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Putting a Price on Water for All, Namibia

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Putting a Price on Water for All, Namibia

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ABSTRACT

Access to water and sanitation is indeed a human right; however quality water and sanitation service provision should not be assumed a 'free service' as a result. Hence it is crucial to understand the costs involved of monopoly water service provision to enable informed decision-making on tariff determination. Namibia, is not only characterised with extreme conditions of water scarcity and skewed income distribution, with a history of free water services, but it also is prone to information asymmetry and lack of transparency (especially financial) challenges in the price-setting process. Hence, the research aim was to adapt a framework for determining price-setting processes and to investigate the potential role of an economic regulator to inform the process and policy accordingly in Namibia. In this regard, the research explores the price-setting processes of independent economic regulators in England and Wales and Zambia (as a guide to understand the dynamics and intricacies of setting and enforcing prices for utilities based on the need for sustainable cost recovery and efficient service provision) to further investigate possible improvements to the Namibian price-setting process. The research objectives were explored through descriptive and exploratory case study approaches, mainly comprising of semi-structured interviews and focus group discussions.

The research found that the most appropriate regulatory framework for Namibia is an intermediate framework- a hybrid regulatory body (consisting of a combination between government and independent expert panels). The research also identifies crucial operating principles, regulatory tools (with emphasis on accounting separation within financial models) and consumer involvement as major components for the Namibian price-setting process. In essence, accountability through transparency (effective information sharing and stakeholder involvement) is identified by the study to address the principal-agent challenges faced within Namibia, especially given the extreme conditions.

Keywords:

Price-setting process, urban water and sanitation services, Namibia

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DEDICATION

This thesis is dedicated to my parents for always making sure I had the best support and education to make it thus far. You have given me the best gift of all, and I am proud to be your daughter. Love always.

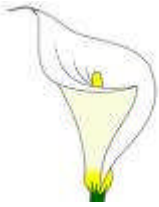


TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOGRAPHS

List of Abbreviations and Organisations

AMP	Asset Management Plans
CAPEX	Capital expenditure
CCWater	Consumer Council for Water
CoW	City of Windhoek
CUs	Commercial Utilities
DTF	Devolution Trust Fund
KWSC	Kafubu Water and Sewerage Company
LA	Local Authorities
LWSC	Lusaka Water and Sewerage Company
MAWF	Ministry of Agriculture, Water and Forestry
MRLGH	Ministry of Regional Local Government and Housing
NamWater	Namibia Bulk water supplier
NGO	Non-Governmental Organisation
NWASCO	National Water and Sanitation Council
O&M	Operation and Maintenance
OFWAT	Office of Water Services
OPA	Overall Performance Assessment
OPEX	Operating Expenses
PPP US$	Purchasing Power Parity in International Dollar currency
RDC	Resident Development Committee
ROCE	Return on Capital Employed
SADC	Southern Africa Development Community
VIP	Ventilated Improved Pit latrines
WFD	Water Framework Directive
WRM	Water Resource Management
WSS	Water Supply and Sanitation
WWG	Water Watch Group
ZMK	Zambian Kwacha

Chapter 1: Introduction and objectives

Namibia has a particular challenge, in terms of its urban water services provision and price-setting processes, with an emphasis on affordability for basic services to the urban poor, given extreme water scarcity and highly skewed income distribution challenges. This chapter provides the context and concepts that outline the research problem and the related research objectives, followed by a brief outline of the thesis structure.

1.1 Providing water services in urban areas

Providing water services to an increasing urban population is a challenge for all governments throughout the world. It is a challenge, especially in developing countries, because physical water scarcity does not always allow for new sources of water to be exploited to provide the necessary services (Vairavamoorthy and Mansoor, 2006: 188). Urban migration is causing huge concern and exacerbating the water scarcity problem faced in urban areas of developing countries. As a result, poverty increases due to limited access to water and sanitation services to inhabitants, leading to various health implications. For example, cities such as Bombay, Lagos, Jakarta and Karachi are faced with rapidly increasing populations in a short period of time and thus cannot cope with the demand for essential services. The necessary infrastructure and capacities to manage water supply and sewerage services is a major limitation and thus exacerbate inequalities in service provision and living standards between the rich and poor (Sohail, 2004: 11).

The increase in development of informal and squatter settlements in developing countries, often declared to be ‘illegal’,, adds further strain on service providers to expand services to these areas. It is estimated that approximately 30-60 percent of total urban populations are made up of these settlements (Uitto et al., 2000: 9). These settlements normally have very little space for in-house water and sanitation facilities, and hence make use of communal outlets for these services. In this regard, it is noted that governments often neglect these areas, and service is mostly directed to the rich part of the population. This is because it is believed that “adequate cost recovery for the provision of services to these settlements is not possible” (Uitto et al., 2000: 10; Sansom et al., 2004: 57). This contributes to rapid decrease of already poor services, causing a heavy impact on the health and environment in these areas. In addition, due to the focus

placed on improving access to clean drinking water, the sanitation sector has been severely neglected, with figures of lack of access to sanitation facilities in urban areas increasing steeply (Mara, 2005: 57).

Politically there is unwillingness to charge for water and sanitation services, which have adverse effects for any service provider/utilities' financial sustainability (Franceys, 2005: 210) and in turn leads to inequitable service distribution. Hence financial implications (increasing capital, operating and maintenance costs) of catering for the growing water and sanitation requirements are unmanageable for many water utilities and governments. Winpenny (1994: 5) attributes this failure primarily to improper pricing and cost-recovery. Other factors include high proportion of leaks and wastage, weak billing and collection systems, illegal connections and theft and erratic payments by large consumers (Vairavamoorthy and Mansoor, 2006: 198). As a consequence water utilities are unable to maintain, repair and expand their systems; resulting in poor quality of water and sanitation services.

In this regard, major shortcomings in most urban utilities are summarised by Uitto et al., 2000: 15-16; Winpenny, 1994: 5; Dutta and Tiwari, 2006: 141,143; Sohail, 2004: 11) as:

- Improper or no metering systems in place, resulting in little monitoring and replacements of faulty meters,
- Improper water tariffs, causing under-billing leading to waste of water and no proper conservation measures in place to manage it,
- Improper financial management of utilities, in many cases results in long delays in bill collections (for example in Dhaka and Shangai cities, it takes 11 months for bill collections),
- Improper account for operation and management expenses (these include replacement of pipes, valves water meters, service vehicles and reduction of unaccounted for water), this leads to investments made on improper maintained system, which ends up doubling costs and system inefficiencies and causes poor service to the customers, and

- Poor capacities and institutional arrangements of utility companies. It is recorded that in many developing countries that utilities are most over-staffed and under-trained leading to "low financial returns" and inefficiencies.

Inefficiency of water utilities can thus be attributed to poor management, in a nutshell. In this regard, financial and political autonomy, as well as clear and transparent tariff policy ("that is acceptable to the people and politicians") are key ingredients to a successful water utility operation (Uitto et al., 2000: 17-18). Another indicator of poor management is extensive use of communal taps in urban cities. These normally indicate "lower levels of service and high wastage". Utilities cannot recover all their revenue from such taps and it normally calls for subsidisation, mainly from taxes (Sohail, 2004: 11). In this regard to be able to meet the goal of provision for basic services to all users, cross-subsidisation from the rich to the poor is an issue that needs to be explored. The Bonn Charter for safe drinking water (2004), supports the notion of cross-subsidies for the "economic disadvantaged" groups and thus urges governments or regulatory authorities to set the price of water "so that it does not prevent consumers from obtaining water of sufficient quantity and quality to meet fundamental domestic needs" (IWA, 2004: 9).

1.2 Price-setting processes for urban water and sanitation services

During the 1980s, water reforms became increasingly popular, largely due to the increasing demands of population growth and urbanisation coupled by lack of governmental financial support (including non payment (limited) for services) and poor management (GTZ, 2008: 7). Decentralised structures and corporatized companies formed the basis of water sector reforms. However, limited knowledge and skills lead to the failure of many such reforms (Swatuk, 2005: 877) – a key challenge being the continuing unwillingness to establish viable water tariffs. In many cases, local government is responsible for water services, and therefore sets the prices through an internal process (self-regulation), however due to large budget allocation systems (for mixed services) the process is often not transparent (Rouse, 2007: 25; Bartle and Vass, 2005). The challenges of self-regulation include improper legal and regulatory framework and lack of definition of clear roles and responsibilities as a result of limited expertise. There is a high level of information asymmetries in developing countries as a result of these constraints which, in many cases, can be described as the result of

regulatory weaknesses (Parker et al., 2002: 11) but in reality it is more the absence of any understanding of the requirement for a regulatory process. Information asymmetries in this context refers to one party having more information over another (Nickson and Franceys, 2003: 5). Hence, customers often do not understand the charges (Rouse, 2007: 25), which affects payment for services. In order to minimise political pressures, services are under-priced with the resulting lack of revenue affecting the sustainability and quality of services rendered. In this regard, regulatory frameworks and structures are required to set, monitor and enforce prices for water and sanitation services. These structures vary widely across countries depending largely on the ownership (public or private) and composition of water service providers as well as the understanding of economic, price-setting, regulation.

The incentives of having regulators in place are to ensure efficient service delivery, while protecting consumers against unfair charges for services. Overall, implementation of these 'incentives' requires change in policy/regulatory frameworks as well as adequate stakeholder involvement (including politicians and consumers) (Franceys and Gerlach, 2008: 16). This process is highly dependent on accurate information for informed decision making processes, and hence it's the duty of such regulators to create the necessary incentives to receive such information (Parker et al., 2002: 3-5), especially financial and operational statistics. Transparency is thus very important and stakeholder involvement, especially with regard to issues such as cost recovery and tariff structures, is required in relation to improved water and sanitation service provision (Jamison et al., 2004: 13). Hence the advocacy of having "some form of independent regulation" is now deemed as "essential for sustainable water services" (Rouse, 2007: 20). Economic regulation, particularly of public service providers is a relatively new development and there is a lot of scepticism regarding the extent of 'independence' regulators can exercise. This is necessarily highly dependent on the political situation of a country and therefore it is up to the country to identify the appropriate level of regulation (Ehrhardt et al., 2007: 9). In terms of water services, independent regulators refer to those that have the autonomy "to set tariffs, take enforcement action and impose sanctions" (Rouse, 2007: 29).

Performances of regulatory processes in lower-income countries are 'under-researched' and hence the appropriate level of economic regulation in the right socio-economic and political context of poorer countries, still needs to be defined (Parker et al., 2002: 2).

While it is necessary to learn from regulatory processes in high-income countries, it should also be noted that conditions are different and thus lessons are not directly 'replicable' (GTZ, 2008: 12). Amongst these challenges facing regulators, the pro-poor agenda is surfacing more and more and hence regulators are forced to act on these particular demands. In this respect, as one example, with the involvement of the economic regulator Zambia has established a 'Devolution Trust Fund' (DTF) with a specific mandate to facilitate extension of services to urban poor (peri-urban) areas (Franceys and Gerlach, 2008: 93-94; Tremolet, 2006: 7).

Economic regulation involves not only setting prices, usually higher than previously to overcome revenue shortfalls, but also giving incentives to service providers to perform more efficiently, ie. at lower cost, to reduce or limit and tariff increases. Comparative competition approaches in the water sector are very common in high-income countries as one means of incentivising efficiency. This approach strives towards achieving efficient service levels at lower costs and also to identify companies that are poorly performing as an incentive to improve. This takes into consideration various parameters such as consumer bills; leakage control; operational costs; quality compliance and financial performance (OFWAT, 2007a: 8). The latter is of high importance during the regulatory process, especially in England and Wales, where the financeability of companies is declared by government to be a primary statutory duty of the regulator, to be able to ensure that necessary investment is obtained to deliver high, and ever improving, quality services (OFWAT, 2007a: 11).

Appropriate water pricing is not only required to ensure viable service provision but also provides information to users regarding the economic, social and physical value of the water resource, thus "sending the right signal to users" to encourage better water allocation and water use efficiency (Sansom et al., 2004: 2; Rosegrant and Cline, 2002: 7). Water pricing trends are gradually changing over time, using a mixture of tariff structures, to attempt to deliver this combination of incentive based water services, both for suppliers (based on performance standards to "reduce costs of water supply") and consumers ("to use water more efficiently") (Dinar and Subramanian, 1997:11). Hence there is an increasing necessity to have an appropriate regulatory framework as part of the institutional set-up to ensure that there is an appropriate level of transparency and information access to facilitate the decision-making process of involved stakeholders

and to enable societal understanding and commitment to sustainable water supply and use.

1.3 Namibian water resource availability

The need for new water management paradigm, incorporating some form of economic regulation, is especially pressing in Namibia. Namibia is the most arid country south of the Sahara and is in a precarious and extraordinary position of having no perennial rivers within its borders (with only two forming its borders) (Figure 1-1) with its water resources being very unevenly distributed over the country. In the regional (Southern Africa Development Countries-SADC) context, Namibia along with South Africa, Botswana, Swaziland, Lesotho and Zimbabwe are classified as dry countries in comparison with their population and renewable fresh water resources. In Namibia's case, most of its renewable freshwater resources are inaccessible (Allan, 2002).

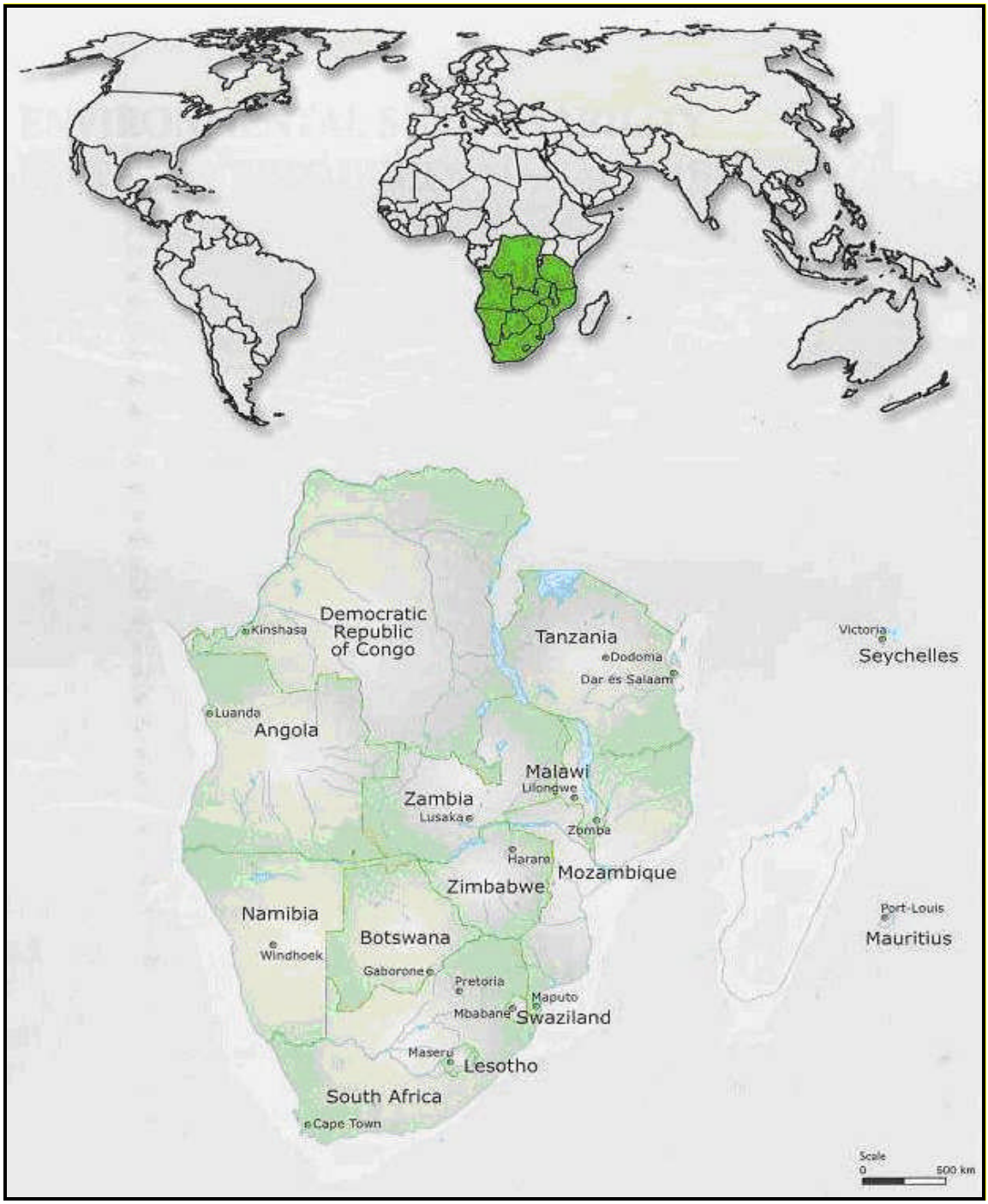


Figure 1-1 Map of the World, indicating Namibia as part of the southern African development community (SADC) countries, with the location of the capital (Windhoek) indicated. The map also highlights the water sources (light green) and major rivers Source: (Hirji et al., 2002)

Consequently, regional water shortages may emerge long before any national shortage is apparent at national level. A good example is the Central Area of Namibia (where Windhoek is located), where local demand is higher than the available local resources (Figure 1-2), a situation that will eventually require expensive supply augmentation schemes with even desalination predicted as one solution (DWA, 2006).

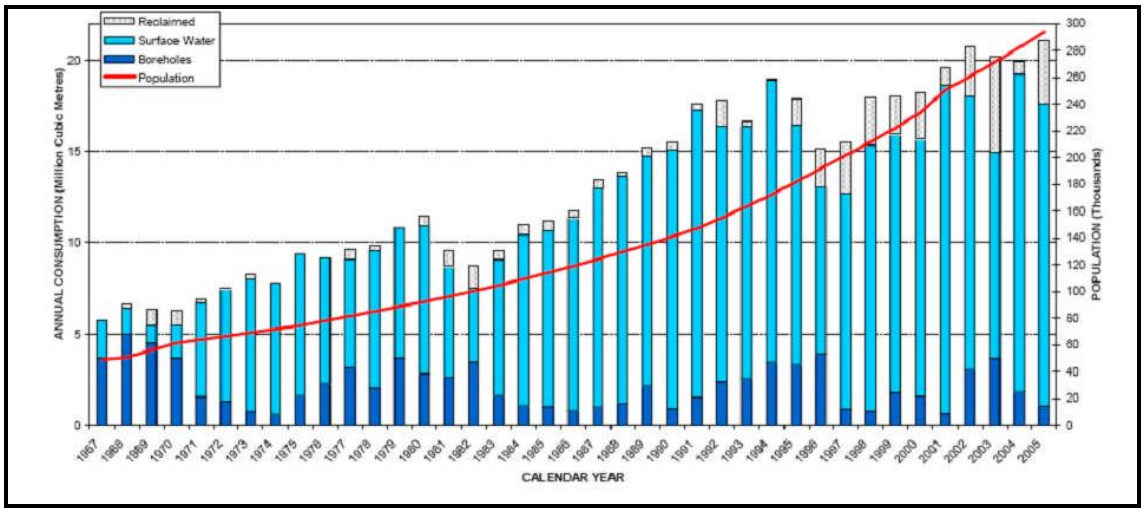


Figure 1-2 water production from different sources and population demand for Windhoek. Source: (CoW, 2005)

The city of Windhoek (see Appendix A for a general overview of water and sanitation status of Windhoek) presently relies on three surface reservoirs to provide 70% of its water for approximately 250,000 residents, while the remainder is provided from groundwater reserves. The dams are built on ephemeral rivers within a 70 to 160 km distance from the city. Evaporation amounts to 3,400 mm per annum; thus Nature is referred to as the biggest "consumer" of water, accounting at times for twice the volume attributable to human consumers. In this sense access to adequate water resources for water supply to central areas of Namibia is one of the biggest challenges for the government and its water services providers (Du Pisani, 2006: 80). Most unusually in the world, though it can now be seen as the fore-runner of a rapidly growing trend, the city's potable water from the reservoirs is augmented with reclaimed waste water from domestic and business sectors so as to cope with the 5% increase in population per annum. The reclamation plant in Windhoek provides approximately 35% of the daily requirements of the city (Du Pisani, 2006: 81-82). Even this approach is not sufficient and the City is now planning to artificially recharge the Windhoek aquifer using excess reclaimed water, while upholding strong quality standards, as an alternative future supply option (Du Pisani, 2006: 88). Other demand management strategies include replacing potable water for industrial and agricultural purposes with reclaimed water (Du Pisani, 2006: 88). According to the National Accounts Report on Water; domestic use, followed by all other uses and losses, and unaccounted-for-water constituted 39%, 36% and 25% respectively of urban water supply by municipalities, in 2001/02 (DWA, 2006).

1.4 Institutional arrangement for urban water and sanitation services

Water sector reforms started as early as the 1980s in the Southern African region, primarily as a result of high population growth in highly water scarce (Swatuk, 2005:874; Gumbo, 2004: 1225; Rothert, 2000:118) and extremely unequal conditions, this latter point reflecting on colonial history trends (Robinson, 2002 as cited by Swatuk, 2005: 874). The reforms have tended to address these challenges through the creation of new legislative frameworks and institutions designed to achieve "equitable, efficient and sustainable use of the resource" (Swatuk, 2005:874). However, as will be explored further in this thesis, the trend of developing new laws, strategies and institutions has not always succeeded in improving water and sanitation services provision due to the lack of commitment and lack of resources commitment from politicians and policy-makers. The lack of clarity in information, particularly financial information, available to politicians and policy-makers, is seen as a key explanatory variable in this process.

The review process for the water sector in Namibia (Figure 1-3) was launched in 1998, with the Namibia Water Resources Management Review team selected to assess the current status of water management and resources in line with associated legislation and available human resources and to make recommendations to promote long term social and economic development. As part of this process, complementing the Water Supply and Sanitation Sector Policy (WASSP) of 1993, in 2000 a Water Policy (white paper) was drafted to promote the concept of the economics of water, while recognizing water as a public good that must be available to those who cannot afford to pay for water services. The policy also incorporates full cost recovery principles (MAWRD, 2000; Heyns, 2004; DWA, 2007). Prior to the review, the Water Act, 1956 (Act No. 54 of 1956) was the basic legal document that guided the Department of Water Affairs and Forestry, stipulating its overall responsibilities to include control, allocation, management and conservation of water sources, including the provision of bulk water supply.

The White paper of 2000 was the guiding document for drafting of the current Water Resources Management Act (WRM), 2004 (Act 24 of 2004). The Act calls for the establishment of a Water Regulatory Board, with the aim of controlling water and

effluent pricing and providing "independent assessment of water pricing proposals by water utilities and suppliers". This Act is not yet in effect and is currently under review; hence certain provisions have not yet been implemented. Regulations following this Act are also still in the drafting phase. Furthermore, based on all the legislation, the water sector vision was reviewed in 2006, as part of the strategic sector plan for 2007-2011, in line with the National Vision 2030 and National Development Plans. The sector vision approved aimed "*to achieve equitable access to sufficient, appropriate, safe, sustainable and affordable water for all Namibian users for improved quality of life*" (MAWF, 2007: 3). A 'balanced score card' system was developed to implement the specific objective to meet the sector vision. To reflect the vision of the sector, in 2008, the WASSP was reviewed and replaced with the Water Supply and Sanitation Policy (WSASP), which is based on principles of stakeholder participation and cost recovery (MAWF, 2008: 1-7). A further law was introduced to make provision for the efficient governance of State-owned enterprises and the monitoring of their performances in the form the State-owned Enterprises Governance (SOEG) Act, 2006 (Act, 2 of 2006). Both the section on Regulatory boards and SOEG Acts are not implemented yet, reportedly due to lack of resources (human and financially mainly).

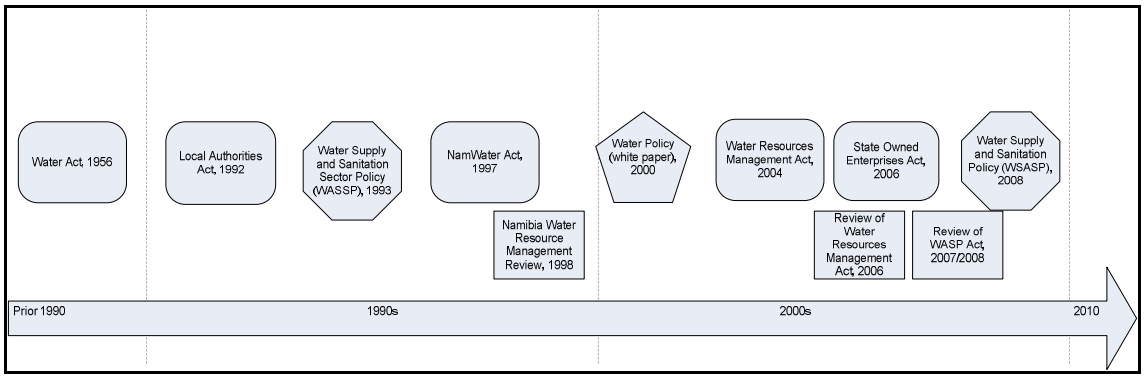


Figure 1-3 Transition of legal framework for water supply sector in Namibia. Source: Author's synthesis from grey literature

To address these policy provisions, the Namibian Government opted to commercialize bulk water services and as a result established NamWater (a government owned water supplier whose operations are required to be run on commercial lines) through the establishment of the Namibia Water Corporation Act in 1997. This defined an effective and sustainable bulk water supplier to customers (in terms of costs; quality and quantity) as well as entailing the determination of levies and tariffs structures based on full cost recovery principles, in consultation with the Ministry of Agriculture, Water and

Forestry. However, as will be investigated and described in more detail following, cabinet decisions have been known to influence and change many of the strategies for implementing the legislation, especially with regard to NamWater tariff determination.

The powers, duties and functions of local government, i.e. the Local Authority councils (including municipalities, towns and villages) are laid out in the Local Authorities Act, 1992 (Act, 23 of 1992). The responsibilities of local authorities include providing services to residents such as distributing NamWater's water and maintaining a system of sewerage to local consumers. For the purposes of the study, only the services and price-setting process of the City of Windhoek (municipality) as a local authority will be considered, as explained and justified in Chapter 3.

In this sense, Namibia's water sector faces similar, though perhaps more extreme, challenges to other low-income countries when it comes to determining cost-reflective tariffs while ensuring that all consumers, especially the urban poor are provided with quality basic services. As a result of political interference in tariff determination, Namibia's bulk water supplier, since inception, has recorded an overall poor financial performance (Ndokosho *et al*, 2007: 1302). Furthermore, there are no measures in place for performance or accountability assessment for the public utility (Ndokosho *et al*, 2007:1308) which reflects on the credibility of the process. Nevertheless, statistics indicate that Namibia's water and sanitation service delivery is advanced compared to other countries in the region; with 99.3% and 84% coverage of the urban population having piped water as their drinking water source and sanitation respectively (CBS, 2006).

Because of the extremes of water availability and income skewness, further institutional improvements (such as sustainable tariff determination) are believed to be required to ensure equitable water and sanitation service delivery (Matros-Goreses *et al*, 2008:296), given the history of high government subsidies as a consequence of non-payment for water services until early 1990s (Dinar and Subramanian, 1997). Despite all the efforts of awareness raising and education of public, leak detection programmes, proper management of water meters; the true cost of water is still not reflected through the charged price (Hirji et al., 2002). However, it is known that water supply services are very costly in Namibia due to its sparsely distributed population (long service distances) and limited rainfall (Dinar and Subramanian, 1997: 78). Furthermore, tariffs (especially

concessionary tariffs for high income users) are deemed unclear (no proper justification) (Dinar and Subramanian, 1997: 29).

1.5 Affordability of urban water and sanitation services

Namibia is classified as a middle-income country, however it has a very skewed income distribution, with a Gini-coefficient of 74.3 (UNDP, 2006). The Bureau of Statistics notes that 34 % of Namibia's population accounts for only 7% of the income, while less than 1% of the population have the highest adjusted per capita income of 16% (CBS, 2006). Households' expenditure on water services should not exceed 5% of their income, according to Namibian standards, in which case such households are classified as urban poor (DWA, 2007). There are various types of water and sanitation services that are available depending on the various income levels of residents, as outlined in the Development and Upgrading Strategy of the City of Windhoek (Table 1-1)(CoW, 2006a).

Table 1-1 Indicates the types of water and sanitation services available according to development levels based on income of residents

Development level	*Monthly Income level (2008, PPP$-5.18)*	*Water service levels/options*	*Sanitation service levels/options*
Welfare level	0-18	- rudimentary services	-none
Level 0: Ultra-low income- rudimentary services	19-32	- communal water points within 200 m walking distance	-none
Level 1: Ultra-low income-block communal services	33-128	- water points at each toilet block - walking distances not to exceed 200m - water meters at each water point	- ventilated improved pit latrines at access points to each block - 2 latrines (1x ladies, 1xgents)/80 people -100m walking distances
Level 2: Ultra-low income-block communal services	129-232	- water points at each toilet block - walking distances not to exceed 200m - water meters at each water point - pre-paid taps being piloted	-communal flush latrines in road reserves - 2 latrines (1x ladies, 1xgents)/80 people -30m walking distances
Level 3: Ultra-low income-block communal services	233-422	-full water reticulation designed and installed -water points with meters at each toilet block - pre-paid taps being piloted	-standards same as for level 2 -entire sewer reticulation system designed and installed
Level 4: Low income-Individual connections	423-663	-full water reticulation designed and installed	-full sewer reticulation -individual sewer connections
Level 5: Low Income-individual connections	664-870	full water reticulation designed and installed	-individual connections for flush toilets (full waterborne sewer)
Level 6: Medium Income-fully serviced	+871	-full water reticulation designed and installed	- individual connections for flush toilets (full waterborne sewer)

Source: (Modified from (Matros-Goreses et al., 2008: 297) and (CoW, 2006a)

The strategy attempts to cater for all residents, including these 'ultra-poor', in providing land for settlement as well as developing uniform standards for all of the services mentioned above, based on appropriate technology and reasonable health standards. Community development services are mostly targeted for level 0 and 1 groups, where

the city facilitates the emergence of self-help initiatives, through which a community can access support from the city. There is also a strong emphasis on capacity-building undertaken to instil a sense of empowerment amongst low-income groups, in the hope of improving their living conditions. In this regard Social Compact Agreements are signed with the low-income groups to decide on the services that they need and can afford (CoW, 2006a). Numerous informal area residents have been relocated since 2000 to "improved" areas as part of this strategy. This relocation process includes feasibility studies (to determine the financial, social and environmental impacts), registration of properties (land), signing of lease agreements, and community participation.

