers of their well deserved rights to water for a certain suitable number of hours in a day.

**ADEQUACY OF SERVICE HOURS OF WATER SUPPLY**

Analysis was done to examine whether or not the water supply hours were sufficient or adequate for consumers to meet all their household requirements (such as drinking, washing and small household gardening). Of the 120 households interviewed, the study established that in 2006, 39.6 percent said the supply hours were adequate to meet their household requirements whereas 60.4 percent mentioned that the supply hours of water were not adequate to meet their household needs (Figure 24).
In 2011, the study found that the water supply hours were much more adequate to meet user’s requirements, as compared to the situation in 2006 which show low adequacy levels. Fifty-eight point three (58.3) percent of the respondents mentioned that water supply hours were sufficient to meet their water needs in 2011, whereas 41.7 percent interviewed mentioned that water supply hours were insufficient to meet their daily requirements (Figure 25).

*Source: Household survey data*
During the period of 2006 to 2011, we deduce that there was an improvement with regards to the way water needs were met. Where as 39.6 percent of the households affirmed that water supply hours were sufficient to meet their needs in 2006, this percentage grew to 58.3 in 2011. In fact, there was an increase of about 47 percent of households, mentioning that water supply hours were sufficient to meet their household requirements between 2006 and 2011. The increase in numbers of hours and improved coverage of service provision, as discussed in the earlier sections, has, to a great extent, ensured that the majority of households in the sampled communities meet their water needs. Availability of water necessary to meet all requirements has potential to improve livelihoods and the well-being of users. The majority of poor households throughout Zambia depend on activities such as subsistence farming, beer brewing, brick making and other handicrafts that require water use. These activities also provide a much needed source of income. Better access for domestic
water and agricultural use is likely to result in improved outcomes for poor households, by improving household productivity and health and releasing labour into the household system, stimulating household income growth (UNESCO, 2009).

The adequacy of water supply hours to meet water user needs by income category were stratified into three income levels to show which income category of the communities perceived supply hours to be sufficient or not, between 2006 and 2011. From this analysis, results show that of the 120 households interviewed, 37 households in the low income areas mentioned that water supply hours were insufficient to meet their household needs in 2006 (Figure 26). This group was in the majority of households who mentioned that water supply hours were not sufficient to meet their water needs. Public standpipes or communal taps used to access water by low income communities were manned by appointed individuals who were given the mandate by LWSC and the Water Trust to “unlock and lock” taps for a certain number of hours. This created a challenge of access in the event that such individuals were absent or for some reasons did not unlock the taps of water at points of connection in time.
Figure 26: Adequacy of water supply hours to meet all water user needs in 2006 stratified into income levels of the study communities of Lusaka District, Zambia

![Bar chart showing water adequacy by income level.]

Source: Household survey data

Similarly, the adequacies of water supply hours were stratified into income categories to show which income category perceived water supply hours to be adequate or not in 2011. Similar to the situation in 2006, households in low income areas perceived water supply to be inadequate accounting for 26 responses (Figure 27). However, there were more households in low income areas in 2006 that perceived water supply hours to be inadequate as compared to the number in 2011. Very few households in low income areas, accounting for 3 responses perceived water supply hours to be adequate in 2006 (Figure 26).
A further examination was done to determine whether or not there was a perceived difference in the water supply situation between 2006 and 2011 in terms of hours of water supply (Figure 28). Thirty-four point two (34.2) percent of the households interviewed perceived an increase in supply hours from 2006 to 2011 whereas 6.7 percent of the respondents perceived a reduction in water supply hours between 2006 and 2011. The study also found that, 36.7 percent of the respondents mentioned that there was no difference in supply hours between 2006 and 2011 because supply hours had always been favourable and 22.5 percent of the respondents perceived no difference in water supply hours between 2006 and 2011 because water supply had always been low (Figure 28).

Source: Household survey data
These results suggest that the majority of the households sampled had better supply hours and to a great extent supply hours had increased. This improvement was as a result of measures put up by the regulator on one hand and on the other hand, initiatives introduced such as putting up water reservoirs, for instance in Chaisa community (Figure 29) through the PPURSS Project. The water reservoir stored adequate water that was made available to consumers as required. This explains the high prevalence of households mentioning that supply hours had increased as of 2011, as compared to the supply situation in 2006; and there being no difference in supply hours as they had always been good. In high income areas however, no water reservoirs had been put up since the change of companies supplying water for the communities. The same water reservoirs previously used in 2006 were still in use in 2011.

Source: Household survey data
However, the low pressure experienced in communities in 2006 was a factor of reduced supply hours for some households. Whilst it would be a fact that service providers were supplying water for longer hours, other households serviced and connected to the water reticulation system would have no water supply, particularly
during peak\textsuperscript{6} hours of the day when water was on high demand (e.g. during lunch time and in the mornings) due to too many households using water at the same time. In other cases, low pressure would be experienced by households situated on hilly places due to insufficient pressure for water to move against gravity. Nonetheless, few households (6.7 percent) (Figure 28) still complained that water supply hours had reduced from what the situation was in 2006 and what prevailed in 2011.

Water user perceptions were stratified into three income levels to determine differences of user perceptions from different income categories of communities between 2006 and 2011. Of the 120 households interviewed, results show that 20 of those households in low income areas interviewed perceived no difference in supply hours claiming that they always had low water supply between 2006 and 2011 (Figure 30). Only 14 households in low income areas mentioned that supply hours of water had increased between 2006 and 2011.

\textsuperscript{6} Peak hours in this case refer to hours of greatest water needs i.e. during lunch time when water consumers are cooking or in the mid mornings when washing and other household activities were taking place – such as watering lawns and gardens.
In the high and middle income areas, the majority of the households interviewed (accounting for 16 and 25 respondents) mentioned that there was no difference or no change with regards to water supply hours, because their supply hours had always been good. This result suggests that households in high and middle income areas mainly had good water supply situations from 2006 to 2011 compared to households in low income areas whose supply was low during the same period of time. In fact, only a few households in the middle and high income communities, accounting for 3 and 2 respondents, respectively, mentioned that supply hours had reduced between 2006 and 2011.

*Source: Household survey data*
SATISFACTORINESS/ADEQUACY OF SANITATION FACILITIES

Satisfactoriness of toilet facilities in the study areas was assessed by examining whether or not toilet facilities were functioning well or not, between 2006 and 2011. Of the 120 households interviewed, the study revealed that in 2006, 45.9 percent said their toilet facilities were functioning well whereas 54.1 percent mentioned that their toilet facilities were not functioning well (Figure 31).

Figure 31: Satisfactoriness of toilet facilities in 2006 in the study areas of Lusaka District, Zambia

<table>
<thead>
<tr>
<th>Number of Respondents (N=120)</th>
<th>Satisfactory</th>
<th>Not satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>45.9</td>
<td>54.1</td>
</tr>
</tbody>
</table>

Source: Household survey data

In 2006, results show that toilet facilities were generally not functioning in a satisfactory manner. This could be attributed to some facilities being clogged due to inadequate water supply to meet all user needs as evidenced in the preceding section (Figure 24). Proper sanitation is always affected by the availability of water supply
especially for flush toilet facilities. Inadequacy in water supply has negative implications on how the operations of toilet facilities would be in homes. In low income areas, poor structure of toilet facilities (Figure 32) being used for some households lessen levels of satisfactoriness of toilet use. In addition, about 12% of the Lusaka Peri-urban population is completely without access to any form of sanitation facility (Aquatis, 2005). In some areas, it is also a big challenge to construct a pit latrine for lack of space and also due to hostile geological conditions (e.g. rocky areas). The result is digging of shallow pits in some cases and elevating the pit latrines (Figure 33) to increase on the storage capacity of the pits in other cases. The elevated latrines have a disadvantage in that the likelihood that the waste in the pits can mix with the storm water is high. This is very likely especially that the peri-urban areas are very prone to flooding (Gauff Ingeniuere, 2011).

**Figure 32: Example of pit latrine of poor standard used in low income communities of Lusaka District, Zambia**

*Source: Picture by Author*
Figure 33: Elevated pit latrine on a rocky area under construction in a low income area of Lusaka District (Note: the shallow pit which cannot be deepened due to presence of rocks.

Source: Photo by Gauff Ingeniuere, 2011

In 2011, the study found that the functioning of toilet facilities was much more satisfactory compared to the situation in 2006. Sixty two (62) percent of the respondents mentioned that their toilet facilities were functioning satisfactorily in 2011 whereas 38 percent interviewed mentioned that toilet facilities were not functioning satisfactorily (Figure 34).
Between 2006 and 2011, we establish that there was an improvement in the satisfactory levels of toilet facilities in the study areas. This could be attributed to improvements in the structure of pit latrines being used in low income areas resulting from hygiene messages frequently communicated to communities, that emphasis the importance of using improved toilet facilities. Through such sensitisation messages, some pit latrines were improved in structure to improve levels of satisfaction (Figure 35). Others were changed from pit latrine to flush toilet facilities within low income communities (see Figures 16 and 17 in the preceding sections) to improve levels of satisfaction.

*Source: Household survey data*
In high and middle income areas, including the low income areas, the launch of the National Urban Water Supply and Sanitation Programme (NUWSSP), to achieve Millennium Development Goals (MDGs) for water supply and sanitation and the targets set in the Zambia’s vision 2030 of “100 percent access to safe water supply and sanitation for all users for wealth creation and improved livelihood by 2030” (MLGH, 2005) tremendously improved toilet facilities being accessed. Through this pronouncement, the government begun shifting from considering sanitation as a
personal\textsuperscript{7} issue and considered it as a national concern where a number of households have since been connected to the sewer lines. In low income areas, improved toilet facilities have been constructed (e.g. Figure 35). This followed a realisation that the cost of not having a toilet and not practicing good hygiene led to loss of productivity, preventable health costs, high morbidity, low dignity and privacy and poor social development (MLGH, 2005).

Levels of satisfaction of toilet facilities used were stratified into three income levels to determine satisfactory levels among different income categories of communities between 2006 and 2011. Of the 120 households interviewed, results show that 27 of the households in high income areas interviewed in 2011 mentioned that toilet facilities being used were satisfactory whereas only 13 households mentioned that their toilet facilities were unsatisfactory (Figure 36). In low income areas, there were only 10 households mentioning that their toilet facilities were satisfactory whereas the majority (30) mentioned that their toilet facilities were unsatisfactory.

\textsuperscript{7} Previously individuals had the ultimate responsibility to choose the kind of sanitation options and access to use as a household. Most recently, the government is improving its budgetary allocation to improve sanitation access for the Zambia citizens.
In 2011, of the 120 households interviewed, results show that 24 of the households in low income areas interviewed in 2011 mentioned that toilet facilities being used were unsatisfactory where as only 10 households in high income areas mentioned that their toilet facilities were unsatisfactory (Figure 37). Twelve (12) households in middle income areas mentioned that their toilet facilities were unsatisfactory.
Figure 37: Satisfactoriness of toilet facilities in 2011 in the study areas of Lusaka District, Zambia

<table>
<thead>
<tr>
<th></th>
<th>Satisfactory</th>
<th>Not satisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>High income area</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Middle income area</td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td>Low income area</td>
<td>16</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: Household survey data

Overall, commendable improvements were noted in terms of levels of satisfactoriness of toilet facilities in use from 2006 to 2011.

When it comes to the conveyance system\(^8\) of waste being generated, however, and final treatment of waste, there are a lot of inadequacies related to the sanitation system network. Of course, this is not the kind of information laymen, like household users would know of. Blockages and breaking of old conveyance pipes occur underground which lead to spillage of untreated waste into the ground creating a health threat to surrounding communities and poses damage to the environment.

