



**UNIVERSITY of the
WESTERN CAPE**

**ASSESSMENT OF WATER SERVICE DELIVERY IN THE
MUNICIPALITIES OF CITY OF TSHWANE, CITY OF CAPE
TOWN AND ETHEKWINI**



**By
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A thesis submitted in fulfillment of the requirements for the degree of Magister Scientiae (MSc) in the Faculty of Science, Earth Sciences Department, University of the Western Cape, South Africa

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Declaration

I declare that: *Assessment of Water Service Delivery in the Municipalities of City of Tshwane, City of Cape Town and EThekweni* is my own work, that it has not been submitted before for any degree or examination in any university, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

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Acknowledgements

The thesis entitled “*Assessment of Water Service Delivery in the Municipalities of City of Tshwane, City of Cape Town and EThekweni*” has been successfully completed with input from many people. Hence, I thereby acknowledge such people for their contributions.

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Dedication

I dedicate this thesis to my mother Mbulaheni Elizabeth Makhari and my entire family for their love and support during the period I was undertaking my studies. May their right to participate in water resources management be respected.



Abstract

Access to water and water scarcity are the most critical impediments to sustainable development in municipal water provision. Good water and sanitation services are essential for health, economic development, and environmental protection. Recognizing the importance of access to a safe and adequate water supply, has become the core business of many cities. Among the major challenges facing local government regarding basic service provision in South Africa are acute problems of institutional capacity, maintenance of existing infrastructure, mismanagement of funds, high levels of corruption and a lack of public anticipation. There has been public outcry in South Africa about poor performance of municipalities in service delivery. Moreover, a good proportion of service delivery protests relate to municipalities' failure to carry out basic maintenance of existing infrastructure. The aim of this study was to assess water service delivery performance in the Municipalities of the City of Tshwane (CoT), City of Cape Town (CoCT) and EThekweni Metropolitan by comparing water service delivery for the three Water Service Authorities (WSAs). In this study the performance of Water Service Authorities is measured using the Regulatory Performance Measurement System (RPMS) using 11 regulatory Key Performance Indicators (KPIs). To find answers to research questions and objectives, the research was conducted through desktop research incorporating both quantitative and qualitative dimensions. Exploring the datasets and frequency tabulations were employed. For the analysis of the relative performance levels toward gaining access to water and sanitation services, the RPMS tool was used. The particular indicators of interest were the changes in performance levels in the provision of basic services for different segments based on RPMS. In line with our findings for Financial Performance Indicator (KPI 9) water supply in the WSAs is undertaken by local government that have the dual objectives of providing a social service while generating revenue to offset cost. Ironically, most of these WSAs do not recover their operating expenses from their own revenues, and remain dependent on state government for subsidies. The study concludes that the CoT is the best performer on the Financial Performance (KPI 9). The KPI requiring attention is Financial Performance (KPI 9) for the CoCT and EThekweni WSAs with indicators showing need for improvement. Compliance is encouraged for all WSAs on the Financial Performance Indicator (KPI 9) to ensure that their water business is sustainable. The study recommends that the relevant stakeholders and project proponents consider financial viability (sustainability) through the increase in value for money expenditure to grow and diversify revenue.

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Key Words

Local government

Organisational structure

Water services delivery

Regulations

Performance measurement



Acronyms

| | |
|--------|--|
| ADB | Asian Development Bank |
| CoCT | City of Cape Town |
| CoT | City of Tshwane |
| DPLG | Department of Provincial and Local Government |
| DWA | Department of Water Affairs |
| DWAF | Department of Water Affairs and Forestry |
| EMMA | EThekweni Metropolitan Municipal Area |
| EU | European Union |
| GOZ | Government of Zanzibar |
| GUI | Graphical User Interface |
| HPI | Human Poverty Index |
| IDP | Integrated Development Plan |
| KPIs | Key Performance Indicator |
| MDGs | Millennium Development Goals |
| NWSRS | National Water Service Regulation Strategy |
| NRW | Non-Revenue Water |
| PPPs | Public-Private Partnerships |
| PuPs | Public-Public Partnerships |
| RDP | Reconstruction and Development Program |
| RPMS | Regulatory Performance Measurement System |
| RSA | Republic of South Africa |
| SFWS | Strategic Framework for Water Services |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNICEF | United Nations International Children's Education Fund |

| | |
|-------|---|
| WHO | World Health Organization |
| WOP | Water Operators Partnership |
| WSAs | Water Service Authorities |
| WSDP | Water Services Development Plan |
| WSMP | Water Services Master Plan |
| WSS | Water and Sanitation Services |
| ZSGRP | Zanzibar Strategy for Growth and Reduction of Poverty |
| ZSP | Zanzibar Sustainable Programme |



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Chapter 1

1.1 Introduction

In South Africa the phenomenon of violent protests against poor service delivery has become systemic over the past several years, with the Institute for Security Studies (2011) reporting one of the highest rates of public demonstrations protest in the world. Numerous concerns have been recorded, many of which have been categorised as ‘service delivery protests’ against local authorities (Parliament of RSA, 2009). This form of protest is regarded as a socio-economic phenomenon, driven by extreme poverty and inequality, and has become increasingly violent. Steyn (2011) notes that between 2004 and 2011 there has been a dramatic acceleration of local government protests in South Africa, and in a six-month period between January and June 2009, a total of 26 service delivery protests were recorded in the country (Parliament of RSA, 2009).

In terms of section 40 (1) of the Constitution of the Republic of South Africa (Act 108 of 1996), government is constituted into national, provincial and local spheres, which are distinctive, interdependent and interrelated. This establishes local authorities as a distinctive sphere, with a mandate to govern, to provide services (such as water, electricity, houses, roads and sanitation), and to promote social and economic development. The motivation for this research stems from the Constitution which recognises that local government has a developmental as well as a service role in meeting the basic needs of communities and improving living conditions. Also, a need for closer investigation is clear from continuing protests over poor service delivery.

Several studies have examined cases where poor service delivery has led to protests and unrest. The Centre for Development Support at Free State University has published four case studies of delivery failures and protests in Phumelela, Khutsong, Phomolong and Nelson Mandela Bay municipalities (Botes et al. 2007). They found that deficient service delivery has been caused by poor governance, individual political struggles within local government, a lack of communication, an ineffective client interface, inefficient management and issues of affordability and unfunded mandates.

According to Statistics South Africa (2007) the National level databases show improvements in basic service delivery in accordance with the Reconstruction and Development Program (RDP) commitment made in 1994. Interesting variations between communities may be hidden by the level of aggregation. Closer inspection of service delivery at local level is required which has resulted in the Department of Water Affairs (DWA) developing the Regulatory Performance Measurement System (RPMS) tool to measure compliance levels within municipalities of service delivery indicators. According to Section 155 (7) of the Constitution, DWA's mandate is to regulate water and sanitation services. The Cabinet approved Strategic Framework for Water Services which sets out a vision for the sector with specific goals and targets. One of the agreed sector goals is the effective regulation of water and sanitation services (DWA, 2010).

Regulatory Performance Measurement System (RPMS) varies according to the needs of the user municipality. RPMS meet the needs of a user depending on the level of use, the user can view compliance from three levels either from national, provincial and local which is at the water service authority level. Users will be able to benchmark their compliance amongst others; WSAs can also use compliance reports from the system to motivate for funding from Treasury on non-complying KPIs in order to improve their compliance levels. The system is designed to provide both DWA and the WSAs with essential management information for sector-wide improvement of business practice. RPMS is a tool used by DWA to measure Water Service Authorities (WSAs) performance against key performance indicators. RPMS constitutes the fundamental tool to benchmark each WSAs performance and to determine performance trends with the intention of promoting best practice in the sector. According to Ehrhardt et al. (2007) there is no one size fits all regulatory solution which merits investigation so that the regulatory framework for the WSAs can be clearly understood and be implemented for the provision of water and sanitation services. This implies that one regulatory solution cannot be applied to all regulatory problems for all WSAs. Examples by Ehrhardt et al. (2007) bear testimony of the same. These examples include countries like Manila and Jakarta. For example, in a city-state, like Singapore, there is discipline and commitment by the Government, and the Singapore Public Utilities Board ends up self-regulating and doing a fine job. Many developed countries, although not perfect, operate in much the same fashion. But in many Asian countries, both legislation and policy are

overlooked. Therefore, when regulatory bodies were set up, such as in Manila, they were not true regulatory bodies. Instead, they were more like contract administrators. While development agencies generally agree that to enter into a private sector contract without first establishing regulatory arrangements is a recipe for disaster, the reality is that over the last 10 years in most developing countries there was only regulation by contract. The example of Manila is a classic case, but it is typical of what has been happening elsewhere in the world. Of course, in most cases, the private sector wants regulation by contract, because private operators will not then be affected by changes in government policies. But as the private sector found in Jakarta, a contract is little protection from the will of the people. There are also cases of disappointing regulatory performances indicative of the faults in check-box approach to regulatory design.

There are three types of key attributes (coherence, predictability and credibility, and lastly legitimacy and accountability) that embody in the regulatory system. Such type of attributes involve different combinations of instruments and organizations as shown by international experience (Ehrhardt et al. 2007). These attributes can be achieved through various functionally equivalent designs.

Approaches to regulation need to be rethought, with more emphasis on the first principles of regulation. Therefore, these first principles may be thought of as a set of regulatory attributes that a good regulatory system should embody, such as:

- Coherence: Tariffs and service standards are inter-related: higher service standards, or greater coverage, mean that higher costs will be incurred. These costs need to be covered either by the government or consumers. A regulatory system should be able to ensure both that providers recover their costs and that people receive the services they are willing to pay for.
- Predictability and credibility: If service standards and rules for cost recovery through tariffs are clear and unlikely to change unpredictably, and regulation provides credible provider protection, it will be easier to procure competent new providers, and existing providers will face less risk in investing to improve and expand water system infrastructure. Predictable and credible regulation requires not only well-designed regulatory arrangements, but also sound policy and governance frameworks for the sector.

- Legitimacy and accountability: Regulatory processes and outcomes need to be understood and generally accepted by consumers who bear the ultimate impact of tariff and service standard decisions, how these are best developed within a variety of legal instruments and organizations, and how they can be applied in a specific country context.

Which combination of legal instruments and organizations works best will vary from one WSA to another. This study seeks to understand the regulatory framework in the provision of quality service to the residents of the three WSAs as case studies.

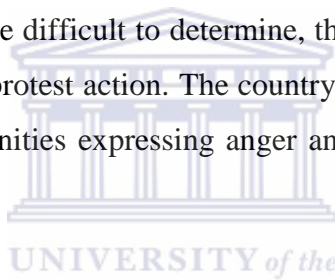
1.2 Background

DWAF (2004) cited in Nnadozie (2013) indicates that from the very inception of the RDP, there was an expectation that the goals set out in the national development framework would be achieved as planned. For instance, in the water and sanitation sector, the stated target was to provide all households with a clean and safe supply of 25 litres of water per capita per day (within 200 meters of the household) as well as improved sanitation facilities. Apart from the targets of the RDP, other development commitments such as service delivery targets were promised on the expectation of speedy delivery (Mbeki, 2004). These related to the key issues around household services provision, education, health care, and security amongst others. The promises include intensifying the housing program and the delivery of piped water to all households in South Africa within the next five years (2008 to 2009).

Other important dimensions regarding basic service provision in South Africa relate to the municipalities' capacity to deliver, the maintenance of existing infrastructure, and institutional problems of corruption and mismanagement. According to (Bloch et al. 2000) there have been documented cases where funding allocations for development projects have been returned to the central treasury because local governments have lacked the capacity to utilize such funds. Moreover, a good proportion of service delivery protests relate to municipalities' failure to carry out basic maintenance of existing infrastructure. Most attempts at measuring service delivery in the post-apartheid era have focused on absolute measures of service access.

According to Ehrhardt et al. (2007) regulation is about making decision and enforcing rules for the development and management of urban water supplies and sanitation in developing countries. Therefore, regulation aims to ensure that all role players comply with all the regulatory goals, objectives and measures in respect of the economic, social, political, environmental and technical desirables as provided for in all relevant policy and legislation.

Among the major challenges facing local government are acute problems of institutional capacity, mismanagement of funds, high levels of corruption and a lack of public anticipation. According to Cronje (2014), data from the South African police shows that the country is averaging around four to five violent anti-government protests a day. For example Gauteng alone experienced more than 500 protests since the beginning of 2014, of which over 100 turned violent. Tapela (2013) and Cronje (2014) indicate a sharp increase in protest action over the past five years. While exact numbers are difficult to determine, there is no doubt that South Africa is experiencing significant levels of protest action. The country is witnessing the development of a protest movement of poor communities expressing anger and frustration at the performance of the Government.



According to Jain (2010) cited in Karamoko (2011) South Africa experienced an average of 8.73 protests per month, and 9.83 protests per month in 2007 and 2008 respectively. In 2009, the average number of protests ballooned to 17.75 per month. Beginning in June 2010, the rising rate of community protests ended abruptly, followed by a period of diminishing frequency. For the entirety of 2010, the average number of community protests fell to 11.08 per month. After June 2010, South Africa experienced relative calm with only 6.14 protests per month for the remainder of the year. Protests have continued to decline during the first five months of 2011, with an average of only 8.80 protests per month.

Since mid-2009, despite the reduced frequency of community protests an increasing proportion of protests led to violence Jain (2010) cited in Karamoko (2011). While only 36.86% of protests taking place between February 2007 and March 2009 were violent, 53.00% of protests taking place during or after April 2009 were violent. In the 3rd quarter of 2009, the 4th quarter of 2009 and the 1st quarter of 2010, 50.65%, 52.38% and 64.06% of the protests, respectively, were

violent. Although the outbreak of community protests remains subdued in 2011, in only one month has the proportion of violent protests remained below 50%.

Protestors claim that they protest over lack of service delivery and water is one of the elements of service delivery (Tapela, 2013). Water service delivery issues rose in prominence among various reasons cited by protesters. Water service delivery issues have been (and still are) a part of a range of conflated grievances that masquerade under the general rubric of 'service delivery' issues and underpin many rallying calls for social protest action (Tapela, 2013). Although such conflation reflects the inter-relatedness of social services, it also masks the precise nature of the specific water service delivery issues in question.