Photograph 1: Facilities (water and sewerage) build before relocation to takes place. This area is earmarked for development level 3 inhabitants. Source: R. Franceys, Windhoek, 2007.

One of the ongoing challenges is preventing illegal settlers from coming into upgraded areas (Photograph 1), so as to avoid disruption of services and ensure proper control and monitoring by the City of Windhoek (CoW, 2006b). Incoming residents are required to settle in the 'receiving' areas (Level 0), from which they will eventually be moved to upgraded or "improved" areas.

According to official reports, (CoW, 2006b) the majority (32%) of households fall within development level 1, which can barely afford services (neither qualify for land with individual connections) and thus can only be accommodated in communal service areas. Furthermore 22% of families (both welfare and development level 0 groups) are unable to afford basic services. There are approximately 32 informal 'squatter' settlements or "shantytowns" within Windhoek, of which 9 are indicated to have no toilet facilities at all. Appendix B shows the status of water and sanitation services in selected informal areas in Windhoek.

A separate study conducted in Windhoek, indicated that "low-income water users were willing to pay N$58 (PPP US$14) in addition to their monthly consumption to get individual water connections" (Kavezeri-Karuaihe, 2005). According to Kavezeri-Karuaihe (2005), "the prices are cryptic", because water users do not know the true price for water services, since that is imbedded into the municipal bill, and hence their response to prices are inconsistent.

1.6 Price-setting process in Namibia

Currently the process of developing NamWater tariffs is undertaken behind closed doors by Government Board members. These tariffs are subjected to annual increases, without proper justification and have been known to be manipulated by Board members, which reduces the chances of effective cost recovery (MAWRD, 2000). Similarly, the tariffs for Local Authorities are increased, based on changes in the bulk water tariffs, without enquiry or investigation. Hence the entire price-setting processes (two separate levels for bulk water and distribute, retail water prices) in Namibia are undertaken on the premise of a lack of transparency and access to information - so that consumers and civil society are unable to understand how prices for basic services are set. Given the Namibian challenges of water scarcity and skewed income distribution, the need for proper pricing mechanisms and institutions is even more pressing, to ensure universal provision of sustainable urban water and sanitation services.

1.7 Scope and objectives

The overall goal of this research is to contribute to sustainable water and sanitation services to all urban users[1] in a water scarce developing country, Namibia, with highly skewed distribution of income.

The research explores the price-setting processes from other countries (particularly England and Wales and Zambia) as a guide to further understand the dynamics and intricacies of what the process entails. It then further reflects on lessons from the experiences in these countries in order to investigate the challenges of the price-setting process in Namibia.

1.7.1 Research Proposition

The underlying proposition of the research is that access to information, linked with an appropriate level of stakeholder involvement, is required for effective and sustainable urban water and sanitation price-setting process, especially in a water scarce, skewed-income distribution country.

1.7.2 Research Aim and Objectives

The specific research aim is to adapt a framework for determining price-setting processes and to investigate the potential role of an economic regulator to inform the process and policy accordingly. In order to achieve the aim, the following *specific research objectives* need to be fulfilled:

- Identify specific lessons/experiences from price-setting processes in selected counties, particularly England and Zambia, to investigate possible improvements to the Namibian price-setting process;
- Understand the current price review process in Namibia, within the legal framework, in terms of its capacity to deliver water and sanitation services to urban consumers (particularly poor households);

[1] All urban water users include domestic water consumers (all income levels); industries and institutions (government, universities, and schools). The main focus of the study will be on the domestic water sector.

- Determine the affordability levels of water and sanitation services for the urban poor in Namibia and the potential role of cross-subsidisation amongst domestic water users;
- Identify the perceived level of transparency and stakeholder involvement required for the price-setting process in Namibia;
- Identify the appropriate regulatory framework needed to improve current price-setting process in Namibia, balancing the needs of all stakeholders but with a bias towards the needs of the urban poor, to inform relevant policy accordingly

The research aims and objectives were translated into a conceptual framework (Figure 1-4), which guided the research, setting the boundaries and hence facilitated the understanding of the concepts and related relationships being investigated. The framework reflects on the contextual issues that are considered to influence the Namibian price-setting process and hence are identified as input factors for the institutional process. In this regard, the institutional processes, namely legislation, water and sanitation services and price-setting (including England and Zambia price-setting processes) with its relevant issues and main stakeholders, further highlights the major focus areas of the research. As a result the proposed regulatory framework is an output of the research to address the contextual and institutional challenges; hence the feedback loop which illustrates that it is an iterative process.

The foundations of the study are embedded around principal-agent theory, where the principal (in this case government) delegates service provision (in this case water and sanitation services) to an agent (in this case service providers). However the challenge exists when the principal and agent have different interests/interpretation and as such one party has an information advantage over the other, leading to huge information asymmetry and uncertainty problems (Jamison, et al, 2004:29-30). In conjunction to the Principal-Agent theory, the research also builds upon the stakeholder theory (‘interest-group’ theory), in recognition of much wider stakeholder base than just the government and service providers, but also including consumers, investors and other interested parties. The stakeholder theory also addresses the implications of compatible/non compatible interests of stakeholders and the consequent regulatory mechanisms required to balance these interests for the best possible outcome (Prosser, 1999:206). In the context of water and sanitation provision, the research suggests implementation of the

proposed regulatory board, as provided for in the Water Resource Management Act, 2004 of Namibia, to address the information asymmetries and stakeholder interests, given the unique characteristics of Namibia; water scarcity and skewed income distribution.

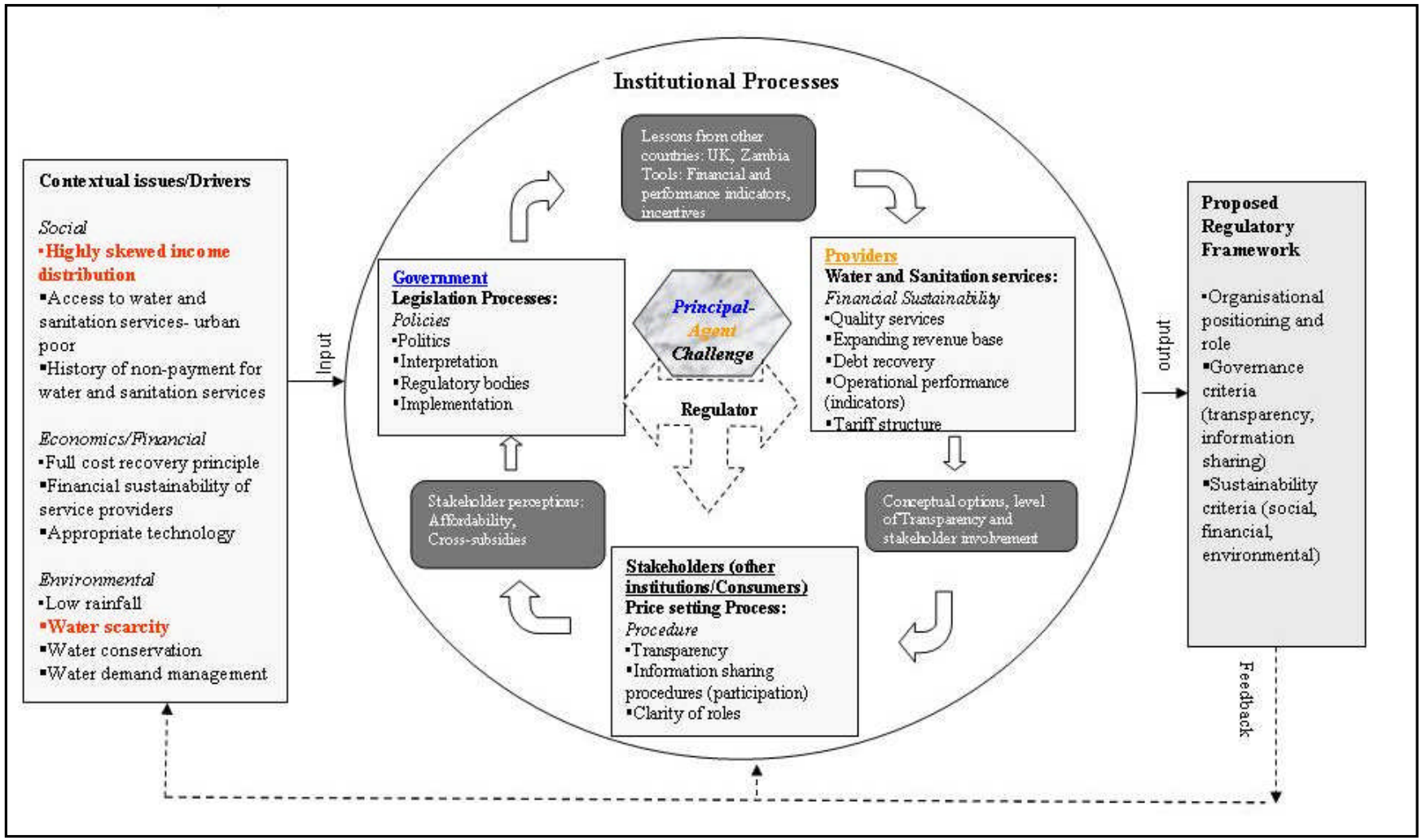


Figure 1-4 Concept flow diagram to be investigated during this study

1.8 Structure and overview of the thesis

The thesis is organised around the ideas highlighted in the conceptual framework and follows on to validate the objectives with empirical data collected from the fieldwork. It follows the logical progression of the research objectives.

This chapter has outlined the introduction and background to the research, indicating the research problem as primarily being lack of transparency and involvement within the current price-setting process, acknowledging the complexity of providing water and sanitation services to all domestic consumers, including the urban poor. This chapter thus sets the scene for the research, which is further explored in ***Chapter 2,*** which present the literature review on previous research in this field, reflecting on appropriate institutional frameworks within the water sector, provision of urban water service and sanitation services, various price-setting processes across the world, with a strong emphasis on regulatory frameworks and the role of economic regulators in the price-setting process. ***Chapter 3*** outlines the research agenda and the research methods adopted throughout the study, primarily following case-study approaches, guided by semi-structured interviews and focus-group discussions using purposive snowballing methods in England, Zambia and Namibia accordingly. ***Chapter 4*** reflects on results from the fieldwork experiences in England and Zambia. It elaborates on the price-setting processes in these countries and interprets the perceptions of targeted stakeholders on service provision and regulatory processes, with a strong emphasis on affordability of services in regulated environments. ***Chapter 5***, forms the basis of the Namibian fieldwork results, indicating responsible institutions, the intricacies of service provision, with focus on the costs of such services and financial situation of the providers which reflects on the prices consumers pay. It furthers explains the price-setting process and the potential role of a regulator in the system. The institutional positioning of such a regulator is also identified as well as the appropriate regulatory framework, given the extreme conditions of the country. **Chapter 6** forms the cross-case analysis chapter, discussing the results in the context of the objectives, also reflecting on the application of the principal-agent theory and the benefits of having an economic regulator in Namibia to guide the price-setting processes based on lessons learnt from England and Zambia in particular. Finally, **Chapter 7** states the main conclusions and implications of the

research findings in line with the objectives, a consideration of this research's contribution to knowledge, as well as future research areas.

Knowledge is a treasure, but practice is the key to it

Thomas Fuller

Chapter 2: Literature Review

This chapter provides insight into the current debates on urban water and sanitation service delivery, with emphasis on the costs involved and the pricing processes. More specifically, the chapter highlights the challenges of service provision, especially towards the urban poor, and the subsequent institutional and procedural governance arrangements to address these challenges. In this context, literature on economic regulation, the elements required and relevant structures are discussed in both the lower-income ('developing') and high-income ('developed') country context. Furthermore, regulation theory is explored as an explanatory tool for information asymmetry challenges prevalent in principal-agent relationships. Access to basic services are important, however access to basic, relevant and accurate information is key to ensure that services are provided in line with sector objectives. Therefore appropriate regulatory frameworks are necessary to facilitate (balance) conflicting stakeholder interests through implementation of good governance principles such as transparency and stakeholder involvement throughout the price-setting process.

A systematic literature review process was followed to ensure a fair representation of the literature in this field and to ensure that the majority of relevant information was included. Various search engines (such as Scopus, Aqualine, Science Direct and Google Scholar) were used, making use of the following search words (either in combination or separately); water utility regulators, urban water and sanitation services (for urban poor), price-setting processes, alternative pricing processes, economic regulators, regulation theory and institutional governance. There is quite a significant amount of literature on these topics, though most were found to be 'older', in many cases older than 10 years, especially on the general literature. Another limitation was that there were not many journal articles (peer reviewed) about regulatory frameworks or price-setting processes in developing countries, and these were more found in books or donor reports (for example World Bank, GTZ, DFID research outputs).

2.1 Defining major concepts

It is predicted that improved water and related services will greatly contribute towards economic growth and poverty reduction. There is a strong link between water and

economy and these cannot be treated separately (Commission on Sustainable Development (CSD), 2004-2005). In agreement, Dinar and Subramanian (1997) draws "close linkages among financial status, physical health, and service quality in the water sector" and states that these are the basis for "water pricing reforms and cost recovery policies in most countries". The costs of not improving these basic services (for example health sector costs increasing) are much higher and benefits of improving it outweigh unwillingness to improve these services (Whittington et al., 2008: 34).

Price and costs are confused and in some instances used interchangeably, however the definition of price is "the amount set by political and social system to ensure cost recovery, equity and sustainability. Prices of water are not determined solely by costs, and may or may not include subsidies" (Rogers et al., 2002: 3). The "cost" of providing water and sanitation services has been defined by (Spencer, 1983 as cited by (van Ryneveld, 1995: 1) as a "sacrifice that must be made in order to do or acquire something. The nature of the sacrifice may be tangible, objective or subjective and may take one or many forms such as money goods, leisure time, income, security, prestige, power or pleasure". In this research, various types of costs will be addressed where appropriate. These may include financial (for example operation and minor maintenance expenditure (OPEX), capital expenditure (CAPEX), the cost of capital and other supporting costs (Franceys et al., 2006: ix) as well as environmental and convenience costs.

The "extent that **user fees** and any other direct contributions are adequate to meet service costs" is refereed to as **cost recovery**. Similarly "**financial sustainability** describes the extent to which society as a whole (including international society) contributes in a committed, long-term manner to support services, either through full cost recovery through user fees or through a combination of user fess and societal contributions" (Franceys et al., 2006: ix).

The term **tariff** refers to payments made by consumers for access to services based on various **tariff structures** developed by service providers depending on their local situations. In this study it specifically refers to "payment for access to provision of water and sewerage services to consumers" (Sohail, 2004: 1). Other concepts such as "user fees, service charges, customer charges and prices" (Franceys et al., 2006: ix)

will also be used in the same context throughout this study. “A water tariff is a powerful and versatile management tool” with the main aim of cost recovery and economic efficiency for the water supplier, while being equitable to the customers. Tariffs can also be set to redistribute charges between customers (**cross-subsidisation** purposes) as well as serving a conservation purpose (Boland and Whittington, 1998).

The **Urban poor** can be defined in various ways, however in this study they are classified according to their “expenditure on water and sanitation services” (Sohail, 2004: 1-2), which is significant for a substantial majority of households, especially in lower-income countries. It is globally advocated that expenditure on water and sanitation services should be between 3-5% of the household income (Merrett, 2005: 116; Almagro, 2005: 200-201).

Institutional arrangements refer to the “rules of the game” (Kemper, 2001: 112). More specifically it focuses on the laws, norms and regulations that influence water use and allocation that are applied by the different actors in the water sector (North, 1992 as cited by Kemper, 2001: 111) There are various actors within the water sector, for example government, providers, users, civil society and other agencies. The combination and interaction between the arrangements and actors within the sector results in an **institutional framework** (Kemper, 2001: 112).

2.2 Providing urban water supply and sanitation services

The provision of water and sanitation services follows a simple cycle of activities which includes “bulk water supply, water treatment, local water distribution, sewage collection and sewage treatment” (Schouten and van Dijk, 2007: 11-12; Abbott and Cohen, 2009: 2), however the delivery process in terms of roles and responsibilities is more complex and dynamic than what meets the eye (Figure 2-1). It is less common to find a single service provider that undertakes all water supply and sanitation activities, though it is the norm in the United Kingdom and has been introduced in the Netherlands as an “integrated water service organisation” (Schouten and van Dijk, 2007: 11-12). In many other countries the norm is a split of services between bulk and local water distribution, of which the latter is done at municipal level. This is known as vertical separation, while horizontal separation/combination of functions applies to separation of water supply from sewerage and wastewater disposal (Abbott and Cohen, 2009: 4).

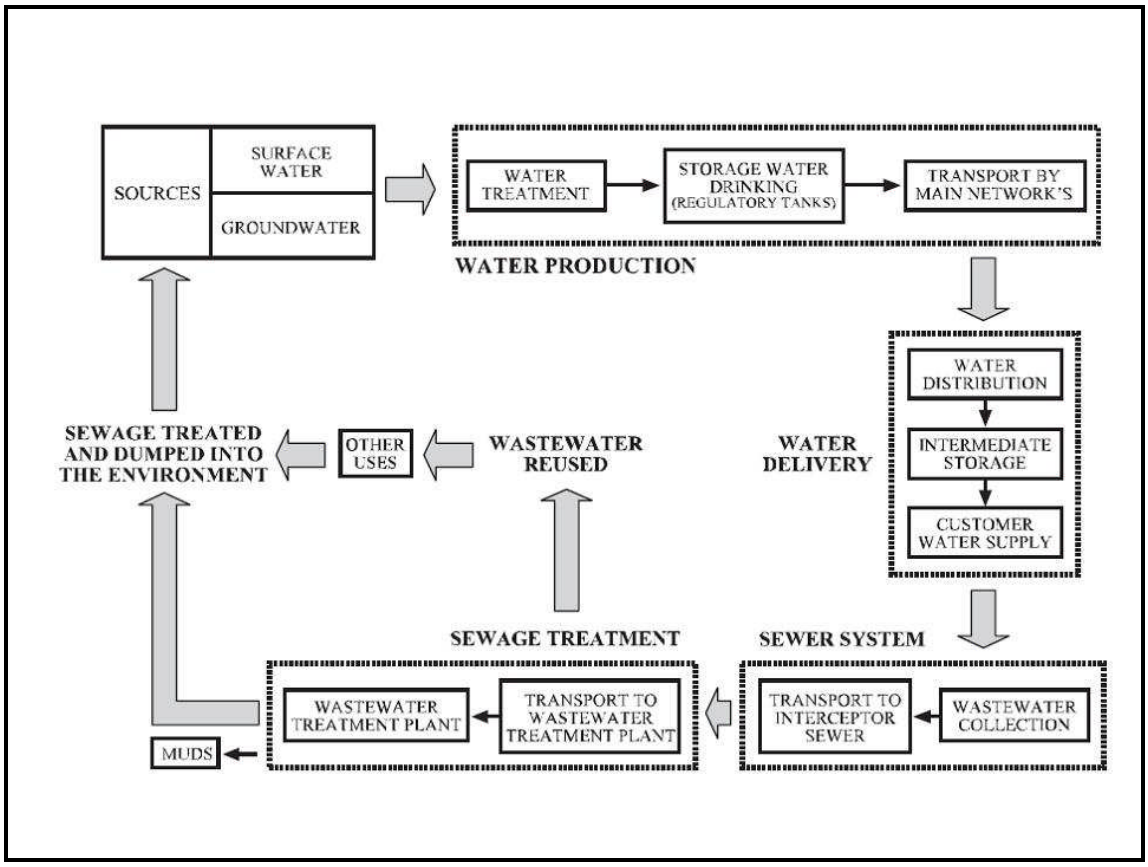


Figure 2-1 Water and waste water supply chain of activities. Source: Gonzalez-Gomes and Garcia-Rubio (2008:41)

The range of activities of service providers varies from country to country and from the nature of the service providers in principle. Various factors, such as the water source, geography, and consumer base further influences the technology and regulation of such services. Due to large transportation and distribution network requirements and costs involved, the water industry is normally a natural monopoly, with limited competition (Abbott and Cohen, 2009: 2). Municipal costs of providing a household with water and sanitation services, subjected to economies of scale, include charging for "collection of wastewater from household; distribution of treated water within urban area to household; treatment of waste water; treatment of raw water to drinking water standards; storage and transmission of untreated water to the urban area; opportunity costs of diverting raw water from alternative uses to household and negative externalities incurred" (in descending order in terms of costs) (Whittington et al., 2008: 15-16).

Water scarcity is one of the biggest challenges facing developing countries. However it is often not treated as such, considering the limited signal to conserve sent by the

low prices charged for the resource, especially in the irrigation sector (highly water intensive) compared to the industrial and domestic sectors (Rosegrant and Cline, 2002: 6; UNEP FI, 2004: 8).

Intermittent supply of water services is often cited as one of the most common results of water scarcity in lower-income countries. This approach is often explained (though usually without adequate justification) as due to necessity and not by design. This adds more pressure to deal with the service consequences such as low pressure; inequitable distribution and short duration of supply and ultimately water quality deterioration. For example, in South Asia and India where people receive services only for limited hours daily and in some areas of Kenya where services are limited to 2.9 hours per day (Hardoy et al., 2001 as cited by (Vairavamoorthy and Mansoor, 2006: 188). However in many instances, twenty-four service is not possible and hence managers should strive to be proactive in the design of the intermittent system to meet service standards where possible. The consumers' costs, coping with these types of services also needs to be incorporated, which results in low-income consumer groups paying more in terms of time and inconvenience of collecting water from public taps (Dutta and Tiwari, 2006: 141,143)

Universal coverage (including services to the urban poor) and water service improvement are objectives usually shared by both governments and service providers. However the challenge is to ensure financial sustainability for further extension of service coverage, hence the suggested option to differentiate service options (for example "in-house connections, yard connections or water kiosks") and prices as appropriate (Sansom et al., 2004: 3) in order to facilitate universal service.

Water losses are inevitable in a distribution network; however the challenge is to manage them as effectively as possible (Mugabi et al., 2007: 2). Losses are comprised of 'real' losses (for example physical leakage) and 'apparent' losses (illegal connections, improper metering schemes and improper billing aspects). Illegal connections are primarily caused by water scarcity, poor management and lack of awareness and result in loss of water and a decrease in service levels of the supply system. Consumers resort to illegal connections if refused household connections; due to inappropriate tariffs and this is mostly found amongst the middle and low-income groups. In lower-income economies illegal connections are sometimes fuelled by

"politicians who try and win public support at the expense of sustainability", thus making the job of utility operators more difficult (Vairavamoorthy and Mansoor, 2006: 198).

Meter reading and billing discrepancies are quite common in developing countries due to various reasons ranging from failure to access properties; failure to read meters; bribing from consumers; flaws in billing system (Nickson and Franceys, 2003: 1-6). These reflect on the capacity and credibility of the service provider; however it also results in the consumer having to pay for the inefficiencies of water service utilities.

Many water utilities in southern Africa do not produce public domain performance indicators therefore cannot be compared with peer utilities. Such indicators include "setting fair tariffs; detecting undue consumption early, maintaining infrastructure in time, reducing unaccounted for water, reuse and recycling of wastewater, planning new developments rationally and having a informed prioritising system in time of shortages and droughts"(Gumbo, 2004: 1230). This is a significant hindrance to any transparent price-setting.

2.2.1 Cost of providing water and sanitation services

Ideally, costing of water and sanitation services should be based on full-cost recovery principle implementation. This is also referred to as sustainable cost recovery (Rouse, 2007: 39). There are direct and indirect costs involved in the supply of water services. Hence, to appreciate the value of water as a resource and a service, it is necessary to understand the full costs of service provision (Figure 2-2), which comprises of full supply, economic and full costs (Rogers et al., 1998: 5-7). In this regard, the basic cost elements that make up the price of water and sanitation services comprise of *operational, capital and replacement costs* (Speers, 2007: 2), which are referred to as full supply costs (Rogers et al., 1998: 6). The *operational costs* refer to day-to-day input costs such as human resources, chemicals and energy and fixed assets, while *replacement costs* relate to replacement or maintenance of assets and infrastructure. *Capital costs* include capital investments (Speers, 2007: 1) and the costs of capital or financing. Reflecting other "less quantifiable" costs in the price is a more complex process; however, ideally, these costs need to be recognised as part of setting the basic price-setting framework. In essence these costs deal with alternative investment

opportunities and consequences of environmental or resource depletion and associated risks, respectively (Dutta and Tiwari, 2006: 136; Speers, 2007: 2). These costs are *opportunity, economic and environmental externalities,* and related risks, which together with full supply costs make up the full economic costs and finally the full costs respectively (Rogers et al., 1998: 7-10; Winpenny, 1994: 10-14). Arguably, it is noted that externality costs (especially due to inefficiency of providers) should not be included in public pricing policies, however full supply costs should be catered for by consumers (Dutta and Tiwari, 2006: 141,143).

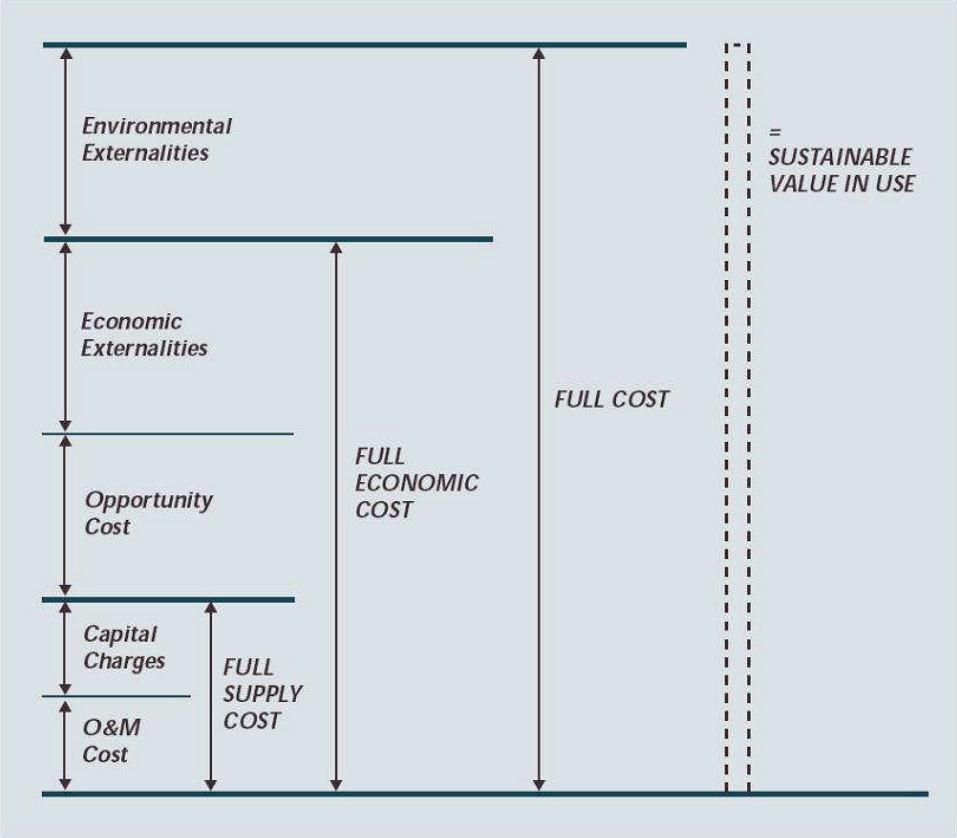


Figure 2-2 Costs Components of water service provision. Source: (Rogers et al., 1998: 7)

Sustainable cost recovery is encouraged, in the sense that the provider should be able to generate "sufficient revenue" to cover operating, financing and maintenance costs (Winpenny, 2003: 18-19). However, in practice, only a proportion of operation and maintenance costs are recovered gradually, with capital costs only recovered slightly (Dinar and Subramanian, 1997: 8). It should be noted that in many cases the average supply costs of the domestic water sector are met by the non-domestic sector (commerce, industry, public sector institutions) through cross-subsidies (Sohail, 2004: 11).

The full costs of service provision hence, sets the context against which prices are determined (Rogers et al., 1998: 31; Tsagarakis, 2005: 10). In this sense, the Bonn Charter emphasises the need for transparency and stakeholder involvement in the price-setting decision making process to fully understand the complexities involved (Speers, 2007: 2; IWA, 2004: 9). The Bonn charter principle further highlights the complexity of these contrasting elements by indicating that "the price of water should be set so that the price does not prevent consumers from obtaining water of sufficient quantity and quality to meet fundamental domestic needs" (IWA, 2004: 9).

2.2.2 Charging for water services

User fees are not only considered as the basis of financial sustainability, but are also incremental in "meeting social, economic and environmental policy objectives", which includes ensuring sufficient revenue to deliver long term quality services; extending service coverage and ensuring that consumers understand the cost to the economy of the scarce water resources, hence enhancing conservation of the natural environment (Franceys et al., 2006: 2). The African Development Bank in their Integrated Water Resources Management Policy (2000), advocated that economic cost pricing should be the basis for water allocation decisions. The price of water is known to influence water use efficiency and hence is used as a tool to facilitate water allocation and conservation behaviour amongst water users (Dinar and Subramanian, 1998: 239-240).