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\(^8\) Conveyance system is a network of pipes that collects and transports waste water from the points of generation to treatment plants.
There is also a tendency for waste treatment plants to be hydraulically and organically overloaded. Hydrological overloading occurs when treatment plants are made to cater for waste not originally catered for at the time of constructing the plant. A good example is with the Kaunda Square stabilisation ponds. These ponds are hydraulically overloaded due to the connection of the Presidential Housing Initiative (PHI) residential area which waste discharges in the Kaunda Square ponds. This means that more sewage is now being channelled to these ponds than originally planned at the time of construction. Ideally, capacity of treatment plants is 65,000m$^3$/day (LWSC, 2011). However, the average volume of sewerage reaching treatment plants per day is 110,000m$^3$ (LWSC, 2011), almost double the required amount. When this happens, the effluent from the ponds is discharged into the Ngwerere River virtually untreated to create room for more waste to be contained in the ponds. Consequently, retention period or treatment period of waste is lessened due to the continuous inflow of waste from un-catered for housing units.

Additionally, the conventional wastewater treatment plant at Manchinchi which uses trickling filter systems is also old and dilapidated (Figures 38 and 39). Much of Zambia's sanitation infrastructure was built between independence in 1964 and the mid-1970s at a time when the country’s economy was strong and export earnings from copper mining were high. Since that period, nothing much has been done to improve infrastructure at the waste treatment plants.
Figure 38: Dilapidated waste water treatment plant with trickling filter systems at Manchinchi in Lusaka District, Zambia

Source: Picture by Author

Figure 39: Dilapidated waste water treatment equipment at Manchinchi in Lusaka District, Zambia

Source: Photo by Author
With the already challenged waste water treatment facing service providers, the challenge is aggravated by everyday theft of manhole covers in different areas of Lusaka District. The situation with missing manhole covers poses a challenge to the system especially during the rainy season when too much water is made to enter the sewer lines. Sewer lines are designed for a certain amount of water at each specific period of time, but when manhole covers are missing, more than required amounts enter this sewer system creating a challenge of water retention and treatment at the receiving treatment plant.

The water borne sewerage system in Lusaka District caters for only 30% of the area supplied with water by LWSC (Gauff Ingenieuere, 2011). Areas supplied with water but not connected to the sewerage system have options of the use of septic tanks. However, this sanitation option also has challenges with waste disposal when septic tanks are filled up because household owners are left with the responsibility of finding tankers to offload the waste from the septic tanks. This can be inconveniencing and cause air pollution of neighbouring households. Further, the use of septic tanks threatens ground water sources with contamination, a situation that can lead to break out of pathogenic diseases such as Cholera.

CONSUMER COMPLAINTS OF SERVICE PROVISION

Water supply and sanitation service related complaints and their methods of resolution were used to measure performance of water supply and sanitation service providers. Water consumers at one time or another may experience dissatisfaction with the level of service and may wish to raise complaints with their service provider. Types of complaints range from erratic or no water supply, sewer blockages, leakages in pipes and at meter, perceived undue billing, late delivery of
bills, non reading of the meter, customer care, low pressure and unjustified disconnections among others.

This study assessed customer complaints of water supply and sanitation related problems from 2006 to 2011 and established that of the 120 households interviewed, 52.5 percent of the respondents had complained about water supply and sanitation related problems where as 47.5 percent had not raised any complaints related to water supply and sanitation to their service provider from 2006 to 2011 (Figure 40).

**Figure 40: Consumer complaints of water supply and sanitation related problems from 2006 to 2011 in the study areas of Lusaka District, Zambia**

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Source: Household survey data
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This result suggests that more than half of the households sampled had at a certain point between 2006 and 2011 been dissatisfied with the service they were receiving and complained about it. This was further supported by NWASCO who assert in their Urban and Peri-Urban Water Supply and Sanitation Sector Report, that customers have the right to complain when they were not receiving the service guaranteed by the provider and hence this was a critical indicator in measuring customer satisfaction. Providers were required to keep a record of customer complaints and resolve them within a stipulated timeframe (NWASCO, 2010).

Consumer complaints were stratified into income categories to show which community by income type had the most or the least complaints raised. Results show that households in the high income areas complained the most about the service provision they received in their households. This accounted for 26 responses (Figure 41). Eighteen (18) and 19 households in the middle and low income areas, respectively, complained about their water supply and sanitation service provision between 2006 and 2011 (Figure 41).
Despite only slightly above 50 percent of the households having complained about water supply and sanitation related problems, there was high knowledge (87.5 percent) of where complaints could be raised and resolved if there was a water supply and sanitation related problem (Figure 42). Between 2006 and 2011, only 12.5 percent of the respondents mentioned that they did not know where they could raise their complaints if they were dissatisfied with the water supply and sanitation service they were receiving from their service provider.
Figure 42: Knowledge of where to lodge complaints of water supply and sanitation related problems from 2006 to 2011 in the study areas of Lusaka District, Zambia

Knowledge of where to raise complaints was high, meaning people knew where they could raise their complaints. Yet the rate of complaints raised was much lower than the level of knowledge. This result suggests that there could be an improvement in service rendered and/or, as suggested by NWASCO (2010), a reduction in a number of complaints could mean that customers were losing confidence in the providers not attending to their complaints. The latter is ruled out because studies done by NWASCO from 2005 to 2011 suggest that the rate of resolution for complaints was above average (NWASCO, 2005-2011).

The knowledge of where people could raise their complaints was stratified into three income levels to determine which community by income category had the most or

Source: Household survey data
the least knowledge of where complaints could be raised. Findings of the study show that 1/4 of the respondents who said they did not know where they could raise their service related complaints were from low income areas (Figure 43).

Figure 43: Knowledge of where to lodge complaints of water supply and sanitation related problems from 2006 to 2011 stratified into income levels in the study areas of Lusaka District, Zambia

Source: Household survey data

Other than falling in the most impoverished stratum, households in low income areas were also deficient of sound educational backgrounds which are basic to the understanding of rights and privileges that they should enjoy as water consumers. For instance, respondents interviewed, such as domestic house workers present at home during the time of the survey, mainly mentioned that they did not know where to complain if they had a water supply and sanitation related problem. As a
consequence there was no chance of knowing where to complain or understand consumer complaints procedure (Figure 44) as stipulated by NWASCO (2008).

The lack of confidence by people with low educational background to face up to people in authority or their service provider is also a problem. Experience has shown that, the less privileged in society tend to take passive roles in activities that affect communities collectively, while complaining silently about problems and they wait on the better offs to take up roles of raising complaints and/or resolutions. As a consequence, such people have continued to be marginalised and lacked knowledge of what takes place within their societies and their well deserved privileges left to be enjoyed by the better offs in society. Good educational background, therefore, is important in ensuring that knowledge of water supply and sanitation issues are known.
Authorities mentioned where people could raise complaints of water supply and sanitation problems were LWSC, the Water Trust and water point care takers. Of the 87.5 percent households who knew where to raise complaints of unsatisfactory service provision, 72.5 percent mentioned that they would complain to LWSC, while...
10.0 percent mentioned that they would complain to the Water Trust. Only 5.0 percent of the respondents mentioned that they would complain to the water point care takers in their area (Figure 45).

Figure 45: Identified authorities where to lodge water supply and sanitation related complaints from 2006 to 2011 in the study areas of Lusaka District, Zambia

Source: Household survey data

Identified causes of water supply and sanitation related complaints in Lusaka District were unfair disconnections, lack or malfunctioning of water meters, turbid water, inadequate water supply coverage, inadequate water supply hours, exaggerated water bills and leakages in pipes.
Of the 120 households interviewed, 14.2 percent complained about inadequate water supply coverage\(^9\) between 2006 and 2011. This was the highest complaint recorded (Figure 46). Exaggerated water bills accounted for 13.3 percent whilst the least complaints of water related problems were lack or malfunctioning of water meters and unfair disconnections to water supply, both accounting for 3.3 percent.

**Figure 46: Causes of water supply and sanitation related complaints between 2006 and 2011 in the study areas of Lusaka District, Zambia**

<table>
<thead>
<tr>
<th>Complain</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfair disconnection to</td>
<td>3.33</td>
</tr>
<tr>
<td>Lack or malfunctioning metre</td>
<td>3.33</td>
</tr>
<tr>
<td>Water being dirty</td>
<td>4.17</td>
</tr>
<tr>
<td>Inadequate water supply</td>
<td>14.17</td>
</tr>
<tr>
<td>Less hours of supply</td>
<td>6.67</td>
</tr>
<tr>
<td>Exaggerated water bill</td>
<td>13.33</td>
</tr>
<tr>
<td>Leaking pipe</td>
<td>7.50</td>
</tr>
<tr>
<td>N/A - Never complained</td>
<td>47.50</td>
</tr>
</tbody>
</table>

*Source: Household survey data*

During the survey, it was heard, in most communities sampled, that their service providers had not prescribed times of water availability and when supply would be interrupted at connection points. Rationing of water supply was also said to have no proper known timetable, hence making it a challenge for consumers to adapt to

\(^9\) This was mainly in terms of limited supply hours and less on actual coverage in terms of space and time.
erratic water supply situations. This increased the frequency of ‘inadequate water supply’ being cited as the most complaint raised to service providers. In addition, the increase in housing units vis-à-vis population was said not to be proportional to supply coverage by service providers. Whilst more housing units were being established, water reservoirs and reticulation systems remained constant. As a consequence, this put a strain on the use of available water from constant storage facilities making it a challenge to have sufficient water for all.

Complaints of exaggerated and/or erroneous water bills also scored highly as the most raised complaints of water supply and sanitation related problems in the study areas. This complaint stemmed from high bills people paid, yet meter reading was not done regularly, in the case of metered households. It was heard during the survey that meter readers seldom carried out the meter reading exercise, yet bills were made available monthly. The difficulty was on understanding how the service bills were derived at. Recommendation was, therefore, made that when meter reading was being done, customers were supposed to be present to carry out their own assessment, and then compare readings at the end of the month to ensure that consumption of water quoted by the service providers corresponded with what the consumer had recorded. This was said to be a solution in reducing contested water bills.

Water bills were also contested if they were high for most of the time yet, water supply continuously erratic.
TURBIDITY OF DRINKING WATER

This study assessed the turbidity\textsuperscript{10} of water consumed to establish whether the water consumed by households was aesthetically pleasing, with no suspended solids, well-aerated, and no unpalatable taste or odour. Ideally, good quality of water for drinking in Zambia is determined by following guidelines by the Zambia Water Standards (ZWS) for drinking water quality (ZS 190: 1990) and also guidelines prescribed by the World Health Organisation (WHO) (1997)\textsuperscript{11} of which the bacteriological parameters are the most important. In this study, the aesthetic parameters were used as a guidance to assess drinking water quality because that was the only parameter households interviewed could recite, especially that the study was of a social nature and also the lack of equipment required to carry out scientific tests of assessing water quality as prescribed by ZWS and WHO. In addition, assessing water quality as prescribed by ZWS and WHO required that prior scientific assessment was done in 2006 to compare findings with those that could have been obtained in 2011 when the survey was conducted. However, it was easy for people to recite the quality of water in terms of turbidity from 2006 to 2011 to compare the levels of turbidity, hence the approach used.

Of the 120 households interviewed, results of the study show that in 2006, 73.3 percent of the respondents mentioned that they accessed clear water for drinking, whereas 19.2 percent mentioned that they accessed unclear water for drinking. Six point seven (6.7) percent of the households interviewed mentioned that they accessed averagely turbid water for drinking (Figure 47).

\textsuperscript{10} Turbidity is the measure of the degree to which the water loses its transparency due to the presence of suspended particulates. The more total suspended solids and the murkier it seems, the higher the turbidity.