Tapela (2013) argues that while protests highlight the prevalence of water services delivery issues in diverse and dynamic local contexts, the crafting of protest narratives and repertoires and the journalistic reporting of most protest events has often obscured the finer details of perceived grievance issues and how these transform into protest action. The growing visibility of water 'service delivery' issues has thus not yielded clear understandings of the political, economic, social, institutional, historical and cultural environment within which social protests tend to occur, the exact nature of grievances over water service delivery and how grievance issues mutate into violent protest action.

Tapela (2013) shows that most social protests associated with water service delivery tend to occur in working-class urban and peri-urban localities characterised by high levels of poverty, unemployment, inequality, relative deprivation, marginalisation and disjuncture's (including communication breakdown) between water services development planning at municipal and national levels and water use at local household and community levels, irrespective of the political party affiliation of local government. Critically, however, protest mobilisation and organization are a major determinant of the specific repertoires protestors use to engage with authorities.

The protests are often described as ‘service delivery protests’, but this is something of a misnomer. Erratic water supply, electricity disconnections, poorly built Reconstruction and Development Program (RDP) houses, and instances of sewerage flowing through the streets may all spark protests, of course (Cronje, 2014). However, there is a distinction to be drawn between the immediate sparks that set off demonstrations and the deeper reason for the protests.

Lack of good quality drinking water and proper sewage disposal can have significant impact on the health of human populations, but the costs of poor water and sanitation services (WSS) and the benefits of improving those services extend well beyond simple health indicators. Just as well, the problems of WSS are inextricably tied to the problems of poverty, inequality, the environment, and overall development. The phenomenal growth being seen in cities – especially cities in developing countries, which will experience 87% of the population growth in those countries by 2015 UNDP (2004) – will increase the fiscal stress on already strained governments and will make providing basic WSS even more difficult.

Kelman (2004) indicates that the bias that occurs within poor countries – a bias that delivers good quality services to the rich, middle class or politically connected groups, and delivers poor or nonexistent services to the lower income groups is an issue to consider. Kelman (2004) calls attention to policies in Brazil that actively subsidize the rich and evaluates a new program that is designed to counter these subsidies with result-based contracting. The rich-poor bias, however, is not the only concern; it has been reported that such infrastructure disparities also occur within poor areas of developing countries (Chege & Agha, 1999). Indeed, some (Zawdie & Langford, 2002) argue that rather than thinking of poor infrastructure as resulting from a poor community unable to pay for upgrades, it may be more appropriate to think of poverty as partially a consequence of poor infrastructure. In line with this argument, Chatterjee et al. (2004) describe experiences of the Asian Development Bank in using infrastructure improvement (electricity and transportation) to effect general poverty reduction and describe policies that attempt to use prices as a way of promoting “equity, efficiency, and sustainability (Rogers et al. 2002).

There are also clear economic costs for poor infrastructure and services which extend beyond the directly affected population to the larger community and city-region. These can include

environmental costs borne by the whole region (Keraita et al. 2003) disproportionate costs to small private businesses that should be forces of growth and development in poor communities (Lee et al. 1999) or long-term systemic costs to the city or country when infrastructure is provided *ex post facto* for unplanned communities (Ferguson, 1996). However, a myopic focus on system or municipal costs can also have negative reverberations throughout poor communities. Smith & Hanson (2003) lay blame on heedless cost-recovery measures for increasing inequalities and service cut-offs in South Africa. Smith (2004) also blames unnecessary corporatization and too much attention to technical issues and efficiency at the cost of equitable service delivery.

These departures from the market highlight a reality of the sector in developing countries: profits are not guaranteed and revenues are not always worth the initial investments made by the international water service consortiums. They also point to the continuing truth of a nexus of poor infrastructure, poor management, and poor revenue streams that produce a vicious cycle of inadequate water service (Graham, 2005).

While many failures to provide basic services and to recover costs are likely locational specific, there are also some trends that can be generalized, including political interference, poor assumptions about the market, and losses from undercapitalized infrastructure.

1.3 Problem Statement

There has been public outcry in South Africa about poor performance of municipalities in service delivery. Performance of many South African municipalities is below expectation (Naidoo, 2010). Most attempts at measuring service delivery in the post-apartheid South Africa have shown considerable numerical improvement in terms of the numbers of individuals or households gaining access to various services. What then appears paradoxical is that in spite of reported progress in this area, there has been increasing outcry and contestation of outcomes amongst various communities in the recent times. This suggests that different dimensions are required to measure access to basic services in order to comprehend this dichotomy.

The provision of water services has over the years faced adverse infrastructural and delivery challenges including poor capacity, rapid loss of water quality, and service provision

management challenges. Water service delivery is of major concern to both environmental scientists and individual citizens. Poor water service delivery inevitably generates community reactions that are generally sources of community clashes. Water service delivery in South Africa's municipalities is particularly a growing problem. Available statistics indicate that the service delivery is compromised with the WSAs responsible for water service delivery management failing to meet their targets. The question of interest is whether the rest of the WSAs are therefore able to comply with the standard service provision benchmarks. Regulations are the most common management systems in the service provision sector of the municipalities. Most of these regulations are improperly monitored, thus allowing for poor delivery of service in those municipalities. Central to this is how effective are these regulations for the provision of quality water to the residents of the WSAs. In order to provide access to water for human needs, DWA introduced regulations to guide WSAs in fulfilling their service delivery mandate. However, in South Africa the delivery of these services can be less than ideal.

1.4 Research Questions and Thesis Statement

1. Which indicators are used by DWA to measure WSAs compliance on water service delivery?
2. Are the criteria used for WSAs water service delivery compliance achieving their key objectives?
3. Can RPMS tool be used to compare water service delivery for the three WSA?

The study will contribute immensely in the academic circles by adding to the quantity of literature available that articulates current issues and challenges related to water regulation and service delivery in the country and the best practice management. On the international arena the study will also contribute to the debate and demonstrate that African countries are also actively engaged in research activities that are contributing to the sustainable management of water service delivery. Clearer insights into issues regarding access to basic services in various communities will contribute to the debate regarding access to basic service delivery in South Africa.

1.5 Study Aim and Objectives

The main aim of this study is to assess water service delivery performance in the Municipalities of the City of Tshwane, City of Cape Town and EThekweni Metropolitan.

In attempting to achieve the aim the following specific objectives for this study are to be fulfilled:

1. identify water service delivery indicators specific for each WSA
2. evaluate each WSA's water service delivery
3. compare water service delivery for the three WSA using RPMS tool

1.6 Scope and Nature of the Study

The study focuses on the assessment of water service delivery in the municipalities of City of Tshwane, City of Cape Town and EThekweni, using Key Performance Indicators (KPIs) developed by the Department of Water Affairs to measure WSAs performance against key performance indicators., For the assessment periods of 2008 to 2009 and 2009 to 2010, to determine performance trends with the intention of promoting best practice in the sector.

1.7 Study Rationale

The study aims to provide insight into the various aspects that affect the water service delivery process and also identify ways to refine this process and improve the KPIs used to measure WSAs compliance on water service delivery.

1.8 Methodology

To find answers to research questions and objectives, the research was conducted through desktop research (Delaney Woods and Associates, 2005), incorporating both quantitative and qualitative dimensions. Exploring the datasets and frequency tabulations will be employed. For the analysis of the relative performance levels toward gaining access to water and sanitation services, the RPMS tool will be used. The particular indicators of interest are the changes in the performance levels in the provision of basic services for different segments of the South African municipalities based on RPMS.

1.9 Thesis Outline

The composition of study is made of five chapters comprising different headings.

Chapter 1: Introduction; this chapter provides a reflection on the background of the study. It is also in the background that an overview of the setting is discussed. Problem statement, aims and objectives of the study, significance of the study and research methodology are discussed.

Chapter 2: Literature Review; this chapter presents an analysis of findings on water services delivery from a global perspective and narrows to the South African situation. This review will include relevant research findings from studies on water service delivery. The chapter explores what is already in the field and tries to identify what knowledge gap this research seeks to fill. The review begins with answering a set of questions pertinent to the problem presented.

Chapter 3: Methodology; this chapter covers the methods used in collecting data and analysis of the research instruments used to gather the data. Definitions of water services delivery, indicators and framework of RPMS are given. It further justifies the choice of the instrument used and briefly explains how the framework is used.

Chapter 4: Results and Discussion; this chapter results of the study are presented, discussed and analyzed. Therefore, the inventory of the water service delivery indicators are presented in form of screen snapshot tables and the framework for assessment of each WSA is presented. Finally assessment of the water service delivery for the three WSAs is presented and discussed.

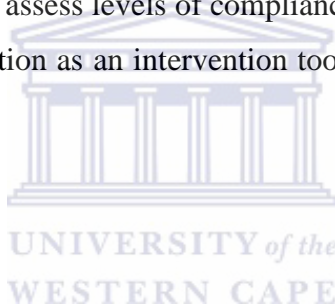
Chapter 5: Conclusions and Recommendations, this chapter focuses on conclusions which are drawn based on the findings of the research and recommendations also drawn from best practices.

Chapter 2

Literature Review

2.1 Introduction

This chapter deals with the concepts of local government, organizational arrangements, water services delivery, regulations for water provision and performance measurement. It provides theoretical definitions of these concepts as well as their meanings in the context of the study. It also sets out some of the alternative ways in which service delivery can be conceptualized and how it can be related to governance issues and legislation. The discussion about water service delivery begins with a section on local governance which is followed by organizational structures within the local municipalities and metropolitans administrations. The main aim of this chapter is to explain the degrees of municipal involvement in water service delivery. A brief explanation of the methods used to assess levels of compliance at municipal level is also entailed in this chapter. The RPMS application as an intervention tool to alleviate water service delivery challenges is also discussed.



2.2 Theoretical Framework

2.2.1 Concept of Performance Indicators of Water Utilities

According to Schwartz (2007) the term performance is frequently used in the field of water services. The term seems quite simple and often it is used without clarification of what exactly is meant by performance. A closer look at the concept of 'performance' shows, however, that the term has more dimensions than at first may appear (Schwartz, 2007). Indicators are standards used to measure achievement of an organization. They are measures of change or result brought about by an activities or series of actions. A performance indicator is a guide to show how well organizations are doing in meeting their goals and objectives. Indicators are pointers, numbers, facts, opinions or perception that measure organization performance (Wouter et al. 2005). According to Schwartz (2007) the term performance is frequently used in the field of water services. The term seems quite simple and often it is used without clarification of what exactly is meant by performance. A closer look at the concept of 'performance' shows, however, that the

term has more dimensions than at first may appear (Schwartz, 2007). Indicators are standards used to measure achievement of an organization. They are measures of change or result brought about by an activities or series of actions. A performance indicator is a guide to show how well organizations are doing in meeting their goals and objectives. Indicators are pointers, numbers, facts, opinion s or perception that measure organization performance (Wouter et al. 2005).

A useful framework for analyzing the performance of water utility is provided by (Tynan & Kingdom, 2002). The framework was originally developed as a framework for benchmarking, meaning that a framework would allow for a comparison between different utilities. The framework distinguishes the following seven dimensions. ‘operational efficiency’, ‘cost recovery’, ‘commercial performance’, ‘coverage and access’, ‘asset maintenance’, ‘price and affordability’.

According to Tucker et al. (2010) in Ghana, a national Public-Private Partnerships (PPPs) showed mixed results, with evidence of some improvements in management and production, but little benefit so far to poor households. However, the partnership has suffered from the lack of baseline information, which undermines accountability for performance. A Public-Public Partnerships (PuPs) between the national water utility and a community-managed water board in Savelugu has had initial great success in improving access to safe and affordable water, including to very poor households. Tucker et al. (2010) further argues that community management has strengthened the integrity and accountability of water supply therefore, this success has relied on public funding and arbitration services to support the community and this will remain necessary into the future to ensure the sustainability of the partnership.

Tucker et al. (2010) indicates that in South Africa, a PPP (in Nelspruit) and a PuP (in Harrismith) both turned around service delivery in municipalities struggling with responsibility for townships and rural areas incorporated at the end of apartheid. Both partnerships have brought in skilled staff and improved the quality and reliability of services, demonstrating the value of partnerships to municipalities which have low capacity and/or are overstretched. In both municipalities, cost recovery in low-income areas has been very challenging, although the PuP was quicker to engage flexibly and sympathetically with these communities Tucker et al. (2010). Lack of

monitoring capacity in the municipality was reflected as weakness in concession. Both partnerships required an intensive negotiations period with politicians and trade unions to build support, this process was shorter and more successful in the case of the PuP.

The bottom line question in terms of sector performance is not so much whether a PPP or PuP is adopted, but rather whether appropriate institutional arrangements, financing mechanisms; subsidies and policies for pro-poor service provision are in place, and the capacity and willingness of government to take leadership in these areas Tucker et al. (2010). Involving a partner with the right expertise and capacity, which includes not just technical aspects but an understanding of customer care and the particular needs of low-income areas and households, may be most important Tucker et al. (2010). These experts may come from the public or private sector, public sector providers and local private operators may offer a wealth of experience which has not yet been tapped. The important thing is to assess the local context and needs, explore partnership options and take the time to develop an appropriate arrangement for each situation.

2.2.2 Choice of performance indicators

Tynan & Kingdom (2002) urge for a choice of indicators that draw on data that are reliable, relative easy to collect and not susceptible to multiple interpretation. They should reflect condition over which the service providers have control. Yepes & Dianderas (1996); Castro & Mugabi (2009) in addition note that operation indicators can be very useful in assessing the performance of water and waste water utilities in the course of evaluation. The idea of a comprehensive and up to date list of indicators from a large number of utilities worldwide is attractive but probably not realistic due to the cost involved in collecting this information.

2.2.3 Assessing performance of water utilities

Tynan & Kingdom (2002) define four broad measures for assessing performance of water utilities namely:

- Efficiency of investment
- Efficiency of operational and maintenance
- Financial sustainability

- Responsiveness to customers

2.3 Conceptual Framework

2.3.1 Performance Measurement

Performance measurement is the process of developing measurable indicators that can be systematically tracked to assess progress made in achieving predetermined goals or standards (Government Accountability Office, 1998)

A performance measurement system can be defined as a formal, regular, rigorous system of data collection and usage that provides measures in changes in effectiveness and efficiency, in order to illustrate the relative performance of an entity over time. Performance measurement is an essential component of achieving best practice through striving for continuous improvement in the entity's key business processes (National Heritage System, 2008).