There are various forms in which users can pay for water services. Four main ones are discussed by Merrett (2005: 6-7) as being the price paid to the supplier per unit quantity (mostly in case of metered supply); payments linked directly to volume received and the cost incurred by user (mostly in case where users supply their own water, eg. pumping water using electric motors); payments indirectly linked to volume used (payments are based on fixed tariffs, multiplied by number of people registered to live in house) and payment based on value of the property of the user (cost-use relation to fixed charge, invariant of volume; mostly, no metering system in place). Charging for water services per unit basis paid (volumetric use), is a powerful method to encourage demand management. The flat-rate tariff payment system which does not take into account volumetric use has no incentive for conservation (Arlosoroff, 1999 as cited by (Vairavamoorthy and Mansoor, 2006: 198) and thus is

not advisable for countries with scarce water resources. Dinar and Subramanian (1997:1) highlighted that out of the different pricing measures used across the world, "about 37% of utilities charge uniform prices regardless of the quantity consumed, 22% used rising block rates and 38% used declining block rates, with the remaining 3% using a mixture of schemes" (Dinar and Subramanian, 1997: 1; Dinar and Subramanian, 1998: 240). Countries which operate on rising block tariffs usually justify this approach through the principle of 'making water more affordable or even free ("basic lifeline") for the low income users, while promoting water conservation amongst the high income users' (Sohail, 2004: 11; Dinar and Subramanian, 1997: 27; Herrington, 2007: 14). The "lifeline" block, providing basic water required to sustain life, can vary from $5m^3$ to 20 m^3 per month – though it might be wondered to what extent the latter figure can ever represent a 'lifeline'. For example in South Africa the lifeline block is fixed at a more reasonable $6m^3$ but with no charge (DWAF, 2008). This has implications for revenue adequacy depending upon the proportion of domestic consumers accessing these limited amounts of water.

Tariff schemes are evolving towards two part charges; fixed and variable. The fixed part is seen to give the utility guaranteed revenue to cover overhead charges, while the variable part encourages efficient use of water by consumers (Dinar and Subramanian, 1997: 4; Tsagarakis, 2005: 4). The most appropriate tariff is one that can balance the various goals of society (Rogers et al., 2002: 5). Very often these goals are conflicting, such that consumers require "high quality water at affordable and stable prices" while suppliers strive for a "stable revenue base, by covering all their costs" of providing services (Rogers et al., 2002: 5). Either way, it is important that the public understand the process and that the tariff systems are relatively easily implemented without conflicting with government policies.

The future of water supplies is moving towards introducing metering and consumption based tariffs to promote efficiency, equity (fairness) and environmental sustainability (Dinar and Subramanian, 1997: 141; Weeden, 2003: 148; Walker, 2009: 11). However currently this is being phased in gradually over time in some countries in order to reduce the payment "burden" on consumers. Metering is a contentious issue, for example in England and Wales, where it is seen by some as unethical towards water as a right, especially for low income users, while others associate it with increase in prices by water companies. As a consequence the fixed annual fee

tariff system is still being implemented by many companies (Herrington, 2007: 11). This may reflect well the 'fixed cost' nature of water supply (>85%, Franceys, 2008:50) however it "provides little incentive to conserve" and does not send the signal for effective water use strongly enough (Rogers et al., 2002: 5-6). In this regard, water metering is deemed essential in demand management, since it is the basis of determining the price based on the consumption rate (Nickson and Franceys, 2003: 6). However in developing countries, metering is mostly used in the context of intermittent supply which results in many problems such as malfunctioning of meters due to improper use or technological failures. Nevertheless, pre-paid water meters are increasingly being installed in lower-income countries, with South Africa being an example of successful implementation history for pre-paid meters for shared connections (though not without ongoing legal challenges from some in civil society). Pre-paid metering is being promoted to be very effective in conserving water and recovery of costs. In general the literature suggests that metering should be considered for all levels of users, from bulk metering to individual metering, requiring careful monitoring and frequent maintenance (Vairavamoorthy and Mansoor, 2006). Franceys (2008:50) points out the resulting cost of metering in England and Wales.

The most popular tariff system in developing countries is the increasing block tariff (IBT) system (Liu et al., 2003: 212), where the poor consumers are subsidised by high-volume consumers. The first block is normally charged at a low rate to include the basic water needs of consumers and subsequent blocks are charged higher as an incentive for consumers to use only the necessary water. Industrial and commercial water users are charged significantly more to contribute to the subsidisation system for low volume users (Vairavamoorthy and Mansoor, 2006). Nevertheless, IBT systems have been criticised as being disadvantageous to the poor, especially those who share water connections. In the sense that most of them pay more than the average cost for each unit than the lowest block as compared to those not sharing household connections (Sohail, 2004: 10-14; Rosegrant and Cline, 2002: 7; Liu et al., 2003: 212-213) because of the number of people in each household using the single connection. They argue that the main reason to use an IBT system is because it is perceived to be politically acceptable and fair. Lack of transparency, flexibility and simplicity in implementation are the major issues of IBT's that need to be sorted out

to ensure cost recovery (Sohail, 2004: 10-14; Herrington, 2007: 40; Liu et al., 2003: 213; Boland and Whittington, 1998: 8)

Sewerage tariffs are not as notorious as water tariffs and are normally subjected to lower coverage (especially in low income areas) as well as lower charges levied as local property tax. It is important that costs of sewerage network are considered inline with willingness to pay for the services, since it is very costly service, especially waterborne sewerage networks (Sohail, 2004: 35).

In addition to tariff structures, consumers pay standing basic charges, which comprises of direct and indirect charges. Direct charges includes connection, physical infrastructure, such as pipe size, meter (Walker, 2009: 69), while indirect charges are mostly attributed to administration related costs (Sohail, 2004: 26). There are numerous debates around the issue of connection charges. High charges is seen as a barrier to access services and usually results in illegal connections due to inability to afford charges, especially by the urban poor (Franceys, 2005: 211). Hence, charging structures of water companies should be based on "fairness principles" according to Walker (2009:51). These principles include cost-reflective charges related to volumes consumed, affordable charges to those that cannot afford and charges should be simple to administer and transparent for consumers to understand what they are paying for and why.

2.2.3 Providing water and sanitation services to urban poor

Cities in lower-income countries mainly expand on the periphery of the city which makes it difficult to ensure adequate and cost effective services, especially in terms of cost determination of water utilities which may delay expansion of services to those areas (Sansom et al., 2004: 57; van Ryneveld, 1995: 2). Therefore the urban poor often need to resort to informal vendors (at a much higher price than those having household connections) as an alternative source of water to unprotected water sources, such as wells and rivers (Table 2-1) (Sansom et al., 2004: 2; Rosegrant and Cline, 2002: 7). It gets even more expensive to provide full sanitation services to such areas, because the implication is that additional sewer capacity along the whole length of the sewer pipe to the treatment works is needed which makes marginal cost of bulk reticulation more expensive than average current replacement costs (van Ryneveld, 1995: 2).

Table 2-1 Existing water sources and options for urban poor.

Typical existing water sources	*Potential Improved service options*
- Unregulated water kiosks - Handcart vendors (expensive) - Unauthorised connections - Public stand posts from which little or no revenue is collected - Contaminated pools or rivers - Distant springs or boreholes - Seasonal dug wells	- Utility-supported private water kiosks - Regulated small-scale providers or vendors - Community-managed local water distribution pipes - Shared water connections with on-selling to neighbours - Individual connections - Pre-paid metered kiosks - Water kiosk with storage tanks

Source: (Sansom et al., 2004: 28)

Service options are related to variable prices and therefore the income base (and "willingness-to-pay") of the target groups has to be considered (Sansom et al., 2004: 35). The current international debates centre around the issue of provision of water to the urban poor and subsidies, in the sense that due to high (extravagant) connecting fees, it seems more plausible to subsidise water connections rather than the norm of water services (Speers, 2007: 3; Winpenny, 2003: 19). The challenges of connecting to water supply and sewerage services are often neglected and hence poorly understood, especially with regard to limiting access to urban poor which are unable to afford the excessive charges (on average US$500 in Uganda in 2004) (Kayaga and Franceys, 2007: 171-172, 174). The connection costs (including additional informal costs) incurred by low-income consumers are much higher compared to other income groups, due to lack of clear policies, information and knowledge (of consumers on official procedures) (Kayaga and Franceys, 2007: 175).

Cost for providing high level services (house connection and full water-borne sanitation) are four times more than the cost of providing low level service (for example stand pipe and ventilated improved pit latrines (VIP). The main reason is attributed to the cost of bulk services (van Ryneveld, 1995: 4). Sanitation technology types are limited to "conventional sewerage, on-site systems (ventilated improved pit (VIP) latrines, pour-flush and ecological sanitation (Eco-san)) and low-cost sewerage (settled sewerage and simplified)" (Mara, 2005: 57). Simplified sewerage is advocated to be most appropriate for peri-urban areas, since it is cheap and does not

require much space to install (Mara, 2005: 58). This technology started in Brazil in the late 1980s and has since been tried in Pakistan, India, Sri-Lanka, Bolivia and South Africa (Mara, 2005: 60-61) though it is unclear to what extent it might be used where alternative materials are used for anal cleansing.

Affordability of services needs to be understood from two angles, "ability to pay" and "willingness to pay" (Van Ryneveld 1995). In other words, "households may be able to pay, but unwilling or may be willing to pay, but unable to. In this regard, ability to pay is directly linked to income levels of the customers (Van Ryneveld 1995). Though water is considered to be 'life', consumers are more eager to pay for electricity, due to the fact that it cannot be received from different sources, like in the case of water, which can be "carried home", hence distorting the value of water (Whittington et al., 2008: 6-7). Hence the need for differentiated services, depending on customer preferences and willingness to pay, to ensure expansion of services to un-serviced poor areas through exploring alternative sources providers and flexible options such as WaterChoice points and water tankers provided it is undertaken with the appropriate regulatory framework (Figure 2-3) (Franceys and Gerlach, 2008:256).

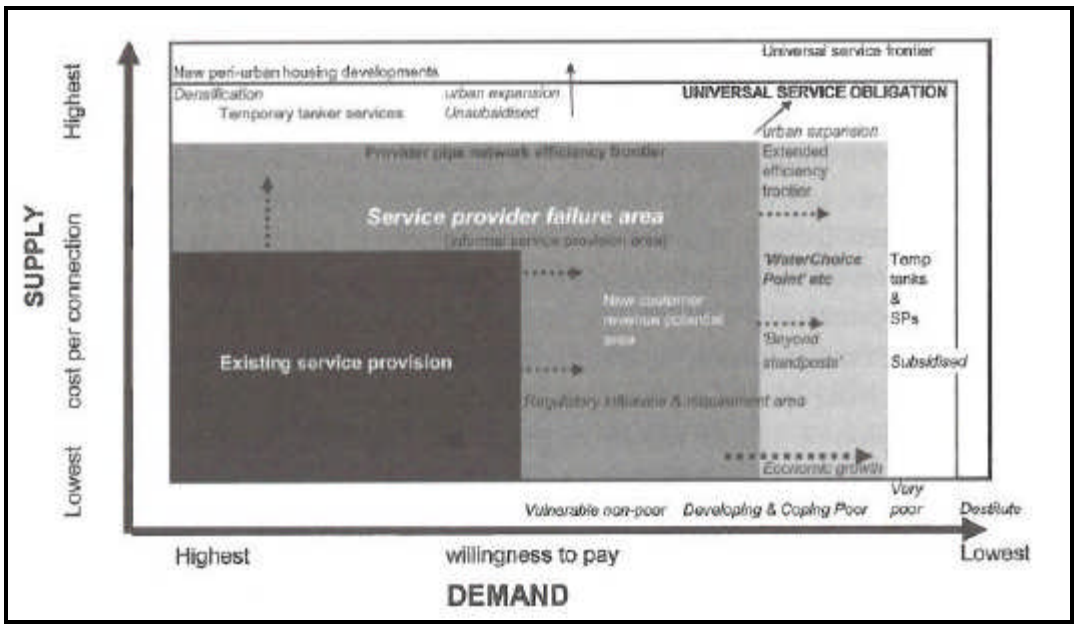


Figure 2-3 Targeting a universal service obligation. Source: (Franceys and Gerlach, 2008: 256)

Franceys and Gerlach (2008:253-256) advocate universal service obligations to be met by government and service providers. This requires exploring best technical and costs options to expand services beyond the provider pipe network efficiency frontier, through tank services or pre-paid water meters. Furthermore, subsidies from

government are suggested to meet the demand of the very poor, however where no alternatives are available cross-subsidies should also be considered. Subsidies are seen as the solution for the 'conflict' between cost, price and affordability. The full cost recovery principle upon which many local authorities operate, is challenged in this respect, because it makes them dependent on subsidies, which in the long-run is not sustainable (van Ryneveld, 1995). It is recognised that it is difficult to identify recipients for subsidies, and so far cross-subsidies from non-domestic sector are deemed as a 'potential' way in which water services to the poor can be serviced, under the rising block tariff, however it has not been found efficient and various debates are still on-going in this respect (Sohail, 2004: 19). The issue of cross-subsidies from those more able to pay, to cover the costs of those unable to pay is also a contentious debate. Though these subsidies will follow the specific socio-political context of various countries, the principles of transparency and communication need to be followed (IWA, 2004: 9), such that those paying for less able consumers are aware and willing. These principles are thus highlighted as crucial for an effective price-setting process (Speers, 2007: 3). The rising block tariff structure is an example of cross-subsidisation method to ensure affordability among consumers (Winpenny, 2003: 19).

However, since the majority of the urban poor are not connected to water and sewerage networks, therefore do not benefit from such subsidies (Whittington et al., 2008: 22; Franceys, 2005: 209; Kayaga and Franceys, 2007: 270; Foster et al., 2003: 1). Household subsidies may be calculated by subtracting the "household monthly utility charge from the full economic cost of producing the monthly household consumption", and based on this equation it is estimated that the non-poor consumers in Kathmandu (Nepal) receive approximately 44% more of the targeted subsidies, 15% more in Bangalore (Foster et al., 2003: 5). In this regard, it is advocated that subsidies should be targeted to public taps instead of through the Increasing Block Tariff, which targets all connected consumers, and hence minimising the benefits to urban poor (Foster et al., 2003: 7).

Social tariffs are subject to the ability of governments and customers to cross-subsidise and the measures in place to facilitate any such cross-subsidies (Herrington, 2007: 14). Targeted assistance may be based on medical issues (eg England & Wales), the size of families (eg Greece) and retirement (eg Belgium), as reasons

which may form part of social tariffs. Furthermore, countries such as Switzerland, Spain, Portugal, Italy, Greece and Ireland have "large (above 30%) subsidy measures in place, while in countries such as France and UK, subsidy measures are limited, though cross-subsidies are inclusive in the tariff structure schemes (Schouten and van Dijk, 2007: 27).

Nevertheless, any increases in tariffs should ideally be linked to improvements in service, which is why it is necessary for providers to invest in mechanisms to improve services (Whittington et al., 2008: 8; Van Hofwegen, 2006: 6), such that the service is both acceptable and affordable and thus sustainable (Winpenny, 2003: 19). However, this presupposes that tariffs are already close to cost-reflectivity. Improved services are generally associated with increased cost and hence increased price for consumers. However, information on the full cost of water supply is required to determine the required improved service levels to meet the demands and willingness to pay levels of consumers (Dutta and Tiwari, 2006: 135; Ntengwe, 2004: 1303). In this regard, consumer's willingness to pay the full cost is very low since water services are often considered government's responsibility, irrespective of consumer's ability to pay (Dutta and Tiwari, 2006: 141).

Rouse (2007:193) argues that the challenge of providing water services to the urban poor is not dependent on the ability or willingness to pay, but on their ability to save, hence his advocacy for pay-as-you-go systems, something developed further in Franceys and Gerlach (2008: 250).

2.3 Water sector price-setting process: the current debate

In the past, water was considered "free" due to its importance for life, perceived abundance and cheap nature (Rogers et al., 2002: 5). Water is considered both a resource and a service of which there are huge deficiencies across the world, especially within the challenges of water scarcity, climate change and population growth (Nickson and Franceys, 2003: 4). However, the most appropriate manner to deal with these challenges, is "*to put a price on water*" to meet "social, political and economic goals" through appropriate water tariff structures (Rogers et al., 2002: 5). In this sense, infrastructural development is key to ensure both quantity and quality water and sewerage services are delivered. Water infrastructure is financed by major sources; water users, taxpayers and or aid donors (Winpenny, 2003: 5-6). The water

industry is known to be highly capital intensive and requires huge capital investments and long-term returns, making it highly risky for investors (Whittington et al., 2008: 9; Winpenny, 2003: 10; Mandri-Perrott, 2009: 41).

Adequate pricing of water services is therefore essential for financial sustainability, to ensure service providers can maintain infrastructure and serve the demand with quality services (Liu et al., 2003: 211; Savenije and van der Zaag, 2002: 100). The "water-for-free policy" essentially promotes increase of government subsidies to ensure access to water for the urban poor, however it benefits the upper income groups more instead of those in need (Sansom et al., 2004: 3; Liu et al., 2003: 211; Savenije and van der Zaag, 2002: 100). In which sense, subsidies do not support efficient cost recovery, and further promotes the vicious cycle of service deterioration and limited quality and quantity services, therefore pricing is the key to the "free water dilemma" (Liu et al., 2003: 211; Savenije and van der Zaag, 2002: 100). In this regard, for the purpose of water pricing, the institutional capacity to deliver and maintain sustainable (especially financially) services, charging at full cost to those that can afford it (for example industries) while ensuring equity in the sense that the urban poor have access to basic ("lifeline") services is recommended to be considered (Savenije and van der Zaag, 2002: 101). In this regard, a gradual approach for setting prices (Figure 2-4), is further advocated, such that prices should gradually be increased to recovery full costs, while at the same time developing relevant governance (regulatory measures) and institutions to guide the process (Gunatilake et al., 2008: 24-27).

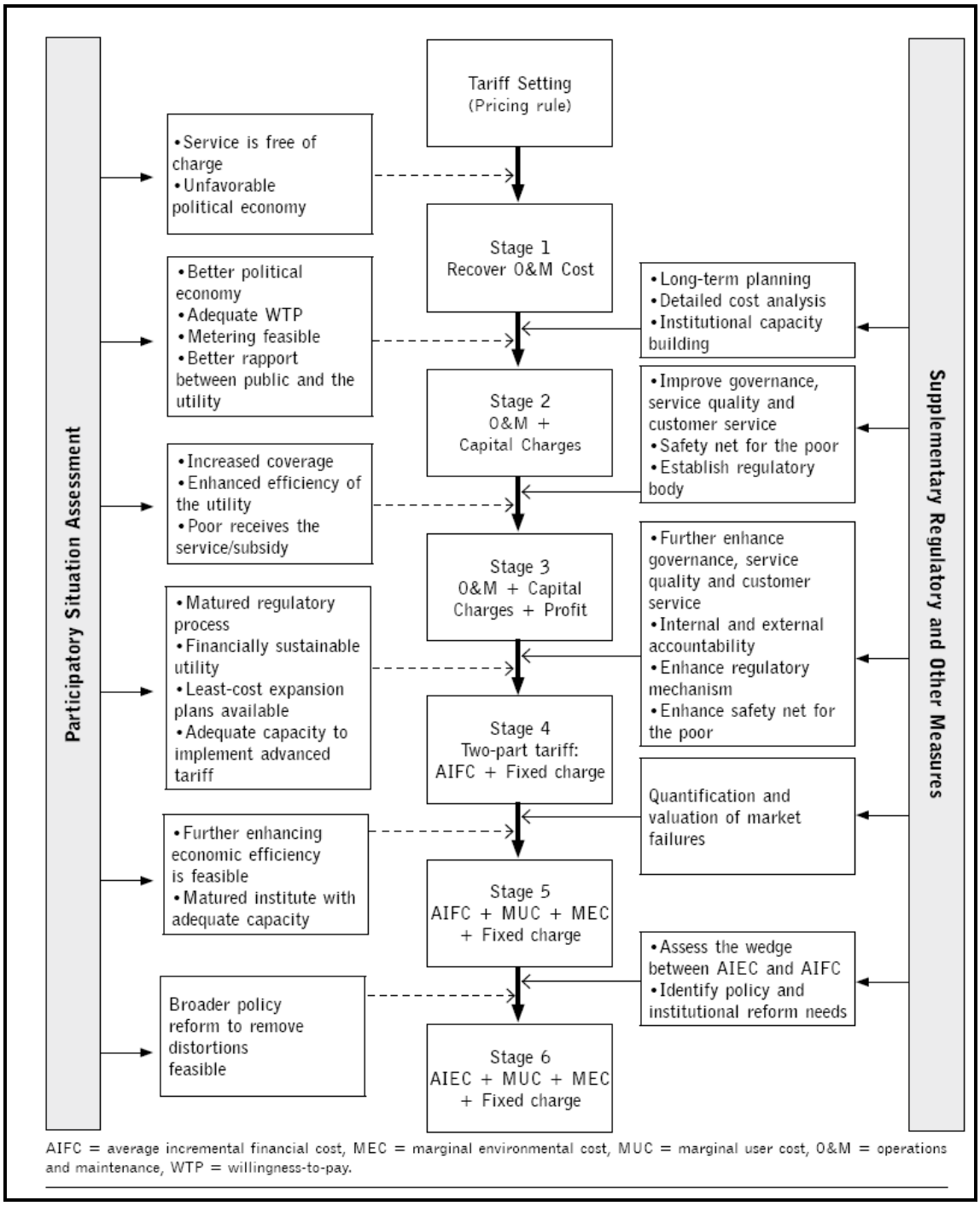


Figure 2-4. Gradual approach for setting prices. Source: (Gunatilake et al., 2008: 27)

The price-setting process is driven by policy objectives (defined from specific problems), instruments and institutional arrangements targeting specific groups and outcomes. Water pricing policies are "conceptually" easy to develop, but difficult to implement "politically" (Rogers et al., 2002: 1). Rosegrant and Cline (2002:6) describes objectives of urban water pricing as:

- Creation of incentives for efficient water use

- Cost recovery
- Financial sustainability, including ability to raise capital for expansion of services to meet future demand

Furthermore, water pricing policies promotes equity, efficiency and sustainability (Rosegrant and Cline, 2002: 6; Rogers et al., 2002: 2). Under-pricing (below cost recovery) and inadequate tariff systems of water result in inefficiencies in the sector (Alexander, 2006: 246). Low water prices not only lead to poor performance, but also to low incentives to expand services to urban poor. This is especially relevant for developing countries (Rosegrant and Cline, 2002: 6).

Financial flows play an essential ingredient to the institutional arrangements of the water supply and sanitation supply chain. In this case financial flows refer to "service costs, taxes or fees and subsidies". Taxes or fees include operation and infrastructural charges, which include "abstraction, production (effluent and treatment taxes or fees) and distribution, use and sewerage charges" (Aubin and Varone, 2007: 46-47). "*The price of the service must correspond to the investment and running costs of the service*", which is indicative of the French model, of which 80% of service fees are collected from consumers and the rest is subsidised by the National Water fund to support infrastructural investments of small municipalities (Aubin and Varone, 2007: 47).

Subsidies for investment depend on the affordability level of the beneficiaries, and hence should cover the difference between project costs and affordability levels (Almagro, 2005: 197-198). However, efficiency, in terms of tariff determination (to cover investment and operation costs); sourcing additional funds to cover the costs and maintaining operation costs at sustainable levels also plays a role in determining the required subsidy levels (Alexander, 2006: 247). In this case, if tariff revenue is low then subsidy levels will be higher and will require cross-subsidies from higher income users for example (Sansom et al., 2004: 3; Liu et al., 2003: 211; Savenije and van der Zaag, 2002: 100).

The issue of linking cost efficiency of providers with affordability is the focus of long standing debates with regard to pricing of water supply and sanitation of services (Savenije and van der Zaag, 2002: 100). In this regard, considerable emphasis is placed on developing targeted "transparent public subsidies and cross-subsidisation

from other users" to ensure equity and access to services for the poor (Rosegrant and Cline, 2002: 7; Winpenny, 2003: 1-2; Tsagarakis, 2005: 7; Liu et al., 2003: 212; Metha, 2004: 4). Furthermore incentives and simplicity in subsidy designs are called for especially for the benefit of urban poor (Metha, 2004: 4). Similarly, the debate of water industry ownership (public or private) also still prevails, in terms of efficiency gains, effective management and access to basic services (affordability). It is further noted that only 3% of the developing country population is serviced by private operators, while the remaining 1.1 billion and 2.4 billion without access to potable water and sanitation respectively are under public service (Winpenny, 2003: 7).

The full economic costs of water and sanitation services are poorly understood by consumers in both developed and developing countries, primarily due to high subsidies by government or industries, which distort the true capital, operation and maintenance costs per volumetric use (Whittington et al., 2008: 20). Clarity and transparency of information on consumer bills is found to increase consumer "responsiveness" to price and hence results in positive payment rates as well as conservation behaviour (Ntengwe, 2004: 1303; Gaudin, 2005: 163 171). In addition, consumer awareness is indirectly linked to cost recovery and hence sustainable water use (Ntengwe, 2004: 1301). Other statistics, such as information on water resources, water supply and pricing should form the basis of water policies, calculating water balance and determining appropriate performance indicators striving for performance improvement and sustainable use of water resources (Tsagarakis, 2005: 8-9). Hence "a*ppropriate financing and pricing are required to ensure economic efficiency, equity, resources conservation and affordability*" (Tsagarakis, 2005: 10).

2.4 Governance and institutional frameworks in the water sector

Governance deals with "power and how it is used" (DFID, 2007: 14). It is made up of three essential elements namely "state capability, accountability and responsiveness" (DFID, 2007: 14). Capability is directly linked to the political stability and capacity in achieving set goals, while accountability and enforcement of set standards and goals complement each other. Responsiveness relates to how "leaders" respond to societal needs and interests of equity (especially for low income groups) and sustainability (DFID, 2007: 14-16). The water sector has been hampered by various 'governance' issues, which limits the ability of providers to deliver basic, and much needed, water

and sanitation services to consumers. These issues are highlighted by Winpenny, (2003:9) as follows:

- Low priority of central governments to water sector issues
- Confusion of social, environmental and commercial goals
- Political interference
- Poor management structures and imprecise objectives of water undertakings
- An inadequate general legal framework
- Lack of transparency in award of contracts
- Non-existent or weak and inexperienced regulators
- Resistance to cost recovery tariffs

In this regard, the water sector institutional framework depends on three functions (Allouche et al., 2007: 218):

- "policy making (defining medium/long term sectoral guidelines)
- regulation (facilitative role by public authorities-dependent or independent-over activities on behalf of society)
- operation (implementation of activities and processes, guided by policies, by operators to provide water services)"

The foundation of a sustainable institutional framework (Figure 2-5) however is built upon three criteria namely "stability; efficiency and legitimacy" (Allouche et al., 2007: 218). Stability primarily reflects on actors performing institutional functions and their relationship. In this sense coherence is used as an indicator for stability, referring to organisational separation of institutional functions (Nickson and Franceys, 2003: 10-11). For example, it is advocated that operational and regulatory functions be free from "political interference" and the former should be dependent on upon the framework of the latter. Other indicators of stability include "balance of power" amongst water sector organisations as well as "conflict resolution mechanisms" in order to control and manage the various conflicting interests of actors given the dynamics of the sector (Allouche et al., 2007: 219).

<table>
<tr><td colspan="6">Sustainable Institutional Framework</td></tr>
<tr><td colspan="6">Legitimacy (Good Governance Principles)
Transparency; Participation; Accountability</td></tr>
<tr><td colspan="3">Stability</td><td colspan="3">Efficiency</td></tr>
<tr><td>Coherence</td><td>Conflict Resolution</td><td>Balance of power</td><td>Adaptability</td><td>Incentives</td><td>Level of transaction costs</td></tr>
</table>

Figure 2-5 Elements of sustainable institutional framework. Source: developed from text of (Allouche et al., 2007: 218-220)

Efficiency, refers to "minimising comprehensive (production and transaction) costs" which is driven by indicators such as "level of transaction costs; adaptability and incentives to perform". Transaction costs are highly dependent on information flows and hence can be hampered by information related problems such as asymmetry; uncertainty and non-verifiability of information (Allouche et al., 2007: 219). Incentives of institutional arrangements includes "water rights, price of water, water use allocation and prioritisation, enforcement of laws and regulations and access to information (Kemper, 2001: 111-112). Incentives and efficient use of water resources are closely linked, for example, the price of water needs to be appropriate to encourage efficient water use (Kemper, 2001: 112)

Finally, legitimacy indicates the policy-making and decision-making capacity of the institution. Indicators for legitimacy are based on good governance principles. These are categorised as "out-put oriented legitimacy (effectiveness, coherence and accountability) and in-put oriented legitimacy (openness/transparency and participation)" (Allouche et al., 2007: 220). In this regard, "access to reliable information" highly influences the transparency and also serves as a pre-cursor for a participatory decision making process (Sansom et al., 2004: 51; Allouche et al., 2007: 220). In essence, the roles and responsibilities within the institutional framework should be clear, such that each organisation could account for their respective actions (Bartle and Vass, 2007: 261-262). Clear roles and responsibilities, together with "independent audit monitoring and open disclosure of information" enhances transparency, which builds trust and credibility amongst stakeholders (especially "users and investors" (Sansom et al., 2004: 72). In addition, accountability and empowerment of utilities through "financial and organisational autonomy" is necessary to achieve sector objectives and hence acts incentives for efficient

performance and further extending service coverage (Sansom et al., 2004: 51). Performance of utilities is measured by key performance indicators to facilitate the decision making process (amongst key stakeholders namely, government, regulators, utilities and consumers) and inform policies accordingly, but more so it helps utilities to assess their performance and make relevant improvements in accordance with regulatory standards and targets (Nickson and Franceys, 2003: 20). In this respect, stability and efficiency leads to legitimacy, which ultimately translates into a sustainable institutional framework.