\textsuperscript{11} Guidelines recommend that water samples are analysed in terms of physical, chemical and microbiological characteristics (DWAF, 1998).
Where as 73.3 percent of the respondents mentioned that they accessed clear water in 2006, in 2011, this figure rose to 79.2 percent (Figure 48). The study also found that 10.8 percent of the households interviewed mentioned that they accessed unclear or turbid water for drinking in 2011, where as in 2006 this figure was at 19.2 percent (Figure 48). From the findings, we deduce that there was an increase of about 8 percent of households accessing clear water from 2006 to 2011. Results also suggest that there was a reduction of households accessing unclear or turbid water during the same period.

**Figure 47: Turbidity of drinking water in 2006 in the study areas of Lusaka District, Zambia**

![Chart showing turbidity of drinking water in 2006](chart.png)

<table>
<thead>
<tr>
<th>Percent</th>
<th>Clear</th>
<th>Not clear</th>
<th>Average</th>
<th>I don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>73.3</td>
<td>19.2</td>
<td>6.7</td>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>
Figure 48: Turbidity of drinking water in 2011 in the study areas of Lusaka District, Zambia

Source: Household survey data

Turbidity of water consumed was stratified into income levels to determine which community by income category consumed the most turbid or the least turbid water in 2006. Results show that no household in the high income areas consumed unclear water. In fact, more households, accounting for 37 respondents, accessed clear water in high income areas. Thirty (30) and 21 households in the middle and low income communities respectively, accessed clear water in 2006 (Figure 49). However, the most households accessing unclear water for drinking were in low income areas accounting for 15 respondents.
Where as 37 households in the high income areas accessed clear water for drinking in 2006 this figure rose to 39 households in 2011. Increases in numbers of households accessing clear water were also recorded for middle and low income areas between 2006 and 2011. Where as 30 and 21 households accessed clear water in the middle and low income areas in 2006, these figures rose to 33 and 23 respectively, in 2011 (Figure 50). In 2011, of the 10.8 percent households accessing unclear water for drinking, 9 households were from low income areas (Figure 50). No household in high income areas accessed turbid water for drinking. However, only 1 household in high income areas mentioned that they accessed water for drinking which was of average turbidity.
Concisely, results for drinking water quality in terms of turbidity for all areas sampled during the survey in 2006 and 2011 show that the majority of the households had access to clear water. This result is commendable because it shows service providers ensured consumers enjoyed water which was aesthetically pleasing and with no suspended solids.

There are different parameters influencing the cloudiness (turbidity) of the water. These can be categorised as sediments from erosion, algae growth, runoffs, rust in the piping, and waste discharge among others. Figure 51 shows different levels of water turbidity – from non turbid to turbid water with average turbidity levels in between.
Turbidity is a good measure of water quality. WHO (1997) establishes that the turbidity of drinking water should not be more than 5 Nephelometric Turbidity Units.
(NTU) and should ideally be below 1 NTU. This is because high turbidity has consequences on humans consuming water. While the main impact of turbid water is merely aesthetic, it is important to eliminate turbid water in order to effectively disinfect it for drinking purposes. The suspended solids help the attachment of heavy metals and other toxic organic compounds and pesticides, hence adding more cost to the treatment of water supplies.

The failure of compliance to acceptable levels of water turbidity is as a result of many factors in the study areas. These factors trail around unsafe methods of excreta disposal and other indiscriminate methods used for waste disposal, especially in low income or peri-urban areas. According to Nkhuwa (2006), areas using pit latrines are high density residential townships that have generally developed in close proximity to areas of natural groundwater discharge or springs, where the groundwater table is very shallow. In Chaisa Compound for example, water used for drinking comes from groundwater sources. In the same community, general waste and excreta disposal is a problem. Few households own proper toilet facilities i.e. flush toilets and or VIPs, where as the majority rely on shallow pit latrines. Children under the age of five are not allowed to use such toilet facilities – probably for fear of falling into the toilet and the probable option available is open defecation. This poses a high risk to ground and surface water, especially during the rainy season when runoffs occur. Another common practice noted is converting dried up shallow water wells into pit latrines during the dry season (Nkhuwa, 2006). These points, however, have the potential for flooding during the wet season. All these practices have generally increased the potential for water contamination and increasing turbidity levels in low income areas and despite efforts made by the water supply and sanitation service providers to improve the quality of water consumed, the challenge persists because such unsafe practices continue to be present.
In high income areas, where water reticulation systems are much more pronounced, the problem mushrooms from contaminants in the piping system. The piping system in some parts of the study areas is old and has not been replaced over long periods of time. These pipes have punctures and breakages and encourage seepage of particles from the ground. Seepage also occurs from the piping carrying sewer waste because the water pipes and sewer pipes are lied closely together. Whilst chlorination and other forms of water purification may occur at the reservoir prior to distribution, water still gets contaminated and carries with it suspended particles by the time it reaches the point connecting to the consumer, because of the seepage that goes on during the transportation process. As a result, water turbidity levels are seen to be high as water reaches the consumers – containing rust and mud particles from the pipes.

PERCEPTION BY USERS OF THE COST OF WATER SUPPLY AND SANITATION SERVICES

Billing of water supply and sanitation service should be favourable and affordable to the consumer and not to be seen as exploitative, if it has to qualify for good performance. In the study areas, there are different types of billing systems for water supply and sanitation service provision, depending on the area being billed. The survey interviewed 120 households and found that there were two major types of billing for water supply and sanitation services. In the low income areas or the peri-urban areas, the majority of the population accessing water from communal taps or standpipes were billed per 20 litre container and paid between Zambian Kwacha (ZMK) 50 to ZMK 100 per 20 litre container of water – which payments were recorded in a book for easy presentation to the service providers (Figure 52). Sanitation usage was not billed because access was on-site (pit latrines and VIPs) and was not provided by the service providers.
In the middle and high income areas, a monthly charge ranging from less than ZMK 30,000 to above ZMK 150,000 was paid on a monthly basis for water consumption for metered customers while others were charged on a monthly fixed rate. Figure 53 exemplifies the type of billing sheet used. All these methods of billing were calculated based on actual (for billed customers) and assumed (for unbilled customers) water consumed.

Source: Photo by Author
Figure 53: Example of a billing sheet used in high income and middle areas - also some low income areas, in the study areas of Lusaka District, Zambia

Source: Photo by Author

In the study areas, there was high perception by water supply and sanitation consumers that the service bills had been expensive from 2006 to 2011. Out of the 120 households interviewed 54.2 percent mentioned that they perceived water tariffs to be higher than they could afford, where as 22.5 percent perceived the water tariff to be less expensive and affordable. Sixteen point seven (16.7) percent rated the water tariff they paid per month to be of average cost (Figure 54).
Figure 54: Perception of the costs of service bills from 2006 to 2011 in the study areas of Lusaka District, Zambia

The cost of water supply and sanitation service bills were stratified into income categories to show which community by income category perceived the service bills to be more or less expensive. Households in the low income areas had the most perception that the service bills they paid per month were expensive, accounting for 26 responses out of the 120 households interviewed. Following closely with the perception that the service bills were expensive were households in the middle income areas (accounting for 24 responses) and the least perception of water tariffs paid per month being expensive was recorded for households in the high income areas, accounting for 15 responses (Figure 55).

Source: Household survey data
High levels of poverty and low earnings of income for the majority of Zambians have implications on how people perceive their service bills. Whilst service bills are subsided through regulation by NWASCO to enable the average Zambian afford to pay for the service, people still perceive that they pay too much for the water supply and sanitation service. However, high bills are sometimes a fault of consumers themselves. Through failure to fix leakages at homes (Figure 56), there tends to be too much water wastage without the cognitive knowledge of the consumer. The perception of high tariffs decreases the willingness to pay off service bills. As a consequence, running costs and operations for service provision tends to be affected.

Much as water supply may be seen as a social commodity, service providers spend money to ensure that water is provided to their customers, hence it attracts economic benefits. Moreover, water provided to consumers must be clean and safe to drink;
therefore, more resources are required for the purification and anesthetisation of the water resource.

**Figure 56: Water leakages in Kabwata Community of Lusaka District, Zambia**

On the whole, service bills paid for water supply and sanitation are perceived to be expensive in the study areas, more than what consumers could afford, which is not commendable in terms of good performance on the part of service providers.

In conclusion, the study found that the percent of the population in the study areas with access to water supply for 18 to 24 hours per day had increased between 2006 and 2011. This percentage however represented main households in high and middle
income areas who considerably had more hours of water supply, from 18 hours to 24 hours per pay. In the dry season however, some parts of the high and middle income areas lacked sufficient supply of water particularly those serviced with ground water sources because ground water depleted of the water resource during dry seasons. Nonetheless, water supply hours were still fewer in low income areas irrespective of the period because of the nature of access opportunities available for communally owned water resources.

In 2006, toilet facilities in use where found to be unsatisfactory in terms of structure and functionality. Low levels of satisfaction in toilet access were mainly found in low income communities. In 2011 however, the study found that toilet facilities in use were much more satisfactory suggesting an improvement of service provision. This was attributed to the many programmes put in place by the government through the MLGH such the (NRWSSP) as well as sensitisation on the importance of the use of proper sanitary facilities.

Further, the study found that slightly above average of households sampled had at a certain point between 2006 and 2011 been dissatisfied with the service they were receiving and complained about it. Households in high income communities complained more about their service provision compared to households in low income areas. This could be attributed to their privileged levels of education of knowing the consumer complaints procedures and levels of confidence to face up to people in authority. However, though complaints of service provision were only above average, over 80 percent had knowledge of where they could lodge their complaints if they were dissatisfied with the service they were receiving.
In terms of turbidity, the study found that no household in high income areas accessed turbid water for household uses in 2006. Water turbidity was mainly in low income areas and slightly more in middle income areas in 2006. By 2011, water turbidity had reduced in both middle and low income areas suggesting that drinking water quality in terms of turbidity for all areas sampled during the survey had improved. This result is commendable because it shows service providers ensured consumers enjoyed water which was aesthetically pleasing and with no suspended solids.

Perception of the cost of service bills was found to be high during the study period. All levels of income categorised the service bills to be high though there were more households in low income areas mentioning that the service bills were higher compared to middle and high income areas. However, the margin of the numbers of people perceiving service bills to be expensive was minimal for all income groups.
CHAPTER FIVE

ENHANCEMENTS AND CHALLENGES TO WATER SUPPLY AND SANITATION SERVICE PROVISION

For this part of inquiry, service providers were consulted about the kind of enhancements they put in place to improve service provision in the study areas and the kind of challenges they faced in improving service provision. Restricting this part of inquiry to service providers was because service providers had the best knowledge of the kinds of enhancements they put in place to improve service provision and the challenges they faced.

ENHANCEMENTS

Any improvements made in service provision requires multifaceted approaches which service providers and other stakeholders involved in water supply and sanitation have tried to implement in the last 21 years of being in operation (for LWSC). Such approaches were premised on the view that efficient management of water supply and sanitation service provision brings about financial sustainability, customer responsiveness and optimal use of resources. In addition, for enhancement in service provision to be realised, there should be systematic techniques put in place to effectively recover operations and maintenance costs from water users. There should also be an adequate tariff policy that promotes effective cost recovery of capital resources and preserves the social objectives of providing equity of access and free basic water supply for poorer consumer groups.
This study examined the kind of enhancements put in place to improve service provision of water supply and sanitation in the study areas. In addition, the study assessed the actual achievements realised in water supply and sanitation service provision from 2006 to 2011. In that respect, the assessment focused on establishing achievements with regards to proportions of people with access to water and sanitation between 2006 and 2011; capacity building of personnel providing service provision as an enhancement to improved service provision; improved funding to the water supply and sanitation sub – sector and stakeholder participation among others.