Rapidly increasing scarcity and deteriorating of quality of water resources present a serious challenge to South Africa. These problems, to a substantial degree, are caused by demographic factors and economic growth, the processes which one cannot easily control at will. Pressing environmental problems call for radical policy measures to curb water demand and to increase environmentally sustainable water supply (Nitikin et al. 2012). Policy changes may jeopardize the welfare of the poor if they are not adequately protected. For instance, price increases in effort to dampen the demand for water and enlarge availability of water in the medium-long run can further limit the poor's access to water in the short run (Nitikin et al. 2012).

In South Africa performance measurement is an essential component of achieving best practice through striving for continuous improvement in the entity's key business processes. RPMS a simple web-based tool used by DWA to measure WSAs performance against key performance indicators and to determine performance trends with the intention of promoting best practice in the sector (DWA, 2009). The system measures activities according to the KPIs set out in the National Water Services Regulation Strategy (DWA, 2010). Regrettably, the results of such performance measurement are not compliant and have been subject to several community service delivery protests that have characterized South Africa municipalities. Understanding fully how

this web based tool is used to assess performance of water services delivery for WSAs is the missing link in the appreciation of how water services are delivered in South Africa.

The need to improve and speed up water service delivery has been the concern of local governments and the national government. Statistical evidence Camay & Gordon (2005) has shown that in 1994, 16 million people had no access to clean water and by 2004, after 10 years, nine million people had been provided with access implying that a large number of municipalities still had service delivery backlogs. This scenario indicates a gross spatial/geographical inequality that is found across the country, due partly to ineffective local government. The need for an alignment between policies, legislation and strategies within the water services sector as well as alignment between the policies, legislation and strategies of other sectors related to the water sector (for example, water resources, finance, local government, housing and health) should be considered as fundamental tenet of any change in the manner in which service delivery is done. In this regard it can be concluded that policies which are designed should eventually establish the vision, overall goals and approach, and legislation then would create the enabling environment. Strategies set out will offer the detail of how the policies will be implemented in order to achieve the vision and goals (DWAF, 2003).

In South Africa performance measurement is an essential component of achieving best practice through striving for continuous improvement in the entity's key business processes. RPMS a simple web-based tool used by DWA to measure WSAs performance against key performance indicators and to determine performance trends with the intention of promoting best practice in the sector. The system measures activities according to the 11 regulatory KPIs set out in the National Water Service Regulation Strategy (NWSRS).

2.4 Other Frameworks

2.4.1 Legal Framework

The legal framework for the provision of Water Services Delivery to households is based on the following legislation:

- i) The Constitution of the Republic of South Africa - Act No. 108 of 1996, Section 152 - states that one of the objectives of local government is “to ensure the provision of

services in a sustainable manner”. Section 27(1) (b) of the Constitution emphasizes “the right of access to sufficient water”.

- ii) The Water Services Act - Act No. 108 of 1997, Section 4(3)(c) states, “that a water service authority may not deny a person access to basic water services for non-payment, where that person proves, to the satisfaction of the relevant water services authority, that he or she is unable to pay for basic services”.
- iii) The National Water Act (No.36 of 1998) is the principal legal instrument relating to water resources management in South Africa and contains comprehensive provisions for the protection, use, development, conservation, management and control of South Africa's water resources.
- iv) The Municipal Finance Management Act – No 56 of 2003, aims to modernize budget and financial management practices by placing local government finances on a sustainable footing in order to maximize the capacity of municipalities to deliver services to all its residents, customers, users and investors.
- v) The Municipal Systems Act - Act No. 32 of 2000, Section 74, states that “a municipal council must adopt and implement a tariff policy on levying of fees for municipal services provided by the municipality itself or by way of service delivery agreements, and which complies with any other applicable legislation”
- vi) Strategic Framework for Water Services (2003) – The Strategic Framework contains guidelines for the provision of water services, including drinking water quality, and role of the Department of Water Affairs (DWAF) as sector regulator;

2.4.2 The Strategic Framework for Water Services (SFWS)

The Strategic Framework sets out a comprehensive approach with respect to the provision of water services in South Africa, ranging from small community water supply and sanitation schemes in remote rural areas to large regional schemes supplying water and wastewater services to people and industries in the largest urban areas. It outlines the changes of approach needed to achieve the policy goals (DWAF, 2003).

The change in institutional roles and responsibilities for water services has created major challenges at national and provincial government levels such as a need for effective sector

regulation, monitoring and evaluation of the sector performance (DWAF, 2003). At municipal level, the basis for which this study is undertaken, the challenges are more complex, for example, there is a need to strengthen the capacity of municipalities to manage large infrastructure projects and ensure effective operation and maintenance of water and sanitation infrastructure. DWAF (2003) indicates that successful implementation of the SFWS will depend on effective institutional arrangements, the type which are sought to be assessed by the study and eventually would shed light into the level of compliance; this is viewed as directly responding to the institutional reforms made to ensure that water services institutions are best positioned to achieve the vision and goals of the SFWS.

The strategy for the regulation of the sector does however recognize that many institutions in the sector are still developing their capacity and that not everything can be done at once (DWAF, 2003). As such, the strategy has a combination of immediate priority programs, medium-term initiatives to build the foundations for effective regulation and a longer term focus on implementing the full scope of water services regulation.

This SFWS is considered as the umbrella framework for the water services sector and addresses the full spectrum of water supply and sanitation services and all relevant institutions (DWAF, 2003).

2.5 Global Review

2.5.1 Water Services Provision and Delivery

Water is an indispensable human right and access to it is therefore critical for human development, however, water service provision continues to challenge most water utilities in developing countries including South Africa (Hove & Tirimboi, 2011). This view point is in line with the Millennium Development Goals (MDGs) which aim to halve the proportion of world population without access to safe drinking water and sanitation between 1990 and 2015 (United Nations, 2006a). Integrated Water Resources Management's observation also emphasizes on equitable access to water resources (Hove & Tirimboi 2011). In the developing countries where the development of water is mostly government-driven, failure to develop efficient water supply systems has been noted as a product of the interplay of several factors. Among them, securing

finances to build, maintain and expand the systems is perhaps the most important (UNEP, 2002; Hall, 2006; World Bank, 1994; Urban Age, 1993). In general, water supply in the developing countries is undertaken by government parastatals that have the dual objectives of providing a social service while generating revenue to offset cost. Ironically, most of these parastatals do not recover their operating expenses from their own revenues, and remain dependent on state governments for subsidies (Hall, 2006; Olajuyigbe, 2010). Studies by UN-Habitat (2002); Graham (2005); Hall (2006) also confirm that about half the water in drinking water supply systems in the developing world is lost to leakage, illegal hook-ups and vandalism.

Improving access to water supply and sanitation services (WSS) is an issue on the development agenda for decades now and still these services fail to reach a substantial proportion of the world's population. Every year, this becomes more of a challenge due to factors such as geopolitical changes, rapid population growth and increasing urbanization (UN-Habitat, 2003). According to WHO (2003a), in the year 2000 approximately 1.1 billion people lacked access to 'improved water supply' and about 2.4 billion people were not served with some form of 'improved sanitation'. According to a number of international conventions and declarations priority should be given to water supply, but linked to this and therefore equally important is the disposal of waste water and human excreta, i.e. sanitation facilities. As a consequence both issues need to be treated jointly (UN-Habitat, 2003).

The World Health Organization (WHO) and the United Nations International Children's Education Fund (UNICEF) update on global access to water and sanitation show that about 884 million people in the world are still using unimproved water sources and unserved urban population is growing WHO & UNICEF (2010). Given such a situation it is easy to notice that Africa has a gigantic challenge in providing tolerable service to its people and this harmfully impact household water security Hove & Tirimboi (2011). Studies by UNICEF & WHO (2008) show that only 64% of Africa's population had access to safe water supply in 2006. Projections by UNDP (2006) cited in Water Operators Partnership (WOP), (2009) show that Sub-Saharan Africa would only reach the MDG targets for water services by 2040, and those for sanitation by 2076. The major setback is the inefficiencies of water utilities and the problem is magnified in urban areas due to limited alternatives. The Asian Development Bank (ADB), ADB (2009),

singled out government crisis which is often associated with how countries manage their water resources as the major limitation (Hove & Tirimboi, 2011).

The situation in developing countries is further aggravated by urbanization (UN-Habitat, 2006b). WOP (2009) notes this challenge and is shown by Africa's lagging behind other regions in the context of the MDGs (Hove & Tirimboi, 2011). In many parts of the world, urbanization and population growth are increasing the pressures on expanding cities, resulting in more people living without adequate provision of drinking water and sanitation (Norström et al. 2009). For example, the number of urban dwellers using improved sanitation has risen by 779 million since 1990, but has not kept pace with urban population growth of 956 million (UNICEF & WHO, 2008). According to United Nations (UN) predictions, the overwhelming majority of urban growth will take place in small and medium sized cities in the developing world over the next two decades UN-Habitat (2006); in other words, in cities with the least capacity to manage it.

Water service provision is governed by the policy and legal instruments. It is crucial for each WSA to understanding the key issues in the water policy, water legislation and other relevant legislation regarding the conduct of water services. These instruments provide the framework within which to operate in providing much assistance on the WSA part as well as the beneficiaries of the services.

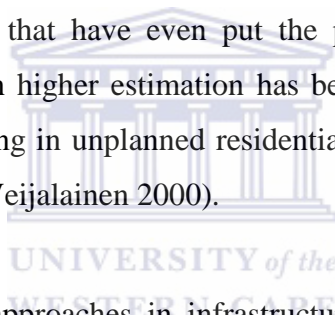
A very significant aspect of water service delivery management is that it is not a single track activity. It is in fact diverse, more of a life cycle of a municipality in the sense that it underpins every activity in the municipality. The end product should be measured against other elements, for example, service delivered only to meet a deadline but which is poor quality, will leave residents of a municipality not getting value for money. This view is supported by Hussey (1999), who maintains that customer expectations continue to rise, requiring more attention to service and quality.

2.6 Regional Review

2.6.1 Water Services Provision and Delivery

Informal development in Zanzibar seems to have outpaced the urban planning authorities' effort in provision of infrastructural services (Haji, et al., 2006). This is more so evident in the town

outskirts where the proliferation of unplanned development is taking place (Haji, et al., 2006; Scholz, 2008). However, even in the former planned areas, there has been continued degeneration, encroachment and densification of neighborhoods which has consumed open spaces and way leaves left for infrastructure provision. This informal growth is attributed to many factors as Scholz (2008) and Sulaiman & Ali (2006) summarize them; incapacitation of the government in enforcing physical planning laws, lack of individual legal rights of tenure (Myers, 1994, 1996; Scholz, 2008) and weak land management system that has fuelled illegal subdivisions and transactions of land subsequently leading to development of informal settlements without physical utilities and amenities being put in place first. Large segment of urban population especially the low income group is purportedly living in informal settlements. According to the year 2000 census, out of 984,625 inhabitants in Zanzibar, more than 45% of residents lived in the unplanned areas (Scholz 2008: quoting ZSP 1998). Sulaiman & Ali (2006) quotes some studies and surveys that have even put the percentage of population living in informal settlements at 70%. Even higher estimation has been quoted from sources reportedly indicating 83 % of population living in unplanned residential areas and 73% of the town being unplanned (Scholz 2008: quoting Veijalainen 2000).



While adoption of participatory approaches in infrastructural service provision in upgrading interventions is being advocated for, informal settlements pose many challenges that planners must contend with when planning especially the problem of data limited environments in these areas. Within informal settlements are complex, dynamic social-cultural, economic and political systems that continually undergo changes (Magigi & Majani 2006). A big challenge facing local authorities lies in the devising methods that can address all these challenges while designing upgrading interventions (Otiso, 2003; Lemma, 2005).

Zanzibar water provision and management is still intricately linked to the traditional water management approaches of developing additional water supply to meet the demand. While this approach can be applied especially where no such infrastructure exist, it has been criticized for its failure in accounting for future water demands. Current reports on urban water management strategies in many African countries indicate that the authorities are concerned mainly with the

improvement of water service and infrastructure provision from the technical point of view (GOZ, 2008a, 2008b; Murage, 2008). An approach that views the problems of increased demand for water as lack of necessary physical water infrastructure. However, the provision of water encompasses many divergent issues as seen from the myriads of problems facing cities like Zanzibar's urban water supply system which includes; inadequate quantity and quality of water supply, dilapidated water supply infrastructure; limited human and financial resources to sustain water supply and maintenance; low stakeholder participation; water losses in production, transmission, storage and distribution; and limited access to supply outlets both in rural and urban areas Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP), (2007). With all these constraints and the ineffective weak legal frameworks, the urban development control in Zanzibar as Scholz (2008) concludes is weak thereby leaving room for informal settlement to thrive.

Rapidly increasing scarcity and deteriorating of quality of water resources present a serious challenge to South Africa. These problems, to a substantial degree, are caused by demographic factors and economic growth, the processes which one cannot easily control at will. Pressing environmental problems call for radical policy measures to curb water demand and to increase environmentally sustainable water supply Nitikin et al., (2012). Policy changes may jeopardize the welfare of the poor if they are not adequately protected. For instance, price increases in effort to dampen the demand for water and enlarge availability of water in the medium-long run can further limit the poor's access to water in the short run Nitikin et al., (2012).

According to Tucker et al. (2010) in Ghana, a national Public-Private Partnerships (PPPs) showed mixed results, with evidence of some improvements in management and production, but little benefit so far to poor households. However, the partnership has suffered from the lack of baseline information, which undermines accountability for performance. A Public-Public Partnerships (PuPs) between the national water utility and a community-managed water board in Savelugu has had initial great success in improving access to safe and affordable water, including to very poor households. Tucker et al. (2010) further argues that community management has strengthened the integrity and accountability of water supply therefore, this

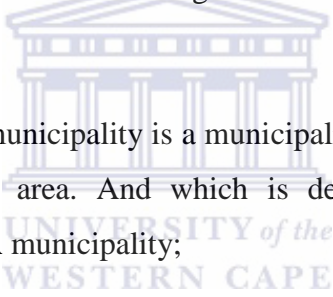
success has relied on public funding and arbitration services to support the community and this will remain necessary into the future to ensure the sustainability of the partnership.