The financing challenge of the water and sanitation sector are three-fold; lack of effective and efficient institutional frameworks and policies; inadequate public resources to meet sustainable costs of services and failure of urban poor benefiting from existing services (Metha, 2004: 2-3). Sector reform in this regard, requires government commitment, financial development and increased capacity for service providers (Metha, 2004: 4).

The institutional relationship of responsible parties and service providers are classified into direct and delegated public and private management systems (Morrison, 2003: 46-47).

Table 2-2 indicates institutional arrangements under these categories with related characteristics. Clarity of stakeholder roles (including politicians) and involvement results in enhanced accountability and transparency in decision making processes (Morrison, 2003: 46-47). Stakeholder involvement also takes into consideration the issues of scale and hence factors such as “direct representation” or “representational democracy” which influences the process (Sansom et al., 2004: 65-67; Tsagarakis, 2005: 10; Morrison, 2003: 47).

Table 2-2 Institutional characteristics of responsible entities and service providers under management systems (public/private)

Management systems	***Public***		***Private***	
Characteristics	**Direct**	**Delegated**	**Direct**	**Delegated**
Service provider	Municipality	Public company controlled by public shareholders	Private company	Contractor (municipalities sub-contract to private companies)
Decision-making power of service provider	Not autonomous	Semi-autonomous	Autonomous	Autonomous
Tariff setting power	Set by responsible entity	Delegated to service provider but responsible entity have final decision	Service provider regulated by economic regulator	Based on contractual agreement
Ownership of infrastructure	Owned by responsible entity	Owned by responsible entity	Service provider	Owned by responsible entity
Control over Budgets and funds for investment	No control-municipal budgeting and investment planning	Semi-autonomous-receive subsidies from responsible entity for major investment	Autonomous	Based on contractual agreement
Country examples	Denmark, Luxembourg, Switzerland,Sweden, Austria, Finland	Italy, Portugal,Scotland,Greece	England and Wales	France, Spain

Note: responsible entity refers to municipal council depending on local government arrangement.
Source: (Schouten and van Dijk, 2007: 20-24)

The debate with regard to ownership of infrastructure influencing productivity and efficiency of service providers is long standing (Abbott and Cohen, 2009: 4; Weeden, 2003: 144-145). Saal and Parker, (2001:66 as cited by Abbott and Cohen, 2009:6) illustrates that private ownership is associated with "management incentives linked to efficient operations" compared to public ownership which is primarily bounded by "political and economic goals which sometimes conflict with efficiency objectives". However, it is more consistently found that regulation has a higher influence on productivity and efficiency compared to ownership of infrastructure (Abbott and Cohen, 2009: 8).

The perceptions of customers in the drinking water and sewerage services market are considered very important and have been known to shape the institutional arrangements within the sector. This is particularly noted with regard to water pricing level assessments, which were negatively perceived (as high as 50% in France and Germany), though is it is not directly linked to service levels. Customers prefer "good value for money" and not necessary the price level (high or low). In this regard, countries such as Italy, France and Greece are in the process of water sector reform (Schouten and van Dijk, 2007: 25). However, direct public management takes precedence in the European water and sanitation market, though change tends to lean towards delegated public management and privatisation, especially amongst southern member states such as Greece, Spain, Portugal and Italy (Schouten and van Dijk, 2007: 32).

2.5 Alternative price-setting processes

Conventional statutory regulation is changing rapidly, as a result of water sector reform processes, and "alternatives to state regulation" are explored in the quest for greater regulatory governance addressing issues such as "inadequate competition, fraud and deception, imperfect information and vulnerable consumers" (Bartle and Vass, 2005: 11-13). In this regard, regulation is often practiced as a result of "conduct failure", dealt with by government or delegated to "non-departmental public bodies or non-ministerial departments" (Lawrence et al., 2002: 3). Conduct failure, otherwise known as market failure, occurs mainly due to the "abuse of monopoly power (prices too high, little choices), public goods and externalities (poor standards and safety; pollution) and social exclusion and inequality (inadequate income; discrimination) (Lawrence et al., 2002: 3; Simmonds and Vass, 2002: 4). The regulatory framework is thus based on addressing conduct failures, through the establishment of institutional structures, with respective roles and responsibilities. In most cases, the regulatory framework consists of general- (government), cross-sectoral- (audit agencies), sectoral (economic - independent) –regulatory functions (Lawrence et al., 2002: 3-5). In a sense, regulators are "external review bodies with powers of enforcement" (Simmonds and Vass, 2002: 5). In this regard, major regulatory related issues include (Sohail, 2004: 25):

- "Ensuring that tariffs are effectively designed and applied

- Checking that revenue stays with the water and sanitation sector
- Regulating cross-subsidisation between different users and customer
- Updating tariffs in line with inflation and other factors to an agreed protocol"

It should be noted that there is a difference in price-monitoring and price-setting, of which the former is more common in governmental departments, where they play a "passive role" (Schouten and van Dijk, 2007: 26). Prices may be controlled by a wide range of regulatory body types, which include (Schouten and van Dijk, 2007: 26):

- (non) State departments (eg Ofwat in England and Wales)
- Regional Government bodies (Spain, Italy, Dutch Water Boards)
- Contractual mechanisms (contract regulation)

These regulatory functions are based on the premise of separate functions, hence to separate policy, regulation and delivery functions within the water services sector (Sansom et al., 2004: 74). As a result, the "establishment of corporatised public utilities" is becoming the norm within any public sector reform process, for the purpose of service efficiency (Rouse, 2007: 25) and mainly as an "alternative to state regulation" various forms of regulation, especially economic (independent) regulators are introduced (Bartle and Vass, 2005: 11). Independent regulation of drinking water and environmental quality is also being promoted due to the different roles and responsibilities involved in these functions (Franceys and Gerlach, 2008: 22; Lawrence et al., 2002: 6-7). In terms of water services, independent regulators refer to those that have the autonomy "to set tariffs, take enforcement action and impose sanctions" (Rouse, 2007: 29). An appropriate level of independence or autonomy of the regulatory function is primarily "to give objectivity" to the price-setting process (Gerlach and Franceys, 2009: 1).

Regulation involves a multi-disciplinary approach and has been defined in various ways which includes "promulgation of a binding set of rules to be applied by a body devoted to its purpose" or "regulation covers all state actions designed to influence industrial or social behaviour" (Baldwin and Cave, 1999: 2). Regulation is also sometimes seen as "an activity that restricts behaviour and prevents the occurrence of certain undesirable activities"(Baldwin and Cave, 1999: 2). In that sense, it is further

defined as "impartially improving accountability and transparency to enable more effective service provision" (Sansom et al., 2004: 74). The role of a regulator is multi-functional (Table 2-3), whether it is done through an independent body or government department (Sansom et al., 2004: 75-76). In this respect, some level of independence, though within a governmental framework, is a pre-requisite for regulators to operate efficiently, given the multi-purpose nature of water resources (Braga, 2003: 27).

Table 2-3 Effective regulatory requirements and functions

Requirements	***Functions***
Sub-dividing functions (water and sanitation performance and tariff regulation, environmental, water quality)	Ensuring responsiveness to consumers needs (consumer satisfaction leading to cost recovery
Strengthening technical capacity for different functions	Flexible technical and service standards
Independent (open and publicly accountable process of recruitment, publication of studies and decisions)	Performance planning and monitoring (performance indicators)
Necessary legal framework backing	Safety net regulations for the poor (encourage utilities to extent service coverage)
Funding of regulatory activities through dedicated budget	Ensure development of essential infrastructure
Consider forming a multi-utility regulatory framework	Promote asset serviceability and efficiency over time (support for asset management plans)
	Agreeing projected water and sewerage tariff policies (cost-recovering tariff determination)

Source: (Sansom et al., 2004: 75-76)

An independent regulator is often noted to improve performances of service providers, however several country specific conditions such as the problems, sector objectives and institutional arrangements and tools in place also play a critical role in the regulatory framework (Ehrhardt et al., 2007: 5). There are several success stories, where performance is achieved in the absence of an independent regulator, such as the cases of Botswana, Burkina Faso, New Zealand, Netherlands and Scandinavia. So too is the evidence of the huge influence of regulators on transparency and effective sector performance in countries like the United States, United Kingdom and Australia as other examples (Ehrhardt et al., 2007: 7). Hence much depends on the regulatory design (Figure 2-6) and the political environment in which it operates. In this sense it is important to identify clearly what the regulator is to address and what outcomes are expected (Ehrhardt et al., 2007: 5).

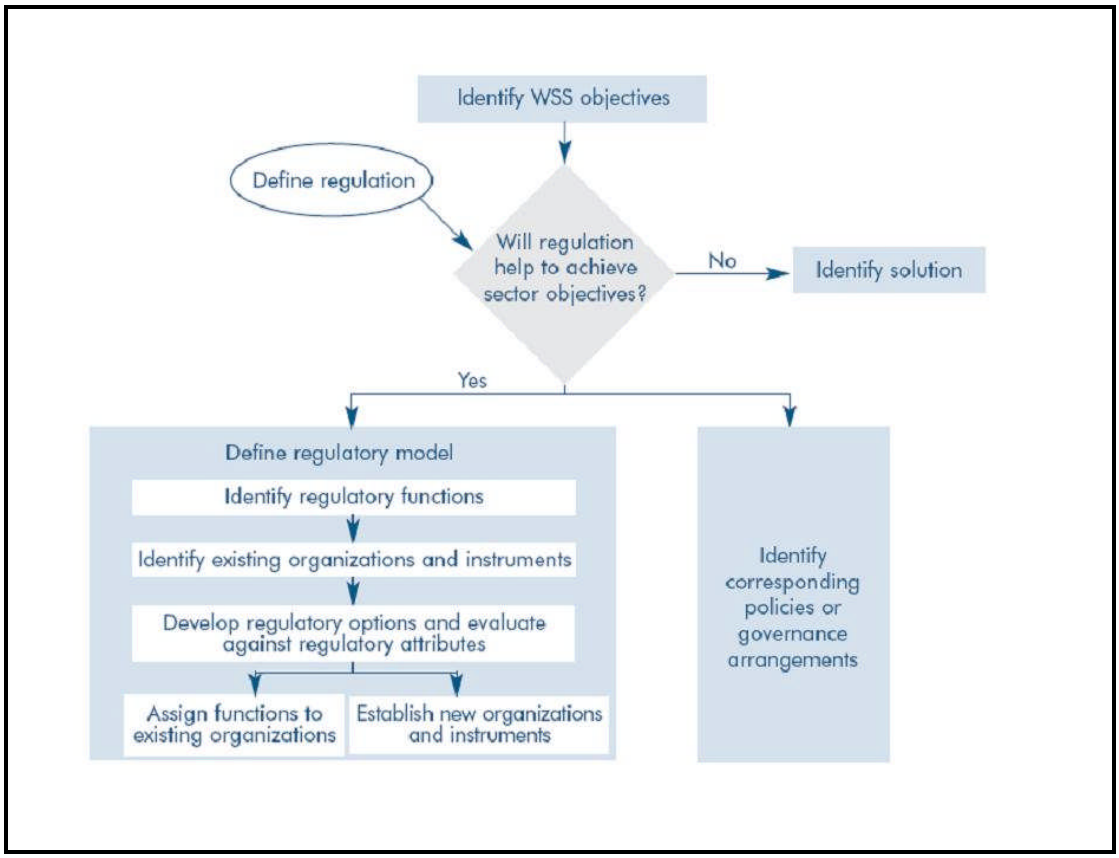


Figure 2-6 Approach to regulatory design. Source: (Castalia as cited by Ehrhardt et al., 2007: 8)

Policy and structural reforms are often required to achieve sector objectives, however often a good regulatory system is required, with the understanding of the strengths and limitations of such systems (Ehrhardt et al., 2007: 9). Regulation, in itself, cannot solve the problems of sector performance and it needs to be complemented with government support in influencing policy decision making, governance structures and adequate coordination of involved stakeholder activities (Ehrhardt et al., 2007:11). It is further highlighted that regulators cannot ensure affordability of services, provider efficiency, improved capital expenditure planning and cost recovery (especially not payment from government departments and agencies) (GTZ, 2008: 14) though they can influence the incentives acting upon service providers.

Regulatory frameworks (Table 2-4) are highly dependent on accountability characteristics and information, therefore lack of detail in the regulatory tools has been known to distort the process (Franceys and Gerlach, 2008: 27). For example, issues such as clarification of the financial models used for calculating costs. Even though the demand for detailed information is high, any such system should generally not be “over-sophisticated” and should be kept simple (Ehrhardt et al., 2007: 24-25).

The core of the framework is about policy (defining regulatory objectives and outcomes) and control (monitoring, enforcement through incentives) (Simmonds and Vass, 2002: 4).

Table 2-4 Regulatory framework based on stages of accountability

Structure and process considerations	*Three stages of accountability*
▪ The legal framework ▪ Separation of roles and responsibilities ▪ Principles of good regulation ▪ Forming a 'whole of government' view ▪ Provision of relevant information	▪ Giving reasons for decisions ▪ Exposure to scrutiny ▪ The possibility of independent review

Source: based on text from (Bartle and Vass, 2005: 47)

Separation of roles and responsibilities is described as the best way to achieve accountability and hence effective regulation (Bartle and Vass, 2005: 47). However, independent, technocratic regulators, should be seen as being part of the state's regulation process and not as separate (Bartle and Vass, 2005: 47). Economic regulation is associated with objectivity and transparency in the process of delivering efficiency and quality in the water sector (Gerlach and Franceys, 2009: 1). Hence economic regulation is directed specifically to regulating monopoly providers, through either strictly imposing or removing regulations as set out by the central government or state. It is normally supported by the threat of sanctions or fines (Baldwin and Cave, 1999: 9-12). In this regard, it focuses on "setting, monitoring and enforcing rules on tariffs and service quality" (Mandri-Perrott, 2009: 41). Commonly, regulation is exercised on "market entries, prices, wages, pollution effects, standards of production for certain goods and services". In this regard economic regulators are facilitative agencies, appointed by the state, to both implement its rules and laws while controlling service providers' behaviour for the best social benefit/interest of their customers (Baldwin and Cave, 1999: 9-12). In fact any issue(s) that compromises the benefits owed to consumers or the public in terms of access, quality of service and fair payment thereof, calls for the mediation of a regulator. This includes 'information inadequacies; anti-competitive behaviour and predatory pricing; unequal bargaining power; improper planning (disregarding 'altruistic intentions')

scarcity and rationing and discontinuity and unavailability of services (Baldwin and Cave, 1999: 12-17).

2.5.1 Elements of Regulation

An ideal regulatory system is one that operates within the policy framework set by government, with the aim to maximise social welfare, while operating on "minimum economic costs", i.e being effective and efficient. Economic costs in this sense refers to the "administrative and compliance costs of regulation" (Parker et al., 2002: 8). The goals of effective regulation are summarised as ensuring financial viability, operational efficiency, dynamic efficiency and distributive justice. Financial viability in this sense refers to creating incentives for service providers to recover investment costs whilst delivering quality services. Operational efficiency allows services to be priced appropriately to "optimise consumption and supply", while dynamic efficiency focuses on increasing competition and expanding services to meet future demands. Finally distributive justice, refers to social objectives of universal service, and this includes considering subsidies. (Mandri-Perrott, 2009: 39-40).

Furthermore, ingredients for successful independent regulatory activities include "adequate resources; legal mandate and operating principles" given the proper political and economic settings (Franceys and Gerlach, 2008: 30; Berg, 2000: 160). Nine activities are perceived to be key to measure 'effective regulation of prices' and have major impacts or implications on costs and tariff setting. These include (Berg, 2000: 161):

- licensing
- performance standards on quality and reliability
- monitoring of data on costs, revenues and performance
- tariff setting for revenue sufficiency for operating and capital costs
- uniform accounting systems for comparable cost data
- arbitration among firms and consumers
- management audits
- human resources policies

- reports on costs and tariffs for current and future performance and efficiency

These activities are highly dependent on the legal framework as well as "incentives for cost containment". These activities legitimise the mandate of independent regulators which is necessary to differentiate its roles and responsibilities from that of government institutions. However, political influences can hamper the implementation of these nine activities, hence putting the autonomy of such regulators to the test. In this regard, there are three crucial elements (amongst others) that are necessary for a regulator to succeed and these are clarity of roles; autonomy and accountability (Stern and Holder, 1999). A further nine operating principles are deemed necessary to measure 'good regulation' which include (Berg, 2000):

- communication (information to stakeholders on a timely and accessible basis)
- consultation (participation of stakeholders in meetings)
- consistency
- predictability
- flexibility
- independence (autonomy in that decisions are free from political influence)
- effectiveness and efficiency
- accountability
- transparency

Out of these elements, the Better Regulation Commission (BRC), (2005) highlights proportionality (needs based intervention); accountability (justify public decisions and open to public scrutiny); consistency (coordination and fair implementation); transparency (open, simple and user-friendly regulation) and targeting (focusing on the problem and reduce side effects) as the most important principles required for regulatory governance (Table 2-5).

Table 2-5 Elements of regulatory governance

Elements	*Characteristics*	*Guiding principles*
Regulatory purpose	Objectives (outputs) 'the problem to be addressed'	Objectivity Coherence rationality
Regulatory means	Instruments (inputs) 'the options available to solve the problem'	Proportionality Targeting Consistency
Regulatory framework	Structure and process (governance) 'the control mechanism aimed at optimising regulatory outcomes'	Transparency Accountability

Source: (Bartle and Vass, 2005: 47)

Regulatory governance is described as "accountability of both regulators and the regulated through transparency of process and reporting is the essential operating mechanism required to maintain effective regulation" (Bartle and Vass, 2005: 46).

Similarly, from an African perspective, regulatory governance elements deemed necessary are comprised from internal and external governance issues (Table 2-6) (van Baston, 2007: 7).

Table 2-6 Internal and external regulatory governance elements required, specifically for African regulators

Internal	***External***
▪ Limited government interference ▪ Clear differentiation of roles and responsibilities of staff and governance structures ▪ Governance structure should be accountable for performance of regulatory agencies through internal audits ▪ Well defined documentation and communication process of decisions ▪ Remuneration of staff should be market related based on relevant skills and expertise required	▪ Regulatory frameworks should be guided by primary legislation ▪ Governance structure (board members) should be multi-sectoral ▪ Human resource capacity should complement regulatory functions and ambitions ▪ Independence should be long-term objective, with regulatory discretion and robust appeal mechanisms in place ▪ Public notifications of decisions and actions

Source: (AFUR, 2002 as cited by van Baston, 2007: 7)

Overall, independence, accountability and transparency are regarded as key elements for competent regulatory body (Mandri-Perrott, 2009: 48). The elements of a good regulator tie in well with those of a sustainable institutional framework (Figure 2-5) which is based on legitimacy, stability and efficiency. More specifically coherence, predictability, credibility, transparency and accountability is most frequently given as a criteria within in which regulators can operate efficiently (Ehrhardt et al., 2007: 13-14). To achieve sustainable development, it is advocated that policy integration be part of the functions of economic regulators. However, separation of functions is highly recommended for independent regulators, therefore policy integration contradicts the aforementioned requirement of an effective regulatory process (Bartle and Vass, 2007: 261-262). The motive behind policy integration for economic regulators is due to the extent to which environmental and social objectives of policies have been neglected and hence it is necessary to balance the three pillars (economic, social and environmental) to achieve sustainable development (Bartle and Vass, 2007: 262).

So far, the ideal scenarios of good regulation have been identified in the literature. However in practice all the 'right' elements are rarely present, which makes the task of independent regulators very difficult. The major tasks being that of 'balancing the different interests of primarily three groups: consumers, investors and government' (Mandri-Perrott, 2009: 48; van Baston, 2007: 7-8). These interests are all centred on the price of the service from different angles, for example industrial or residential consumers - either would like low prices for high quality service, while investors would like easier entry regulations and government is concerned about elections and does not have charging for services as a priority on their agenda. Independent regulation constitutes a balance between the legal mandate, resources and operating principles. One without the other is not ruled out; however it is most likely to affect the performance of the sector as well as the creditability and legitimacy of the institution (Berg, 2000: 163-167). This being said, it is recognised that political pressure is in most cases inevitable, thus it is the 'art of regulation' to know the boundaries of such pressure influences (Mandri-Perrott, 2009: 48; Berg, 2000: 165).

2.5.2 Regulatory structures

The last two decades have witnessed several debates on the structures of regulators, and various forms of regulation, moving from typical "command and control regulation" towards "self-regulation and co-regulation", then "deregulation" followed by "liberalisation of markets" (Bartle and Vass, 2005: 15-18). However, recent trends indicate various regulatory bodies (Table 2-7) emerging in the water sector (Rouse, 2007: 28). Four distinct types of economic regulators for utilities are evident; integrated, semi-independent, independent (Parker et al., 2002; Stern and Holder, 1999; van Baston, 2007: 5) and self-regulation (Rouse, 2007: 23; Bartle and Vass, 2005: 17). Integrated structures refer to public regulation which is part of a government ministry controlled by the respective Minister. Semi-independent regulator has a degree of independence from the ministry, but its decision can be over-ruled by the minister; while independent regulators are not controlled by government (Rouse, 2007: 23) but almost certainly and necessarily remain open to be influenced by governmental priorities. Independent regulators are mostly used in high-income countries, with the UK and US models being the most frequently cited examples (Parker et al., 2002: 7; Lawrence et al., 2002: 4).

Table 2-7 Types of regulatory structures

Regulatory structures	***Description***
No regulation	No explicit controls on an organisation
Statutory regulation (classic)	Regulations are specified, administered and enforced by the state
Co-regulation	Regulations are specified, administered and enforced by a combination of the state and the regulated organisation (s)
Quasi-regulation	Regulation are specified and administered by the state, and enforced by industry
Self-regulation	Regulations are specified administered and enforced by the regulated organisation (s)

Source: (Bartle and Vass, 2005: 19 22)

There seems to be confusion of definitions of regulatory structures- such that semi-independent and integrated regulation refers to co-regulation, while many confuse

self-regulation with statutory regulation. The variations within regulatory structures, reflects the complexity of regulation and thus it is difficult to "fit" it in specific categories (Bartle and Vass, 2005: 24). The role of government in regulation structures are not clearly defined (except in statutory regulation) (Bartle and Vass, 2005: 20), but cannot be completely divorced from the regulation process either, therefore there will be a degree of government involvement, irrespective of the regulatory structures in place (Baldwin and Cave, 1999: 126).

Service providers in lower-income countries are mostly state owned (Parker et al., 2002: 10). The trend had been towards changing to private ownership but with state regulation" due to 'regulatory/state failure' (Parker et al., 2002: 1). Elements needed in state regulation include good public administration (institutional setting) and responsibility (backed up with proper information); "regulatory rules and processes" (Parker et al., 2002: 5 9). The Australian case, represents corporatized public regulation, with independent powers to set tariffs, standards and conditions of service for all utilities, including water, under the auspices of the Essential Services Commission, for the state of Victoria (Rouse, 2007: 31). In contrast, the Regulatory Office in Manila, Philippines, does not set the tariffs, but has more of a monitoring role based on concession contract conditions, making use of independent observers (Rouse, 2007: 31).

Self-regulation is normally practiced internally by the utility or through associations, which includes developing "technical standards and codes of practices" (Bartle and Vass, 2005: 19). An example of self-regulation is taking place in Ghana, where water tanker operators practising a "code of practice" through associations to their customers. Perceived benefits are direct control and recognition of suppliers within the "public water supply distribution system" (Rouse, 2007:24). One of the biggest criticisms against self-regulation is that it is not efficient and sustainable, due to its political influence on setting charges (Rouse, 2007: 24). South Africa is also practising self regulation through a three-tier government structure, which comprises government setting tariff strategies to be followed by the sector, water boards (part of government) regulating bulk water suppliers to municipalities and the latter regulating water supplied to end users (van Baston, 2007: 29). This system is further described as "problematic opaque regulatory relationships currently in place", hence the

recommended need for an independent regulator to facilitate the process (van Baston, 2007: 30).

Political and social relations frame the processes and outcomes of the 'regulatory regime' (Parker et al., 2002: 4-5). 'Institution building' forms a very crucial aspect of economic development, such that it enhances "economic incentives, reduce information imperfections and reduce transaction costs" (Parker et al., 2002: 5). Threats to regulatory success depend on the strength of the regulator to handle 'hold-up', regulatory and political capture' situations. 'Hold-up' in this case refers to negotiating the terms of the contract after agreement between the regulator and the investor, otherwise leading to under-investment of one of the negotiating parties. 'Regulatory and political capture refers to the regulator favouring the interest of the utility over that of the consumer and or being subsumed by political pressure and operating on political terms respectively (Parker et al., 2002: 6-7). Regulation of the industry structure and regulation of market conduct are two major ways of dealing with monopoly regulation. In the case of structural industry regulation, promotion of competition through "setting rules regarding market entry and shape of corporate entities operating in market" is prevalent, while with regulation of market conduct is limited to "behaviour of market suppliers in terms of quality, pricing and access" of services (Ballance, 2006; Ballance and Taylor, 2005).

In the case of England and Wales, the focus is on improving the quality of services, whilst ensuring financial sustainability to maintain desired service levels. There are four main regulatory bodies, focusing on separate issues (economic, drinking water and environment, consumers), yet working together. Consumers are represented through an independent body, the Consumer Council for Water, to ensure that they are fully involved in the process and issues are represented and dealt with (OFWAT, 2007a). Similarly, the regulator in Chile, Superentendencia de Services Sanitarios (SISS), operates strictly on the full cost recovery principles and does not focus on social objectives (for example affordability), which includes subsidies for poor (Franceys and Gerlach, 2008: 162). Contrastingly, following the water sector reform in Zambia, an independent regulator, the National Water Supply and Sanitation Council (NWASCO) was established, with a strong focus on the urban poor. NWASCO regulates both private and public utilities, with economic and quality regulation functions (NWASCO 2004: 11). The Zambian regulator has built up a

successful reputation of managing with limited resources and investment in infrastructure, amongst the developing countries as well as the world (Rouse, 2007: 30-31).

Effective and efficient regulation in developing high-income and lower-income countries are different, in the sense that in lower-income countries (depending on their economic history) goals of poverty reduction and social welfare top the agenda whereas in high-income countries economic development feature stronger. For example in South Africa 'black empowerment and affordable access to services' drives their policy (Schwella, 2002 as cited by (Parker et al., 2002: 15). In the case of lower-income countries the following issues are critical when assessing economic regulation (Parker et al., 2002: 16):

- Cross-subsidies and market liberalisation policies
- Link between empowerment, participation and poverty reduction with economic regulation
- Privatisation and economic efficiency
- Benefits to low-income consumers (and their respective needs)
- Effective economic regulation in developing countries are measured on 'scope and quality of services provided' and not necessary on improving 'network infrastructure'

Criticism about lower-income country regulators are mostly related to adaptation of "developed" country solution, without exploring low-cost options (Baker and Tremolet, 2000: 2). In addition, institutional building in lower-income economies is hampered by "technical and political constraints" (Parker et al., 2002: 11).

An alternative to having a permanent regulatory body is to make use of expert panels, boards or committee, to be used only when necessary due to lack of resources. The role and autonomy given to these temporary arrangements might differ depending on the country situations; however it could be seen as more credible process. In some developing countries, NGOs are known to be given this role and has worked quite well (Rouse, 2007: 33-34).

The need for some sort of independent regulator cannot be overemphasised according to the literature, especially in lower-income countries where the pressure from the international world is promoting various standards to be upheld.

Table 2-8 indicates the global requirements and the role of regulatory to address these requirements to ensure sustainable water services (UNDP Human Resources Report, 2006 as cited by Rouse, 2007: 34-35).

Table 2-8 Actions and elements required for sustainable water services regulation

Actions required by governments	*Elements required to fulfil the required actions*
▪ Making access to water a human right with implementation based on 20 litres a day of clean water for everyone	▪ Develop sound objectives and policies including the need for adequate cost recovery for sustainability
▪ Introducing 'lifeline tariffs', cross-subsidies and investment in standpipes	▪ Independent regulators to – Implement policies – Monitor compliance (including system extension and increased access targets) by service providers – Setting tariffs and standards – Ensure effective public consultation and information dissemination takes place
▪ Regulating water utilities to improve efficiency, enhance equity and ensure accountability to the poor	▪ External support to pay for start-up refurbishment costs
▪ Enacting legislation that requires female representation on water committees and other bodies	▪ Subsidies directed at the poor to provide assistance on access charges, and either low-tariff pre-payment meters or means tested direct support on water bill payments
▪ Giving priority to the needs of the poor in public investment and service provision strategies for water and sanitation	▪ Local water committees to provide the focus for public participation
▪ Empowering independent regulators to hold service providers to account for delivering efficient and affordable services to the poor	

Source: Table created based on information provided by (Rouse, 2007: 34-35)

The need for structural reform and strong regulation (drinking water quality standards, pricing and environment) procedures in place to ensure productivity and efficiency (based on performance indicators) of the sector cannot be overemphasised (Abbott and Cohen, 2009: 3,7; Saleth and Dinar, 2005: 17).

2.5.3 Regulating for the urban poor

Water sector reforms usually include the development of regulatory frameworks which adopt different country characteristics resulting in different types of regulators in place (Ehrhardt et al., 2007: 7). The impact of regulatory frameworks towards access of services to urban poor is significant; hence the recent trend towards pro-poor regulation (Franceys and Gerlach, 2008: 44-45). Regulating for the urban poor includes understanding the motivation and incentives of regulators to encourage formal providers to increase service coverage. This is referred to as "*regulating the regulator*" (Tremolet, 2006: 6).