**CAPACITY BUILDING FOR ENHANCING SERVICE PROVISION**

For most organisations, capacity building is an ongoing training process that allows groups and individuals enhance their ability to identify and meet organisational goals through the application of acquired knowledge. This study assessed whether or not water companies were building capacity in their organisation as a means to enhance service provision of water supply and sanitation service provision. Of the 6 institutional sources – service providers interviewed during the survey, the study found that 83.3 percent of the respondents mentioned that their organisations built capacity in their organisations in 2006 to enhance service provision (Figure 57). Only, 16.7 percent of the respondents mentioned that their organisations did not incorporate aspects of capacity building to enhance service provision in their organisations (Figure 57).

A similar scenario to that observed in 2006 was observed for the period of 2011. Eighty three point three (83.3) percent of the 6 service providers interviewed mentioned that they were building capacity in their organisation whereas 16.7 percent mentioned that they did not build capacity in their organisations (Figure 58). This result suggests that there had been no major changes with regard to capacity
building between 2006 and 2011. However, the high percentage recorded for conducting capacity building in organisations for service providers is commendable from 2006 to 2011.

**Figure 57: Service providers carrying out capacity building in their organisations to enhance service provision in 2006**

<table>
<thead>
<tr>
<th>Number of Respondents (N=6)</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>83.3</td>
<td>16.7</td>
</tr>
</tbody>
</table>

*Source: Institutional survey data*
Considerations for capacity building were at different levels. Firstly, there was the WAVE training programme on management of Non-Revenue Water (NRW) and Commercial and Customer Orientation (CCO) (NWASCO, 2010). The WAVE programme was a InWEnt supported regional capacity development initiative conducted in Kenya, Uganda, Tanzania and Zambia. The training programme on NRW and CCO benefited 150 staff from various Commercial Utilities in Zambia of which LWSC was part (NWASCO, 2010).

Secondly, in-house capacity building was done for individuals implementing Operations and Maintenance (O & M) on the ground; financial management; and various activities in water supply and sanitation to equip them with skills and
techniques necessary for their assignments. The best application of financial management and O & M are cardinal to sustain service provision and ensure customer responsiveness. Essentially, the two ensure financial viability on the part of the service provider while ensuring quality service provision for the consumer. Good water supply and sanitation reticulation networks do not encourage leakages of water hence losses on unaccounted for water are avoided; leakages in sewer waste are also avoided hence environmental contamination ceases to be a problem; and clean pipes reduce the risk of providing turbid water to consumers hence improving consumer satisfaction of the service. Service providers understand these important aspects hence the importance placed in building employee capacity in these areas. The need for identifying training institutions with relevant courses should, therefore, be prioritised, as well as the reviewing of existing training modules. At times, in-house training activities work best particularly when internal knowledge gaps exist and training is most tailored to fill those specific gaps identified.

**FUNDING FOR ENHANCING THE PROVISION OF WATER SUPPLY AND SANITATION SERVICE**

Funding for water supply and sanitation service provision is basically from service bills, government and donors. This is because service bills alone are insufficient to cover reinvestments and replacement costs of assets including O & M of the organisation. However, other sources such as the government and Cooperating Partners come into play to enhance service provision by bridging the finance and resource gaps. This study assessed the attention given by Government and Cooperating Partners in bridging the finance gap to enhance service provision. Of the 6 institutional sources interviewed, the study found that 83.3 percent of the respondents mentioned that Government’s and Cooperating Partner’s attention towards funding water supply and sanitation was at 0 – 25 percent in 2006 where as 16.7 percent mentioned that Government’s and Cooperating Partner’s attention to
fund service provision was at 26 – 50 percent (Figure 59). All responses from this study show that attention given to fund service provision was low in 2006.

**Figure 59: Government's and Cooperating Partner’s attention given to fund water supply and sanitation service provision in 2006**

In 2011, of the 6 institutional sources interviewed from water companies, the study found that 66.7 percent mentioned that Government and Cooperating Partners’ attention given to fund water supply and sanitation service provision was between 51 and 75 percent. Results also show that 16.7 percent of the respondents mentioned that the attention given to enhance water supply and sanitation service provision by Government and Cooperating Partners was at 76 – 100 percent. Another 16.7 percent of the respondents mentioned that the attention given to finance service provision was between 26 – 50 percent in 2011 (Figure 60).

*Source: Institutional survey data*
Between 2006 and 2011, Government and Cooperating Partner’s attention given to fund service provision of water supply and sanitation had risen tremendously. Whereas all respondents mentioned that the attention given to fund service provision in 2006 did not exceed 50 percent, in 2011, the majority (66.7 percent) of respondents mentioned that attention given to fund service provision was between 51 and 75 percent. In fact, 16.7 percent of the respondents mentioned that the attention given was between 76 and 100 percent. This scenario is considerably good because it shows that other than primary water supply and sanitation service providers, governments, donors and other interests groups have, over the years, recognised the importance of ensuring that a lot more people access clean water and use proper sanitation facilities. It is important to note, however, that some funds are given to service providers through the government on credit by the World Bank and Development Financing International Fund (DFIP) to be paid back in due course. This is because tariffs collected from water users are not sufficient to cover reinvestment and replacement cost of assets per year, including operations and maintenance of the organisations.
Further, various projects have been implemented through the DTF classified under General Fund for Water Supply; General Fund for Sanitation; and Performance Enhancement Fund (DTF, 2010) to enhance service provision, especially in peri-urban areas. These funds encompassed different projects throughout the country. In Lusaka District for example, the General Funds, LWSC drilled and equipped 2 boreholes, laid 3 kilometre water supply network and installed 1,100 water meters (DTF, 2010). This project was undertaken in one of the peri-urban settlement under a budget of ZMK1, 221,673,221 and targeted 59,200 beneficiaries (DTF, 2010).

Source: Institutional survey data
GOOD PRACTICES IN HUMAN RESOURCE USE – ENHANCEMENT TO IMPROVED SERVICE PROVISION

With regards to human resource in water companies, enhancement to service provision has been achieved by identifying training needs, matching responsibilities with required work and put up performance appraisals to ensure work was output based. To understand the levels of improvements of water supply and sanitation service provision, the study assessed the three aspects of enhancement indicators used with regards to human resource handling service provision. Out of the 6 institutional sources of information interviewed during the survey, the study found that 83.3 percent mentioned that service providers identified training needs and trained personnel to enhance service provision in 2006 (Figure 61). Similarly, in 2011 83.3 percent of the respondents mentioned that service providers identified training needs and trained personnel to enhance service provision (Figure 62). Sixteen point seven (16.7) percent of the respondents in 2006 and 2011 mentioned that their organisations did not identify training needs and trained personnel to enhance service provision in their organisations (Figures 61 and 62).
Figure 61: Identified training needs and trained personnel to enhance water supply and service provision in 2006

Institutional survey data
Human resource development was seen as an integral part for the success of service provision. One of the reasons identified as the cause for poor performance of water supply and sanitation service delivery in Zambia prior to the sector reforms was the lack of appropriately qualified and experienced personnel (NWASCO, 2004). Over the years, following recommendations to improve on human resources handling service provision, a number of training activities had been instituted in the sector. One such training thought to be the most appropriate at that time was the Competence Based Modular Training (CBMT) – though it was never implemented (NWASCO, 2004). Actual training activities conducted were to train personnel in rehabilitation program for infrastructure and also higher training at diploma level, especially for courses in Water Engineering which was offered at Copperbelt University. Other related training programs are offered at the University of Zambia, in the Civil Engineering Department and most recently, the Integrated Water
Resources Management (IWRM) Centre, with support from DANIDA, begun sponsoring post graduate students to study on topics in the water field.

Meanwhile, all personnel carrying out O & M on the ground must have attained tertiary education in a water related field. This could be at a level of certificate. The kind of qualifications required in carrying out O & M at the minimum was a certificate in plumbing.

Another aspect of enhancement to service provision in the study areas was with respect to matching responsibilities with required work. Of the 6 institutional sources interviewed, results show that all respondents (at 100 percent) (Figure 63) mentioned that their organisations matched responsibilities with required work to improve performance of human resource in their organisations vis-à-vis enhance service provision in 2006.
In 2011, 100 percent of the 6 institutional sources interviewed mentioned that their organisations matched responsibilities with required work to improve performance of human resource in their organisations (Figure 64). From 2006 to 2011, results suggest that matching responsibilities with required work to enhance service provision was high with a 100 percent response. This is commendable because the right size of personnel in an organisation is important for work efficiency. A suitable span of control\textsuperscript{12} is suitable because it allows a manager to communicate quickly with subordinates and control is more manageable. Feedback of ideas from the workers will also be more effective. This is further supported by NWASCO (2011) who asserts that in service provision the right size of personnel ensures good

\textsuperscript{12} Span of control refers to the number of subordinates or the units of work that an administrator can personally direct (Basu, 2004)
performance and that the benchmark for staff per 1,000 water connections is as shown in Table 3 (NWASCO, 2011).

However, such a result could mean respondents did not want to report negatively of their organisation, hence the need for further investigation.

Figure 64: Matched responsibilities with required work to enhance service provision in 2011

Source: Institutional survey data
<table>
<thead>
<tr>
<th>Benchmark for staff per 1,000 water connections (cluster 1)</th>
<th>Good</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acceptable</td>
<td>6 – 8</td>
</tr>
<tr>
<td></td>
<td>Unacceptable</td>
<td>&gt; 8</td>
</tr>
<tr>
<td>Benchmark for staff per 1,000 water connections (cluster 2 and 3)</td>
<td>Good</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Acceptable</td>
<td>10 – 14</td>
</tr>
<tr>
<td></td>
<td>Unacceptable</td>
<td>&gt; 14</td>
</tr>
</tbody>
</table>

*Source: (NWASCO, 2011)*

In this case, the number of staff per 1,000 water connections should be low for purposes of efficiency. The size, spread (area and number of towns) and operational requirements of the utility company are considered when establishing the number of staff required per 1,000 water connections.

Another aspect to enhance service provision in Lusaka District was with respect to carrying out performance appraisals to ensure that work was output based. Of the 6 institutional sources from service providers interviewed, the study found that 83.3 percent of the respondents mentioned that service providers put up performance appraisals to ensure that work was output based to enhance service provision of water supply and sanitation in 2006 (Figure 65).
Figure 65: Put up performance appraisals to ensure that work was output based to enhance service provision in 2006

Institutional survey data

Where as 83.3 percent of the respondents mentioned that their organisations put up performance appraisals in 2006 to ensure that work was output based to enhance service provision, in 2011, this figure rose to 100 percent (Figure 66) suggesting an improvement in performance. The growth curve between 2006 and 2011 was due to importance put on meeting organisational goals. Carrying out performance appraisal is important in working towards achieving organisational goals because personnel tend to be focused and efficient in carrying out their duties. This enhances service provision because personnel in an organisation are seen to work towards intended goals. Efficient services also reduce losses and cuts down operational costs.
For enhanced service provision to be achieved, there is need to motivate personnel offering the service. Motivation of employees was another aspect used to sustain, efficiently utilise personnel and enhance service provision in Lusaka District. Success in organisations requires physical, financial and human resources to accomplish organisational goals. It is through motivation that the human resources can be utilized by making full use of it. Of importance, therefore, is building willingness in employees to work and achieve the intended goals.

This study established whether or not service providers as organisations had improved financial and other benefits at their disposal to motivate their employees. Of the 6 institutional sources interviewed from service providers, results show that
50 percent of the respondents mentioned that their companies had improved financial and other benefits in 2006 to sustain and efficiently utilise personnel in their companies (Figure 67).