2.7 Local Review (South Africa)

2.7.1 Local Government

Local government [Municipality] is the sphere of government closest to the people; they are elected by citizens to represent them and are responsible to ensure that services are delivered to the community (DWAF, 2005).

Water service delivery/water provision is the responsibility of local government in most countries including South Africa. In South Africa local government comprises different categories of municipalities. According to the Constitution, 1996, section 155 (1) & Municipal Structures Act, 117 of 1998 there are several categories of municipalities. They are categorized into three groups as follows:

- 
- a) Category A: Metropolitan municipality is a municipality that has exclusive executive and legislative authority in its area. And which is described in section 155(1) of the Constitution as a category A municipality;
 - b) Category B: Local municipality is a municipality that shares municipal executive and legislative authority in its area with a district municipality within whose area it falls. And which is described in section 155(1) of the Constitution as a category B municipality.
 - c) Category C: District municipality is a municipality that has municipal executive and legislative authority in an area that includes more than one municipality, and which is described in section 155(1) of the Constitution as category C municipality.

According to DWAF (2001; 2003) a water service authority is any municipality that has the executive authority to provide water services within its area of jurisdiction in terms of the Municipal Structures Act 118 of 1998 or the ministerial authorizations made in terms of this Act. There can only be one water services authority in any specific area and water services authority area boundaries cannot overlap. Water services authorities are metropolitan municipalities, district municipalities and authorized local municipalities.

2.7.2 Organizational Structures

2.7.3 Water Provision Prior to 1994

Prior to 1994, government policies were geared at advancing the needs of the select few, mostly the white population group. According to DWAF (1994), the development of South Africa's water resources was linked with supporting the progress of the country's wealthy sector rather than with alleviating the position of the poor. Water supplies and water-borne sewage services were provided to wealthy municipalities and towns along clearly designated racial white lines (Marais, 2001 & Goldin, 2005).

South Africa used its well-developed social resources to engineer itself a degree of water security. This involved the construction of large-scale water transfer schemes such as the Orange-Fish Sunday's river transfer of the 1950s and the Lesotho Highlands Water Project started in 1986.

Water services provision to the black populated areas was inferior to that enjoyed by the white communities MacKay (2003) although, according to Cameron (2003); Carmichael & Midwinter (2003) access and delivery of water to white, even white local authorities, were considered inefficient. According to MacKay (2003) white local authorities kept separate native revenue accounts for black townships that were under their control and the townships and rural areas were left to fend for themselves. Most municipalities and townships did offer some sort of basic level of services to residents. Water was typically provided through a standpipe in a community. Those houses which did have in-yard or in-house connections usually paid a flat monthly rate for the service they received. As the political situation of the country continued to destabilize a process of "civil disobedience" was adopted by the black majority. This involved withholding payment for municipal services such as water and electricity and was collectively referred to as a "culture of non-payment". The government turned a blind eye to the lack of payment and generally carried on providing the basic services in an effort to prevent political tensions from escalating further (McDonald, 2002). Local authorities under black control were meant to raise revenues and provide services, but in themselves became a point of contention between various civil and political groups.

2.7.4 The Challenge of “some for all forever”.

Earle et al. (2005) observed that by the late 1980s the political situation was becoming unsustainable for the government. The volatile situation changed, with the initial un-banning of political organizations by the National Party government under FW de Klerk in February 1990 and culminating in the first democratic elections held in April 1994. Behind the scenes, a lot had to happen to make the experience of democracy a reality for the mass of the South African citizens expecting change. The provision of water supply and sanitation to all citizens based on the principles of equity and sustainability were placed near the top of the political agenda (MacKay, 2003).

The South African Constitution allows national government to decentralize its power and attendant responsibilities. In this way local government can assume the responsibility for the provision of water services and can contract with private companies to manage and provide water services. However – the national government “bears the ultimate responsibility to ensure compliance with the state’s obligations” – as contained in the Bill of Rights (Welch, 2005; Camay & Gordon, 2005). The Constitution recognizes international law in the interpretation of the Bill of Rights. South Africa is a party to the International Covenant on Economic, Social and Cultural Rights of the United Nations which specifies that states must provide “sufficient, safe, acceptable, physically accessible and affordable water” to their citizens (Gleick, 2000; Welch, 2005; Camay & Gordon, 2005). The fulfillment of socio-economic rights and implementations of policy have been hindered by a number of governance factors at municipal level. Insufficient resources and capacity constraints have resulted in inadequate progress in meeting set targets for basic water services delivery (Camay & Gordon, 2005). Thus, where water management services are provided with private sector involvement, the government is in violation of its duty to fulfill its obligation to citizens if it allows private water companies to arbitrarily disconnect water taps or to adopt discriminatory or unaffordable increases in the price of water (Welch, 2005).

The 1956 Water Act, it was based on providing water for the economic growth of South Africa without specific regard for the environment or social equity issues would need to be replaced. An

extensive public participation process was embarked on by the Department of Water Affairs and Forestry (DWAF), resulting in the Water Law Principles being approved by Cabinet in 1996 (MacKay, 2003). Both sets of principles were summed up by the succinct slogan adopted by the DWAF in the post 1994 years – “Some for all forever” embodying the equity as well as the sustainability components of the principles.

According to Earle et al. (2005) the White Paper of 1994 played a key part in establishing an enabling policy framework on the establishment of a new national water department and the role of this new department in assuming a direct delivery function on behalf of national government to provide basic water and sanitation (water) services to people living primarily in rural areas (DWAF 1994). Since 1994, the context has changed significantly. A 1994 White Paper on Local Government published a suite of municipal legislation (e.g. Local Government Municipal Demarcation Act (Act 27 of 1998), the Municipal Structures Act (Act 117 of 1998), the Municipal Structures Amendment Act (Act 33 of 2000), and the Municipal Systems Act (Act 32 of 2000). The White Paper focused largely on the role of DWAF and basic services for households (Earle et al. 2005).

The 1994 Water Supply and Sanitation Policy White Paper introduced the concept of focusing the DWAF resources on the capital costs of extending the basic water services infrastructure, while covering operation and maintenance costs from user charges (Marah et al. 2004). The white paper states that “the basic policy of Government is that services should be self-financing at a local and regional level” DWAF (1994). In this way the DWAF sought to focus its limited resources on capital development, with operation and maintenance costs covered by users at the local level. However, by the late 1990’s it merged that lack of payment for water services was impacting on the expansion of basic water services.

These background factors set an important context in which any cost recovery process needs to take place. Marah et al. (2004) in their study on water scheme cost recovery propose four background factors which influence the success or otherwise of cost recovery initiatives and these are, Social Capital – the presence in a community of a sense of interdependence and its ability to collectively solve problems. Trust, financial resources, education levels and governance

all play a role in determining the success of water supply projects in communities. Social capital can be developed, as has been done through the Mvula Trust in generating support and trust within communities around specific water supply projects. An important part of social capital is respect for leadership – there needs to be a sense of legitimacy about the people tasked with managing a scheme. Previous Cost-Recovery Regime – the nature of the cost recovery regime and the efficacy with which it was enforced had a profound effect on the way in which changes were accepted (Marah et al. 2004). There is also a direct correlation between the length of time between the initial supply of water from a scheme and cost recovery measures being introduced and the unwillingness of people to pay for water. However, the existence of a weak or ineffective system does not preclude a reversal in payment practices – there are several examples of successful turnarounds. Previous Levels of Payment – if people are not used to budgeting for water it is difficult to introduce the concept of cost recovery. Changing the behavior of people is difficult, but not impossible. An example of a community in Klerksdorp with a “culture of non-payment” (for services) developed during the end years of apartheid through the rates boycotts shifted from 11% payment levels to around 94% showing that it can be done to improve Levels of Payment. Elements needed are improved service, customer education and strict enforcement and lastly Previous Standard of Service – the level of satisfaction with the water provision system in place has an impact on people’s willingness to pay for an improved service. There are several examples of old systems still being used even after new ones are introduced. Although the old system may be less convenient (requiring a long walk, or hand pumping etc.) people may continue using it as it is free. In the case of people fetching water from rivers this poses a possible health risk, exposing them to a range of waterborne diseases.

According to McDonald (2002b) cost recovery has not always been the modus operandi of the South African government arguing that during apartheid, many South Africans received subsidized services and infrastructure, even though these benefited the rich white suburbanites the most. He writes that there were user fees, tariffs and general property rates for services, but the most part of these charges had little relevance to the actual marginal costs of providing them, stating that this was due partly to the fact that it was virtually impossible to estimate the costs of

a given municipal service because apartheid local governments were so fragmented, but more importantly, there was little interest on the part of the apartheid state to pursue full cost recovery.

Water pricing; in the form of progressive block tariffs was introduced to the policy framework in South Africa as a cost recovery measure in 1994 through the White Paper (1994) on Water Policy. A three-tier rising block domestic tariff was proposed, comprising a life-line tariff for consumption of less than 25 liters a day, a normal tariff based on average historic costs for consumption between 25 liters a day and 250 liters a day, and a marginal tariff based on long-run marginal costs for consumption in excess of 250 liters a day (DWAF, 2002). Block tariffs are geared at making the initial levels of consumption more affordable-or even free- while charging increasingly higher prices as consumption levels rise, increasing the potential benefit of curbing consumption at the top end, thereby introducing conservation incentives (McDonald, 2002a).

Earle et al. (2005) made it explicit that prior to 1994 access to water was dependent on access to land and the management and allocation of the resource was highly securitized. Water was supplied to those with political and economic power or in return for political patronage. Conclusively citizens are viewed as patrons of the state. In the post 1994 era the only right to water is the reserve. According to National Water Act (Act 36 of 1998), the reserve is the basic human subsistence amount which every person is entitled to (defined commonly as 25 liters a person per day or 6,000 liters per household a month) and the needs of the environment. Water management is based on the subsidiarity principle – management takes place at the lowest practical level in a politicized environment. Citizens are, increasingly, viewed as consumers, with rights as well as obligations.

Based on the Water Law Principles, the Water Services Act (Act 108 of 1997) and the National Water Act (Act 36 of 1998) were drawn up and adopted. The National Water Act (Act 36 of 1998) repealed the 1956 Water Act and all related legislation. It clearly stipulates that the National Government has the overall responsibility for and authority over water resources management, including the equitable allocation and beneficial use of water in the public interest. Based on this argument, all uses of water became subject to recognition as permissible under the

National Water Act (Act 36 of 1998). There are to be no rights to water – only authorizations (except for the Reserve – the basic human consumption amount and ecological requirements).

Three types of water use authorizations can be granted and these are:

1. Schedule 1: These are non-commercial uses of water including domestic use, small-scale gardening & the watering of livestock. Such a use will not attract any charges or tariffs for the water and the water will be supplied to water service providers free of charge.
2. A general authorization can be granted to groups of users – such as farmers who have had land returned to them.
3. A water use license must be applied for when water will be used for large-scale or commercial purposes.

The Water Services Act of 1997 (Act 108 of 1997), Section 3(1) states “everyone has a right of access to basic water supply and basic sanitation”. According to De Visser et al. (2003), “basic water supply” is the “prescribed minimum standard of water supply services necessary for the reliable supply of a sufficient quantity and quality of water to households, including informal households, to support life and personal hygiene”. The Water Services Act (Act 108 of 1997) sets out the rights and duties of consumers and places emphasis on ensuring the financial viability of water service providers. The concept of “cost recovery” (of providing water) and private sector involvement in the provision of water is entrenched Section 9 of the Act.

According to DWAF (1994) the fundamental issue to be addressed by the new government in the water sector is that of equity, arguing that “the line which divides those with adequate access to water from those without is the same dividing the rich from the poor, the hungry from the well fed, the line of race and privilege”. The new government proclaimed that its goal was thus to ensure that all South Africans have access to essential basic water supply and sanitation services at a cost which is affordable both to the household and to the country as a whole.

Since under the previous system water ownership was tied to ownership of land, the majority of South Africans were “condemned to a life of poverty, insecurity and contentious exposure to diseases that would otherwise be avoidable” (De Visser et al. 2003). De Visser et al. (2003) argues that by 1994 the majority of South Africans were hoping for at the minimum, access to

basic water supply at nationwide public hearings on poverty in 1998, the restriction to access to water was continuously cited as one of the many obstacles in the development of many impoverished communities. The 1994 RDP provided for a short-term target of a safe water supply of 20-30 liters per capita per day within 200 meters, an adequate/safe sanitation facility per site, and a refuse removal system to all urban households (De Visser et al. 2003).

2.7.5 Establishment of Water Boards and the New Water Supply Chain

A water board is established by the Minister of Water Affairs and Forestry (DWAF, 2005).

- The primary function of a water board is to provide water services to other water services institutions.
- Water boards may carry out secondary activities as long as they do not interfere with its primary function of supplying other institutions, or create financial problems for the board. Secondary activities of a water board may include:
 - providing management services, training and other support services
 - supplying untreated water to end users who do not use the water for household purposes
 - providing catchment management services with the approval of the water services authority
 - supplying water directly for industrial use
 - accepting industrial effluent
 - acting as a water services provider to consumers
 - performing water conservation functions
 - A water board is a public water services provider.

Thus, it is important to explore and understand the processes around water service delivery and how it relates to ensuring qualitative, efficient and effective service delivery in municipalities. An exposition on the policy, legislation and strategies applicable to water service delivery as well as the challenges thereof is in order. All these are necessary conditions to ensure that effective performance takes place.

In terms of the National Water Act (Act 36 of 1998) each water management area has to be managed by a catchment management agency. Its mandate is to provide equitable, efficient and sustainable water-resource management. In order to carry out its task the catchment management

agency must establish a governing board to develop and administer a catchments management strategy. The members of these boards must be constituted so as to represent water consumers, potential water consumers, local and provincial government, and environmental interest groups.