The urban poor typically make use of informal providers for water services due to the high costs of accessing the services of formal providers. Therefore it is advocated by some that regulators focus on informal providers as well, to regulate their activities and monitor standards. However due to lack of information this is a huge challenge and some argue that it is not so necessary where informal providers are actually operating within a real market (Nickson and Franceys, 2003: 5). Similarly, regulators find it difficult to address affordability issues (primarily due to political influence) regarding the urban poor, in which case pro-poor low tariff structures are proposed to be considered (Tremolet, 2006: 11; Gerlach and Franceys, 2009: 9). The interest of the poor may not be an implicit part of the regulatory process, as witnessed in Jordan, which can influence service delivery to urban poor significantly (Gerlach and Franceys, 2009: 9). The most credible solution for regulating for the poor, according to the literature, is to make it a regulatory responsibility with the addition of consumer representation, so as to keep abreast on critical issues concerning the groups. In this regard, Zambia's Water Watch Groups are noted to have a huge influence within the regulatory framework and in turn benefiting urban poor (Tremolet, 2006: 13).

Independent regulators are often formed as a result of privatisation, which is associated with increased efficiency and service quality and as a result increased prices. Private companies are tailored for the high income groups, to recover costs and

thus do not consider low-cost options for the urban poor. In which case the urban poor are neglected and have to resort alternative water sources, which have health implications. In this regard, flexibility in regulatory frameworks and "infrastructural diversification" are called for, to permit alternative providers entry into the system to cater for the needs of the urban poor (Baker and Tremolet, 2000: 1-3). Another alternative is to provide differentiated services based on income levels of consumers, allowing consumers to choose lower quality services for lower prices. However technicalities about this option prove to be difficult to implement since urban poor areas are not clearly demarcated and are mixed with other income level consumers (Baker and Tremolet, 2000: 2-3).

2.6 Theories of regulation

Normative theories of regulation deal with "how regulation should be done", while positive theories of regulation focuses on "why regulation occurs" and more specifically on the "roles of stakeholders within the policy-making process". (Jamison et al., 2004: 11). This research focuses on positive theories of regulation. Typically regulatory problems are three-fold associated with "market power; opportunisms and asymmetric information" (Jamison et al., 2004: 11; van Baston, 2007: 4). The latter situation occurs if an operator has an information advantage over government in terms of efficient operation abilities and capacities (Jamison et al., 2004: 13). However, in the absence of such information advantage, typically it results in "*control and command regulation*", where government could 'instruct' operators to operate in a certain manner (Jamison et al., 2004: 13). Jamison et al. (2004:14) highlight three ways to deal with information asymmetry:

- Increase competition
- Gathering and publishing information on operator and market
- Applying incentive-based regulation

Competition allows consumers to opt for better quality and price, hence forcing operators to increase efficiency – however this form of competition is not common amongst monopolistic water providers.

Typically to avoid information asymmetry, regulators obtain mainly "financial data and operator statistics" to facilitate and monitor the sector efficiently (Jamison et al.,

2004: 16; Simmonds and Vass, 2002: 19). In this regard, operators are required to adhere to accounting rules, which require financial data such as financial statements, including "capital structures and depreciation schedules"; while operating statistics range from price information, number of consumers and employees, quality of services and operating details (Jamison et al., 2004: 16). Furthermore, comparing various performances of operators in terms of efficiency and effectiveness can be done through benchmarking or yardstick regulation, with the incentive to reward the operators for out-performance (Alegre et al., 2006: 3).

Incentive regulation as a means to reduce information asymmetry is to control price levels of operating and as a result reward operators for achieving societal objectives, through maintaining accounting profits (Jamison et al., 2004: 17). Price-cap and revenue cap incentive based regulation can be used, taking into consideration inflation in relation to the price or revenue respectively (Franceys and Gerlach, 2008: 27-28). To maximise rewards, many operators use "hybrid incentive schemes", mixing the various approaches, for example in UK one author describes how "rate of return and price-cap regulation" systems are used (Jamison et al., 2004: 18). Further issues to be addressed as incentives are investment related aspects such as the need and timing of investment, the related efficient costs levels and inclusion of investment into the regulatory asset base (RAB) (Alexander, 2006: 245). Ideally, the regulator should aim to align the rate of return and cost of capital of companies, to avoid abuse of monopoly power, while encouraging investment (Andres et al., 2007: 4).

To ensure that the companies perform well, interests (often conflicting) from key stakeholders namely, shareholders/investors, board of directors and management must be synchronised for mutual benefit of the organisation. The relationship amongst these three key stakeholders refers to corporate governance (Wheelen and Hunger, 2002: 26), which in this case can be related to the water sector. The role of top-managers are very essential, such that they are responsible for the day-to-day running of the business, in that sense they are not the owners and are usually referred to as the "hired-hands" (Wheelen and Hunger, 2002: 30). In this regard, the managers might have their own personal welfare interests at heart, compared to those interests of the shareholders for example. Managing or resolving the relationship (interests) between 'principals' (owners/shareholders) and agents (top management) involves the application of principal-agent theory (Figure 2-7) (Wheelen and Hunger, 2002: 30;

Mallin, 2007: 12). There are two typical problems experienced within this theory which are (Wheelen and Hunger, 2002: 30): "the desires or objectives of the owners and the agents conflict" or difficulties faced by principals to find out the exact activities of the agents different attitudes of principal and agents towards risk-sharing problems.

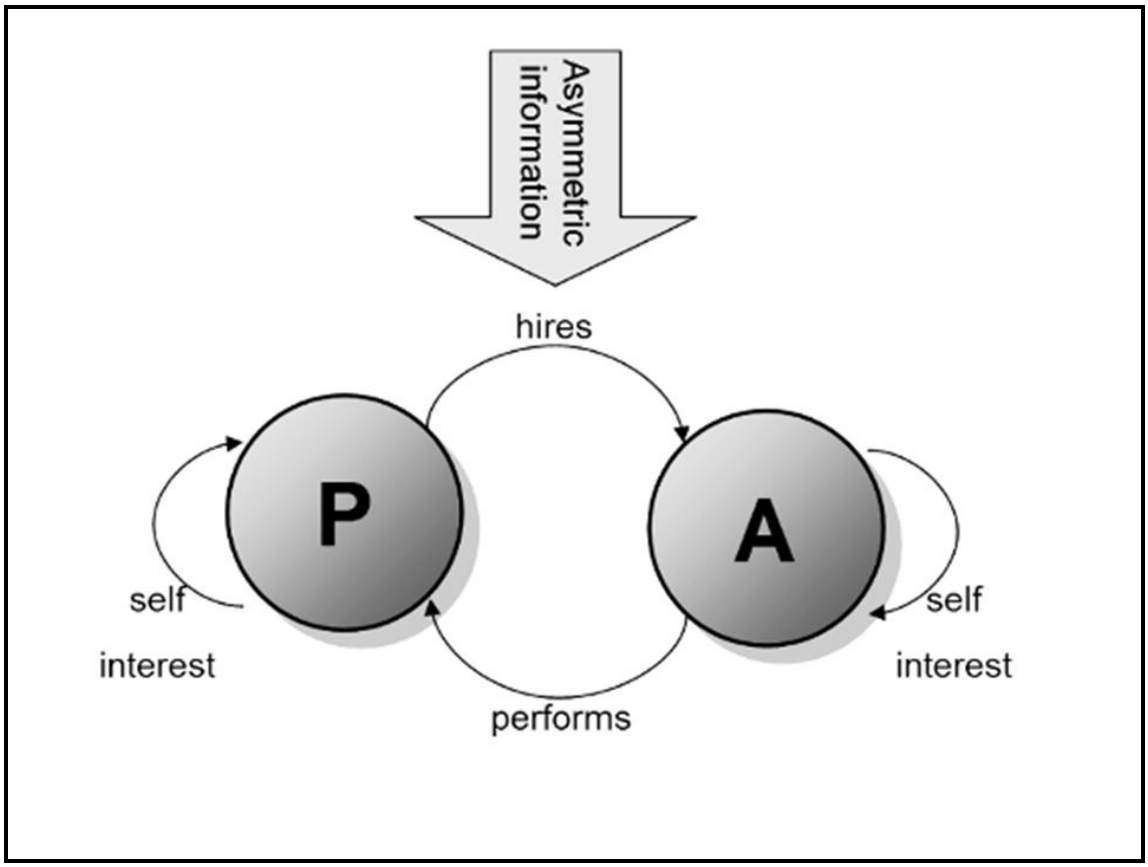


Figure 2-7 Illustration of the principal-agent theory (P=Principal, A= Agent).

Source: **http://en.wikipedia.org/wiki/File:Principal_agent.png#filehistory**

It is indicated that these problems are likely to occur if the principals have very little knowledge about the activities of the company or are mostly comprised of social relations or where the majority are 'inside' managers serving on the board (Wheelen and Hunger, 2002: 30). Information asymmetry is one of the biggest problems faced in the principal-agent relationship. In this case, the agent has an advantage over the principal due to access to more detailed information. According to Blair, (1996 as cited by Mallin, 2007: 13) "managers are supposed to be the 'agents' of a corporation's 'owners', but managers must be monitored and institutional arrangements must provide some checks and balances to make sure they do not abuse their power". "Information asymmetries" in market related decision-making is

identified as one of the main attributes of market failure. In this respect market failure is defined as having an 'unfair' advantage of information over the other party during the market transaction (Berg, 2008: 3).

In the case of monopoly water providers the principal-agent challenge is not so much between shareholders and managers but rather between price-setters (government or its regulator) and service provider management. For example, the influence of market competition in France on the negotiation of a "better price" with the operators is not clear; hence it is noted that information asymmetry problems are very prominent within the French system, making cost analysis (and therefore price-setting) very complex and non-transparent (Garcia et al., 2005: 175 180).

This research builds its foundation on the principal-agent theory in the context of the water sector. As opposed to corporate governance being promoted, this research will take a closer look at regulatory governance, in which case, the government is the principal and the agent is the service providers. However, realising that more stakeholders are involved, the study also draws on stakeholder theory, taking into consideration the consumers, environmentalists, other organisations and private sector. In applying these theories, the study suggests that institutional development forms part of the solution to the problems facing the water sector in Namibia and it should be in the form of establishing the appropriate level of regulator, to monitor the activities of the agents on behalf of the principal.

There are different opinions regarding information flow depending on type of regulators: either state or private regulators. One opinion is that information flow to regulators is better when the state both owns and regulate, hence facilitating the process of contracting (Shapiro and Willing 1990 as cited by Parker et al., 2002). The counter opinion is that if it is state owned then the incentive to gather information is less and thus minimises welfare benefits (Hayek, 1945 as cited by Parker et al., 2002). Either way the information flow process depends on the 'commitment' of the regulator and the 'credibility' of the regulated parties (Parker et al., 2002: 5).

On a wider scale, stakeholder theory takes into consideration not only the relationship between shareholders and managers, but also the interests of other stakeholders such as customers, suppliers, government and the local community (Mallin, 2007: 16; Prosser, 1999: 206). As a solution, stakeholder theory supports interests of

stakeholders to be considered provided it contributes to the "long-run value" of the organisation, due to multiple interests that arise from stakeholders (Mallin, 2007: 16). This theory also further encourages "participative procedures in regulation" (Prosser, 1999: 209).

Sector performance is known to be influenced by the relevant information, incentives and institutions involved (Berg, 2008: 3). Hence, stakeholders make decisions based on information they have, in which case four conflict scenarios (Figure 2-8) arises as identified by Shabman, (2005 as cited by Berg, 2008:5):

- Authority conflicts: "who should make decisions"- reflecting on clarity of roles and responsibilities and coordination amongst decision makers
- Cognitive (factual) conflicts: "what can be done"- reflecting on current and historical facts/trends
- Values conflicts: "what should be done"- reflecting priorities
- Interest conflicts: "who should benefit from decision"- reflecting on different benefits for stakeholders (producers, consumers and policy-makers)

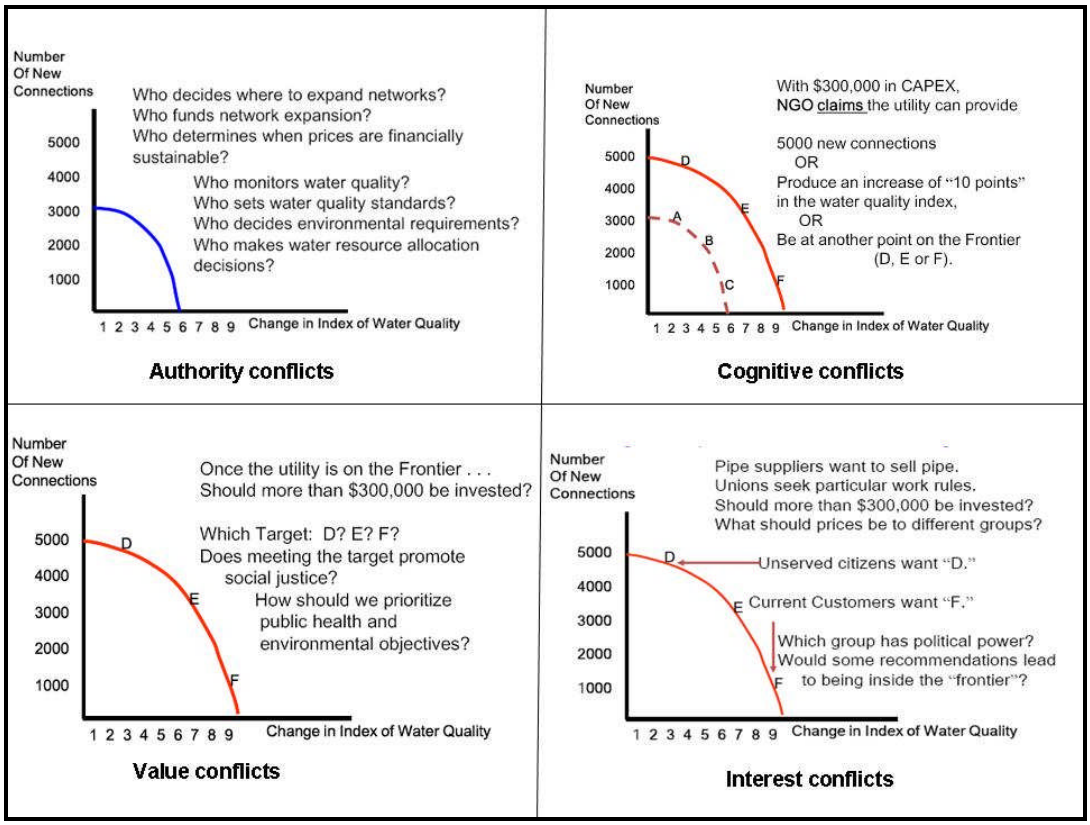


Figure 2-8 Sources of conflicts facing regulators. Source: (Berg, 2008: 6-10)

Regulatory decisions are complex and therefore information and transparency can facilitate the process of balancing these various conflict types. The authority conflict, deals with stakeholder authority, which even if roles are clear in some instances, authority levels dictate. In this sense the decision making process is very complex takes into consideration issues such as service coverage areas, sources of funding, prices to be charged to achieve financial sustainability, water quality and environmental standards and resource allocation options (Berg, 2008: 6-7). It is very critical to verify the possible service options with factual information to avoid cognitive conflicts. Lack of appropriate financial and operating statistics is associated with under-performing and hence depends on the credibility of managers to demonstrate performance because it is believed that "managers can only manage what they can measure" (Berg, 2008: 7). Similarly, value conflicts can be resolved through public awareness, to understand the trade-off involved in making the relevant decisions. Often these conflicts arise over the need to extend to unserved areas or improving water quality linked to health risks (Berg, 2008: 7-8). In the absence of information, it difficult to determine what is available to implement various options. The interest conflict is centred on stakeholder power and influence, which is based on available information and understanding consequences of the various options and decisions. For example, affluent consumers (usually the minority), are more 'powerful' and more organised and thus can represent their case (improved quality) better in comparison to poor consumers (majority), who in many cases are difficult to organise and are uninformed about investment options (expansion of services and available technology) and prices to be able to influence the process properly (Berg, 2008: 9-10). "In addition, in some cases, regulators and policy-makers may wish to avoid the political pressure generated when poorly performing utilities are singled out. "Knowledge is power," and providing information to stakeholders disturbs the *status quo*" (Berg, 2008: 1-2).

It is noted that information asymmetry has a huge impact on the performance of water utilities, since without centralised data systems the relevant information required for critical decision making in accordance with policies is not available (Berg, 2008: 2). Access to water and sanitation services is often referred as "human right", a "right to dignity" and in this sense it is summarised as "distributive fairness", which is a concept strongly linked to "procedural fairness" that refers to access to reliable

information so as to allow consumers to make informative decisions. Though it is widely recognised that water is an economic good, it is also recognised that quality of service can only be obtained through financial sustainability, and as such procedural fairness receives preference and in this case access to information becomes a key indicator for performance of service providers (Berg, 2008: 2). “Information can be a catalyst for reform” through consistent and reality-based benchmarking (Berg, 2008: 3)

Finally “regulation is performed in a network of relationships among persons, institutions that differ in their objectives, incentives and sets of information”(Jamison et al., 2004: 24). Hence to facilitate an efficient process the following elements are required (Jamison et al., 2004: 24):

- Decision making procedures to limit information asymmetries
- Incentives for operators, government and regulators to the benefit of consumers
- Requirements for service quality and access to poor
- Align the goals and capabilities of regulator with welfare of consumers

Delegation of power as a means of maintaining “credible commitment” to long term objectives is one of the major reasons behind principal-agent relationships (Bartle and Vass, 2007: 263). In this respect, information asymmetry challenges between principals and agents are reduced by “functional specialisation”, such that the agent implements policies developed by government, allowing principals to deal with policy implications, hence increasing efficiency and effectiveness of agents (regulators) (Bartle and Vass, 2007: 263; Prosser, 1999: 198-199). Furthermore, regulatory agencies are recognised as the “optimal way” to manage “conflicting interests” and efficient water use, especially through the water charging process (Braga, 2003: 25).

2.7 Chapter summary

Urban water and sanitation services are seen as part of the basic functions of government to achieve sustainable development. However, the pillars of sustainability namely social, economic and environmental aspects, often conflict when it comes to the provision of services, especially the price-setting process thereof. In this regard,

the implementation of pricing policies is a complex process entailing understanding of costs of services (full cost recovery principles), the income base of target groups, especially the urban poor (ability and willingness to pay), the capacities and incentives of providers (financial sustainability) operating within scarcity challenges of the resource base. In this respect, the governance and institutional arrangements play a critical role within the process. Separation and clarity of roles and responsibilities as well as expectations of such institutions (especially regulators), combined with the need of financial, structural, and functionality independence, is comprehensively highlighted as necessary to deal with the challenges facing both high and low-income country price-setting processes. Regulators (on behalf of the principal, ie government), have the daunting tasks of facilitating the process while balancing conflicting stakeholder interests, in the quest for efficient service provision (improving performance). In this regard, it is advocated that regulatory frameworks be based on country objectives (clearly defined expectations), complemented with relevant institutional arrangements, while realising the relevant limitations. The biggest challenges faced by regulators are imbedded within the regulation theory of the principal-agent problem, which addresses the challenges of information asymmetries and differing objectives/interests of relevant parties. In this sense, access to, and the ability to make public, relevant, accurate information (transparency) along with stakeholder involvement to consider that information is equally important for the price-setting process of the urban water and sanitation sector.

This chapter has set the scene, the conceptual framework, for the field research conducted throughout the study and forms the basis against which the methodology is developed.

"*The only way to hold your government*
responsible is through transparency and accountability"
President Barack Obama, 21 May 2009

Chapter 3: Research Strategy and Methods

This chapter outlines the research design and methods used throughout the research period. The data collection methods, including case study strategies and relevant justification for method selection are elaborated upon. The chapter further gives more insight on the country cases selected followed by methods of data analysis for both qualitative and quantitative data collected.

3.1 Research design

The research was undertaken in three phases, where the first phase consisted primarily of drafting the concept and literature review chapters (though this is an iterative process) and finalizing the methodology of the study. The second phase concentrated on active research (consisting of pilot fieldwork and main fieldwork), during which research on the required variables was undertaken. The final research phase consisted of results analysis, developing conclusions and recommendations. The research is primarily qualitative by design (descriptive studies) but incorporates quantitative data collection methods and exploratory work (case studies) (Robson, 2002: 87 164). Hence, the research follows a flexible design leaving room for further development during data collection (Robson, 2002: 164; Neuman, 2006: 158). Furthermore, flexible designs include fundamentals of evolution as the understanding of the research evolves (Yin, 2009: 94) and this design characteristic is evident in development of the research proposition, objectives and methods.

The qualitative aspect of the research was undertaken through the case study data, collected from various key informant interviewees in the selected three countries, complemented by focus groups where appropriate. The quantitative data was mainly collected through secondary data, such as existing statistics and financial reports/information mainly from the provider groups.

3.1.1 Evolution of objectives and methods

The research proposition is classified as conjunctive, which links the concepts under investigation. Conjunctive propositions are noted to generate multiple response categories, which further guide the research questions and objectives (Van de Ven, 2007: 117). The research was primarily centred around assessing the price-setting process and identifying the potential role of a regulator in Namibia, based on

understanding the price review processes in England and Zambia. Due to the exploratory nature of the research, the process was driven by "discovery" and was influenced by a various decisions based on research findings and hence resulted in "reformulation" (Glaser and Strauss, 1967 as cited by (Denscombe, 2003: 25; Smithson, 2008: 218)) of the proposition, objectives and subsequently the methods in a process known as "sequential discovery". This is further based upon a strategy of qualitative research; (Lincoln and Guba, 1985 as cited by (Denscombe, 2003: 25) described as "emergent and sequential" where findings of research determine the direction in which research develops. As a result of this strategy, the research draws on wide variation of data collected (including contradictions) to explain the "complexity" of the research.

3.2 Data collection methods

The research relied on several data collection strategies including surveys (document surveys; face-to-face and telephone interviews) and focus group discussions. The face-to-face interviews allowed for more detailed data from respondents, while the telephone interviews were used as supplementary and verification means rather than a primary source of data (Neuman, 2006:300-301; Yin, 2009: 102-103). These survey strategies were selected based on their reputation for producing 'honest' data, such that it equips the researcher to "immediately validate" the data through probing and getting direct responses as oppose to postal and internet questionnaires (Robson, 2002). The research capitalised on the major advantages of surveys which aim to get information "straight from the horse's mouth", and hence the results display "real-world observations" (Robson, 2002: 4; Van de Ven, 2007: 77; Miles and Huberman, 1994: 4-5,10). Furthermore, the research focused on case study approaches to obtain depth, detail and variety (to understand the 'bigger picture' from the research) (Yin, 2009: 4)

Photograph 2: Focus group discussion, with community members in Freedom land A. Source: R. Franceys, Windhoek, 2007

A non-probability sampling technique, purposive snowball sampling, was used throughout the research because the target group types were identified in advance, based on literature surveys, in terms of their relevance to the research and particular characteristics (Neuman, 2006: 220) such as knowledge of price-setting process and representatives of consumer groups.

The benefit of using the snowballing technique was mainly to get references to those informants that are familiar with the issues researched making it easier to discuss the topic and to get as much as possible information. The same technique was used with regard to obtaining the relevant documentation (or referred to those people that would have the documents). This technique also provided the researcher room to have "quality" interviews (due to credibility of referees or prior contact) with the interviewees, therefore the researcher did not require a statistically representative sample size, since the purpose of sampling was based on quality and not on quantity. In this sense, the research is classified as small-scale qualitative research (sample size between 30 and 250) (Denscombe, 2003:24). Furthermore, following characteristics of qualitative research, the sample size was not known from the beginning of the

research, though a relatively small sample size was anticipated (Neuman, 2006: 221-223), however data was gathered from a total sample size of 158 individuals from all case studies (see **Error! Reference source not found.** for detailed breakdown).

3.2.1 Case study strategy

A case study approach is selected primarily because it deals with the questions "how" and "why" with no control over events in the contexts of the investigated real-life ("naturally occurring") phenomenon (Yin, 2009: 10). Case studies are also commonly used for understanding relationships, experiences or processes in different disciplines, including socio-economics and development (Denscombe, 2003: 31; Smithson, 2008: 214). This study combines exploratory and descriptive case studies. In the exploratory cases, the questions "what" were more prevalent, whereas in the descriptive cases "how many and how much" questions were asked (Yin, 2003b). Error! Reference source not found. indicates the choice for case studies above other social research strategies.

Table 3-1 Relevant situations for different research strategies

Strategy	*Form of research Question*	*Requires control of behavioural events?*	*Focuses on contemporary events?*
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case study	How, why?	No	Yes

Source: COSMOS Corporation as cited by Yin, 2009: 8

Case studies are classified as comprehensive research strategies in comparison with the other strategies, because case study research includes investigations between real-life context and phenomenon that are not clearly defined dependent on multiple sources of evidence (including triangulation) (Miles and Huberman, 1994: 29; Yin, 2003b: 13-14,97). Contrary to popular belief, case studies can be conducted with

quantitative and qualitative evidence and should not be confused with ethnographic methods which are mainly based on qualitative data. To refine the case study further, an embedded multi-case approach was taken (Figure 3-1, Type 4), meaning that within each case, there are multiple units of analysis (Yin, 2009:60). The sampling size differed depending on country situations and logistical arrangements (Yin, 2003b: 52-53). Thus the main unit of analysis are the perceptions of stakeholders on the different country price-setting processes within the context of regulatory frameworks and consumer presentation with specific reference to the urban water and sanitation sector.

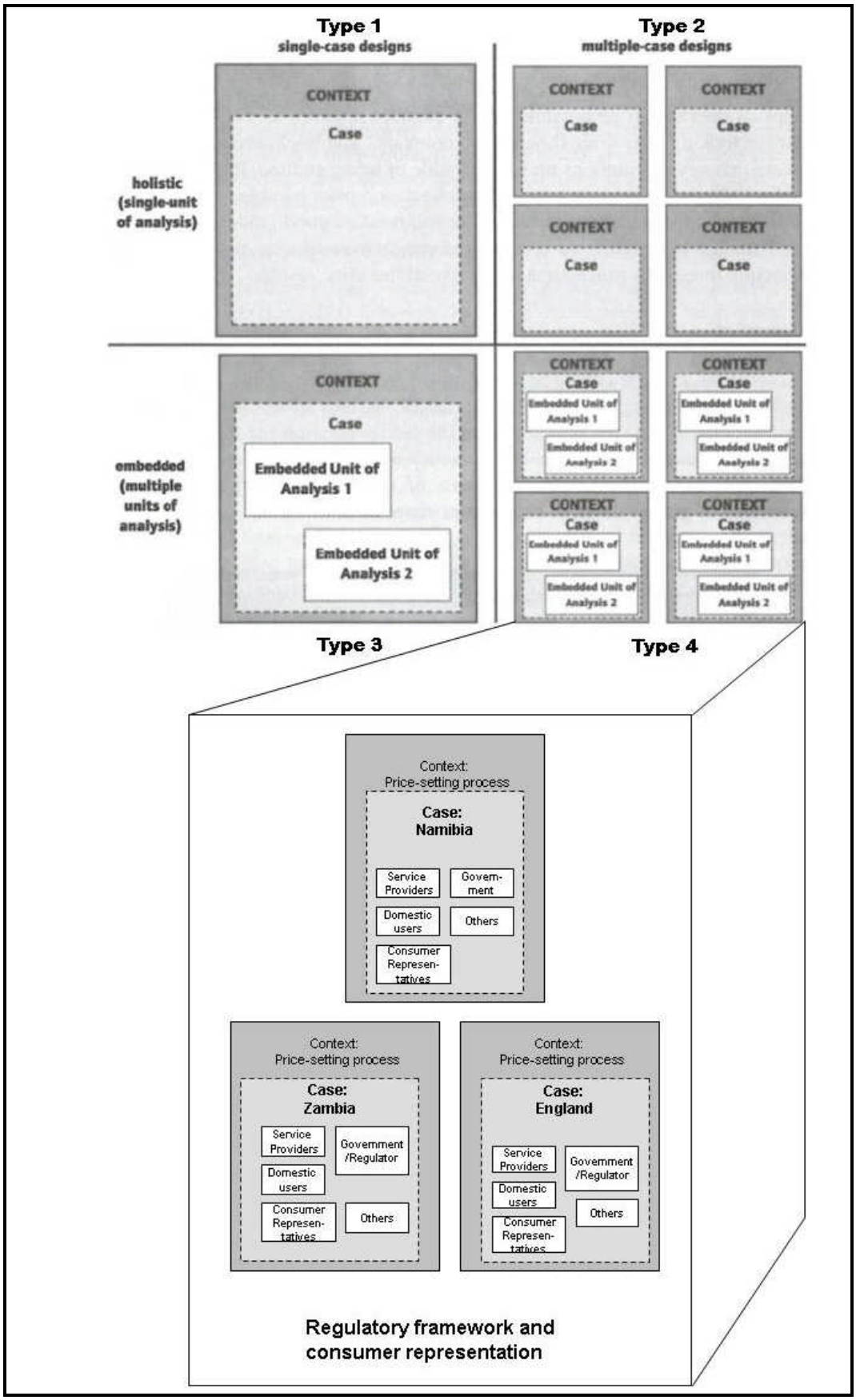


Figure 3-1 Basic types of designs for case studies. Source: Adapted from COSMOS Corporation as cited by Yin, 2009:46

The case studies in this research primarily comprises of documenting the perceptions of stakeholders, which is classified as "phenomenology" by Smithson (2008:215). In this regard, the research forms part of "interpretivist case studies", which also reflects on personal experiences of the stakeholders (Smithson, 2008: 216). Reliability of the research is ensured through detailed description of the research strategies and through repeating the strategies developed and modified from the pilot-fieldwork phase in the main-fieldwork phase in Namibia, resulting in similar findings and conclusions. In addition, the financial data obtained are re-calculated to ensure it is reliable. The reliability and construct validity (making use of "multiple sources of evidence") research test were built into the data collection phase to ensure research quality and to minimise errors and biases (Yin, 2009:41-45). Furthermore the research design is characterised as stable, dependable and predictable in accordance with Kerlinger and Lee (2000:642). Hence the research is classified under representative reliability (Neuman, 2006: 189).