**Figure 67: Improved financial and other benefits in 2006 to sustain personnel utilisation and enhance service provision**

In 2011, results show that of the 6 institutional sources interviewed from service providers, 100 percent mentioned that their companies had improved financial and other benefits in 2010 to sustain and efficiently utilise personnel in their companies (Figure 68).

Where as 50 percent of the respondents mentioned that their companies had improved financial and other benefits to sustain and efficiently utilise personnel in
2006, this figure was at 100 percent in 2011. This suggests that there was a 100 percent increase of financial and other benefits to sustain personnel between 2006 and 2011. This kind of increment is very commendable because it shows that more service providers had upheld the use of financial and other benefits to improve service provision by sustaining their personnel.

**Figure 68: Improved financial and other benefits in 2011 to sustain personnel utilisation and enhance service provision**

![Bar chart showing improved financial and other benefits in 2011.](chart.png)

*Source: Institutional survey data*

Financial benefits, capacity building and other benefits are important in sustaining personnel and efficiently engaging them in service provision. Employee motivation was recognised as a factor to improved service provision and most service providers adhered to motivating personnel to uphold service provision in the study areas. Employee motivation is an important factor which brings about employee satisfaction. In simple terms, motivation can be defined as the process of stimulating...
people to actions to accomplish the goals. In the work context, therefore, the psychological factors stimulating people’s behaviour can be desire for money, success, recognition, job-satisfaction and team work just to mention but a few.

Other than monetary benefits to motivate personnel, water companies initiated promotion opportunities for deserving employees and also used disincentives for inefficient employees. This encouraged good performance among personnel in water supply and service provision.

Motivation also builds a pleasant and friendly atmosphere in an organisation because of the feeling of belonging instilled when employees are recognised for their efforts. Consequently, there is effective cooperation which brings stability in an organisation, employees will be adaptable to change and there will be no resistance to change, individual interests tend to coincide with organisational interests, hence profit maximisation is increased through increased productivity.

**CHALLENGES**

The water supply and sanitation service provision in many countries experience a number of challenges which can be classified into financial, institutional, operational and/or technical. Another, important cause of challenges in water supply and sanitation in many countries is inappropriate political interference on operating decisions, such as personnel policy or tariff setting by providers. This complicates the establishment of effective and efficient supply structures and their sustainability. All these challenges instigate inadequate and low levels in access to water supply and sanitation. Problems instigated also are in low expansion to underserved areas. This
study investigated the different dimensions affecting service provision in the study areas of Lusaka district based on the categories identified.

For this part of inquiry, service providers were the main sources of information because the type of inquiry was specific to the kind of challenges they faced as water utility companies.

**LACK OF FINANCIAL RESOURCES**

Lack of financial resources was seen as a constraint to improved service provision between 2006 and 2011. Service providers have a challenge of meeting operational costs from service bills because water supply and sanitation service bills in Zambia are subsidised to ensure that all consumers can afford to access the service. This has implications on operational costs incurred by service providers to enable them improve service delivery of water supply and sanitation in the study areas.

Most of the investments in water supply and sanitation have come from international finance and donor agencies which are by far below the funds required by the sector. The accompanied local funds from the government are also in short supply. The result is that huge gaps in terms of finance are created and service delivery is challenged in most cases. In 2006, all (at 100 percent) the 6 service providers interviewed mentioned that financial resources were an impediment to improved service provision in the study areas (Figure 69)
Figure 69: Lack of financial resources as an impediment to service provision in 2006

Institutional survey data

In 2011, of the 6 institutional sources of information interviewed from service providers, the study found that 83.3 percent of the respondents mentioned that lack of financial resources was a challenge for improved service provision in the study areas whereas 16.7 percent mentioned that lack of financial resources was not an impediment to service provision in the study areas (Figure 70).

Where as 100 percent of the respondents noted that they experienced financial problems to improve service provision in 2006, in 2011, this figure dropped to 83.3 percent suggesting that by 2011, a few service providers had no problems with financial resources to enhance service provision of water supply and sanitation.
Generally, however, results of this study suggest that lack of financial resources was an impediment to service provision, looking at the high percentage of service providers citing it as a challenge. The water supply and sanitation sub sector lacks necessary funds to finance the required investment on water supply facilities development and rehabilitation, particularly to underserved areas. Like many urban areas in Zambia, the study areas in Lusaka District have high demand for housing, causing the Local Authority to open up more land for housing development. Essentially, water supply and sanitation should be in place before construction of housing units can begin (NWASCO, 2011). However, this is not currently the case. Previously, when Local Authorities were directly providing water supply and sanitation services, the cost of utility services (water, electricity, roads) was embedded in the cost of land, which funds were used to provide these services (NWASCO, 2011). With the delegation of authority of water supply and sanitation

Source: Institutional survey data
service provision to water utility companies, while the Local Authorities retained allocation responsibilities, inadequate co-ordination in developmental planning has resulted in the allocation of plots without first providing the necessary services such as roads, water and sewerage reticulation systems. This has challenged service provision of water supply and sanitation to underserved areas because financial resources are not readily available to fund such kinds of developments. This is also contrary to the provisions of the Town and Country Planning Act Cap 283 and water supply and sanitation service provision is seen to lag behind in new development areas (NWASCO, 2011).

Further, in the study areas, expansion of water supply and sanitation service provision to underserved areas has been minimal, as evidenced by the numerous individual initiatives to sink boreholes and use of on-site sanitation due to lack of finances for infrastructural development on the part of service providers. It is seemingly hard to get connected to the main reticulation system and hence some new housing units in Chelstone and Kabwata extension, for instance, have adopted the use of boreholes and on-site sanitation for water and sanitation access, respectively. These are among the many newly expanded communities not serviced by LWSC in Lusaka District. In peri-urban areas, the challenge on sanitation coverage is on building space, while water supply is made available by either LWSC or Water Trusts in particular areas.

**POLITICAL INTERFERENCE**

Political and/or government interference was also identified as a challenge to improved service provision of water supply and sanitation in the study areas. Out of the 6 sources interviewed from service providers, the study found that 83.3 percent of
the respondents identified political interference as a challenge to improved service provision of water supply and sanitation in 2006 (Figure 71).

Figure 71: Political interference as a challenge to improved service provision in 2006

Source: Institutional survey data

In 2011, a similar scenario to that observed in 2006 was observed. Of the 6 institutional sources from service providers interviewed, 83.3 percent mentioned that political interference was a challenge to improved service provision in the study areas (Figure 72). From 2006 to 2011, there was no change regarding the extent to which political interference was perceived as an impediment to improved service provision in the study areas. However, the high percentage of service providers, citing it as challenge between 2006 and 2011, suggests that it was a significant challenge with regards to service provision.
Inappropriate political interference on water companies’ operational decisions, personnel policy or tariff setting by providers complicates the establishment of effective and efficient supply structures and their sustainability. Government’s interference in service provision is through regulations put in place. Despite the establishment of NWASCO to protect water companies from undue political interference, there still exists a problem of political interference, especially when politicians want to be seen to be working in favour of their electorate by including in their political campaigns that they would reduce the cost of accessing water supply and sanitation once voted into power. These speeches, however, are made without due consideration of operational costs incurred by water companies. Trying to live up to their promises compromises and hinders the opportunities for adequate revenue generation by water supply companies and also handicaps the revenue that would
have complemented the funds available for expansion to underserved areas because politicians seek to keep tariffs low and adjustments may not even be considered for approval if they are being amplified.

**INADEQUATE EMPLOYEE MOTIVATION**

Inadequate employee motivation was identified as one of the factors that led to poor service provision in the study areas, though it was not identified as a major contributor to poor delivery of services. In 2006, 16.7 percent of the 6 institutional sources interviewed mentioned that inadequate or lack of employee motivation was a challenge to improved service provision of water supply and sanitation in the study areas (Figure 73). This result suggests that personnel offering water supply and sanitation services in the study areas were actually highly motivated than assumed.
Figure 73: Inadequate or lack of employee motivation as a challenge to improved service provision in 2006

Source: Institutional survey data

However, where as high motivation for personnel offering water supply and sanitation service was observed in 2006, in 2011, half of the respondents (at 50 percent) mentioned that inadequate or lack of employee motivation impacted negatively on improved service provision in the study areas (Figure 74). Between 2006 and 2011, therefore, the motivation for personnel offering water supply and sanitation service provision decreased.
Inadequate or lack of employee motivation as a challenge to improved service provision in 2011

Institutional survey data

**TECHNICAL PROBLEMS**

Technical issues related to water supply and sanitation include illegal connections to water supply, lack of records or maps showing location of piping system and old water supply and sanitation line networks. Such problems were identified as impediments to improved service provision in the study areas. Findings of the study show that of the 6 institutional sources interviewed, 50 percent of the respondents cited technical related problems as challenges to improved service provision in 2006 (Figure 75) while 50 percent, mentioned that technical issues were not an impediment to service provision in the study areas.
A similar scenario observed in 2006 was observed in 2011. Fifty (50) percent of the respondents cited technical problems as a challenge to improved service provision in the study areas (Figure 76). Between 2006 and 2011, there was no change in the way technical problems were perceived as challenges to improved service provision.

**Figure 75: Technical problems as challenges to improved service provision in 2006**

![Graph showing technical problems as challenges to improved service provision in 2006](image)

*Source: Institutional survey data*
Illegal connections to water supply occur when there is late reconnection to water supply after being disconnected due to non-payment of bills. However, water supply disconnections were not in the prominence in the study areas, hence the average results showing technical problems as a challenge to improved service provision. Additionally, the lack of records or maps showing location of piping system which leads to breaking pipes during construction of roads, for instance, are a factor to poor service provision, but the rate of construction of roads and houses can not be over emphasised. However, experience has shown that there are pipe bursts on construction sites because developers are not aware of actual location of water supply and sanitation networks. As a consequence, disruptions in water supply at points of connection for the consumers occur, yet they may not even be aware of the causes of such disruptions.

*Source: Institutional survey data*
In conclusion, capacity building and matching responsibilities with required tasks promised major enhancements to service provision in the water supply and sanitation sector. Yet lack of financial resources and political interference to service provision drastically reduced performance of the sector. Other impediments to service provision in the water supply and sanitation sector were technical problems and inadequate employee motivation.
CHAPTER SIX

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The study set to assess the performance of water supply and sanitation service provision in Lusaka District between 2006 and 2011, covering a number of aspects. Among the aspects covered in the assessment were coverage of water supply and sanitation service provision; levels of consumer satisfaction of the service and assessment of the enhancement and impediments of water supply and service provision.

With regards coverage of service provision, this assessment established that the introduction of commercial utilities in Lusaka District had improved performance of water supply and sanitation access in the study areas. From 2006 to 2011, there was an increase on the number of people accessing clean and reliable water. In 2011, there was an increase in the number of people accessing water from their homes rather than communal taps – suggesting that there had been an improvement in infrastructural development of water supply and sanitation systems in the study areas. In terms of actual access, 75 percent of the population interviewed through the household survey had access to clean water in 2011. In addition, more people in the middle and high income communities had water access of 24 hours on a daily basis than those with fewer access hours. Sanitation coverage had also improved. Whilst 67.5 percent accessed flush toilets in 2006, this figure rose to 69.2 percent in 2011. Clearly, this was a reflection of good performance because access opportunities to water supply improved.
However, the same was not true with regards to households in low income areas. Service providers failed to supply water in low income communities at standpipes for a minimum of 6 hours on a daily basis. This was because of complications with manpower and poor work culture by personnel manning the standpipes. Additionally, low income communities were billed less – on a social tariff rate for affordability hence service providers did not concentrate their efforts to supplying sufficient water to these areas. More supply hours were in high and middle income areas where it was believed that service providers did not operate at a loss. This was one way of ensuring service providers’ sustainability. Sanitation coverage was also still low in low income communities. However there was a 9 percent reduction of people relying on ordinary pit latrines for sanitation use by 2011.