Water service authorities and water-consumer associations respectively, are the providers of water services to urban consumers and non-urban consumers, for example, irrigation boards. DWAF support their functioning in the following forms:

- planning support for Integrated Development Plans (IDPs) and Water Services Development Plans (WSDPs);
- monitoring the water purification and wastewater treatment works' operations;
- facilitating project selection, feasibility studies and service-level options;
- supporting the implementation of a tariff structure and the free basic water policy;
- determining the division of powers and functions for water services between district and local municipalities and selecting water service providers;
- training councilors and officials in water-services and water-demand management; and
- mobilizing resources to support municipalities DWA (2009)

The norms and standards for water services, tariffs and regulations are listed under Section 10 of Water Services Act (Act 108 of 1997), in the Water Services Act (Act 108 of 1997), whereby, a water service institution must, when setting tariffs for water service consumers, differentiate, where applicable, between at least the following categories:

- water supply services to households and others;
- industrial use of water supplied through a water services works;
- water supply services;
- sanitation services to households and others;
- discharge of industrial effluent to a sewage treatment plant; and
- sanitation services

In addition, a water services institution must, according to the Water Services Act (Act 108 of 1997), when setting tariffs for providing water services to households, differentiate, where applicable, between at least the following levels of service:

- the supply of water to a household through a communal water services works;
- the supply of water to a household through a water services works or consumer installation designed to provide a controlled volume of water;
- the supply of water to a household through a water services works or consumer installation designed to provide an uncontrolled volume of water;
- the provision of sanitation services to a household not connected to a sewer; and
- the provision of sanitation services to a household connected to a sewer

A tariff structure may use additional categories to those stipulated above and the same tariff may also be set for two or more categories.

Dugard & Tissington (2008) argue that South Africa has one of the most progressive water rights-related legislative and policy frameworks in the world. Amongst these legislative and policy frameworks is the Strategic Framework for Water Services of 2003. Furthermore, DWAF (2003) indicates that this framework focuses on water services delivery and places an appropriate focus on the imperative of ensuring universal access by households to at least a basic water supply and sanitation service. However, the provision of effective and efficient water services to meet the economic demand of all consumers (domestic and non-domestic) is equally important and is also addressed in this framework.

Within the Strategic Framework for Water Services of 2003 is included the national Free Basic Water Strategy of 2001 which reflects the approach that, water is not merely a commodity to be sold in order to recover costs or make a profit, but is a social and developmental good and a basic human right. Indeed, the water services policy and legislation framework at national level incorporates a water rights approach. DWAF (2003) indicates that according to the universal service obligation- water services authorities have a responsibility to ensure that all people living within their jurisdiction are progressively provided with at least basic water services (the first step up the ladder). This includes people living on private land (for example, farm dwellers) and others who are provided services by intermediaries. Wherever practical and sustainable, water services authorities are expected to plan for and provide higher levels of service (stepping up the ladder).

Since 1994 the national government of South Africa has been involved in the delivery of water and sanitation infrastructure to reduce the basic water services backlog. The Water Supply and Sanitation White Paper of 1994 and the Water Services Act of 1997 provided the policy and legislative context within which service delivery took place during the first ten years of democracy. The Municipal Demarcation Act (Act 27 of 1998) and the Municipal System Act (Act 32 of 2000) provide the legislative framework for local government to take full responsibility for water services delivery as mandated by the Constitution of the Republic of South Africa (Act 108 of 1996). The Strategic Framework for Water Services of 2003 sets out a comprehensive approach with respect to the provision of water services in South Africa. It outlines the change of approach needed to achieve policy goals as a result of the progress made in establishing democratic local government since 1994.

2.7.6 Water Service Delivery

Euromarket (2003) defines water services as all services that provide water for households, public institutions or any economic activities. In the European Union (EU) definition, water services relate to the whole series of activities from the abstraction of raw water at the source to the delivery of (treated) water to the consumer and from the consumer back to a water sources.

According to van Hofwegen (2001), the implementation /management of water services may be shared between an authority responsible for the general organization and political decision and operators (utility) responsible for operation maintenance, management and in some cases investment. To carry out the services function and operate and maintain the infrastructure, the utility should meet several accountability criteria including liability associated with performance of its functions, political and social responsibilities embodied in the effectiveness of the utility in meeting the expectation of the government and customers

DWAF (2003) defines the term water services as water supply services and/or sanitation services or any part thereof. Water services are provided to domestic consumers, institutions, businesses and industries. DWAF (2003) places an appropriate focus on the imperative of ensuring universal access by households to at least a basic water supply and sanitation service. However,

the provision of effective and efficient water services to meet the economic demand of all consumers (domestic and non-domestic) is equally important.

2.7.7 Water Services Provision and Delivery

In South Africa, a PPP (in Nelspruit) and a PuP (in Harrismith) both turned around service delivery in municipalities struggling with responsibility for townships and rural areas incorporated at the end of apartheid (Tucker et al. 2010). Both partnerships have brought in skilled staff and improved the quality and reliability of services, demonstrating the value of partnerships to municipalities which have low capacity and/or are overstretched. In both municipalities, cost recovery in low-income areas has been very challenging, although the PuP was quicker to engage flexibly and sympathetically with these communities (Tucker et al. 2010). The weakness of the concession in this area reflects in part a lack of monitoring capacity in the municipality. Both partnerships required a period of intensive negotiations with politicians and trade unions to build support. This process was shorter and more successful in the case of the PuP.

Tucker et al. (2010) indicates the bottom line question in terms of sector performance is not so much whether a PPP or PuP is adopted, but rather whether appropriate institutional arrangements, financing mechanisms; subsidies and policies for pro-poor service provision are in place, and the capacity and willingness of government to take leadership in these areas. Involving a partner with the right expertise and capacity, which includes not just technical aspects but an understanding of customer care and the particular needs of low-income areas and households, may be most important (Tucker et al. 2010). According to Tucker et al. (2010) this expertise may come from the public or private sector, and public sector providers and local private operators may offer a wealth of experience which has not yet been tapped. The important thing is to assess the local context and needs, explore partnership options and take the time to develop an appropriate arrangement for each situation.

According to Tucker et al. (2010) it is important that governments are able to exercise choice in partnership development, and retain the flexibility to change arrangements which are not

working. Providing effective water and sanitation services for urban areas in developing countries is challenging and there are no easy solutions, so room to experiment with new approaches is key. Support to new PPPs should consider working with the private sector in more flexible ways with lower risk to municipal governments (Tucker et al. 2010). Opportunities to partner with local private sector organizations and entrepreneurs should be explored, particularly for small towns. There is also a need for better monitoring of partnerships for lesson-learning and also accountability purposes. This is not to say, however, that it does not matter whether a partnership involves the private or public sector. Tucker et al. (2010) further argues that involvement of the private sector, particularly in relatively short-term flexible arrangements, can bring improvements in efficiency and management of services, but costs are high. In the Africa, Caribbean and Pacific (ACP) context PPPs require strong policies and regulation to ensure benefits reach poor households, so if a PPP is the chosen route governments are likely to require assistance in these areas. PuPs in contrast are likely to offer more capacity building and a greater focus on equity, and are less likely to be beset by tensions in both design and implementation (Tucker et al. 2010). They can also turn around municipal/utility performance as seen in Harrismith and Dar es Salaam. Because of greater trust and because no profit is sought by either party, they are also cheaper. PuPs also offer the potential for more holistic and integrated approach to services. However, public or community-based partners may struggle with financial sustainability and technical capacity, and require external support.

Tucker et al. (2010) indicates that PuPs are less well tested but given the very mixed experience of PPPs and the initial success of some PuP experiences, this alternative is certainly worthy of support. The primacy which has been given to PPPs appears somewhat unjustified. Given the existing financing and technical support available from a variety of donors for PPPs, it is recommended that dedicated funds are made available for PuPs – such as currently offered by the EC – both to ensure that PuPs are an accessible option for governments seeking to enter into partnerships, and to enable PuPs to develop so that their potential can be better understood. Forthcoming PuPs should be carefully followed for further lesson-learning (Tucker et al. 2010).

2.8 Research Framework

Despite international efforts, water and sanitation services are failing as much as a third of the world's population (Graham, 2005). Poor management, lack of financing, contentious politics, and other factors all contribute to a global crisis that saps not only human lives but economic and social development. However, recognizing these factors as problems has not yet resulted in solutions for much of the world's poor, and often poor governments are caught (to some extent, their own fault) in a dangerous cycle of poor infrastructure leading to weak revenue streams that cannot maintain or expand the infrastructure.

While many failures to provide basic services and to recover costs are most likely locational specific, there are also some trends that can be generalized, including political interference, poor assumptions about the market, and losses from undercapitalized infrastructure. This study will consider some of the local spatial and demand-oriented issues in South Africa with a specific focus on three cities. It will speak to specific costs that affect households, the spatial constraints that they face, as well as various value issues that are inherent in different water service delivery types and an assessment using a web based model.

The literature review has shown that a number of countries have challenges relating to the way they regulate water service delivery and performance indicator management. Generalizations of the findings therefore are difficult and hence the need to examine the conditions under which the South African regulatory performance framework is applied in the three WSAs chosen for this study.

Chapter 3

Research Design and Methodology

3.1 Introduction

This chapter presents a discussion of the research methodology which was used to collect and analyze data. The chapter covers desktop research methods involving the reviewing and summarizing of the secondary sources of information. The examination of existing data and carrying out a preliminary data survey in order to establish indicators which impact on WSAs water service delivery for the City of Tshwane, EThekweni and City of Cape Town. An inventory of the indicators specific for the WSAs was therefore created from reviewed literature.

3.2 Research Design

3.2.1 Description of the Study Area

The principal study areas is made up of three WSAs found in three major cities of the country as shown in Figure 3.1. The City of Tshwane is the administrative capital of South Africa. It is located in the north-western corner of Gauteng Province covering approximately 13% of the Province's surface (City of Tshwane, IDP, 2008) (Fig3.1a). The City of Tshwane is a Category A municipality. Tshwane comprises a significant amount of rural land, which must be managed in synergy with its urban responsibilities (City of Tshwane, IDP, 2008). Since the Municipality's location makes it to fall within two provinces geographically the bulk of it lies within Gauteng province, while the Temba area including the Garankuwa/Mabopane/Winterveld areas fall within North-West Province (City of Tshwane, WSMP, 2002). In terms of its geological set up dolomite is the major geological feature that bears influence on bulk supply in the area, (City of Tshwane, WSMP, 2002). The same geological set up has also often limited development in areas where they occur, due to potential foundation problems. For example some informal settlements in the south of Atteridgeville have been established on the dolomitic zone and need to be re-established elsewhere (City of Tshwane, WSMP, 2002).

The second WSA is the City of Cape Town. Cape Town is located on the south western tip of Africa, and is considered to be one of the most beautiful and environmentally rich cities in the world. The city surrounds Table Mountain, and is itself surrounded by mountains and sandy flats (Fig 3.1b). With 3.2 million residents, the city is one of the largest cities in South Africa. Growing urban sprawl has increased the need for resources such as water and energy, and services such as waste management. Between 15 and 20 percent of the city's residents live in informal settlements, and there is currently a housing backlog of over 260 000 housing units (City of Cape of Town, WSDP, 2008).

The third WSA EThekwini. The new boundary of the EThekwini Metropolitan Municipal Area (EMMA) increased the area of the previous Durban Metropolitan area by 68% although increasing the population by only 9%. The EMMA now covers an area of 2297 square kilometers (EThekwini Municipality, WSDP, 2004). The new demarcated EMMA is shown in (Fig 3.1c). The spatial configuration of the EMMA forms a T shape with the areas closer to the two major national freeways tending to be well provided with water services infrastructure (EThekwini Municipality, WSDP, 2004). Areas on the periphery are generally poorly resourced with the diverse topography (steep escarpments to relatively flat coastal plains) contributing to the challenge of providing cost effective water service related infrastructure (EThekwini Municipality, WSDP, 2004).

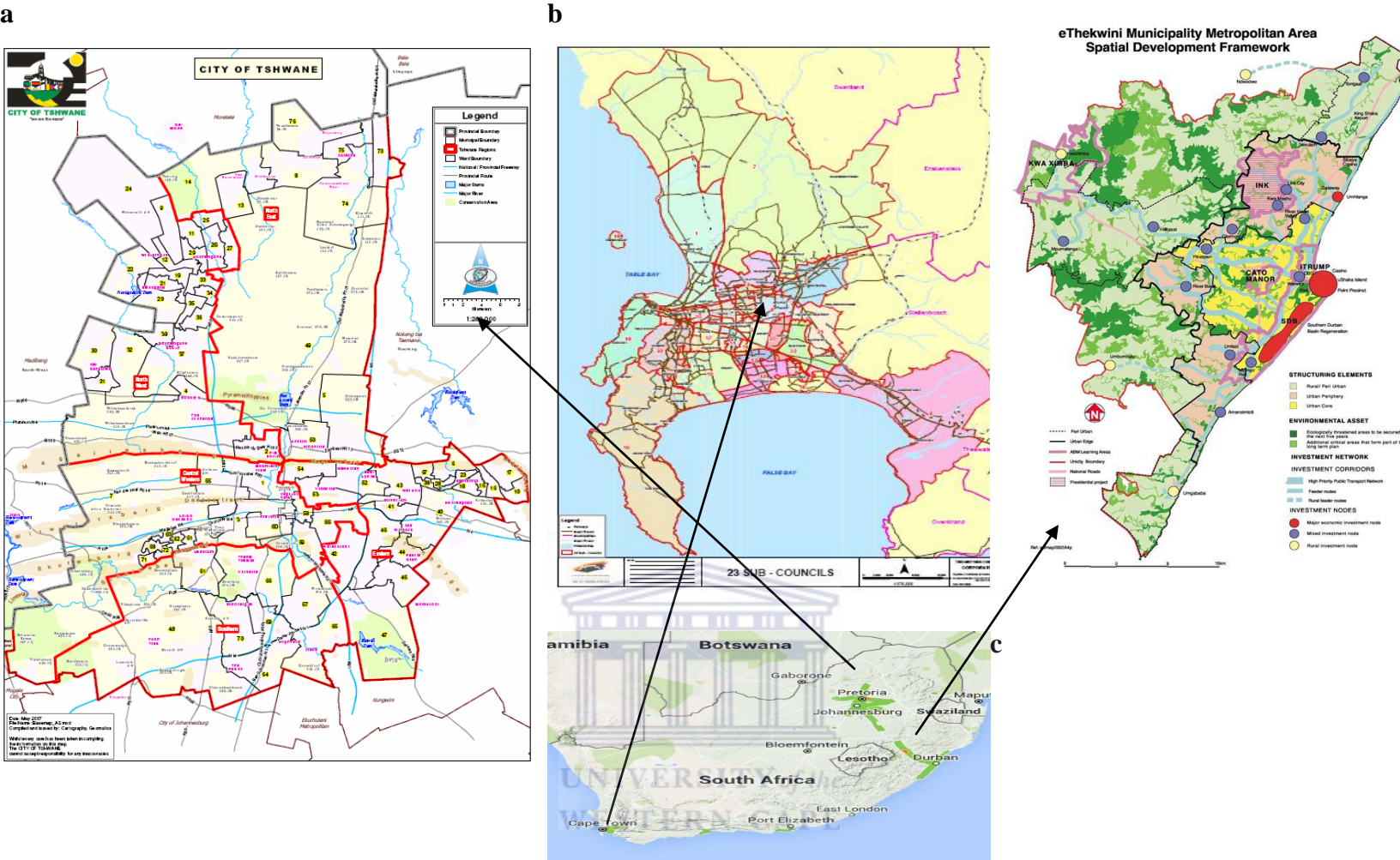


Figure 3. 1 Maps showing 3 WSAs locations a) City of Tshwane, b)City of Cape Town, c)eThekwini