The validity of the research design is subjective which is typically characteristic of interpretive research. In addition, the data triangulation method (as further explained in section 3.2.2) was part and parcel of the design to increase the validity of the research (Smithson, 2008: 221). The issue of generalisation in the context of case studies have been widely critiqued. However, this research falls within "analytic generalisation" category, as opposed to statistical generalisation, where the identified theory is linked with research findings can be generalised (Firestone, 1993: 17 as cited by Smithson, 2008: 223). In this case, the research makes use of principal-agent theory as part of the interpretive process (Smithson, 2008: 224).

3.2.2 Data needs and information sources

Different sources of information were collected during this study, which included documentation (unpublished reports, minutes of meetings, published reports, annual reports and newspaper clippings); archival records (service records, organisational records, maps and charts, lists of names and other relevant items, survey data); interviews (focused semi-structured interviews) and direct observations (Yin, 2003b:85-89). Detailed data needed from providers and other stakeholders is listed in Appendix C (and was used as a check-list during the study).

Table 3-2 Data needs and sources to address specific research objectives

Objectives	*Data/information needs*	*Data/information sources*
1.Identify specific lessons/experiences learnt from price-setting processes in selected countries, England and Zambia, to investigate possible improvements to the Namibian price-setting process	- price-setting processes (institutional arrangement including legal frameworks) - price-setting tools, performance indicators, enforcement sanctions and incentives - Service levels, types of water and sanitation facilities/options available and in use (including perceptions of services and providers)	- Annual reports from regulators and service providers - Sector reports -Consumer bills - Interviews (semi-structure questionnaires)
2.Understand the current price review process in Namibia, within the legal framework in terms of its capacity to deliver water and sanitation services to urban consumers (particularly poor households)	- Institutional relationships, roles and responsibilities - tariff determination process (who is involved and how?) -Consumer involvement in process	- Policies - Government reports and documents
3. Determine the affordability levels of water and sanitation services for urban poor in Namibia and the potential role of cross-subsidisation amongst domestic water users	- Income and payment levels for services from low, middle and high income users - Service levels, types of water and sanitation facilities/options available and in use (including perceptions of services and providers) -Costs of service provision -Available subsidies for urban poor	- Consumer bills - Annual reports from service providers (emphasis on financial reports) - Socio-economic statistics
4. Identify the perceived level of transparency and stakeholder involvement required for the price-setting process in Namibia	-perceptions of stakeholders on: - role and expectations of potential regulator - level of preferred access to information - level of preferred stakeholder involvement	- Interviews (semi-structure questionnaires) - Verification workshop -Focus-group discussions
5. Identify the appropriate regulatory framework needed to improve current price-setting process in Namibia, balancing the needs of all stakeholders but with a bias towards the needs of the urban poor, to inform relevant policy accordingly	- combination of above mentioned data needs	- Interviews (semi-structure questionnaires) - literature on regulatory frameworks -Literature on country experiences on similar processes and issues

Access to information, especially financial information was relatively limited in Namibia which hampered the data collection process - but was also a research finding

in itself with regard to the concerns of information asymmetry and transparency, at the core of the research question.

During interviews audiotapes were used, depending on the permission of interviewees, in conjunction with note-taking by the researcher. Ethical issues such as obtaining permission of interviewees before the interviews; privacy and confidentiality (or anonymity) was highly considered and adhered to according to request from interviewees (Robson, 2002: 65; Silverman, 2006: 319-320; Punch, 2000: 59; Kerlinger and Lee, 2000: 444-445). Appointments for interviews were arranged with providers, non-domestic users and consumer representatives in advance, but domestic users were asked to participate "on the spot".

The data triangulation (based on multiple sources of evidence-see Table 3-2) approach was used in conjunction to a workshop to validate/verify information from interviewees. It improved the quality and accuracy of findings (Robson, 2002: 174 371). Data triangulation was undertaken by collecting data from various sources with the aim of verifying certain facts (Yin, 2003b: 97-99), while the information gathered from the pilot fieldwork, as well as information from other case study countries, was presented during a participatory workshop in Namibia as part of the triangulation process. The workshop focused on four major questions/issues used in marketing research (Sansom et al., 2004: 15): overview of current situation (where are we now?); lessons learnt from other countries (where do we want to be?); options for regulator (how do we get there?); identification of issues (indicators) to consider (how do we ensure success?). Participatory methods were used during the workshop, making use of 'zopping' (German-led method to engage all workshop participants, making use of colourful cards, and clustering ideas) materials such as pin boards, brown paper, and sticking dots. The questions had 5 options each and participants were asked to use the sticking dots to 'vote' which options best suit the Namibian conditions based on results and comparisons with other case countries. The justification for the various choices was discussed in detail, forming part of a 'rich' source of information.

3.2.3 Interviews

Semi-structured interviews were conducted with the use of "interview guides" (Bernard, 2002: 205) which were tailored for each target group (Appendix D), though

certain guide questions were similar for all target groups, especially regarding issues on the price-setting processes, potential role of regulator, levels of information requirements and stakeholder involvement.

Specific semi-structured guides with a combination of open and closed questions (1 hour maximum duration) were developed to fully grasp their roles and perceptions on the price-setting process in the water and sanitation service sector. The interviews were mainly conducted face-to-face to allow for further probing, though telephonic interviews were also conducted to those critical interviewees that could not be reached. Interviews are noted to gather invaluable information compared to other methods (Yin, 2009: 106-107). Personal interviews provided in-depth knowledge on justifications for actions, beliefs and attitudes of respondents that can enhance the researchers understanding of the research problem, hence semi-structured interviews are referred to as "depth interviews" (Kerlinger and Lee, 2000: 602-603 694).

Focus group interviews were conducted with a group of domestic water user groups from informal areas (minimum 2, maximum 10), "to generate diverse viewpoints" (Smithson, 2008; Kerlinger and Lee, 2000: 700).

Table 3-3 Details of focus group discussions undertaken in selected informal areas in Windhoek

Interview data	*Location*	**Number of participants**	
		Male	Female
12 /05/07	Freedom land A	2	1
16/05/07	Havanna Proper	0	3
26/11/08	Greenwell Matonga C	2	8
26/11/08	Kapuka A	2	0
27/11/08	7de laan	1	1
27/11/08	Onyika	3	2
Total		13	12

The focus group discussions were pre-arranged with the assistance of the City of Windhoek community development officer. The discussion was a maximum of 2

hours, but varied from group to group. Focus group discussions are also noted to be an effective way of drawing out user "perceptions, preferences, practices and attitudes (Sansom et al., 2004:25). The researcher facilitated the discussions and enabled all participants to share their opinion. The discussions followed a flexible yet structured manner, to make the group feel relaxed and at ease. Focus group discussions also allow for group interaction on the researched topic (Yin, 2009: 108-109; Smithson, 2008:358; Rosenthal and Rosnow, 2008: 167), which is interesting to observe and also tells a 'story' on its own. Making use of focus groups typically falls within flexible research designs, using semi-structure interview guides to lead the discussion (Smithson, 2008: 360).

Translators (for Herero and Oshiwambo languages) were used during interviews in Namibia with certain domestic user groups. The researcher speaks Afrikaans and Nama/Damara, thus at least 5 language groups were covered. These are the majority of the languages spoken in Namibia and since English is the national language, the majority of interviewees were conversant in this language.

3.2.4 Identification of interviewees and fieldwork schedule

The study targeted six different audiences, namely government (policy decision makers), regulator (where independent), service providers, consumer representatives, users (domestic and non-domestic) and other interested groups (NGOs, private consultants). These are the 'actors' identified to be involved (or influenced) in the urban water and sanitation price-setting processes based literature (Rouse, 2007: 94-98; Franceys and Gerlach, 2008: 15-17). Key informants ranged from senior management to chairpersons of consumer groups, including retired officials.

The pilot fieldwork period took place over 2 months (April-June 2007). The purpose was to test the feasibility of the questionnaires for clarity and appropriateness to ensure that the correct data was collected in the best possible manner considering resources and time. The pilot period provided conceptual clarification for the research (Yin, 2003b: 79). A further 4 months (September-December 2008) was spent in Namibia as part of the main field work period, while July-August 2008 was used as fieldwork period in England and October-November 2008 in Zambia to collect data. A total of 158 individuals were interviewed during the research period (Table 3-4).

Table 3-4. Fieldwork periods in case countries and sample size of major target groups.

Fieldwork period and target groups	***Namibia***	***England***	***Zambia***	***Namibia***
Fieldwork period	Apr-Jun 2007	Jul –Aug 2008	Oct-Nov 2008	Oct-Dec 2008
Providers	NamWater (3) City of Windhoek (11)	Anglian Water (3)	Lusaka Water and Sewerage Company (4) Kafubu Water and Sewerage Company (6)	NamWater (2) City of Windhoek (4)
Government	MAWRD (4) MLGHRD (1)		MLGH (3)	MAWF (3) MLGHRD (1)
Regulators		Ofwat (2)	NWASCO (2)	
Other orgs	NGOs (4) Consultants (4)		Donor (1) NGOs (1)	NGOs (6) Consultants (3)
Users	Industry (2)	Local users (9)	Local users (13)	Local users (43)
Consumer representatives	Community Committees (6)	CCWater (4)	WWG (1)	Community committees (12)
Total interviewees	35	18	31	74
Sampling methods	Purposive Snowballing sampling Face-to-face interviews Focus Group discussions	Purposive Snowballing sampling Face-to-face interviews	Purposive Snowballing sampling Face-to-face interviews Focus Group discussions	Purposive Snowballing sampling Face-to-face interviews Focus Group discussions Verification workshop

Note: Figures in brackets indicate number of interviewees (which is a combination of both focus group discussions and individual interviews) .

The data collected from the pilot fieldwork period formed an integral part of the result analysis and guided the research focus. In the Namibian case, as part of the triangulation process some of the interviewees from the pilot fieldwork were interviewed again, however in the majority of cases new informants were identified and interviewed. During the main fieldwork in Namibia, the non-domestic users were not interviewed again, due to non-involvement/interest in the price-setting process as indicated during the pilot fieldwork. The main fieldwork also focused on interviewing local users in Namibia in addition to consumer representatives, which was not the

case during the pilot fieldwork. The sample size was determined by reaching saturation point, such that no new information (value) was generated from interviews (Robson, 2002: 192).The English and Zambian case study sample sizes were mainly limited by available resources.

3.3 Selection of study area and case studies

The study was highly dependent on key informants and individuals, but also focused on specific urban-poor areas in the selected countries using primarily semi-structured interview questionnaires. The primary focus of the study was on Namibia, however, for guidance, another southern African country (Zambia) was selected on the basis of having an established regulator, to identify relevant lessons learnt, to objectively analyse and conclude based on the study objectives. Furthermore it is envisaged that the comparative study could be used as a basis for future comparative purposes regarding regulatory processes within southern Africa as a whole. Throughout the study, a third country case was investigated reflecting on the England and Wales price-setting process as an example of incentive-based regulation with participation with all relevant stakeholders. Figure 3-2 highlights the three case countries where the research was conducted. More specifically, the cases were primarily selected based on interest from the researcher in addition to three other principle reasons as categorised by Denscombe (2003:34):

- *Extreme instance*: the Namibian case is characterised by extreme water scarcity and skewed income distribution, making price-setting process more complex compared to other cases

- *Least likely instance*: the theory of principal-agent challenge is described as more challenging in an utility operating in a developing country with extreme conditions, such as in Namibia

- *Pragmatic instance*: England and Zambia case study selections were done due to presence of well established economic regulators from which lessons on price-setting processes could be deduced easily, as well as on basis of convenience in terms of resources and logistical arrangements. The latter choice was based on regional (southern African) significance related to the operation of the economic regulator.

The reason for selecting 3 case countries (hence multiple-case design as oppose to single case study) was to strengthen the research quality (Yin, 2009:53). The research replication logic is further based on theory, such that the different case results were anticipated to be different and in some cases contrasting. More (more than the selected 3) would have hindered the researcher's ability to conduct detailed research and therefore only 3 cases were selected to enable quality research and to fully understand the price-setting processes in these countries.

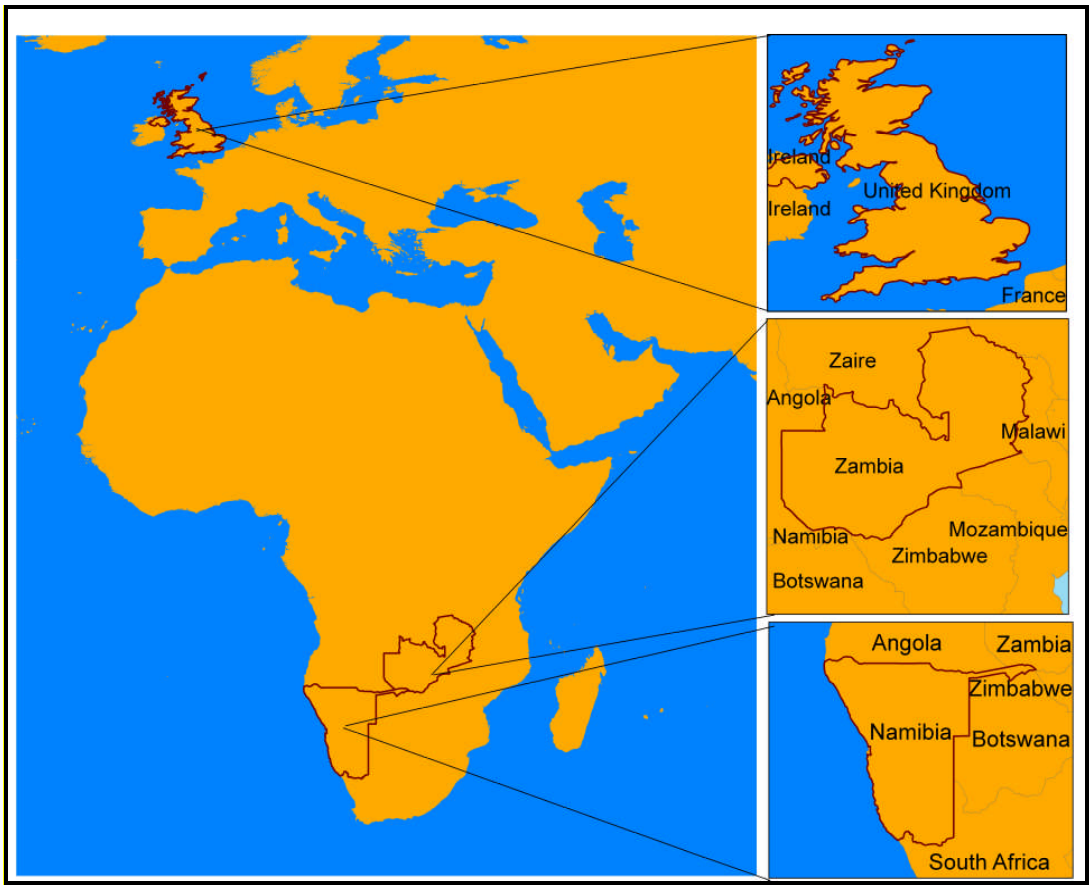


Figure 3-2 Map highlighting the three countries (Namibia, Zambia and England) selected as case studies. Source: Created in Arc-GIS by Shamal Mohammed, Cranfield University, 2009

3.3.1 Case study I: Namibia

The primary focus area was Windhoek, the capital of Namibia, with selected urban-poor areas highlighted. Windhoek has an estimated population of 250,000 with a rapidly increasing (5% urbanisation rate per annum) population growth, including water demand challenges (NWRMR, 2000: 22). Furthermore, Windhoek serves as the administration centre in the sense that it is home to all headquarters, such as governmental offices, NamWater and City of Windhoek (municipality), hence making

it ideal for the purposes of this research. More interestingly, this city is located in the centre of the country, making it one the most difficult areas to access water, hence one of the areas with very limited water resources, predominantly dependent on groundwater sources.

Figure 3-3 shows the map of Windhoek demarcating the residential areas, primarily based on income levels. The selection of visited informal areas were facilitated by City of Windhoek officials, based on the availability of different types of facilities (for example pre-paid meters, communal taps, flush toilets or VIPs). The idea was to visit areas with different facilities, to understand affordability levels and related challenges faced by informal area residents. A sample from middle and high income area residents were also selected to understand the gap between 'rich and poor' and the service differentiation.

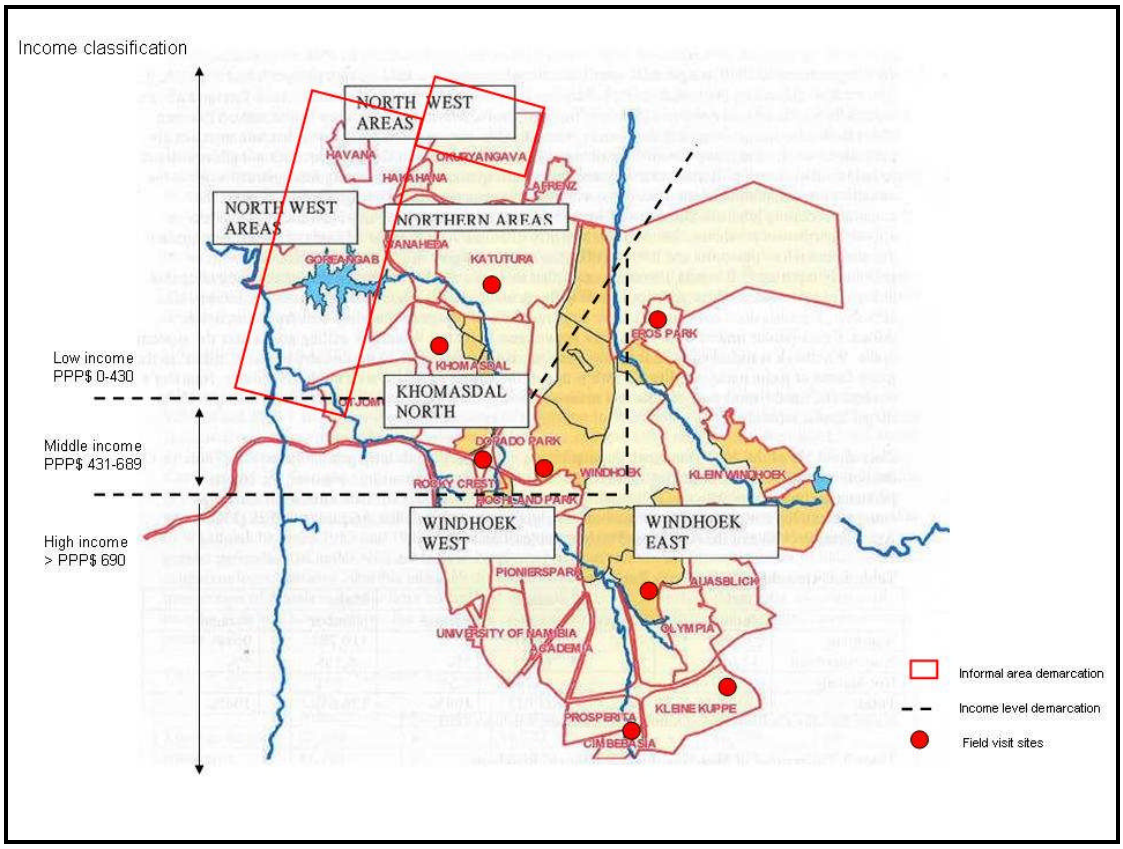


Figure 3-3 Map of Windhoek residential areas. Source: adapted from City of Windhoek, 2001. Income level demarcation estimated based on results.

It should be noted that there are exceptions within the boundaries of the indicated income level demarcations, such that there are high income residents living within the low and middle income bands, though the map depicts the average income levels.

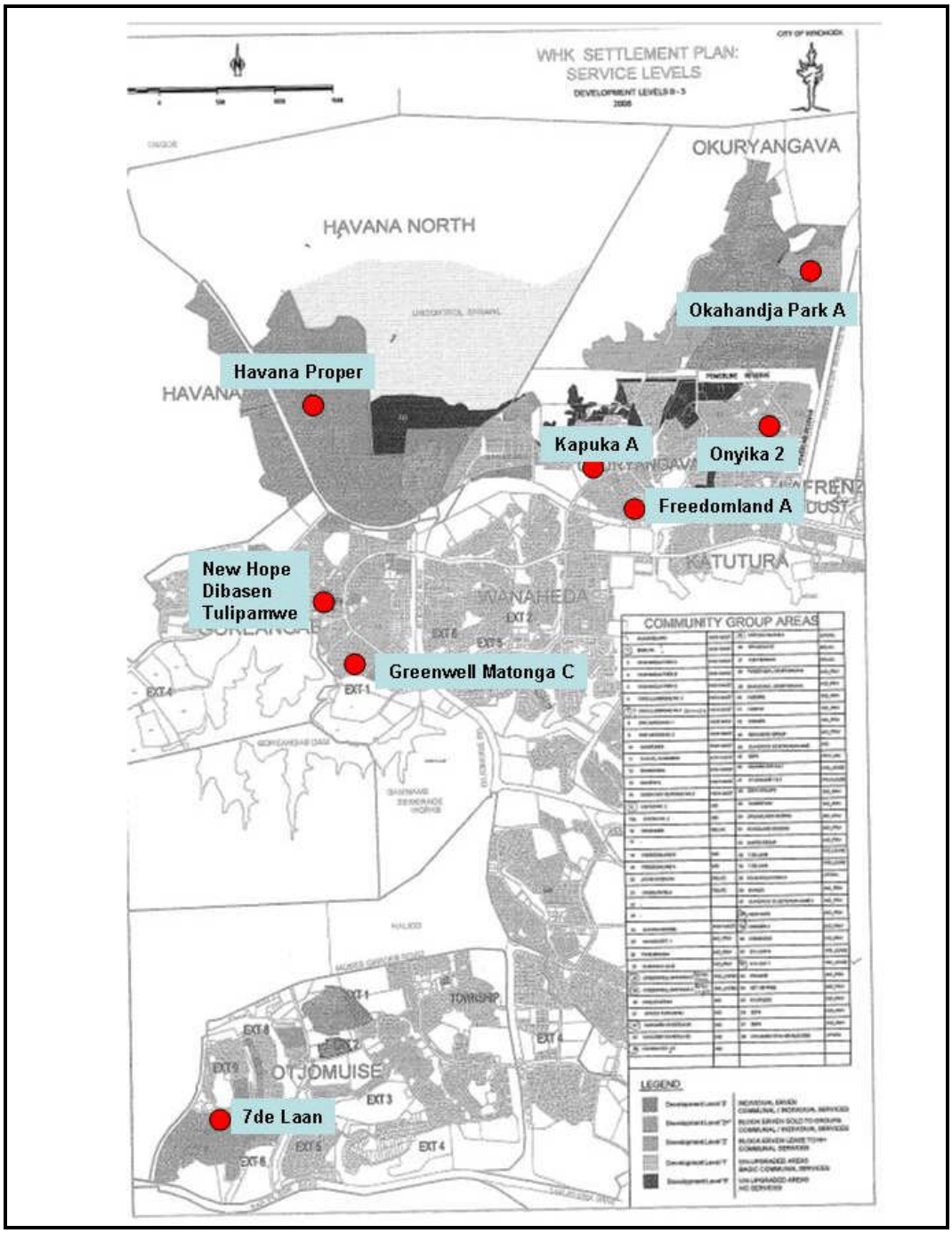
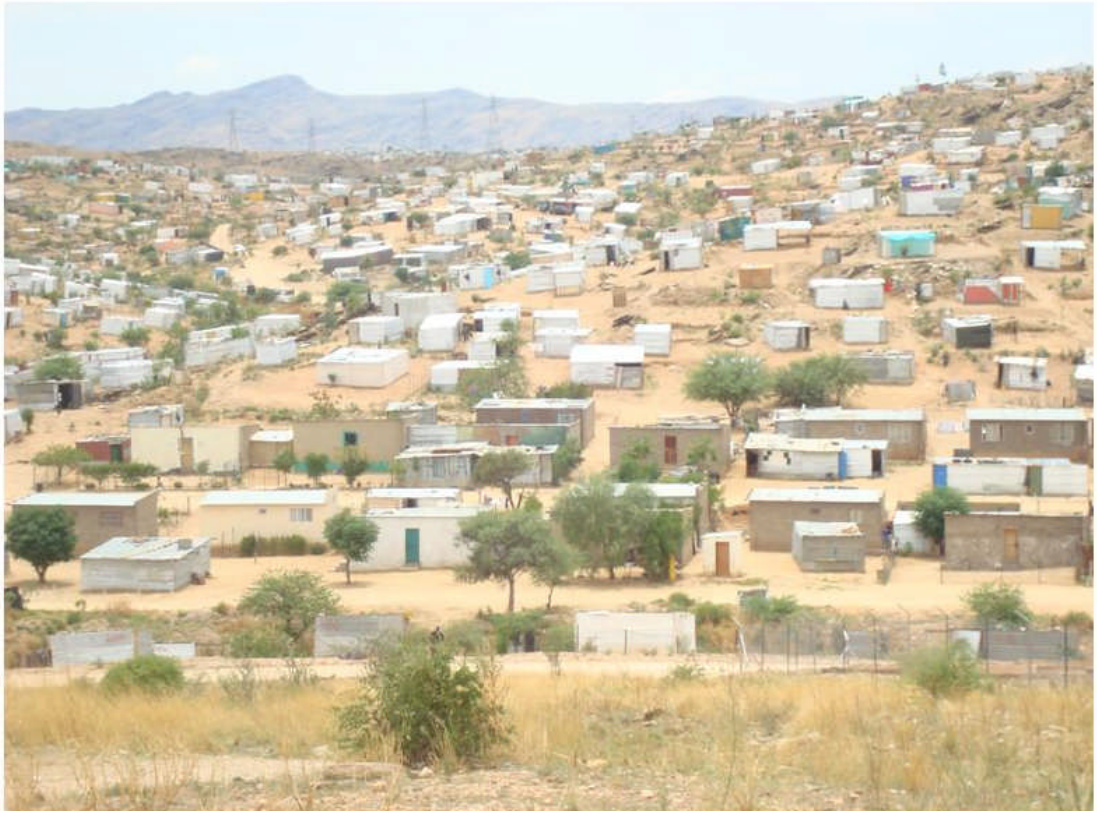


Figure 3-4 Informal area map of Windhoek, with visited areas highlighted in red dots. Source: City of Windhoek, 2008

There are 32 informal areas in Windhoek, located on the periphery of the north western part of the city. Figure 3-4, further shows the informal areas, with the visited 8 informal areas.



Photograph 3: Lay-out of Havana informal area. Source: Author. Windhoek. 2008

3.3.2 Case Study II: Zambia

The majority of the interviews took place in Lusaka in Zambia, though Ndola, a mining town in the copperbelt area was also visited, with the aim to understand the differences in tariff setting (if any) depending on characteristics of towns. Kafubu Water and Sewerage Company and local users in informal areas, were interviewed in Ndola. Lusaka share similar characteristics with Windhoek, in the sense that it is the administrative centre, as well as the most populated in the country, with the exception of the severe water challenges, though their challenges are more management related. Figure 3-5, indicates the areas visited in Zambia. The visited urban poor area, Kanyama (indicated to be the largest informal settlement in Lusaka), is located within the centre of Lusaka.

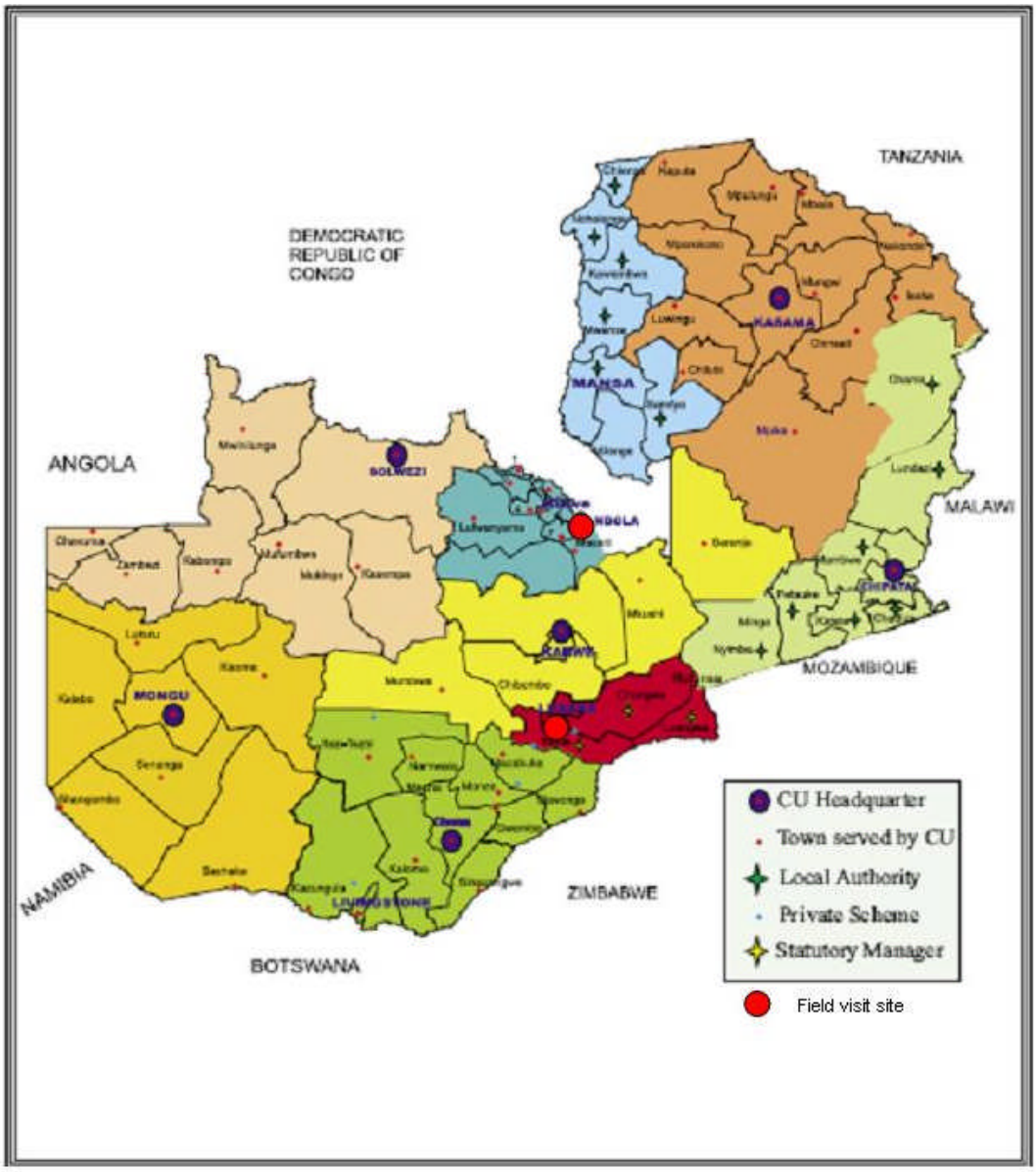


Figure 3-5 Zambian field visit sites (Lusaka and Ndola), indicated in red dotted blocks. Source: adapted from (NWASCO, 2008:iii)**.**

3.3.3 Case study III: England

The fieldwork visits in England were mostly conducted in Birmingham, where the independent regulator for water and sanitation services, Ofwat, and the Consumer Council for Water (CCWater), is based. This included several trips to both conduct interviews with selected individuals, but also to attend some of the public briefing meetings organised by CCWater or Ofwat. Anglian Water Company's headquarters were visited in Huntingdon, being the company that provides water in the driest part in England, facing significant climate change related challenges. This was the main reason for selecting the company as part of the sample.