Consumer satisfaction was assessed by reviewing service hours of water supply, service related complaint, adequacy of service provision, consumer satisfaction of the service and turbidity of water supply.

The assessment revealed that service hours were generally commendable for high and medium income communities. In fact, the service provision was found to be in accord with what was recommended by NWASCO over acceptable number of hours of water supply for each community. However, service hours were fewer for low income communities than the general recommendations proposed by NWASCO.

Water supply and sanitation service related complaints were just slightly above average. Yet, there was a notable excellent knowledge base of where complaints
could be raised, if consumers were dissatisfied with the service. Dissatisfaction was mainly noted in low income communities with about 2/3 of the population interviewed expressing dissatisfaction with the service coming from low income communities.

Service related complaints in the study areas were mainly about low supply hours and inflated service bills. In addition, the rationing of water supply had no systematic time table so that people could easily adapt to it, hence the low supply in some areas was seen as a problem. Similarly, there was no definite amount of money to be paid for the service in high and middle income areas and sometimes, the service bills were too high and unjustifiable. The less the time meter readers were seen carrying out meter reading in the field, the more people contested their service bills because they were perceived to be erroneous and unjustifiable. Water bills were also contested if they were high for most of the time, since water supply was continuously erratic.

It is important to note that households in the low income areas mostly perceived service bills to be on a higher side. The high levels of poverty lessen affordability of water bills distorting perceptions of affordable services to be expensive.

The lower levels of turbidity in water connotes that service providers paid particular attention to the kind of water supply they offered to their customers. In 2006 and 2011, turbid water was not cited as a problem. In fact, whilst about 73 percent of the sampled population accessed clear water in 2006, 79 percent of the population accessed clear water in 2011 suggesting an improvement in access to clear water.
Investigating enhancements to water supply and sanitation service provision assessed capacity building in of the service providers, funding mechanism in the sector and good practices in human resource use.

The study revealed that service providers built capacity to improve service provision. Capacity building was done on an in-house training basis as well as outsourcing tutorials from external sources to offer training on expertise not available among service providers.

For enhanced service provision of water supply and sanitation in the study areas, financial gaps of service bills were met by government and Cooperating Partners. However, most of the investments in water supply and sanitation came from international finance and donor agencies but these were by far below the funds required by the sector. The accompanied local funds from the government were also in short supply. The result was that huge gaps in terms of finance were created and service delivery was challenged in most cases. As a consequence expansion was minimal in the study areas, as evidenced by the numerous individual initiatives to sink boreholes and use of on-site sanitation techniques. It was seemingly hard to get connected to the main reticulation system for newly developed areas; hence house owners adopted the use of boreholes and on-site sanitation for water and sanitation access, respectively.

Identifying training needs and training personnel was important for enhanced performance in water supply and sanitation service delivery. Necessary qualifications were cardinal for work proficiency. Notably, certificates in plumbing for personnel in O & M improved technical abilities to conduct maintenance with expertise. Special
programs such as intensive leak detection, surveys to detect illegal connections, or distribution network analysis would be scheduled to be conducted yearly and such tasks required personnel with the know-how in O & M and necessary expertise. Financial performance and competent managerial skills for personnel handling finance to be able to minimise costs of operating in a water supply and sanitation system required a sound educational background. Cost recovery to pay for operations, maintenance and debt services also required excellent decision making on devising good approaches to efficiently recover all revenues and that which was outstanding. In addition, the amount of work to be executed could also be equated to the number of staff implementing it. All these aspects were cardinal for enhanced service provision of water supply and sanitation in the study areas.

Financial benefits and capacity building were important in sustaining personnel and efficiently engaging them to enhance service provision. The presence of benefits motivated and gave personnel morale to engage in work activities with proficiency and apply their acquired skills diligently.

Challenges encountered by service providers were with respect to political interference, inadequate finances, inadequate employee motivation and technical problems.

Inappropriate political interference on water companies’ operational decisions, personnel policy or tariff setting by providers complicated the establishment of effective and efficient supply structures and their sustainability. This was a challenge on service provision in the study areas.
Technical issues related to water supply and sanitation challenged service provision in the study areas and these included illegal connections to water supply, lack of records or maps showing location of piping system and old water supply and sanitation line networks. Illegal connections occurred due to late reconnection to water supply after being disconnected due to non-payment of bills. Lack of records or maps showing location of piping system led to breaking pipes during construction of roads and houses, for instance. Experience shows that there has been pipe bursts on construction sites because developers were not aware of actual locations of water supply and sanitation network systems. As a consequence, disruptions in water supply at points of connections for the consumers occurred, yet they may not even be aware of the causes of such disruptions. Such problems were identified as challenges to improved service provision in the study areas.

RECOMMENDATIONS

To improve water supply hours in low income communities, there should be stringent measures put in place to ensure stipulated times of access are adequately followed. For instance, LWSC or the Water Trust should devise a system that allows for accountability of time spent by their officers responsible for ‘opening’ and ‘closing’ water at communal water points. This will improve access opportunities for many including those in low income communities where access is still low.

Demonstration projects such as one that was done in Kalingalinga Community to construct good sanitary facilities could be done for other low income communities in Zambia to encourage people to opt for the use of hygienic toilet facilities. Such demonstrations could be coupled with health benefits that most people hold valuable in their daily life. This has positive implications on the success of the safe toilet use campaigns.
To reduce on the perception that water supply and sanitation services are expensive, there is need to encourage households or communities come up business initiatives such as vegetable growing or small entrepreneurship, especially in low income areas to raise funds communally to pay for water access. This would reduce the water stress situation experienced by many in trying to find money to buy water on a daily basis – which is ZMK50 – ZMK100 per 20 litre container. Sufficiency of water will also be improved as families would be able to afford a reasonable number of water containers on a daily basis to meet all their household requirements.

In order to improve water supply and sanitation coverage to underserved areas, the government should put stringent measures to ensure that the allocation of residential plots is done simultaneously with the provision of necessary services such as water and sewerage reticulation systems. This will also be in line with the Town and Country Planning Act Cap 283 of the Laws of Zambia.

To reduce the number of contested service bills, it is recommended that when reading the meter, family members on the part of the consumers be present to carry out their own assessment, and then compare meter readings at the end of the month, to ensure that consumption of water quoted by the service providers corresponds with what the consumer had recorded. It is also recommended that there should be an increase in awareness creation to consumers on how service bills are arrived at.

To reduce the erratic water supply situation during the dry season, LWSC should partner with other stakeholders with ground water sources so that they could use space to drill boreholes for use during the dry season in high and middle income
areas such as Handsworth and Chelstone, then sell the surplus of the water to neighbouring communities.

To improve on the quality of water consumed, it is recommended that consumers take up boiling of water as a safe mode of water purification as making water less turbid does not eliminate germs and bacteria.

Politicians should consider technicalities involved in water supply and sanitation service provision, even when they are trying to live up to their political promises. This will lessen compromises on the part of service providers that hinder the opportunities for adequate revenue generation by water supply companies and also handicaps the revenue that would have complemented the funds available for expansion to underserved areas; because politicians seek to keep tariffs low, adjustments may not even be considered for approval, if they are being amplified.
BIBLIOGRAPHY


Moriarty, P. and T. Schouten (2004) How can the capacity and strength of local government be developed to reach the MDGs for water and sanitation? Background paper to the session on local government at the WASH Forum, Dakar, Senegal. http://www.irc.nl/page/16096


NWASCO (2010) NWASCO 10 years of regulating. Lusaka. Zambia

NWASCO (2011) Service level guarantees – The level you are entitled to. Lusaka Zambia.


APPENDICES

APPENDIX 1: COMMUNITY SELECTION

<table>
<thead>
<tr>
<th>High income</th>
<th>Middle income</th>
<th>Low income</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Northmead</td>
<td>2. Cheltone</td>
<td>2. Ng’ombe</td>
</tr>
<tr>
<td>5. Woodlands</td>
<td>5. Libala</td>
<td>5. Chipata</td>
</tr>
<tr>
<td>11. Roma</td>
<td></td>
<td>11. Chainda</td>
</tr>
<tr>
<td>15. Villa Elizerbetha</td>
<td></td>
<td>15. John Haward</td>
</tr>
<tr>
<td>17. Lusaka West</td>
<td></td>
<td>17. Misisi</td>
</tr>
<tr>
<td>18. Lusaka South</td>
<td></td>
<td>18. Kuomboka</td>
</tr>
<tr>
<td>22. Longacres</td>
<td></td>
<td>22. Kaunda Square</td>
</tr>
<tr>
<td>23. Hill view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Chalala</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Mass Media</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### APPENDIX 2: HOUSEHOLD QUESTIONNAIRE

**SECTION I: QUESTIONNAIRE IDENTIFICATION**

<table>
<thead>
<tr>
<th>Name of Community:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Survey:</td>
</tr>
<tr>
<td>Household ID:</td>
</tr>
<tr>
<td>Community ID:</td>
</tr>
</tbody>
</table>

**SECTION II: HOUSEHOLD CHARACTERISTICS**

<table>
<thead>
<tr>
<th></th>
<th>Sex of Respondent(s)?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><em>Don’t ask, just note!</em></td>
</tr>
<tr>
<td>1.</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>Couple – male and female</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Are you the household head(s)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>How long have you been living in this house?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Below 2 years</td>
</tr>
<tr>
<td></td>
<td>2. 2 to 3 years</td>
</tr>
<tr>
<td></td>
<td>3. 3 to 5 years</td>
</tr>
<tr>
<td></td>
<td>4. 5 to 10 years</td>
</tr>
<tr>
<td></td>
<td>5. More than 10 years</td>
</tr>
</tbody>
</table>