3.2.2 Study Population

The City of Tshwane in terms of its demographic characteristics, the population in the year 2000 was estimated to be more than 1.76 million (State of Environment Report, 2001) and is currently increasing at 4.7%, mainly due to the high influx from the Northern Province City of Tshwane, WSMP (2002). According to the previous Greater Pretoria Metropolitan Council (GPMC) Water Service Development Plan (WSDP), which constitutes the majority of the new City of Tshwane Metropolitan Municipality (CTMM) area, it is anticipated that the growth rate will taper off to \pm 3.3 % p.a. in 2010 and 3.1 % p.a. in 2020, as the intense degree of urbanization subsides due to the decline of influence for abolition of influx control into the City of Tshwane, (City of Tshwane, WSMP, 2002). According to the 1996 census data approximately 35% of households earn less than R 1000 per month City of Tshwane, WSMP (2002). There are a total of 278 700 formal consumers according to the CTMM's treasury data records. There are a further 152 200 informal households, which brings the total number of consumers to 430 900 for the City of Tshwane (City of Tshwane, WSMP, 2002).

The EThekwini Metropolitan Municipal Area (EMMA) currently has an estimated population of just over three million people. In May 2000, the City's Traffic and Transportation Department commissioned a study entitled "Demography and Demographic Projections to 2020". In this study, demographic projections followed three scenarios viz. low, middle and high AIDS scenarios (EThekwini Municipality, WSDP 2004). The middle AIDS scenario was adopted for planning by all service sectors. This scenario predicts that the population is expected to grow by 0.67% to 3.125 million people over the period to 2005 and then decline at an average rate of 0,07% p.a. such that in year 2020 the population will be around 3 million (EThekwini Municipality, WSDP, 2004). Subsequent to this study the City's Corporate Policy Unit produced annual population predictions based on the middle AIDS scenario population growth rates of EThekwini Municipality (EThekwini Municipality, WSDP, 2004). This allowed for a comparison of the Census 96 population, projected to 2001 using the middle AIDS growth rate, with the population enumerated during the 2001 Census. A comparison between the projected and the census figures showed a relatively small difference of 45000 - which falls within the Census 2001 sample error range of 4.19% (for KZN) at the 95% confidence level (EThekwini Municipality, WSDP,2004).

The population of the City of Cape Town is currently estimated at 3.2 million with an annual growth rate of 2.7% pa (City of Cape of Town, WSDP, 2008). It has a land area of 2,487 square kilometers, with a population density of 1,291 people per square kilometer. Over the period 1991 to 2000, the local economy grew at an average rate of 2.6% p.a. (1.8% p.a. nationally) and contributed approximately 11% to the national GDP (City of Cape of Town, WSDP, 2008).

3.3 Data Collection Methods

The foci of the study are based on desktop research; secondary and tertiary sources of information related to the topic such as the Water Services Development Plan (WSDP).

Desktop research methods involved the reviewing and summarizing of the secondary sources of information. According to Delaney Woods and Associates (2005) desktop research has many advantages because it is less expensive than original research. It takes advantage of research already undertaken, saves time and money and finally can be provided in electronic or hard copy.

- Secondary sources of information were acquired by means of reviewing and summarizing journal articles, reports, comments and conference proceedings.
- Tertiary sources of information were acquired by means of reviewing newspapers and brochures. Tertiary sources consisted of information which was a distillation and collection of primary and secondary sources.

3.3.1 The Available Methods

Data for various indicators were collected using various methods as indicated below.

3.3.2 The Chosen Method

The Key Performance Indicator (KPI) of the Regulatory Performance Measurement System (RPMS)

The first exercise was to determine KPIs which are indicators. The measure is an indicator of performance in a particular functional area. Therefore, the RPMS KPIs were developed from the broad functions of the WSA. The RPMS is therefore, a simple web-based tool used by the

Regulator to measure performance against key performance indicators and to determine performance trends with the intention of promoting best practice in the sector. The system measures activities according to the 11 regulatory KPIs set out in the NWSRS. These KPIs have been clustered and are represented in Figure 3.2. There are various activity categories (or sub-issues) within each broad functional area; these are components of the KPI. The components were weighted to indicate their overall importance as a sub-issue within the broad function as indicated on Table 3.1.

Table 3. 1 11 Regulatory Key Performance Indicators

| Key Performance Indicators |
|---|
| <ul style="list-style-type: none"> • KPI 1: Access to Water • KPI 2: Access to Sanitation • KPI 3: Access to Free Basic Water • KPI 4: Access to Free Basic Sanitation • KPI 5: Drinking Water Quality • KPI 6: Wastewater Quality • KPI 7: Customer Service Standards • KPI 8: Institutional Effectiveness • KPI 9: Financial Performance • KPI 10: Strategic Asset Management • KPI 11: Water Use Efficiency |

Additionally, of the 11 KPIs, not all of the data required for the KPIs was available therefore a data sheet was developed for WSAs to complete in order that their performance with respect to regulatory compliance could be measured (Table 3.1). A data input feature was also created on the system to enable WSAs to enter their own data. This feature of the system relates only to KPIs 7 to 11. Additional data was used which was already available to DWA through other systems for KPIs 1 to 6.

3.3.3 Data Collection Tools

Table 3. 2 Sample of a KPI data sheet

| KPI | Component | Data criteria | Weighting |
|---------------------------|---|--|-----------|
| 1: Access to water supply | 1: Backlog reduction rate (%) | Backlog (water supply) previous year-end (according to the definition in the SFWS) - n Backlog (water supply) latest year end (according to the definition in the SFWS) - n | 40% |
| | 2: Backlog reduction planning (Households served) | Target households to be served to the minimum level specified under compulsory national standards (water) in last financial year - (according to WSDP) - n Households served to the minimum level specified under compulsory national standards (water supply) in last financial year - n | 40% |
| | 3: Efficiency of spending (Project spending – sanitation) | Total MIG Grant Amount for the last financial year (for all infrastructure - water/sanitation/roads etc.)- R million Amount (MIG) spent on water supply projects in the last financial year - R million | 20% |

3.3.4 Data Collection Procedure

Regulatory Performance Measurement System

The required data was collected from the three WSAs using the RPMS process to measure WSAs performance against 11 regulatory KPIs set out in the NWSRS and to determine performance trends with the intention of promoting best practice in the sector. Figure 3.2 shows a representation of the functions.



Figure 3. 1The Regulatory Performance Measurement System Process

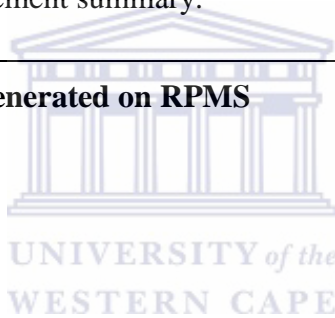
This tool was used to assess, address, evaluate and measure the WSAs performance against the KPIs. The WSAs performance was assessed through KPI reports generated by the RPMS. Table 3.2 is a summary of the reports and it indicates the main characteristics of each report generated. The system uses the reports to score points in favour of compliance or non-compliance. It addresses non-compliance through tracking the progress of Regulatory Actions (RAs), and Action Plans (APs). Finally, it evaluates performance after action has been taken to address non-

compliance / non-performance (thus evaluating the effectiveness of regulatory action as well as WSA management performance).

| Document Reviewed | Summary Points Noted |
|--|---|
| WSA compliance assessment report | This report provides the WSA with a detailed assessment of their compliance on each KPI, and component scores to identify weaknesses within an overall KPI. The prioritization is based on the variance from the compliance score. Those KPIs in which the score achieved is below the compliance (required) score by the greatest margin, are listed as top priorities. |
| Consolidated and averaged regional reports | These show consolidations and averages on KPI and component scores in order that, firstly a “snapshot” of compliance and performance for a regional or national level can be extracted, or to allow comparisons of either individual WSAs to the Regional score, or of the Regional averaged score to the National score (component and KPI scores). |
| Comparative reports | The reports indicate either the individual WSA score, or a regional average KPI score which is compared with the same score at the next “level” (i.e. WSA being the most basic level and then regional, then national level). This allows either the WSA or the region to determine “where they are” in comparison to other WSAs or other regions. Comparative reports allow the national office to determine which regions are weaker in terms of both compliance and performance. |
| Regulatory action reports | The reports relate to the management of the regulatory actions which will be initiated by regional coordinators when WSAs are evaluated as not complying. The report also provides details of the status of each RA (as per the RA status menu in the system). |
| Transaction | This report identifies the transaction activity on the system over a period of |

| | |
|---------------------|---|
| Reports | <p>one calendar month. It is important to know whether WSAs are entering data accurately or entering data to ensure compliance. An exception report which indicates more than 1 transaction per component per monthly period and a summary report of these transactions is produced per region. More than 2 transactions per month will be highlighted or indicated in red so that the Regional Coordinator is flagged. Transactions are grouped by KPI and Component and sorted in descending order according to the number of transactions.</p> |
| Action plan reports | <p>These reports are need by the WSAs to manage their action plans and by the regional offices and national office to highlight WSAs which are not following their agreed plans. In essence it is a report that can be used as a project management summary.</p> |

Table 3. 3 Summary of reports generated on RPMS



3.4 Data Analysis Method

Exploring the datasets and frequency tabulations for score comparison were employed. For the analysis of the relative performance levels toward gaining access to water and sanitation services, the RPMS tool was used. The particular indicators of interest were the changes in the performance levels in the provision of basic services for different segments of the South African municipalities based on RPMS.

- **Objective 1:** required an inventory of the service delivery indicators specific for each WSA. The first step of the study involved examining existing data and carrying out a preliminary survey to establish indicators which have an impact on WSAs. An inventory of the indicators specific for the WSAs was created from relevant literature. Eleven indicators were identified which are: Access to Water, Access to Sanitation, Access to Free Basic Water, Access to Free Basic Sanitation, Drinking Water Quality, Wastewater Quality, Customer Service Standards, Institutional Effectiveness, Financial Performance, Strategic Asset Management and Water Use Efficiency. The research focused on the CoT, CoCT and EThekweni during the period between July 2008/2009 and June 2009/2010.
- **Objective 2:** To apply a framework for the evaluation of each WSA aligned within three major themes: the various issues relating to the physical delivery of water to households: the physical typologies of delivery: and the issues that surround the measurement of and charging for water. Having created the inventory, a framework for the indicators developed by DWA was applied to assess expected targets. Data for this objective was collected from literature review and the NWSRS.
- **Objective 3:** lastly data was collected relating the procedures related to the evaluation of water service delivery; how the water gets from a distribution point to individual households; and how these issues affect the market for water. These issues (or characteristics) of water service delivery were broken into three broad groupings: direct financial issues, geo-spatial issues, and value issues that include traits such as quantity and quality as well as access concerns. Data for the analysis of specific indicators was collected through RPMS annual reports and benchmarking reports.

- Results presentation was done using screen snap shots of the graphical user interface (GUI) of the RPMS whose outputs are in form of tables.

As the study represents a secondary research in which both quantitative and qualitative dimensions are incorporated, the bulk of data for this study was derived from the department of water affairs dataset. The particular variable of interest was access to water and sanitation services. The choice of this variable was informed by the fact that water is considered one of the three basic human needs. Furthermore, studies have shown that most of the service delivery protests are centered on the demand for water. The criticality of water for improved sanitation, human nutrition, disease prevention, and improved maternal and infant mortality ratios is self-evident. Indeed, access to piped water is a critical variable for the computation of the United Nations' Human Poverty Index (HPI). In this sense, this variable was viewed as antecedent to the provision of other basic services. For instance, a household without formal housing or piped water connection is unlikely to have sanitation, electricity, or telephone connection amongst others. It follows that households normally access the fundamental services of formal housing and water before other services.

3.5 Data Quality Assurance

DWA as the sector leader and custodian of the nation's water resources, has the objective of improving water management in general. With regard to water services, given that local government is responsible for delivering services to consumers, has a mandate to regulate WSAs. Therefore, it is within Department's regulatory mandate to monitor, evaluate, report and publish performance of WSAs. DWA has developed the NWSRS in order to spell out the actual activities and pave the way that it has to undertake in fulfilling this role. To fulfil its mandate effectively, DWA developed the RPMS as a tool used by the Regulator to measure performance against key performance indicators and to determine performance trends with the intention of promoting best practice in the sector. The system measures activities according to the 11 regulatory KPIs set out in the NWSRS. The RPMS was piloted by DWA during the 2007 to 2008 assessment period to WSAs, and it was implemented in 2008 to 2009 assessment period. The RPMS tool is available for use and approved by DWA through the government's quality assurance system. Therefore, it is on this basis that RPMS was chosen to be used in this study since is a locally developed tool for local conditions than an externally developed tool not compliant with local conditions.

3.5.1 Reliability of Results

The data collected and used from WSAs using the RPMS tool is reliable as it is approved by DWA through the government's quality assurance system, since it is a criminal offence to provide misleading information to the Minister of DWA according to section 82 of the Water Service Act, (108 of 1997).