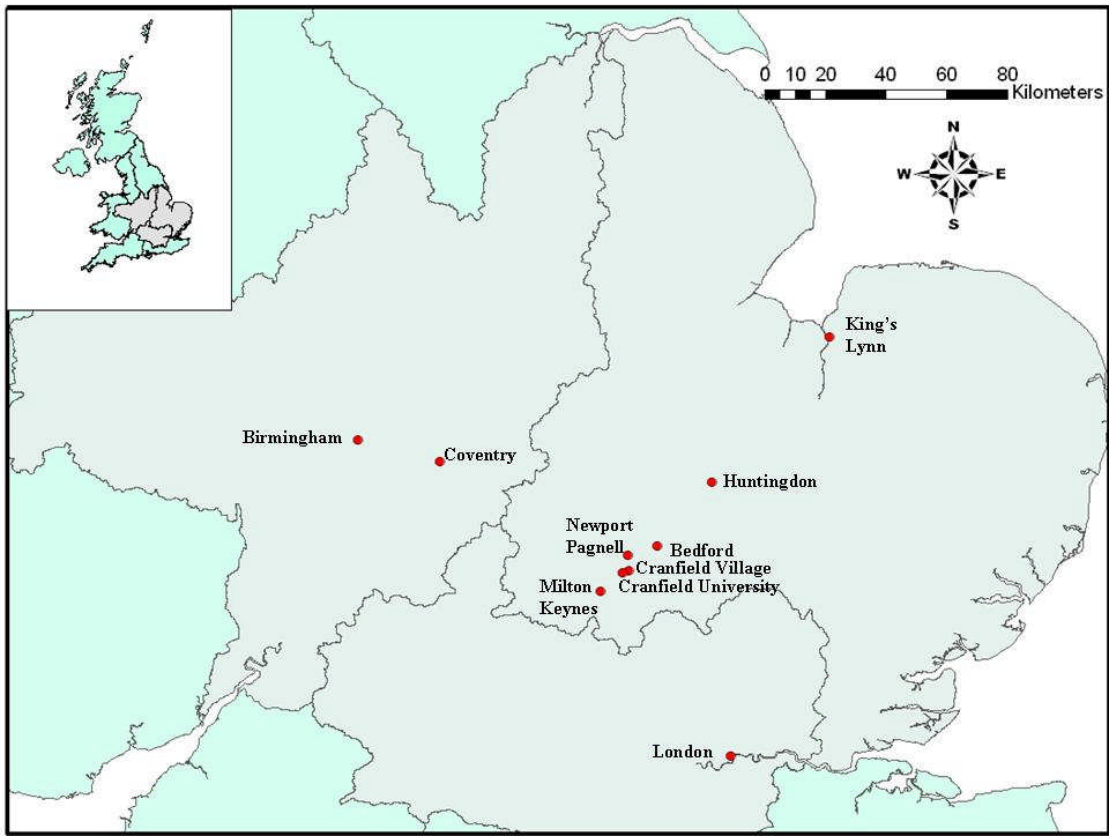


Figure 3-6 Places where interviews were conducted in England. Source: Map created in GIS-Arc by Andre Daccache, Cranfield University, 2009

Further interviews with selected CCW members were conducted in London and King's Lynn. Figure 3-6, indicates the areas visited in England. Water users interviewed were from Cranfield village, Newport Pagnell and Bedford towns, which were selected for convenience and limited resource purposes, based on surrounding areas of researcher's location (Cranfield University).

3.4 Data Analysis

Initial analysis and interpretation of data was started during the data collection period which enabled the researcher to make necessary adjustments and evaluations regarding data collection process. This also assisted the researcher to identify alternative or additional information that can be collected to enrich the data set (Miles and Huberman, 1994: 90-91). Qualitative data analysis primarily comprised of three main approaches namely cross-case synthesis, explanation-building and time-series (Yin, 2009:136-160 (in correspondence with flexible design) as explained in Table 3-5. Other analytical techniques involves pattern-matching and developing logic

models (Yin, 2009:136-150), however these were not suitable for the purpose of this research and were thus not selected.

Table 3-5 Explanation of application of analytical techniques.

Analytical technique	**Application**
Cross-Case Synthesis	- comparing the Namibian price-setting process with that of England and Zambia *(*relating price-setting processes with those described in theory and linking it with theoretical principles) , making use of tables (word), matrixes, flow-diagrams and conceptual diagrams
Explanation building	- Explanations for price-setting process experiences (as a result of a series of stakeholder interactions) are elaborated upon, so as to draw specific lessons for application to the Namibian price-setting process - Building explanations based on theoretical basis of the research and revising it (and comparing details) in the context of the various country processes.
Time-series	-"How"- and "why"- questions about relationships & changes of events over time -Comparing financial trends of various water service companies in the various case countries

Source: Adapted from Yin, 2009:136-149

Cross-case synthesis was done by dealing with each country case separately first, before looking at comparisons between country processes, which enabled researcher to look for cross-case patterns (Yin, 2003b:133-135) through assembling word tables of various cases (Yin, 2003a: 145). Cross-case analysis in combination with literature review further strengthened the external validity of the research. Figure 3-7 indicates the 'road map' which was followed, based on the conceptual framework.

The questionnaires used during the interviews were numbered and entered (in classified groups) using Microsoft Word, following the interview guide outline, entering different responses (based on numbering codes) per questions (Appendix E). Diagrams and flow charts were drawn using Microsoft Visio, 2003 software.

Microsoft Excel was used for the financial data analysis. This included transcribing all financial statements (balance sheets, income statements and cash flow statements) from annual reports (hard copies) into pre-determined format in Microsoft Excel. All statements were converted to real time figures (further converted to Purchasing Power Parity International dollar (PPP$) rates) to facilitate the conversion process to present-day values as much as possible. Calculating and interpreting selected financial ratios, formed part of the major analysis process, to understand the financial performance of service providers to the extent to which the public domain information allowed.

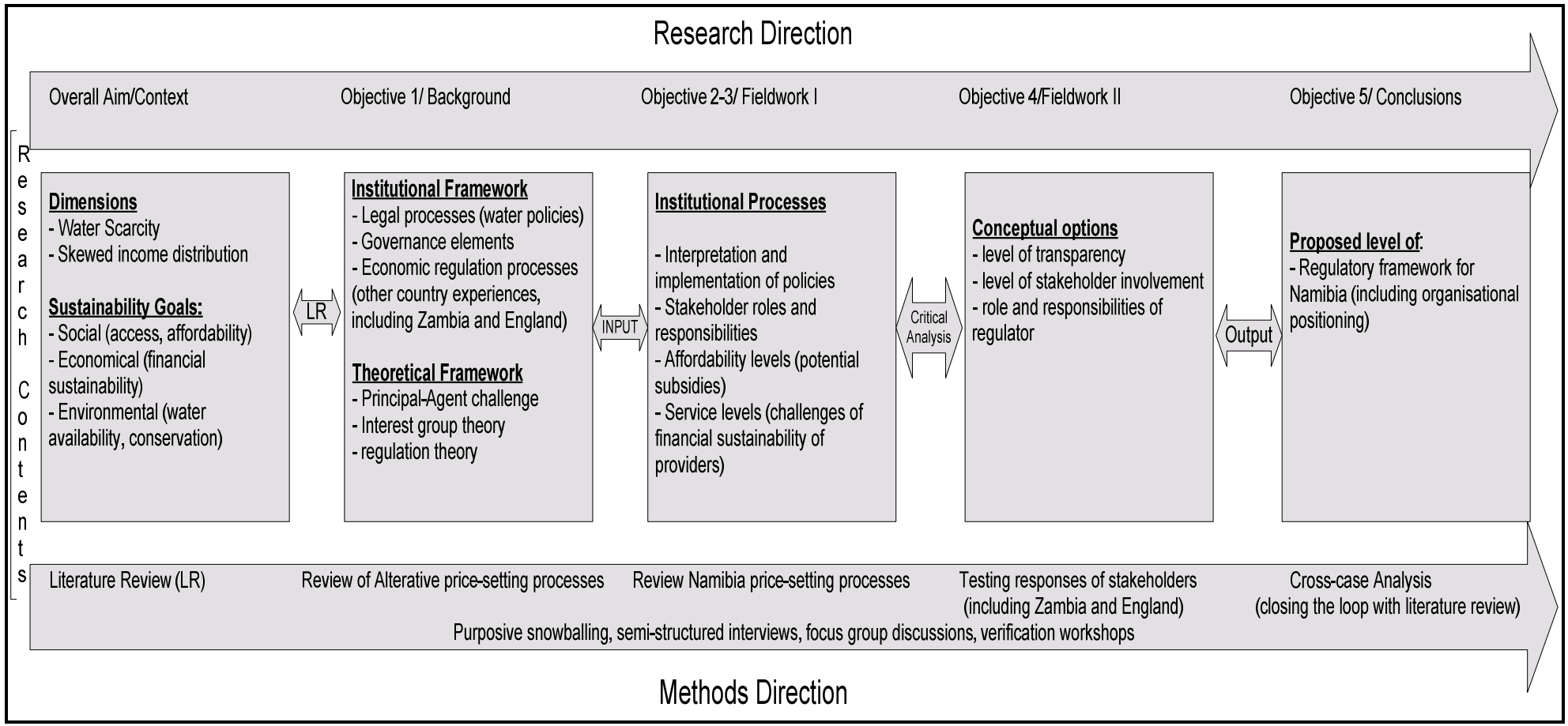


Figure 3-7 Research 'road map', including research and methods directions.

The research followed a conceptual framework, which represents the researcher's understanding of the research and essentially guided the researcher throughout the process, acting as a 'road-map' for the research (Figure 3-7). The analysis also included a significant amount of "narrative reporting", which enables the reader to understand and have a 'feel' for the research process and results (Smithson, 2008: 219).

3.5 Critique of methods

3.5.1 Limitations on type of information gathered

Secondary data collection mainly composed of unpublished reports, including government, local authority and other organisational reports. Much of the information used for the England case were found on the internet, due to the very advanced and 'more transparent' regulatory culture, including the latest reports from the companies and the regulator. The biggest challenge for this research however was to access detailed financial data in Namibia and Zambia, which essentially resulted in an adjustment to the research focus. In this regard, the research experienced the usual 'case study related challenges' such as access to information and lack of certain key informants (Yin, 2009: 62), to take forward certain ideas, however this was also viewed as an opportunity such that it lead the researcher in a very interesting 'path' of discovery.

3.5.2 Limitations on research methodology

The researcher was aware of the various caveats of the research design and strategies selected and as such many were addressed with counter methods. Though focus group discussions are critised for being an "unscientific" way of collecting data, it does generate a wealth of information that cannot be obtained through quantitative data collection methods and it serve as a good tool for understanding peoples' needs and perceptions (Kerlinger and Lee, 2000: 701). Furthermore, Purposive sampling is mostly selected based on "informativeness" as opposed to "representativeness" and hence is the most appropriate design for this research (Neuman, 2006: 158; Smithson, 2008: 223). This method is critised for its potential to be bias. To address these limitations, data triangulation methods were primarily used as well as multiple sources (both qualitative and quantitative) of evidence and stakeholders to reconcile

and verify information provided by the informants. Furthermore, cross-case synthesis heavily relies on argumentative interpretation of collected data as oppose to numeric evidence. In this case the researchers' prior knowledge and ability to develop strong arguments supported by the data collected also facilitated the data collection and analysis process to address the 'how' and 'why' questions.

3.6 Chapter summary

The study is dependent on both qualitative and quantitative data collection methods, and is hence classified as descriptive and exploratory case study research. It has been undertaken by reflecting upon equitable water provision based on financial and environmental sustainability goals, under extreme conditions of water scarcity and income distribution, and therefore entailed critical literature review of existing information to understand the current price-setting process, which was supplemented by field work periods (April-June 2007 (Namibia); July 2008 (England) and October-December 2008 (Namibia and Zambia). Both the England and Wales and Zambian regulators have been used as models of economic regulators world wide and thus these systems were studied to understand the price-setting process dealing with private and public utilities as an alternative to public water utility regulation in Namibia.

The qualitative data of the research was gathered primarily through semi-structured interviews and focus group discussions. Matrix analysis as part of template analysis approaches were used to analyse the data, resulting in tabular and diagrammatic presentations of information. Graphical representations were also used to analyse financial data.

The subsequent results chapters elaborate on responses from the 158 respondents across, England (18) and Zambia (31) and Namibia (109).

Chapter 4: Water pricing processes in England and Zambia

This chapter draws upon price-setting experiences from England[2] and Zambia to understand the processes involved. The cases of England and Zambia are highlighted as countries with independent regulators driving the price-setting processes with private and commercial utility companies as the major water and sewerage service providers, with particular emphasis on Anglian Water (England) and Lusaka Water and Sewerage Company (public, corporatised) and Kafubu Water and Sewerage Company in Zambia. The institutional arrangements (including legal frameworks), regulatory processes and tools are discussed in the light of perceptions of the major stakeholders about the process and services. The views of 49 stakeholders are taken into consideration for this chapter.

4.1 England case study: Institutions, Roles and Relationships

Similar to most countries, the UK underwent several policy and institutional reforms within the water sector. Local authorities were replaced by regional water authorities in 1974 to provide water and waste water services in ten regions. The Government remained responsible for setting standards and norms, while the regional water authorities were responsible for several tasks with the aim of facilitating an integrated catchment management approach. These included service provision, application, monitoring and enforcement of regulatory standards as well as being environmental regulators (including regulating themselves and other stakeholders). This situation presented various irregularities due to their dependence upon government such as a decrease of investment, political influence within service provision and improper regulation of services. Recognising these difficulties, service provision and associated assets were privatised in 1989 (after various contentious public debates) whilst environmental and drinking water regulation remained the responsibility of public

[2] The regulatory system is officially for England and Wales collectively, but for the purposes of this research it will be referred to as England throughout this study.

bodies. In this regard, segregation of functions became the key feature of the UK organisational and institutional arrangement. The Secretary of State for the Environment, Transport and Regions[3] and Secretary of State for Wales[4] became primarily responsible to give effect to standards and requirements, based on European Commission standards, in UK legislation as well as to give legal guidance to the Environmental Agency; independent regulators and private service providers with specific functions and responsibilities described in Table 4-1 R (Summerton, 1998).

[3] Now DEFRA

[4] Now the Welsh Assembly Government

Table 4-1 Roles and Responsibilities of various institutions within the water and wastewater service provision sector in the England

Function	***Responsible institution***	Roles and Responsibilities
Application of standards, monitoring and enforcement	Department for the Environment, Food and Rural Affairs (DEFRA)*	- Improving the environment and integrating environment with other policies
	Drinking Water Inspectorate (regarding drinking water)	- Ensures drinking water quality conforms with regulatory requirements
		- Enforcement action and prosecutions for delivery of unfit for human consumption water
	Environment Agency (non-departmental public body of DEFRA)	- Protection of water environment (prevent and control abstraction and discharge of water pollution)
		-Enforcement action and prosecution powers over abstraction licences and discharge consents
	Natural England (coalition with English Nature, Countryside Agency and Rural Development Service). Public body*	- Conserve and enhance natural environment of English countryside*
Economic regulation of private service providers	Water Services Regulation Authority (Office of Water Services - OFWAT)	- Limit the prices of private water suppliers and oversee efficient service delivery
		- ensure financeability of companies*
		- customer protection*
		-monitoring and enforcing performance standards*
		-promote competition among companies*
Provision of water and waste water services	- Private companies (one for each of the 10 regions)	- operate under licence (transfer of operational assets used for service provision)
Customer representation	Consumer Council for Water (independent body)*	-represent interest of customers in relation to price and quality of service from water companies

Source: (Summerton, 1998),* (Anglian Water Services, 2008a: 7)

The bodies (regulators) responsible for activities in England and Wales are distinctive for being "politically-independent" while operating under set legislation to ensure that companies provide their functions efficiently in accordance with specified standards

and prices in the interests of all stakeholders, customers and society (Cashman, 2006: 490-494).

Privatisation was marked with a rapid increase in prices due to the increased demand of quality services, which required huge increase in investment. Increase in investment in "privatised transmission and treatment of water and wastewater" ranged from £3 billion (PPP US$ 2 billion) in the early 90s to £50 billion (PPP US$ 32 billion) by 2005 (Byatt, 2004.). Consequently this resulted in an increase in consumers' bills by an estimated £100 per household per year (PPP US$ 66) between 1990 and 2005 for better quality water and wastewater. However, the incentive based regulatory approach also delivered an increase in efficiency and prices eventually reduced towards the year 2000 following the 1999 second quinquennial price review. This period also marked the time for legislative changes such as banning disconnections due to non-payment of water service related bills, as demanded by the new incoming government (Byatt, 2004.). It is clear that there is still a role for political involvement, even where there are semi-autonomous, 'independent', regulators.

4.2 Providing Water and Sanitation Services

Ofwat regulates 10 private water and sewerage companies (the previous water authorities) and 13 private water only companies (the remnants of a much earlier, and very long-lasting, private sector approach to water supply in England) through ensuring compliance with legal instruments as well as their respective licence requirements. This enables the regulator to exercise comparative competition amongst these companies, taking into account various differing conditions, such as geological and geographical conditions, that are not controllable by the companies. The comparative competition indicators include evaluating the costs (both operating and capital); level of service and customer care services (Byatt, 2004.).

For the purposes of this study, only Anglian Water Services Company was investigated. The focus of the interviews was on how the company sets tariffs and prepares themselves for the price review period. At the time (July) of the interviews, the company was in the process of submitting draft business plans to Ofwat, the regulator as part of the Price Review for 2009, for the next 5 years. The perceptions of

the interviewees (4 senior officials) regarding the price-setting process and service provision were gathered.

4.2.1 Anglian Water Services

The 27,500 km^2 Anglian water region, is recognised as the largest and driest region (compared to other water company regions) with an annual rainfall of 600 mm (Anglian Water Services, 2008a: 5). Anglian Water Services Limited company forms part of Anglian Water Group Limited and serves 5 million domestic and commercial customers in east of England and Hartlepool (Figure 4-1) (Anglian Water Services, 2008a: 4).

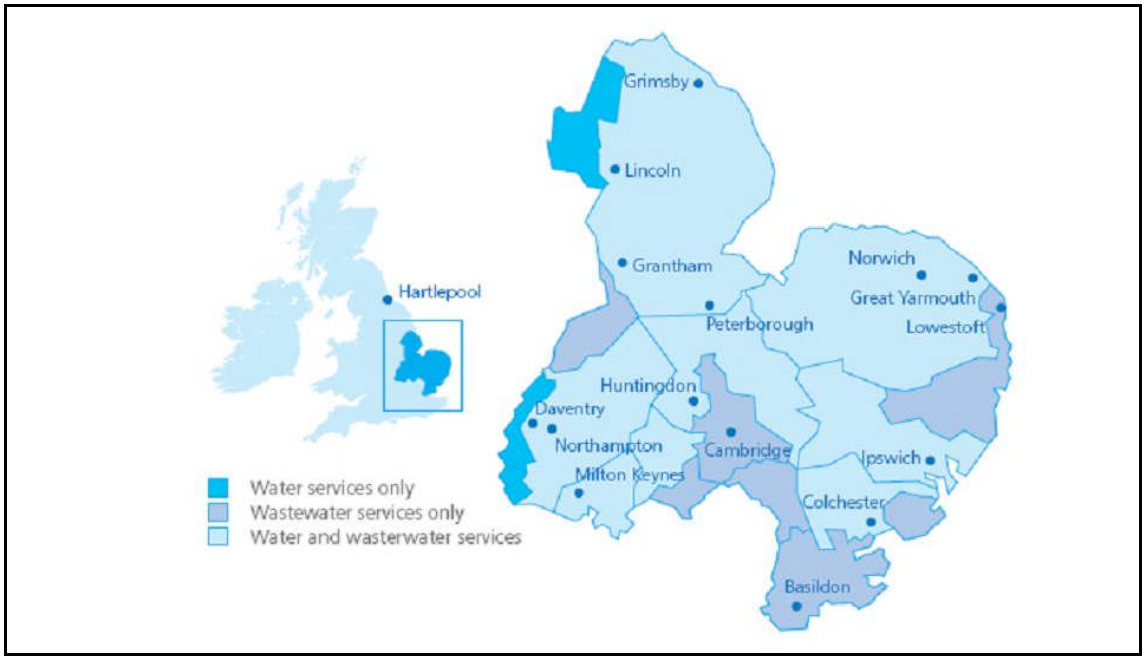


Figure 4-1 Map covering Anglian Water Service areas. Source: (Anglian Water Services, 2008b: 6)

The company is projecting a water deficit within the next 5 years (Figure 4-2), unless other sources of water supply is developed.

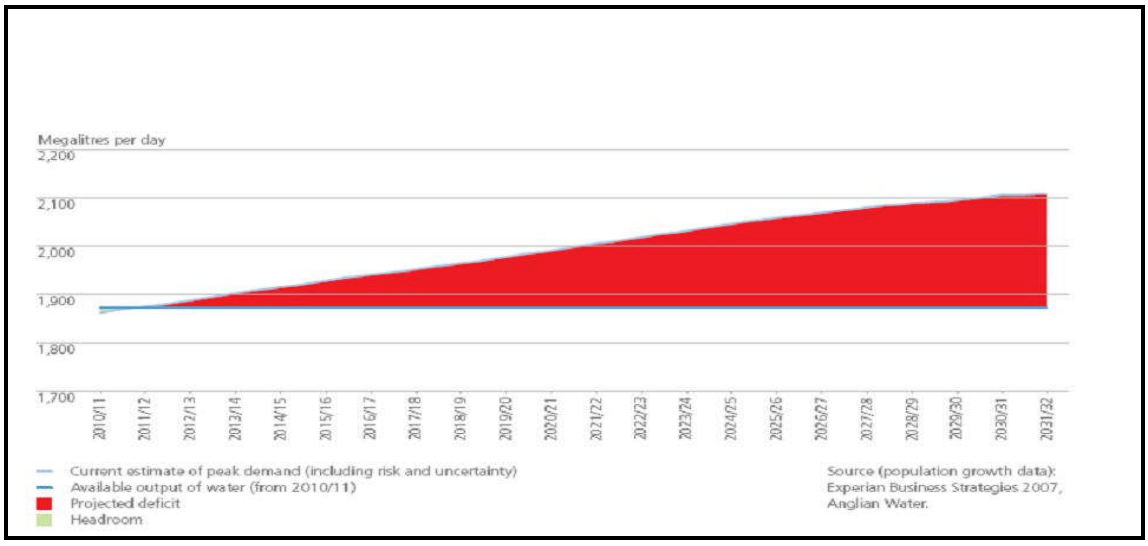


Figure 4-2 Predicted water deficit facing Anglian water region. Source: (Anglian Water Services, 2008b: 50)

The biggest challenge is dealing with uncertainty of rainfall patterns as a result of climate change effects, thus the strategic plan focuses on how to curb these effects (Anglian Water Services, 2008b: 50) (including risk sewer flooding and rise in sea levels). Options that are being explored are re-use of wastewater, development of major storage reservoirs and desalination (depending on sustainability factors) (Anglian Water Services, 2008b: 50).

The company declares that it strive to provide "reliable, high quality service" in accordance with regulatory requirements. In this regard, the company was identified as the leading water and wastewater company against OPA criteria in 2006/2007(Anglian Water Services, 2008a: 10). Furthermore, the company had an outstanding rating of 92% in 2007/2008 for customer satisfaction with service levels (Anglian Water Services, 2008a: 11). Overall performance of the company is measured through drinking water quality standards (including related investments); leakage control (including metering), customer service and energy and employee management (Anglian Water Services, 2008a: 12-18).

Based on the regulator's 2004 Final Determinations of the third quinquennial price review, Anglian Water's price increases were the lowest compared to all other companies, which the interviewees mentioned was a huge efficiency challenge for the company. The operating ratio of the company was recorded as 34.2% in 2006/07, indicating an increase in infrastructure renewal charges. Selected indicators (Table 4-2) of the company are used to indicate the progress made over various years.

Table 4-2 Selected performance indicators of Anglian Water presented over past 6 years

Indicators	*2002/03*	*2003/04*	*2004/05*	*2005/06*	*2006/07*	**2007/08**
Return on Capital Employed [%]	4.9	5.8	5.5	5.8	6.7	6.4
Gearing [%]	82	82	90	79	86	88
Leakage [m3/km/day]	5	6	6	5.8	5.5	5
Customer satisfaction [%]	88	87	85	85	86	92

Source: Annual Reports of Anglian Water.

Further calculations from the company financials indicate that 2002/03 was the worst year for the company in terms of recovering costs from assets invested. Major asset disposals took place in that year hence the sharp decline in ROCE, but interestingly, in 2003 huge capital investments were made, which resulted in an increase in long-term debt trends. The company's bad debt from customers profile reportedly increased in the financial year 2007/08, and is predicted to increase still further given the economic situation in the country. Overall, the company is recovering their costs, with an average figure of 5.6% real return on capital invested, a satisfactory return in a mature economy relative to alternative investments and risk profiles, as evidenced by the purchase of the company during this period at a significant premium to the regulatory capital value.

The company priorities for 2007/08 were reflected in their budget for water and sewerage services (Figure 4-3). The company focus for water services are mostly on water distribution, maintenance and treatment, while as for sewerage services the focus is on sewerage treatment and disposal.

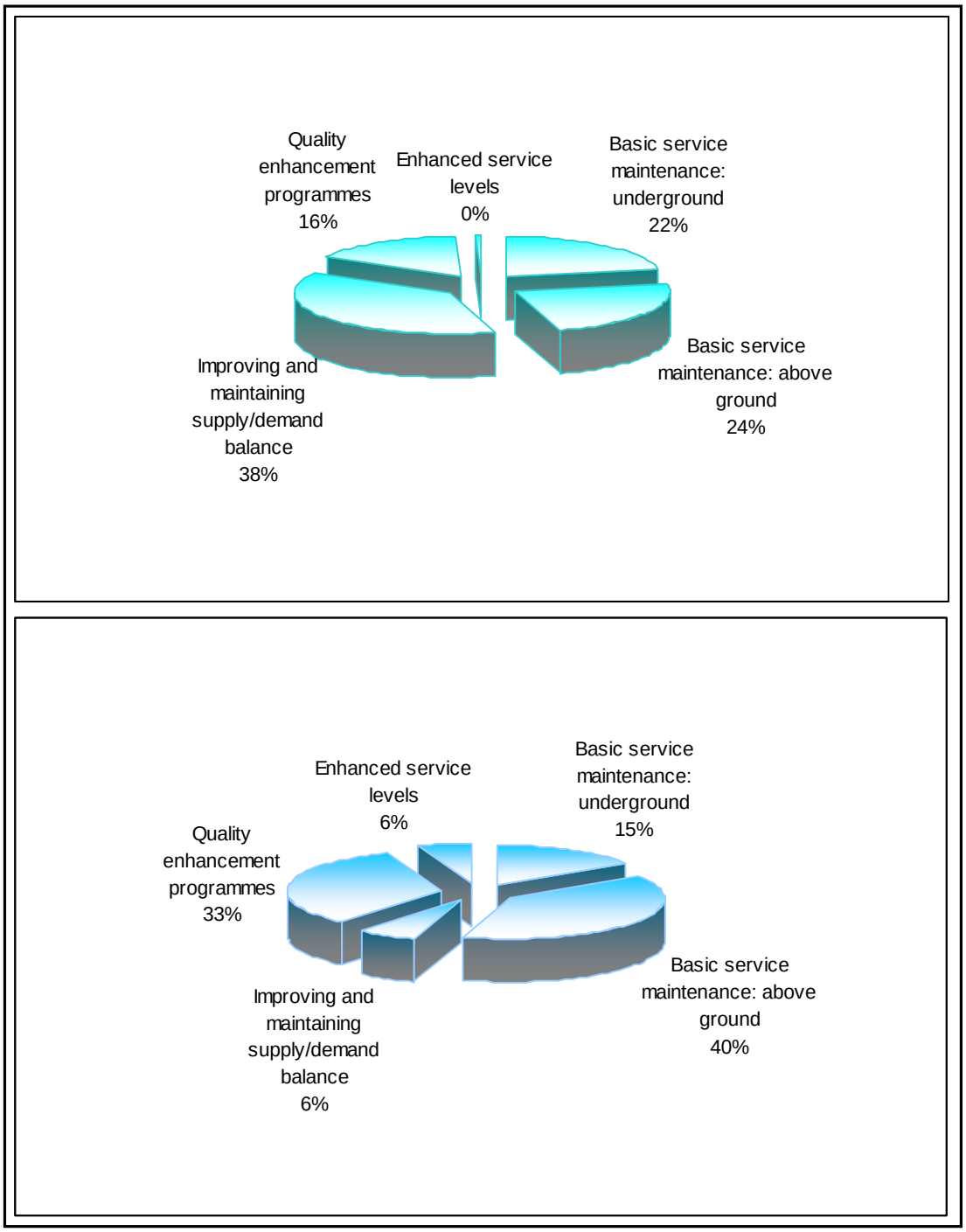


Figure 4-3 Anglian Water Capital investment for water (top) and sewerage (below) out of total budget of £191 Million (PPP US$ 125 Million) and £228 (PPP US$ 149 Million) respectively. Source: (Ofwat, 2008: 30)

As part of the PR09 process, the company has developed a strategic direction statement for the period 2010-2035 (required by the regulator), which highlights seven challenges (partly resulting from a company led consultative stakeholder analysis) to be addressed of which climate change and demand growth are one of the biggest (Anglian Water Services, 2008b: 2), due to the region's vulnerability (driest

water region in England). These major challenges were confirmed during interviews, with an added concern of the ability of consumers to afford improved services, in line with quality enhancements to reduce environmental pressures, and increased innovation requirements.