**SECTION III: PERFORMANCE OF SERVICE PROVIDERS**

<table>
<thead>
<tr>
<th></th>
<th>What is your source of drinking water?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tap water (single users)</td>
</tr>
<tr>
<td></td>
<td>Tap water (multiple users)</td>
</tr>
<tr>
<td></td>
<td>Kiosk</td>
</tr>
<tr>
<td></td>
<td>Communal tap</td>
</tr>
<tr>
<td></td>
<td>Hand pump</td>
</tr>
<tr>
<td></td>
<td>Protected well</td>
</tr>
<tr>
<td></td>
<td>Shallow well</td>
</tr>
<tr>
<td></td>
<td>Other, specify</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>In 2006, what was your source of water for drinking?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tap water (single users)</td>
</tr>
<tr>
<td></td>
<td>Tap water (multiple users)</td>
</tr>
<tr>
<td></td>
<td>Kiosk</td>
</tr>
<tr>
<td></td>
<td>Communal tap</td>
</tr>
<tr>
<td></td>
<td>Hand pump</td>
</tr>
<tr>
<td></td>
<td>Protected well</td>
</tr>
<tr>
<td></td>
<td>Shallow well</td>
</tr>
<tr>
<td></td>
<td>Other, specify</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 6 | Who supplies water to your household/community?                          | ☐ 1. Council  
☐ 2. LWSC  
☐ 3. DWA  
☐ 4. Water Trust  
☐ 5. NGO / Civil society  
☐ 6. Self  
☐ 7. I don’t know  
☐ 8. N/A                                                                 |
| 7 | In 2006, who supplied water to your household/community?                 | ☐ 1. Council  
☐ 2. LWSC  
☐ 3. DWA  
☐ 4. Water Trust  
☐ 5. NGO / Civil society  
☐ 6. Self  
☐ 7. I don’t know  
☐ 8. N/A                                                                 |
| 8 | What is your comment on service provision in your household/ community?  | ☐ 1. Satisfactory  
☐ 2. Average  
☐ 3. Unsatisfactory  
☐ 4. Other specify………………  
☐ 5. I don’t know  
☐ 6. N/A  
Explain your answer ……………. |
| 9 | Approximately, how many hours is the provision of water supply to your household/community, on a daily basis? | ☐ 1. Less than 6 hours  
☐ 2. 6 – 12 hours  
☐ 3. 12 – 18. Hours  
☐ 4. 18 – 24 hours  
☐ 5. I don’t know  
☐ 6. N/A                                                                 |
| 10| Are the hours of supply suitable to meet all your household water needs (drinking, bathing, washing etc)? | ☐ 1. Yes  
☐ 2. No  
Explain your answer ……………. |
| 11| In 2006, how many hours was the provision of water supply to your community on a daily basis? | ☐ 1. Less than 6 hours  
☐ 2. 6 – 12 hours  
☐ 3. 12 – 18. Hours  
☐ 4. 18 – 24 hours  
☐ 5. I don’t know  
☐ 6. N/A                                                                 |
| 12| Were the hours of supply suitable to meet all your household water needs (drinking, bathing, washing etc)? | ☐ 1. Yes  
☐ 2. No  
Explain your answer ……………. |
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 13. | What is the quality of water in terms of turbidity that you drink?       | □ 1. Clear  
□ 2. Not clear  
□ 3. Average  
□ 4. Other specify …………….  
□ 5. I don’t know  
□ 6. N/A |
| 14. | In 2006, what was the quality of water in terms of turbidity that you drank? | □ 1. Clear  
□ 2. Not clear  
□ 3. Average  
□ 4. Other specify …………….  
□ 5. I don’t know  
□ 6. N/A |
| 15. | Is there any difference in the supply situation now compared to the period of 2006 in terms of proximity to the water source? | □ 1. Yes, water is available in the house  
□ 2. Yes, water is nearer  
□ 3. No water still not available  
□ 4. No, water is still further  
□ 5. No difference  
□ 6. Other specify …………….  
□ 7. I don’t know  
□ 8. N/A |
| 16. | Is there any difference in the supply situation now compared to 2006 in terms of hours of supply? | □ 1. Supply hours have increased  
□ 2. Supply hours have reduced  
□ 3. No difference  
□ 4. Other specify …………….  
□ 5. I don’t know  
□ 6. N/A |
| 17. | Approximately, how much do you pay for water per 20 litre container?     | □ 1. Less than K50  
□ 2. K50 – K100  
□ 3. K100 – K150  
□ 4. More than K150  
□ 5. I don’t know  
□ 6. N/A |
| 18. | Approximately, how much do you pay for water per month (communal tap)?  | □ 1. Less than K30,000  
□ 2. K30,000 – K50,000  
□ 3. K60,000 – K100,000  
□ 4. K100,000 – K150,000  
□ 5. More than K150,000  
□ 6. I don’t know  
□ 7. N/A |
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 19| Approximately, how much do you pay for water per month from a Kiosk?     | □ 1. Less than K10,000  
□ 2. K10,000 to K20,000  
□ 3. K20,000 to K50,000  
□ 4. More than K50,000  
□ 5. I don’t know  
□ 6. N/A                                                                       |
| 20| Approximately, how much do you pay for water on a monthly basis? (In a residential area) | □ 1. Less than K30, 000  
□ 2. K30,000 – K50,000  
□ 3. K60,000 – K100,000  
□ 4. K100,000 – K150,000  
□ 5. More than K150,000  
□ 6. I don’t know  
□ 7. N/A                                                                       |
| 21| How do you perceive the water tariff that you pay to access water per month? | □ 1. Not expensive  
□ 2. Average  
□ 3. Expensive  
□ 4. Other specify.........................  
□ 5. I don’t know  
□ 6. N/A                                                                       |
| 22| In 2006, how did you perceive the water tariff that you paid to access water per month? | □ 1. Not expensive  
□ 2. Average  
□ 3. Expensive  
□ 4. Other specify.........................  
□ 5. I don’t know  
□ 6. N/A                                                                       |
| 23| Is your water metered? | □ 1. Yes  
□ 2. No |
| 24| In 2006, was your water metered? | □ 1. Yes  
□ 2. No |
| 25| What is your view of having meters at your houses/community? | □ 1. Reduces water wastage  
□ 2. Consumers are aware of their water consumption  
□ 3. Able to know how much is supposed to be paid as a tariff  
□ 4. Causes us to pay too much money  
□ 5. Other, specify .................  
□ 6. I don’t know  
□ 7. N/A                                                                       |
<p>| 26| Do you know where you could complaints if there is a | □ 1. Yes |</p>
<table>
<thead>
<tr>
<th></th>
<th>water supply and sanitation related problem?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>27.</td>
<td>In 2006, did you know where you could complain if there was water supply and sanitation related problem?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Yes</td>
<td>2. No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Where do you complain about problems related to water supply and sanitation in your area?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>28.</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>In 2006, where did you complain about problems related to water supply and sanitation in your area?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>29.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Have you ever complained about any problems related to water supply and sanitation between 2006 and 2011?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>30.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Yes</td>
<td>2. No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>If yes, to who?</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>31.</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>---</td>
</tr>
<tr>
<td>32.</td>
<td>If yes, what was the complaint about?</td>
<td>□ 1. Unfair disconnection to water supply  □ 2. Lack or malfunctioning metre at home  □ 3. Water being dirty  □ 4. Inadequate water supply coverage  □ 5. Less hours of supply  □ 6. Exaggerated water bill  □ 7. Leaking pipe  □ 8. Other, specify ……………  □ 9. N/A</td>
</tr>
<tr>
<td>33.</td>
<td>Have you ever been served with a disconnection notice between 2006 and 2011?</td>
<td>□ 1. Yes  □ 2. No</td>
</tr>
<tr>
<td>34.</td>
<td>Have you ever been disconnected from water supply between 2006 and 2011?</td>
<td>□ 1. Yes  □ 2. No</td>
</tr>
<tr>
<td>36.</td>
<td>Is it a communal or household toilet?</td>
<td>□ 1. Household  □ 2. Communal  □ 3. N/A</td>
</tr>
<tr>
<td>37.</td>
<td>Is the toilet facility you use functioning well?</td>
<td>□ 1. Yes  □ 2. No</td>
</tr>
<tr>
<td>38.</td>
<td>Is the toilet facility satisfactory in terms of functionality?</td>
<td>□ 1. Satisfactory  □ 2. Not satisfactory</td>
</tr>
<tr>
<td>39.</td>
<td>If not satisfactory, what is the problem with the facility?</td>
<td>□ 1. It has leakages  □ 2. Septic tanks/ sewer line gets flooded  □ 3. Facility is falling apart  □ 4. Other, please specify ……</td>
</tr>
<tr>
<td>41.</td>
<td>Was it a communal or household toilet?</td>
<td>□ 1. Household</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 42. Was the toilet facility you were use functioning well?               | 1. Yes  
|                                                                    | 2. No                                                    |
| 43. Was the toilet facility satisfactory in terms of functionality?     | 1. Satisfactory  
|                                                                    | 2. Not satisfactory                                       |
| 44. If not satisfactory, what is the problem with the facility?         | 1. It has leakages  
|                                                                    | 2. Septic tanks/ sewer line gets flooded  
|                                                                    | 3. Facility is falling apart  
|                                                                    | 4. Other, please specify ……                                   |
| 45. General comment on the water supply and sanitation situation in your area | ................................................................. |

END OF INTERVIEW

Thank you for your time and for all the information rendered!
# APPENDIX 3: INSTITUTIONAL QUESTIONNAIRE FOR SERVICES PROVIDERS

## SECTION I: IDENTIFICATION OF RESPONDENT

<table>
<thead>
<tr>
<th>Position at work:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Institution:</td>
<td></td>
</tr>
</tbody>
</table>

## SECTION II: PERFORMANCE INDICATORS

<table>
<thead>
<tr>
<th>1. What catchment areas are you serving and are under your office/jurisdiction?</th>
</tr>
</thead>
</table>
| □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ………… |

<table>
<thead>
<tr>
<th>2. What percentage of the population in your catchment area has access to clean water?</th>
</tr>
</thead>
</table>
| □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ………… |

<table>
<thead>
<tr>
<th>3. What percentage of the population in your catchment area has access to proper sanitation?</th>
</tr>
</thead>
</table>
| □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ………… |

<table>
<thead>
<tr>
<th>4. In 2006, what percentage of the population in your catchment area had access to clean water?</th>
</tr>
</thead>
</table>
| □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ………… |

<table>
<thead>
<tr>
<th>5. In 2006, what percentage of the population in your catchment had access to proper sanitation?</th>
</tr>
</thead>
</table>
| □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ………… |
<table>
<thead>
<tr>
<th></th>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 6 | Where do you get your funding for running costs of the water supply and sanitation?                                                                                                                     | □ 1. No where  
□ 2. Water bills  
□ 3. Government  
□ 4. Donors  
□ 5. NGOs  
□ 6. Other, please specify ……  
□ 7. I don’t know  
□ 8. N/A  
*(Tick more than one option if applicable)*                                                                                     |
| 7 | If there is multiplicity of funding, how do you determine performance of WSS in your organisation alone?                                                                                                   | □ 1. Making a loss  
□ 2. Not making a loss  
□ 3. Average in performance  
□ 4. Reaping the full benefits  
□ 5. Other, please specify ……  
□ 6. I don’t know  
□ 7. N/A  
Give small explanation for your answer ................................             |
| 8 | Is it good investment in WSS or LWSC/Water Trust is making a loss?                                                                                                                                          | □ 1. Making a loss  
□ 2. Not making a loss  
□ 3. Average in performance  
□ 4. Reaping the full benefits  
□ 5. Other, please specify ……  
□ 6. I don’t know  
□ 7. N/A  
Give small explanation for your answer ................................             |
| 9 | Compared to the amount of water billed, what was the percentage of tariffs collected in the last financial year?                                                                                             | □ 1. 0 – 25%  
□ 2. 26 – 50%  
□ 3. 51 – 75%  
□ 4. 76 – 100%  
□ 5. I don’t know  
□ 6. N/A  
Give small explanation ..............                                                                                |
| 10| In your view, do you think water consumers are making prompt payments to water billed?                                                                                                                   | □ 1. Yes  
□ 2. No  
□ 3. I don’t know  
□ 4. N/A  
Give small explanation……………….                                                                                |
| 11| Are tariffs collected from the users sufficient to cover reinvestments and replacement of assets per year?                                                                                                 | □ 1. Yes  
□ 2. No  
□ 3. I don’t know                                                                                                           |
<p>| | | |</p>
<table>
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<tbody>
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</tr>
</tbody>
</table>
| **12.** | Is the amount of actual collected tariff sufficient for the operations and maintenance costs in your organisation per year? | □ 4. N/A  
Give small explanation ………… |
| | | □ 1. Yes  
□ 2. No  
□ 3. I don’t know  
□ 4. N/A  
Give small explanation ………… |
| **SECTION III:  SUSTAINABILITY AND AWARENESS** |   |   |
| 13. | For sustainability of your company, what kind of activities do you do? |   |
| 14. | What aspects of capacity building do you cover in your organization to ensure that you are efficient in water supply and sanitation provision? | □ 1. Operations and maintenance  
□ 2. Financial management  
□ 3. Protection of water sources including water conservation  
□ 4. Other, specify ……………  
□ 5. I don’t know  
□ 6. N/A  
(Tick more than one option if applicable) |
| 15. | Do you carry out public awareness campaigns to educate consumers on their rights and responsibilities in WSS? | □ 1. Yes  
□ 2. No  
□ 3. I don’t know  
□ 4. N/A |
| 16. | If yes, how often? | □ 1. Every 1 month  
□ 2. Every 2 to 3 months  
□ 3. Every 4 to 6 month  
□ 4. Every 7 to 12 months  
□ 5. I don’t know  
□ 6. N/A |
| 17. | What was the message for the most recent awareness campaign activity carried out? | Give small explanation ………… |
| **SECTION IV:  HUMAN RESOURCE DEVELOPMENT** |   |   |
| 18. | What is the minimum qualification for a Station Manager? | □ 1. None  
□ 2. Basic education  
□ 3. Tertiary (Certificate) |
<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>19.</td>
<td><strong>What is the minimum qualification for a metre reader?</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ 1. None  □ 2. Basic education  □ 3. Tertiary (Certificate)  □ 4. Tertiary (Diploma or Degree)  □ 5. Other, please specify ……  □ 6. I don’t know  □ 7. N/A</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td><strong>What is the minimum qualification for personnel carrying out O&amp;M on the ground?</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ 1. None  □ 2. Basic education  □ 3. Tertiary (Certificate)  □ 4. Tertiary (Diploma or Degree)  □ 5. Other, please specify ……  □ 6. I don’t know  □ 7. N/A</td>
<td></td>
</tr>
</tbody>
</table>
| 21. | **Does the level of education have any implication in service delivery or performance of personnel?** | □ 1. Yes  □ 2. No  □ 3. I don’t know  □ 4. N/A  
Give small explanation for your answer ............................... |
| 22. | **If yes, what is the implication of service delivery in terms of water supply and sanitation?** | □ 1. Improve technical expertise  □ 2. Improve cognitive abilities to make proper decisions  □ 3. No implications  □ 4. Other, please specify ……  □ 5. I don’t know  □ 6. N/A  
*(Tick more than one option if applicable)* |
<p>| 23. | <strong>What has been done to improve human resource handling service delivery?</strong> | □ 1. Identified training needs and trained personnel  □ 2. Matched responsibilities with required work |</p>
<table>
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<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>Are there improved financial and other benefits to sustain personnel utilisation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have there been improved financial and other benefits in 2006 to sustain personnel utilisation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, has the improvement of pay and benefits been used to motivate employees in the company?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hence, what is your perception of service delivery as a result of improved conditions of service for the workers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is your perception of service delivery as a result of un-improved conditions of service for the workers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there been financial and other capacities to sustain employee training?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In 2006, were there financial and other capacities to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>Sustain employee training?</td>
<td>2. No</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. I don’t know</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. N/A</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION IV: ENHANCEMENTS AND IMPEDIMENTS EXPERIENCED**