3.5.2 Validity of Results

The study results are valid as the results of previous years for the tool were used. Therefore, the findings of the study were validated by the results of the previous years for selected municipalities. Furthermore, the findings of the study were also validated by DWA through the government's quality assurance system.

3.6 Scientific Ethical Statement

The study adheres to the framework and policies of the Faculty of Science, Earth Sciences Department University of the Western Cape, Research Ethics Committee. Poor drinking water quality remains a challenge within municipalities. The study will not look at poor drinking water quality but focused on the assessment of water service delivery. The RPMS tool is available for use and approved by DWA through the government's quality assurance system. Therefore, DWA publishes the results through the RPMS annual report of all WSAs which submitted data to the Department. These results are available for use to the public without having to ask for permission to use them. Desktop research was used for the study, therefore, there were no interviews conducted during the study and leaving not any potential harm to the environment.

3.7 Study Limitation

Firstly, the issue of time presented a major limitation. Due to the deadline placed on this study, which requires that it should be completed in a period of two years. I had to limit the study only to three municipalities namely City of Tshwane, City of Cape Town and EThekweni using Desktop research was used because it has many advantages as it is less expensive than original research, takes advantage of research already undertaken, saves time and money and finally can be provided in electronic or hard copy, thereby ensuring it was manageable project to tackle. The success of the research is limited by the type and accessibility of relevant information from the study.

Chapter 4

Results and Discussion

4.1 Introduction

This chapter presents the research results obtained following the methodology explained in Chapter 3. Each WSA is considered under the eight KPIs showing their levels of compliance. The discussion focuses on the inventory of the water service delivery indicators. The RPMS tool was used to generate the results based on the indicators. The service delivery indicators are discussed for each WSA. Screen snapshot tables for each WSA are presented to show the framework for assessment periods. Basing on the scores obtained by each WSA a comparison is made with respect to compliance levels.

4.2 Water Service Delivery Indicators

The results presented in this section constitute the inventory of water service delivery indicators and compliance indicators for each WSA for the assessment periods 2008 - 2009 and 2009 - 2010 respectively. These results are presented for each WSA separately.

Each WSA is considered under the eight KPIs out of eleven KPIs measured by the RPMS for 2009 - 2010 assessment period showing their levels of compliance. The discussion focuses on the inventory of the water service delivery indicators. One of the outstanding challenges is related to lack of proper access to sanitation (KPI 2) as indicated by the performance level of CoT which is likely to lead to water service delivery protests. The CoT is the best performer on the Financial Performance (KPI 9) with a score of 4.05. The KPI requiring attention is Financial Performance (KPI 9) for the CoCT with a score of 3.116 and EThekwini with a score of 3.112 WSAs with indicators showing need for improvement. Compliance is encouraged for all WSAs on the Financial Performance (KPI 9) to ensure that their water business is sustainable. The CoCT has complied on seven out of eight measured KPIs. It is noted that the KPI scores for the municipality makes CoCT a better performer amongst the three. On the other hand the Water Use Efficiency (KPI 11) requires attention as shown by the results of two WSAs, i.e. CoT and EThekwini that have registered lower scores that is one and zero respectively. Since South Africa is water scarce country proper management of this KPI is strongly encouraged.

Results indicate the expected results generated by the RPMS tool. The RPMS is a web-based tool used by the Regulator to measure performance against key performance indicators and to determine performance trends with the intention of promoting best practice in the sector. The RPMS tool was able to measure the compliance levels for the eight measured KPIs in this study. It was able to indicate the performance of each KPI including the compliance challenges experienced on various KPIs by three municipalities with the intention of promoting best practice in the sector in terms of water service delivery.

The study will enable other WSAs to compare their performance with others to improve their performance on non-complying KPIs. Other WSAs will not be able to compare their performance against others in terms of KPI 4: Access to Free Basic Sanitation because DWA has not developed any standards to measure this indicator. Followed by KPI 5: Drinking Water Quality Management the score is captured on the Blue Drop Report and KPI 6: Wastewater Quality Management the score is captured on the Green Drop Report, which were not considered in this study for the three WSAs.

The study has contributed immensely in the academic circles by adding to the quantity of literature available that articulates current issues and challenges related to water regulation and service delivery in the country and the best practice management. On the international arena the study has also contributed to the debate and demonstrates that African countries are also actively engaged in research activities that are contributing to the sustainable management of water service delivery. Clearer insights into issues regarding access to basic services in various communities would contribute to the debate regarding access to basic service delivery in South Africa.

The study was able to answer all research questions as listed below.

1. Which indicators are used by DWA to measure WSAs compliance on water service delivery?

The study was able to identify water service delivery indicators developed by DWA specific for each WSA (Table 4.1). The framework used in this study was able to distinguish the following eight dimensions:

Table 4. 1 Key performance indicators used in the study

| Key Performance Indicators |
|---|
| <ul style="list-style-type: none">• KPI 1: Access to Water• KPI 2: Access to Sanitation• KPI 3: Access to Free Basic Water• KPI 4: Access to Free Basic Sanitation• KPI 7: Customer Service Standards• KPI 8: Institutional Effectiveness• KPI 9: Financial Performance• KPI 10: Strategic Asset Management• KPI 11: Water Use Efficiency |

2. Are the criteria used for WSAs water service delivery compliance achieving their key objectives?

The study was able to evaluate each WSAs performance in terms of water service delivery. With regards to quality of service provision, the study shows the rankings of the KPIs for the three municipalities to be different with the values indicating compliance or values above the acceptable standard dominating for the City of Cape Town. The City of Cape Town is the only service provider complying in more KPI areas than the other two WSAs, secondly in position is EThekwini and lastly is the City of Tshwane. The results indicate that CoCT is ranked highly in terms of water service delivery.

3. Can RPMS tool be used to compare water service delivery for the three WSA?

The study was able to compare the WSAs performance in terms water service delivery for the three WSA using RPMS tool to determine performance trends with the intention of promoting best practice in the sector. A comparative analysis of water service delivery for the three WSAs was carried out based on the results generated by RPMS tool. The analysis focuses on one assessment period (2009 - 2010) which has a complete record of KPIs used for the assessment. EThekwini does not have a complete data set for the two assessment periods save for 2009 - 2010 period.

4.3 Water Service Authorities Performance

City of Tshwane

The results presented in this section constitute the inventory of water service delivery indicators and compliance indicators for each WSA for the assessment periods 2008 - 2009 and 2009 - 2010 respectively. These results are presented for each WSA separately. The first case to be considered is the City of Tshwane whose service delivery indicators are shown in Table 4.2.

Table 4. 2 KPI and compliance assessment for City of Tshwane

| KPI No | Description | KPI Score 09/10 | KPI Score 08/09 | Required Score | Compliance Assessment |
|--------|--|-----------------|-----------------|----------------|-----------------------|
| 1 | KPI 1: Access to water supply | 3 | 5 | 3 | |
| 2 | KPI 2: Access to sanitation | 1 | 3.107 | 3 | |
| 3 | KPI 3: Access to Free Basic Water | 3.948 | 4.281 | 3 | |
| 4 | KPI 4: Access to Free Basic Sanitation | | | | |
| 5 | KPI 5: Drinking Water Quality Management | Refer to BDS | | | |
| 6 | KPI 6: Wastewater quality management | Refer to GDS | | | |
| 7 | KPI 7: Customer service quality | 3.5 | 4.125 | 3 | |
| 8 | KPI 8: Institutional effectiveness | 3.957 | 3.992 | 3.5 | |
| 9 | KPI 9: Financial performance | 4.05 | 4.321 | 4 | |
| 10 | KPI 10: Strategic asset management | 3.401 | 3.021 | 3 | |
| 11 | KPI 11: Water use efficiency | 1 | 0 | 3 | |

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The City of Tshwane complied on seven measured KPIs for 2008 - 2009 with the exception of one KPI that is the Water Use Efficiency (KPI 11). The City has achieved compliance in all indicators that deal with access to the service delivery. These KPIs are indicated in Table 4.2 as Access to Water Supply (KPI 1) with a score of five, Access to Sanitation (KPI 2) with a score of 3.107 and Access to Free Basic Water (KPI 3) with a score 3.948. There are no standards in place to measure KPI 4: Access to Free Basic Sanitation and DWA has not developed any standards. For KPI 5: Drinking Water Quality Management the score is captured on the Blue Drop Report and KPI 6: Wastewater Quality Management the score is captured on the Green Drop Report, which were not considered in this study for the three WSAs. Other indicators in which the City complied are Customer Service Quality (KPI 7), Institutional Effectiveness (KPI 8), Financial Performance (KPI 9) and Strategic Asset Management (KPI 10).

For 2009 - 2010 the CoT provided service to a number of people to achieve compliance on Access to Water Supply (KPI 1) with a score of three and Access to Free Basic Water (KPI 3)

with a score 3.948. The non-complying exception is Access to Sanitation (KPI 2) with a score of one. The City achieved a score of 3.5 for Customer Service Quality (KPI 7). On Institutional Effectiveness (KPI 8) the CoT is complying with a score of 3.957. The WSA achieved compliance score of 4.05 on Financial Performance (KPI 9) which is higher than required score of four. On Strategic Asset Management (KPI 10) the WSA is complying with a score of 3.401. Water use efficiency (KPI 11) is non-complying with a score of one which is lower than the required score of three.

Table 4.2 indicates the levels of compliance for the two assessment periods (2008 - 2009 and 2009 - 2010). Access to Water Supply (KPI 1) has a higher score of five for period 2008 - 2009 as compared to the score of 2009 - 2010 which has dropped to 3 but not below the required score of three. Access to Sanitation (KPI 2) has a lower score of one for 2009 - 2010 as compared to a score of 3.107 for assessment period 2008 - 2009. The score of 3.948 was achieved on Access to Free Basic Water (KPI 3) in 2009 - 2010 dropped as compared to the 2008 - 2009 period which stood at 4.281. On Customer Service Quality (KPI 7) a drop in score is recorded from 4.125 to 3.5 for the two assessment periods. Equally so a drop in values was registered for Institutional Effectiveness (KPI 8). Another drop for Financial Performance (KPI 9) and Strategic Asset Management (KPI 10) was recorded for the consecutive assessment periods. However, a marginal improvement though below the required score was registered for Water Use Efficiency (KPI 11).

City of Cape Town

According to Table 4.2 the CoCT has data for two assessment periods (2008 - 2009 and 2009 - 2010). For 2008 - 2009 assessment period, the City of Cape Town complied on two access KPIs: Access to Water Supply (KPI 1) with a score of five and Access to Sanitation Supply (KPI 2) with a score of 3.119. A non-complying score of 2.683 was recorded on Access to Free Basic Water (KPI 3). There are no standards in place to measure KPI 4: Access to Free Basic Sanitation and DWA has not developed any standards. For KPI 5: Drinking Water Quality Management the score is captured on the Blue Drop Report and KPI 6: Wastewater Quality Management the score is captured on the Green Drop Report, which were not considered in this study for the three WSAs. A maximum score of five was registered on Customer Service Quality (KPI 7). The City has achieved a compliance score of 4.531 on Institutional Effectiveness (KPI 8). On Financial Performance (KPI 9) the CoCT scored

below required score value of three which is the lowest score on their dashboard. The City scored 3.238 on Strategic Asset Management (KPI 10) indicating that their assets are properly managed. On Water Use Efficiency (KPI 11) a non-complying score of 2 was recorded which the required score of three.

Table 4. 3 KPI and compliance assessment for City of Cape Town

| KPI No | Description | KPI Score 09/10 | KPI Score 08/09 | Required Score | Compliance Assessment |
|--------|--|-----------------|-----------------|----------------|-----------------------|
| 1 | KPI 1: Access to water supply | 3 | 5 | 3 | 👍 |
| 2 | KPI 2: Access to sanitation | 3.26 | 3.119 | 3 | 👍 |
| 3 | KPI 3: Access to Free Basic Water | 5 | 2.683 | 3 | 👍 |
| 4 | KPI 4: Access to Free Basic Sanitation | | | | |
| 5 | KPI 5: Drinking Water Quality Management | Refer to BDS | | | |
| 6 | KPI 6: Wastewater quality management | Refer to GDS | | | |
| 7 | KPI 7: Customer service quality | 5 | 5 | 3 | 👍 |
| 8 | KPI 8: Institutional effectiveness | 4.531 | 4.531 | 3.5 | 👍 |
| 9 | KPI 9: Financial performance | 3.161 | 1.951 | 4 | 👎 |
| 10 | KPI 10: Strategic asset management | 3.757 | 3.238 | 3 | 👍 |
| 11 | KPI 11: Water use efficiency | 4 | 2 | 3 | 👍 |

For the 2009 - 2010 assessment period the CoCT has achieved a score of three on Access to Water Supply (KPI 1) dropping from a score of five in 2008 - 2009 assessment period. An increasing score of 3.26 was recorded for Access to Sanitation Supply (KPI 2) compared to a score of 3.119 achieved in the previous assessment period. An outstanding score of five was achieved for Access to Free Basic Water (KPI 3) during the 2009 - 2010 assessment period increasing from a score of 2.683 in 2008 - 2009 assessment period, indicating compliance improvement on this KPI. The WSA has registered a maximum score of five which is higher than the required score of three on Customer Service Quality (KPI 7) for both assessment periods (2008 - 2009 and 2009 - 2010). For Institutional Effectiveness (KPI 8), the CoCT registered a score of 4.531 for consecutive assessment periods. The WSA achieved lower scores for the two assessment periods, 3.161 for 2009 - 2010 and 1.951 for 2008 - 2009 on Financial Performance (KPI 9). Despite the fact that these are below required score of four there is a marginal increase on scores. The CoCT recorded a score of 3.757 on Strategic Asset Management (KPI 10) for 2009 - 2010 assessment period which is higher than the 2008 - 2009 assessment period. The WSA achieved a score of four which is higher than the required score of three on Water Use Efficiency (KPI 11) for the 2009 - 2010 assessment period. As can be seen in Table 4.3 the KPI score is lower than the required score in 2008 - 2009. This score is relatively lower than the 2009 - 2010 indicating an improvement in performance.

EThekwini Metropolitan

EThekwini complied on six out of the eight KPIs for the 2009 - 2010 assessment period. Table 4.4 indicates the 2009 - 2010 assessment period data. A comparative trend analysis involving two assessment periods for EThekwini could not be done due to non-availability of data.

Table 4. 4 KPI and compliance assessment for EThekwini

| KPI No | Description | KPI Score 09/10 | KPI Score 08/09 | Required Score | Compliance Assessment |
|--------|--|-----------------|-----------------|----------------|-----------------------|
| 1 | KPI 1: Access to water supply | 3.59 | | 3 | 👍 |
| 2 | KPI 2: Access to sanitation | 3.057 | | 3 | 👍 |
| 3 | KPI 3: Access to Free Basic Water | 4.131 | | 3 | 👍 |
| 4 | KPI 4: Access to Free Basic Sanitation | | | | |
| 5 | KPI 5: Drinking Water Quality Management | Refer to BDS | | | |
| 6 | KPI 6: Wastewater quality management | Refer to GDS | | | |
| 7 | KPI 7: Customer service quality | 4.125 | | 3 | 👍 |
| 8 | KPI 8: Institutional effectiveness | 4.021 | | 3.5 | 👍 |
| 9 | KPI 9: Financial performance | 3.112 | | 4 | 👎 |
| 10 | KPI 10: Strategic asset management | 3.042 | | 3 | 👍 |
| 11 | KPI 11: Water use efficiency | 0 | | 3 | 👎 |

EThekwini has provided service aimed at achieving compliance on three access KPIs which are Access to Water Supply (KPI 1) with a score of 3.59, Access to Sanitation Supply (KPI 2) with a score of 3.057 and Access to Free Basic Water (KPI 3) with a score of 4.131 (Table 4.4). The recorded scores for KPI 1, KPI2 and KPI 3 are all higher than the required score of three. The WSA has achieved a score of 4.125 on Customer Service Quality (KPI 7). There are no standards in place to measure KPI 4: Access to Free Basic Sanitation and DWA has not developed any standards. For KPI 5: Drinking Water Quality Management the score is captured on the Blue Drop Report and KPI 6: Wastewater Quality Management the score is captured on the Green Drop Report, which were not considered in this study for the three WSAs.

The WSA complied with a score of 4.021 on Institutional Effectiveness (KPI 8). In terms of Institutional Effectiveness (KPI 8) EThekwini scored above the required score of three. EThekwini did not comply on the Financial Performance (KPI 9) with a score of 3.112 which is below the required score of four. The WSA scored 3.042 on the Strategic Asset Management (KPI 10). The EThekwini's compliance on Water Use Efficiency (KPI 11) is lower than the required score of three.

4.3 Comparative Analysis of Water Service Delivery

A comparative analysis of water service delivery for the three WSAs was carried out based on the results generated by RPMS tool. The analysis focuses on one assessment period (2009 - 2010) which has a complete record of KPIs used for the assessment. EThekwini does not have a complete data set for the two assessment periods save for 2009 - 2010 period. Figure 4.1 summarises levels of performance for each WSA. The comparison uses indicators as pointers, numbers, and facts that measure organization performance as argued by (Wouter et al. 2005).

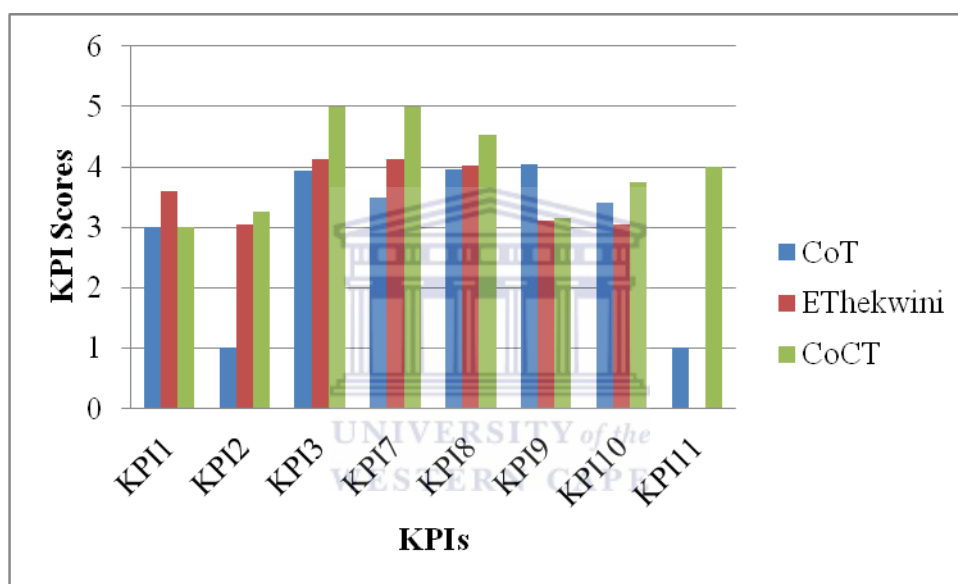


Figure 4. 1 Comparison of KPI scores for the study period 09/10

This comparative analysis focuses on eight out of eleven KPIs measured by the RPMS for 2009 - 2010 assessment period. EThekwini achieved the highest score of 3.59 on Access to Water Supply (KPI 1) indicating a high level of compliance than CoT and CoCT. The CoCT registered the highest score of 3.26 on Access to Sanitation Supply (KPI 2) as compared to the other two WSAs with the least score attributed to CoT. A score of five was recorded by the CoCT on Access to Free Basic Water (KPI 3) as opposed to the other WSAs where the least value of 3.948 being recorded by CoT. Relatively speaking all three WSAs are compliant on this KPI. There are no standards in place to measure KPI 4: Access to Free Basic Sanitation DWA has not developed any standards. For KPI 5: Drinking Water Quality Management the score is captured on the Blue Drop Report and KPI 6: Wastewater Quality

Management the score is captured on the Green Drop Report, which were not considered in this study for the three WSAs. All three WSAs are compliant on Customer Service Quality (KPI 7) with the KPIs required score. However, the CoCT is the highest scoring WSA. In terms of Institutional Effectiveness (KPI 8) all three WSAs are compliant with CoCT recording the highest score of 4.531. Figure 4.1 shows that for Financial Performance (KPI 9) the CoT is the only complying WSA with a score of 4.05. Strategic Asset Management (KPI 10) the CoCT is ahead of the two WSAs with a score of 3.757 way above the required score of three. Finally, the last KPI considered is Water Use Efficiency (KPI 11), of the three WSAs only CoCT is complying with an outstanding score of four. Using information shown in Figure 4.1 CoCT stands out as the most complying WSA followed by EThekweni and lastly the least compliant WSA is CoT. This finding concurs with what Camay & Gordon (2005) indicated that a gross spatial/geographical inequality found across the country is due partly to ineffective local government.

The framework used in this study is similar to the one developed by Tynan & Kingdom, (2002) which allowed for comparison between different WSAs. The framework used in this study was able to distinguish the following eight dimensions. 'Access to Water Supply (KPI 1)', 'Access to Sanitation Supply (KPI 2)', 'Access to Free Basic Water (KPI 3)', 'Customer Service Quality (KPI 7)', 'Institutional Effectiveness (KPI 8)', 'Financial Performance (KPI 9)', 'Financial Performance (KPI 9)', 'Strategic Asset Management (KPI 10)' and 'Water Use Efficiency (KPI 11)'.

The literature review has shown that a number of countries have challenges relating to the way they regulate water service delivery and performance indicator management. Generalizations of the findings therefore are difficult and hence the need to examine the conditions under which the South African regulatory performance framework is applied in the three WSAs chosen for this study.

The results of this study are in line with the view point expressed by United Nations, (2006a) in line with the Millennium Development Goals (MDGs) which aim to halve the proportion of world population without access to safe drinking water and sanitation between 1990 and 2015. Access to water and sanitation indicated by the following KPIs, Access to Water Supply (KPI 1), Access to Sanitation Supply (KPI 2) and Access to Free Basic Water (KPI 3) show similar trends as reported by (WHO & UNICEF 2010). Given such a situation it is easy

to notice that Africa has a gigantic challenge in providing tolerable service to its people and this harmfully impact household water security (Hove & Tirimboi 2011) and equally so in South Africa.

In line with findings for Financial Performance (KPI 9), water supply in the WSAs is undertaken by local governments that have the dual objectives of providing a social service while generating revenue to offset cost. Ironically, most of these WSAs do not recover their operating expenses from their own revenues, and remain dependent on state governments for subsidies (Hall, 2006; Olajuyigbe, 2010). Studies by (UN-Habitat, 2002; Graham, 2005; Hall, 2006) confirms our findings especially for Water Use Efficiency (KPI 11) that half of the water in drinking water supply systems in the developing countries is lost to leakage, illegal hook-ups and vandalism.

A very significant aspect of water service delivery management is that it is not a single track activity. It is in fact diverse, more of a life cycle of a municipality in the sense that it underpins every activity in the municipality. The end product should be measured against other elements, for example, service delivered only to meet a deadline but which is poor quality, will leave residents of a municipality not getting value for money. This view is supported by Hussey (1999), who maintains that customer expectations continue to rise, requiring more attention to service and quality. Customer Service Quality (KPI 7) results in our study support the views expressed in other studies.

Studies conducted by Tucker et al. (2010) in Ghana and South Africa indicate that Public-Private Partnerships (PPPs) have produced mixed results, in our study results point to a need for some improvements in management for the benefit of households. In South Africa, a PPP (in Nelspruit) and a PuP (in Harrismith) have turned around service delivery an indication that compliance with water service delivery indicators is possible. In both municipalities, cost recovery in low-income areas has been very challenging, although the PuP was quicker to engage flexibly and sympathetically with these communities.

4.4 Summary

The results and discussion chapter has shown that a number of WSAs have challenges with the manner in which they regulate water service delivery and performance indicator management. A generalization of the findings has shown us the need to examine the conditions under which the South African regulatory performance framework is applied in

the three WSAs. Further probing of the results shows through comparative analysis that there are differences in the way WSAs deliver water services to their communities. Such challenges are specific to each WSA and a common criterion for comparison has separated the best performers from those struggling to keep up with service delivery demands. The comparison done has shown the status of each WSA in terms of service delivery.

Chapter 5

Conclusion and Recommendations

5.1 Introduction

This chapter offers an overview of the conclusions arrived at through the results obtained by the study. All objectives set for the study were fulfilled. In view of this, it can be concluded that systematic measurement of performance delivers significant management information to WSAs, in the sense that they are able to concentrate resources strategically, in their areas of weakness. The system also delivers value to DWA, in the sense that it is able to priorities areas which require regulatory action, thereby streamlining the deployment of DWAs resources into areas which show the most pressing need for improvement.

Without effective measurement, knowledge and understanding of water services management information, services delivery is impossible. A systematic approach to the collection and provision of data is essential for effective monitoring, in terms of both regulatory and management requirements. Therefore, having an effective and methodical system of data collection, information processing and monitoring, such as the RPMS, can have a significant effect on management efficiency with positive implications for service delivery.

5.2 Waters Service Indicators

In conclusion the results have shown that municipalities experienced compliance challenges on several measurable KPIs, therefore, each municipality's performance differs from the other. The study concluded that there is comparative difference in the performance levels in terms of service delivery. One of the outstanding challenges is related to lack of proper Access to Sanitation (KPI 2) as indicated by the performance level of CoT which is likely to lead to water service delivery protests. The CoT is the best performer on the Financial Performance (KPI 9).The KPI requiring attention is Financial Performance (KPI 9) for the

CoCT and EThekwini WSAs with indicators showing need for improvement. Compliance is encouraged for all WSAs on the Financial Performance (KPI 9) to ensure that their water business is sustainable. The CoCT has complied on seven out of eight measured KPIs. It is noted that the KPIs scores for the municipality makes CoCT a better performer amongst the three. On the other hand the Water Use Efficiency (KPI 11) requires attention as shown by the results two WSAs, i.e. CoT and EThekwini who have registered lower scores that is one and zero respectively. Since South Africa is a water scarce country proper management of this KPI is strongly encouraged.

5.3 Evaluation of Service Provision

With regards to quality of service provision, the study shows the rankings of the KPIs for the three municipalities to be different with the values indicating compliance or values above the acceptable standard dominating for the City of Cape Town. The City of Cape Town is the only service provider complying in more KPI areas than the other two WSAs, secondly in position is EThekwini and lastly is the City of Tshwane. The results indicate that CoCT is ranked highly in terms of water service delivery.

5.4 Recommendations

In light of the above, the following recommendations are directed to the relevant stakeholders and project proponents:

- Promote the development of outstanding standards to measure outstanding KPIs. There are no standards in place to measure KPI 4: Access to Free Basic Sanitation and DWA is encouraged to develop the standards. It is recommended that all WSAs should align their water service delivery goals with sectoral objectives set out by DWA.
- Based on the comparative analysis of water service delivery CoCT is ranked as the best performer. It is therefore, recommended that WSAs adopt performance strategies used by the CoCT to improve water service delivery. Notwithstanding that the priorities of the WSAs' critical areas that have to be targeted the following could be included:
 - i) Service Delivery where the municipalities are thriving to meet infrastructure and service needs and also meet community service backlogs,

- ii) Financial Viability (sustainability) through the increase in value for money expenditure to grow and diversify revenue,
- iii) Internal Perspective (good governance) which the municipality hopes would ensure accessibility and promote governance and make it possible to create an efficient, effective and accountable administration,
- iv) Learning and growing that would eventually improve knowledge management.

Capacity development initiatives should be focused on the needs of the municipality. In order to achieve this, a systematic analysis of the needs of the municipality should be in place. It is therefore recommended that resources are directed to the implementation of a systematic analysis such as the RPMS framework. This will allow for more purposeful initiatives which have an actual impact on business practice in water services delivery.

The approach to implement these recommendations should be structured and systematic, in order to deliver a defined benefit and to monitor the achievement of measurable goals. For example, if the goal is to “improve business practice”, the dimensions of that goal must be clearly defined, and measurable criteria demonstrating achievement of that goal identified. Without a system, the impact of support, capacity-development and regulatory activities cannot be determined, which means that it cannot be replicated or applied in other areas or organizations, and the sector as a whole cannot improve its performance.

It is essential to concentrate only on the critical issues in the first iterations of the implementation of the system, and implementation must take place within a coordinated context which has established communications mechanisms for consolidating requests to local government for data. The RPMS, as a national government system or tool, is an example of the initiation of an intra-department coordinated approach.

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