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>In terms of expansion to underserved areas and improvement of service delivery, do you face financial challenges in doing that?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In 2006, did you face financial challenges to expand to underserved areas and improve service delivery?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In terms of expansion to underserved areas and improvement to service delivery, do you face political interference in doing that?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In 2006, did you face political interference to expand to underserved areas and improve service delivery?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In terms of expansion to underserved areas and improvement to service delivery, do you face technical problems in doing that?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In 2006, did you face technical problems to expand to underserved areas and improve service delivery?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In terms of expansion to underserved areas and improvement to service delivery, do you lack skilled human resource to do that?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In 2006, did you lack skilled human resource to expand to underserved areas and improve service delivery?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>Have you incorporated into your activities the aspect of capacity building among your employees to enhance service provision?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>In 2006, did you incorporate into you organizational plans the aspect of capacity building among your employees to improve service provision?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td>What percentage of attention is given to fund service provision by government and cooperating partners?</td>
<td>1. Yes</td>
</tr>
<tr>
<td></td>
<td>2. No</td>
</tr>
<tr>
<td></td>
<td>Question</td>
</tr>
<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>42.</td>
<td>In 2006, what percentage of attention was given to fund service provision by government and cooperating partners?</td>
</tr>
<tr>
<td>43.</td>
<td>Did your organisation identify training needs and trained personnel to enhance service provision of water supply and sanitation?</td>
</tr>
<tr>
<td>44.</td>
<td>In 2006, did your organisation identify training needs and trained personnel to enhance service provision of water supply and sanitation?</td>
</tr>
<tr>
<td>45.</td>
<td>Did your organization match responsibilities with required work to efficiently utilize personnel and enhance service provision?</td>
</tr>
<tr>
<td>46.</td>
<td>In 2006, did your organization match responsibilities with required work to efficiently utilize personnel and enhance service provision?</td>
</tr>
<tr>
<td>47.</td>
<td>Did your organization carry out performance appraisals to ensure that work was output based?</td>
</tr>
<tr>
<td>48.</td>
<td>In 2006, did your organization carry out performance appraisals to ensure that work was output based?</td>
</tr>
<tr>
<td>49.</td>
<td>Did your organization use financial and other benefits to motivate your employees as a means of improving service provision?</td>
</tr>
<tr>
<td>50.</td>
<td>In 2006, did your organization use financial and other benefits to motivate your employees as a means of improving service provision?</td>
</tr>
</tbody>
</table>

END OF INTERVIEW

Thank you for your time and for all the information rendered!
# APPENDIX 4: GENERAL INSTITUTIONAL QUESTIONNAIRE

## SECTION I: IDENTIFICATION OF RESPONDENT

<table>
<thead>
<tr>
<th>Position at work:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of Institution:</td>
<td></td>
</tr>
</tbody>
</table>

## SECTION II: PERFORMANCE INDICATORS

1. Is your organisation involved in anyway with regards to water supply and sanitation in Lusaka District?  
   - [ ] Yes  
   - [ ] No

2. If yes, what is your involvement?  
   - [ ] Financing agent  
   - [ ] Regulator  
   - [ ] Advisor  
   - [ ] Service provider  
   - [ ] Other, specify ……………  
   - [ ] I don’t know  
   - [ ] N/A

3. What is your opinion of service provision in the urban parts of Lusaka District?  
   - [ ] Satisfactory  
   - [ ] Average  
   - [ ] Unsatisfactory  
   - [ ] Other, specify ……………  
   - [ ] I don’t know  
   - [ ] N/A

4. In the last 5 years, has there been an improvement in performance regarding WSS for urban parts of Lusaka District?  
   - [ ] Yes  
   - [ ] No

5. If yes, by what increment?  
   - [ ] 0 – 25%  
   - [ ] 26 – 50%  
   - [ ] 51 – 75%  
   - [ ] 76 – 100%  
   - [ ] I don’t know  
   - [ ] N/A

6. What is your opinion of service provision in the peri-urban parts of Lusaka District?  
   - [ ] Satisfactory  
   - [ ] Average  
   - [ ] Unsatisfactory  
   - [ ] Other, specify ……………  
   - [ ] I don’t know  
   - [ ] N/A

7. In the last 5 years, has there been an improvement in  
   - [ ] Yes
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>performance regarding WSS for peri-urban parts of Lusaka District?</td>
<td>☐ 2. No</td>
</tr>
<tr>
<td>8. If yes, by what increment?</td>
<td>☐ 1. 0 – 25%</td>
</tr>
<tr>
<td></td>
<td>☐ 2. 26 – 50%</td>
</tr>
<tr>
<td></td>
<td>☐ 3. 51 – 75%</td>
</tr>
<tr>
<td></td>
<td>☐ 4. 76 – 100%</td>
</tr>
<tr>
<td></td>
<td>☐ 5. I don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ 6. N/A</td>
</tr>
<tr>
<td>9. What percentage of the population in Lusaka District has access to clean water?</td>
<td>☐ 1. 0 – 25%</td>
</tr>
<tr>
<td></td>
<td>☐ 2. 26 – 50%</td>
</tr>
<tr>
<td></td>
<td>☐ 3. 51 – 75%</td>
</tr>
<tr>
<td></td>
<td>☐ 4. 76 – 100%</td>
</tr>
<tr>
<td></td>
<td>☐ 5. I don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ 6. N/A</td>
</tr>
<tr>
<td>10. What percentage of the population Lusaka District has access to proper sanitation?</td>
<td>☐ 1. 0 – 25%</td>
</tr>
<tr>
<td></td>
<td>☐ 2. 26 – 50%</td>
</tr>
<tr>
<td></td>
<td>☐ 3. 51 – 75%</td>
</tr>
<tr>
<td></td>
<td>☐ 4. 76 – 100%</td>
</tr>
<tr>
<td></td>
<td>☐ 5. I don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ 6. N/A</td>
</tr>
<tr>
<td>11. In the last 5 – 10 years, what percentage of the population Lusaka District had access to clean water?</td>
<td>☐ 1. 0 – 25%</td>
</tr>
<tr>
<td></td>
<td>☐ 2. 26 – 50%</td>
</tr>
<tr>
<td></td>
<td>☐ 3. 51 – 75%</td>
</tr>
<tr>
<td></td>
<td>☐ 4. 76 – 100%</td>
</tr>
<tr>
<td></td>
<td>☐ 5. I don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ 6. N/A</td>
</tr>
<tr>
<td>12. In the last 5-10 years, what percentage of the population Lusaka District had access to proper sanitation?</td>
<td>☐ 1. 0 – 25%</td>
</tr>
<tr>
<td></td>
<td>☐ 2. 26 – 50%</td>
</tr>
<tr>
<td></td>
<td>☐ 3. 51 – 75%</td>
</tr>
<tr>
<td></td>
<td>☐ 4. 76 – 100%</td>
</tr>
<tr>
<td></td>
<td>☐ 5. I don’t know</td>
</tr>
<tr>
<td></td>
<td>☐ 6. N/A</td>
</tr>
<tr>
<td>13. Who finances service providers in Lusaka District?</td>
<td>☐ 1. Self, through water bills</td>
</tr>
<tr>
<td></td>
<td>☐ 2. Government</td>
</tr>
<tr>
<td></td>
<td>☐ 3. Donors</td>
</tr>
<tr>
<td></td>
<td>☐ 4. Other specify …………..</td>
</tr>
<tr>
<td></td>
<td>(Tick more than one option if applicable)</td>
</tr>
<tr>
<td>14. If there is multiplicity of funding, how do you determine performance of WSS of the service</td>
<td>.................................................................</td>
</tr>
<tr>
<td></td>
<td>.................................................................</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 15. Is the funding sufficient to cover all running costs of the service providers? | □ 1. Yes  
□ 2. No  
Explain your answer …………… |
| 16. As an organisation, what do you do to ensure that service provision by WSS service providers is of an acceptable standard? | …………………………………… |
| 17. Do you think water consumers are adequately educated about their rights and responsibilities? | □ 1. Yes  
□ 2. No  
Explain your answer……………… |
| 18. What challenges do you think service providers face in providing efficient WSS in Lusaka District? | …………………………………… |
| 19. What kind of improvement do you think service providers of WSS have scored since their inception in Lusaka District? | …………………………………… |
| 20. Is there health and hygiene education for water consumers in Lusaka District? | □ 1. Yes  
□ 2. No |
| 21. If yes, what kind of health and hygiene information is disseminated? | …………………………………… |
| 22. How do you rate the attention given to WSS in Zambia by the government and cooperating partners? | □ 1. 0% – 20%  
□ 2. 21% - 50%  
□ 3. 51% - 75%  
□ 4. 76% - 100% |
| 23. Are there any measures put in place by your organisation to monitor service provision? | □ 1. Yes  
□ 2. No |
| 24. If, yes, what kind of measures have you put in place? | …………………………………… |

END OF INTERVIEW

Thank you for your time and for all the information rendered!