Anglian Water proposes to spend over £2 billion (PPP US$ 1 billion) over the next period 2010-2015 (Anglian Water Services, 2009: 3) to maintain their aim of delivering "reliable supply of clean, safe drinking water and effective wastewater services at an affordable price" (Anglian Water Group, 2003: 7). The majority of the costs are directed to maintaining and improving assets (Figure 4-4).

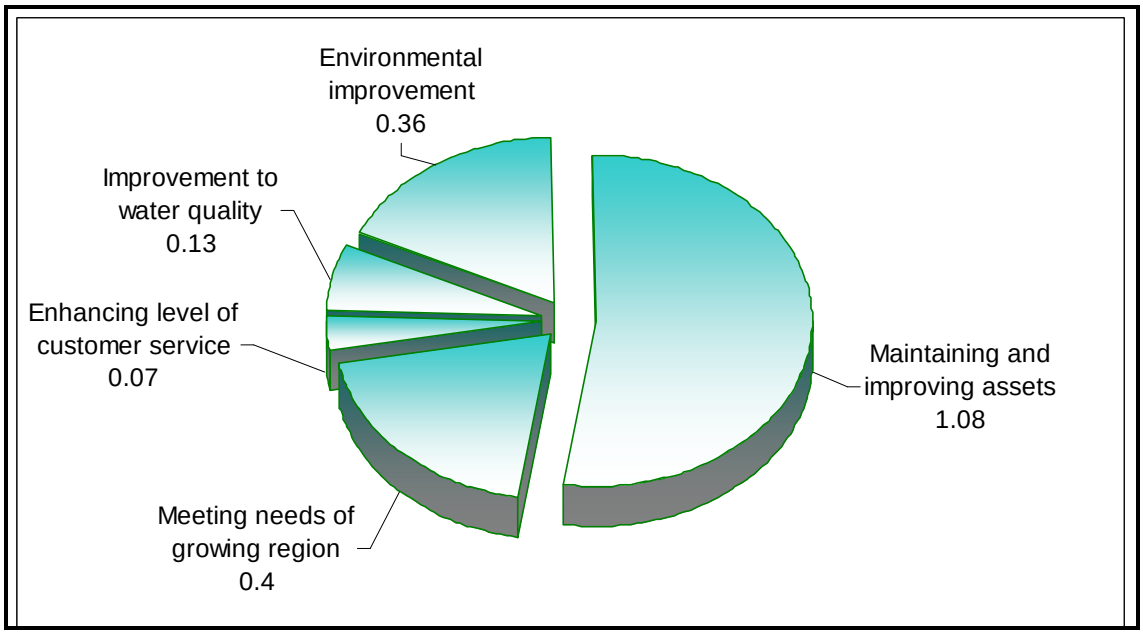


Figure 4-4 Breakdown of Anglian Water Services proposed costs (£Billion) over next 5 years (2010-2015). Source: Anglian Water Services, 2009: 3

The draft determination on price limits resulted in a proposed 11% decrease in household bills, compared to the company business plan proposal, indicating an average price limit of 0.2% per annum over period of 2010-2015 (Ofwat, 2009). Though there is a proposed overall decrease in the price limits, the regulator states that they believe that they have ensured that companies will still be able to make the necessary capital investments to ensure quality services (Ofwat, 2009). Part of Ofwat's approach to price setting is to require Strategic Direction Statements, then Draft Business Plans followed by Final Business Plans, all from the service providers to which they then respond with Draft Determinations on prices for the subsequent

five year period concluded, after a two year process, by Final Determinations in November 2009. This apparently long drawn out process is designed to address the principal-agent challenge in England whereby companies are 'enabled' to become more transparent through this process – the regulator being able to respond appropriately according to the strength of response by any company to any particular feedback or draft decision.

As part of information sharing and transparency of financial data, the company annual reports include sections on corporate governance and remuneration, which elaborates on:

- Board members qualifications roles and activities (eg. meetings attended, performance evaluation),
- Audit committee members and their roles,
- Information on shareholders (including Directors' shares interests and options),
- Incentive arrangements (eg. annual bonus schemes, performance targets for directors in particular) and
- Directors' salary packages (including names, benefits, pensions, bonuses).

These represent normal commercial governance requirements of any private company rather than anything specific with regard to regulation – however they do illustrate another benefit of having private providers as a means of generating a different type of transparency when compared to state providers.

In order to ensure universal access and affordability of water and sanitation services, different types of 'passport tariffs' are reportedly being implemented by Anglian Water. These are the national scheme called Vulnerable Groups Regulations (VGR) and Aquacare Plus for large user consumers (more than $75m^3$ (205 lhd)) and So Low for low user consumers (less than $75m^3$ of annual water consumption with no standing charges). The VGR, was introduced in April 2000, targeting identified vulnerable metered consumers. Since 2005, the recipients on the scheme criteria included people on government benefits or tax credits; large families (three or more children) or defined medical conditions, with significant water usage requirements. If these criteria are met the household bill is measured against the average household bill for a

specific area and the consumer then pays whichever is the lowest amount between the two.

In 2006, it was reported that 5-10% of the population in England and Wales are on the VGR social tariff (Herrington, 2007: 25), out of which 0.4% of metered households are on the Anglian social tariff scheme.

4.3 Affordability of water and sanitation services

The water users interviewed (9) indicated that they receive water bills over a period of 6 months, however pay a flat rate monthly, even though they are metered. The total water and sewerage charges consist of standard (per volume of water consumed) and standing (over certain period of days) rates. The average monthly water and sewerage bill is £34 (PPP US$ 22) per average household of 4 people (Figure 4-5).

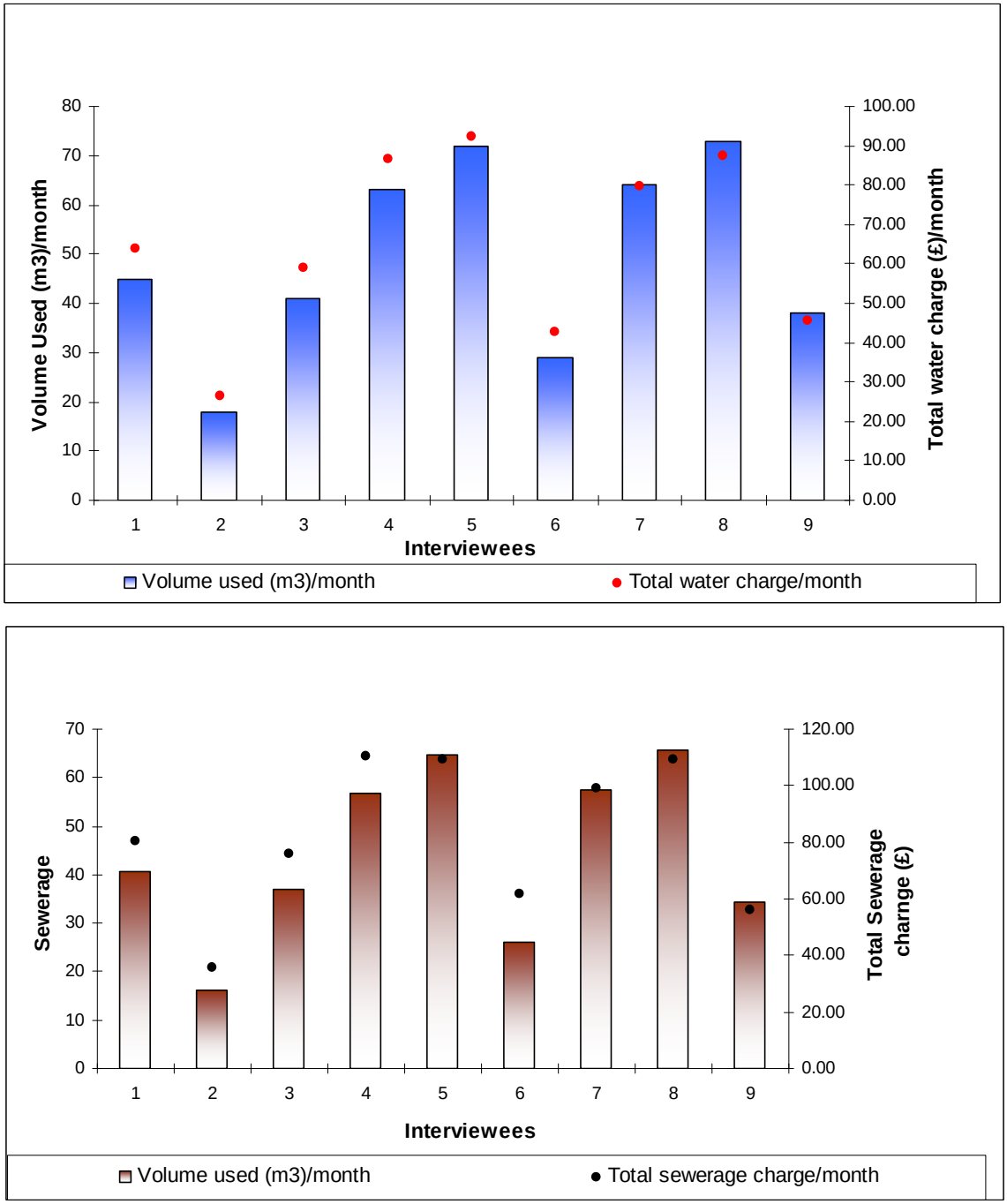


Figure 4-5 Water consumption (top) and sewerage disposal (bottom) with associated payment trends of interviewees (n=9) over period of March-July 2008. Note: Interviewee no. 2 is on SoLow rate. Note: sewerage disposal is based on water use estimate

One of the interviewees is on a SoLow rate (excluding standing charges) and pays an average of £30 (PPP US$ 20) per month for 18m^3 of water and sewerage. In general the interviewees were satisfied with the prices charged and services provided by Anglian Water Company. The interviewee on the SoLow rate stated that information about the low income tariff was very difficult to obtain hence feels the need for increased transparency about services and rates available. 56% of the interviewees

were aware of conservation measures and only 18% practised measures such as rainwater harvesting (building storage tanks) for gardening purposes.

The draft price limits for the period 2010-2015 indicated an average decrease in bills for Anglian region customers of 8% translating into £32 (PPP US$ 21) (Ofwat, 2009).

4.3.1 Perception of service providers on services

The service providers interviewed (4) indicated that they operate in the driest area of England and thus strive to balance water conservation with efficient water supply hence 62% of their service area is metered in conjunction with active promotion (free meter installation on request) of water savings devices such as shower timers. Leakage control and maintenance of infrastructure, reportedly forms part of a very important component of the company operations, and as such the company spends £15 million (PPP US$ 10 million) annually to achieve their leakage targets. The results of willingness to pay assessments conducted by the company are positive (especially their social tariff schemes) and hence do not impact on revenue collection of the company. The social tariffs are reportedly mostly used by pensioners. The company interviewees stated that the company is committed to serve the consumers and thus takes issues of affordability and access to water services very seriously.

4.3.2 Perception of consumer representation on service levels

A high emphasis was placed on balancing supply and demand especially since the Anglian region is the driest area within England and therefore the CCWater interviewees mentioned the need for metering and implementation of effective conservation measures by companies operating in this particular area. The historical management style of the companies is reportedly changing gradually from engineering towards management and thus overall the companies' services are improving, especially towards consumer relations. This relationship between company and consumers was further strengthened during the recent drought (2005/2006), which forced companies to communicate more effectively.

The role of CCWater was described by the interviewees as primarily initiating discussions that are beneficial for consumers based on the demand and preferred services. In particular, members aim to build better relationships with consumers and companies; promote issues of concern such as metering and efficiency (where appropriate) and get involved in planning (for example town planning) to ensure that

proactive planning practices take place and that managers anticipate growth during planning.

Frequently reported complaints to the Council are bill related (metered consumers), in terms of clarity and over-pricing. Other complaints include drinking water quality, low pressure of water supply and sewer flooding. Interviewees stated that 50% of consumers contact CCWater first with a complaint instead of the company. Most information regarding CCWater and water savings techniques are found on the back of water bills.

In general two of the CCWater interviewees felt that the price for water in Anglian region is too expensive and that the Council is working on making it cheaper for consumers, through negotiations with the company. Interviewees further dismissed the idea of subsidisation due to its non-sustainability and indicated that various companies have introduced social tariffs to cater for low income consumers. They commented on Anglian Water's SoLow scheme in this regard, indicating that it is working well. In contrast, a CCWater representative highlighted that profits are considered "good", since it is channelled back into infrastructural development and maintenance, hence improving services levels as well as environmental improvements. It should also be noted that since 1989, companies have invested £70 billion (PPP US$ 42 billion) in making supply safe and cleaning the environment (interviewee, England, August 2008).

The flat rate tariff structure was criticised by interviewees and was referred to as "*a cheap way of collecting money*". Hence metering was identified as the best way to charge and conserve water (including leakage detection) at the same time. In contrast, another interviewee felt that metering creates a misconception of "paying as much as you want to use" thus for high income users conservation is not a factor even if supply is metered. Metering also presents a limitation for large families in low income categories and therefore the interviewee suggests that careful consideration should go into the metering option. One interviewee alluded that hesitation from companies to install meters were primarily due to administrative related costs.

Consumer research in consultation with other stakeholders is also conducted by CCWater. The biggest issue that CCWater is trying to address is to establish "two-way communication channel" with companies, and through this way be "part of the

softer solution to environmental and sustainability". Furthermore, the majority of the interviewees indicated that the Council plays a critical role in ensuring that customers pay a fair price for their services or else facilitates the compensation of funds back to consumers. The Council members interviewed reflected on their successes achieved over the years and indicated "returning money to consumers" as the biggest success, as well as establishing good working relations with companies as the key to success of their operations, because it shows that companies respect and value CCWater contributions.

In terms of representation, the interviewees stated that they do not represent specific groups in society, though the importance of representation is to understand the social issues and thus represent "what we think" is the best for the consumers "being consumers ourselves". The essence of representation therefore according to one interviewee is "to ask the right questions" and therefore it is essential that the members have specific skills to serve on the committee.

4.3.3 Perceptions of consumers on services provided

Overall, the water users interviewed mentioned that water and sewerage service charges are reasonable, though some (3) indicated that the water charges are high and in some instances they had to postpone payment until funds were available. The great majority of consumers interviewed were satisfied to pay a flat rate per month, because it gave them a sense of control and predictably over their budget.

4.4 Price setting process and regulatory tools

The Water Services Regulation Authority (Ofwat) is guided by the Water Industry Act of 1991, updated to the Water Act of 2003, which is very clear on the roles and responsibilities of the regulator, including those of the Consumer representation body. Ofwat's mission is to protect consumers, while ensuring services are sustainable in the long term (OFWAT, 2008: 3). With a staff complement of 193 (in 2008) (OFWAT, 2008: 28), the Office's core operations are divided into the following key areas (OFWAT, 2008: 24):

- Legal services
- Network regulation
- Consumer protection

- Regulatory finance
- Marketing (including competition and enforcement policy)
- Corporate affairs and operations

The office depends on regular information flows, to be used for comparative study purposes and thus works very closely with industries, but do not impede on management style of companies as along as it is within the legal framework (arm's length regulation). The review process takes into consideration the charging structures and systems of companies. Ofwat plays a critical role in developing criteria for pricing structures to avoid "price discrimination and undue preference" and to ensure that tariffs are related to costs of service provision (Ofwat Interviewee, 2008). The price review (also known as Asset Management Plan Periods (AMPs)) process has evolved over the past review cycles to include/emphasise various tools in the quest to adapt to changing sectoral developments Table 4-3.

Table 4-3 Evolution of Ofwat regulatory focus and tools over review periods

Price review period	***Regulatory focus***	***Average Price limits above inflation***	Major Regulatory tools (price control mechanisms)
PR 89 (1990-2000)	- Price limit determination	5%	- Price caps
PR 94 (1995-2000)		1%	- Price caps - Revenue caps
PR 99 (2000-2005)	- Setting quality framework - Environmental Improvements - Prospects for prices (impact on future consumer bills) - Incentives for greater efficiency improvements (rewards for out-performance)	2%	- Capital Asset Pricing Model (CAPM) -Dividend Growth Model (DGM) - Benchmarking comparison
PR 04 (2005-2010)	- Scope for future efficiency improvement ('carrot and stick' model) - Environmental improvements (including protection against sewer flooding) - Review of Overall Performance Assessment (OPA)	4.2%	- Aquarius 3
PR 09 (2010-2015)	- Review of competition and innovation - Environmental and social costs - 25 years strategic direction statements	-4%*	- Project Reservoir (holistic data information system) - Project Explain - Capital Asset Pricing Model (CAPM) framework - Capital expenditure incentive scheme (CIS) (Correct revenue over/under recovery)

Note. * price limit is still draft. Source: Ofwat Annual Reports; Price limits:(OFWAT, 2004); (OFWAT, 1999); (OFWAT, 2008b: 31); (Ofwat, 2009)

The 2004 price review approach was subsequently reviewed at Ofwat's request by an independent steering group which concluded that the approach was very complex and it further highlighted that company proposals included more capital investment projects than necessary (OFWAT, 2007b: 31), hence there was an attempt to simplify the tools over the consequent review period. The draft determination average industry price limits for the 2010-2015 period was 4% (-0.2) less than the companies had

proposed in their Final Business Plans. This limit will be finalised in November 2009 and will come in to effect from April 2010.

The price setting process (Figure 4-6 and detailed schedule in Appendix G) starts with companies submitting draft business plan (5 year) proposals to Ofwat (these include proposed price limits and strategic direction statements with 25 year forecasts). The process further includes:

- Draft determinations are published, after scrutinising of business plans, for consultation to companies and other stakeholders
- Representations from stakeholders are done based on draft determinations
- Final determinations are drafted and published after careful consideration of representations on draft determinations as well as relevant information

Figure 4-6 Key stages in the price review process. Source: (OFWAT, 2008b)

The price limits are determined based on the business plans submitted by the various companies, which includes the costs of services as well as the revenues to be collected to finance the business. This process leading up to the final determinations includes

various stakeholders including Ministers and the economic, quality and environmental regulators and customer (household and business) representation, in close collaboration with the companies. The price limit set in the final determinations considers the following costs that companies face (OFWAT, 2008b):

- Running costs due to taxation, pension, energy and legislative changes
- Activity to maintain the asset network and improve security of supply services
- Further improvements to drinking water quality and environment
- Significant reductions in sewer flooding
- Maintaining the balance between supply and demand
- Enhanced service levels

The process of setting price limits was described by interviewees as normally delivering an increase in the first year of the proposed period, because it is the first adjustment for costs over the preceding five years, which can then be phased-out over the period. The first year's price limit also includes factors such as climate change levies and national insurance contributions.

Customers however, would like to have price increases to take place gradually, however smoothing price limits would mean that bills are higher towards the end of the five year period, and this would mean costs exceeding revenue, making it more risky for companies. An additional feature in the process is that it makes provision for price limits to include supply and demand for water and sewerage services for both existing and new customers of the companies. Official reports predict that companies will require a total capital investment of £17 billion (PPP US$ 11 billion) (compared to the proposed £21 billion (PPP US$ 14 billion) by companies) over the period of 2005-10 to maintain current services levels as well as meet new obligations (OFWAT, 2008b; OFWAT, 2004a: 123).

The companies are assessed on their ability to perform against the cost assumptions set and the likely delivery of output requirements. The final determinations are based on careful consideration of the arguments and evidence presented by companies and their relevant representations in search for improvement in efficiency (Ofwat interviewee, 2008).

Financial modelling packages (spreadsheet based) have been developed by Ofwat to support the UK price-setting processes. The Aquarius 3 model was used for Price Review 2004 (PR04), and has been modified as 'Project Reservoir' for the PR09 price review. The model in general, is developed as a benchmarking tool assessing relative performances of water sector companies through determining the 'allowable revenues' for efficient financial sustainability to deliver the required services, without charging the customers "more than necessary" (Robson, 2006: 4). These efficiency estimates are based on service specific requirements, tariff basket and financial inputs (OFWAT, 2009: 7). The tariff basket refers to various charges which are included in the annual price limits, such as charges for measured and unmeasured water and sewerage services (OFWAT, 2009: 53).

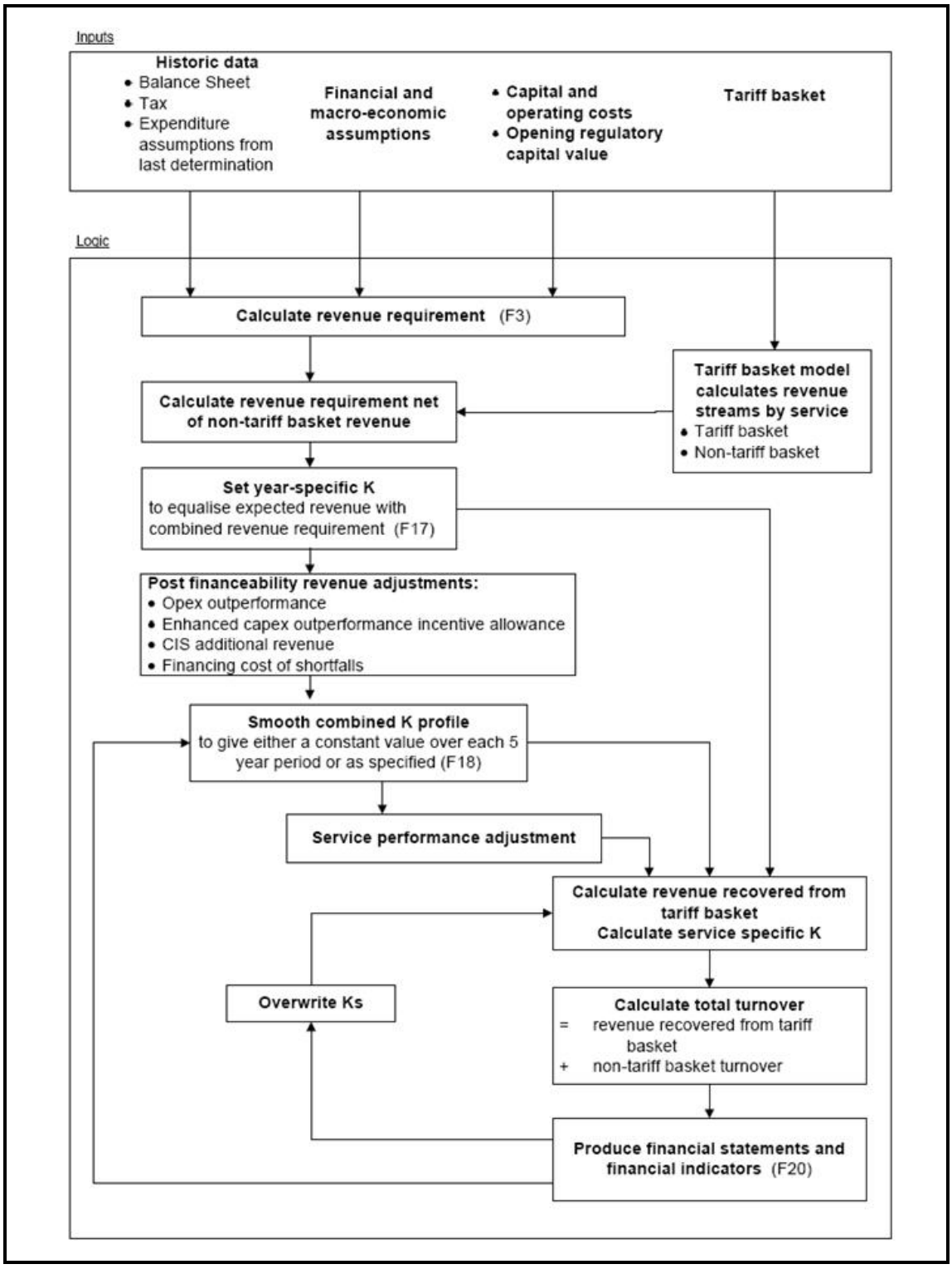


Figure 4-7. Financial modelling overview. Source: (OFWAT, 2009: 8)

The financial model calculates the costs of running the business and the expected turnover, which will determine the revenue required to be raised from the customers to finance the company functions (OFWAT, 2009: 7). To simplify the financial modelling process, the CCWater have been advocating to include "what-if" scenarios as part of a user interface to be able to address immediate concerns of stakeholders,

however, the request have been refused by Ofwat, with 7 months outstanding (out of 30) before the final price determinations for the PR09 (Franceys 2009).

The price limits calculation (Figure 4-8) includes revenue requirement and revenue base and is calculated based on output requirements which are equal to operating expenditure plus expenditure to finance the capital investment programmes plus return on capital plus tax (OFWAT, 2008b).

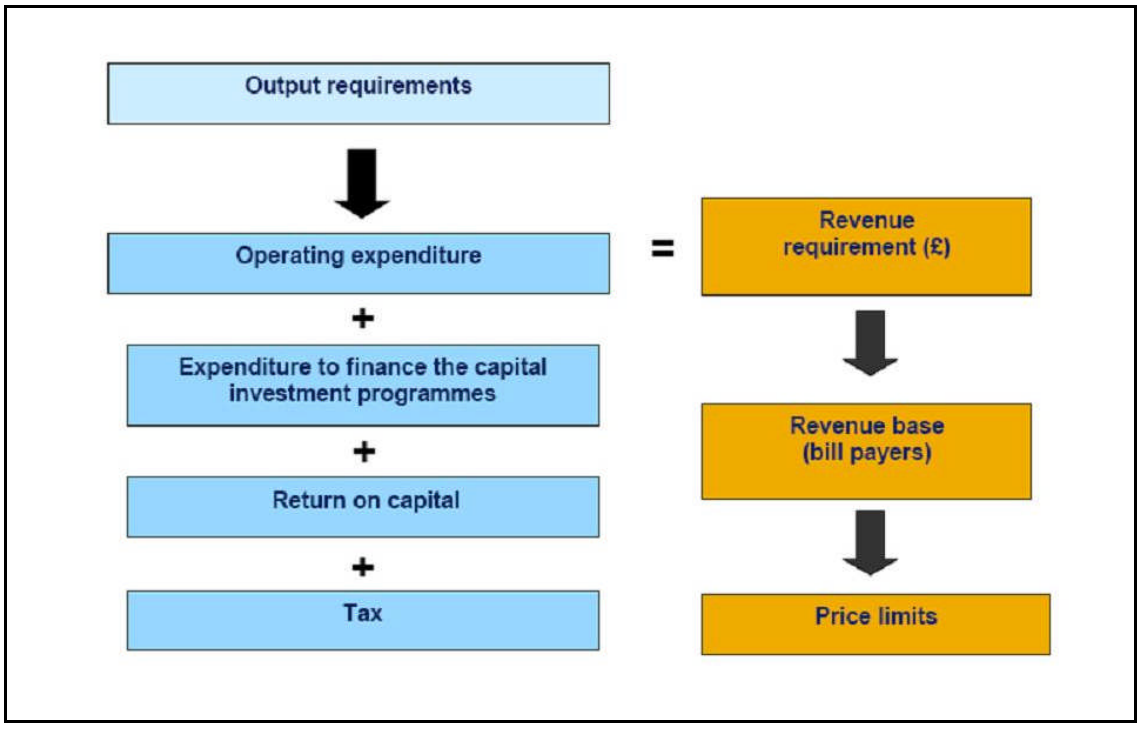


Figure 4-8 illustrates simple representation of financial model used to set price limits. Source: (OFWAT, 2008b: 11)

The equation above of annual price limits is calculated to ensure that companies obtain the necessary capital to "deliver the improvements required at realistic rates" (OFWAT, 2007b: 11). The annual average price limit of 4.2%, before inflation (all prices are increased by the level of inflation automatically, every year), was set for the period 2005-10. There are limits set for each company and in this case Anglian Water company had the lowest average price limit of 2.4% while South West Water had the highest price limit of 6.9% out of the 10 water and sewerage companies. Customers' bills are directly influenced by the price limits. The current price limit thus implies that the average household customer will pay approximately £46 (PPP US$ 70), (18% increase) in contrast to the last price review in 1999, where customers bills decreased on average due to large efficiency gains (OFWAT, 2004) and reductions in the target cost of capital.

A new mechanism, the Capital Expenditure Incentive Scheme (CIS) (OFWAT, 2009: 6) was introduced for the PR09 process, yet another regulatory tool to address the principal-agent challenge. This approach reduces companies incentives to "inflate" their figures in the business plans and gives the companies "ownership/accountability and responsibility to determine the right level of expenditure" hence meaning simplification of required information from OFWAT. Capital expenditure is identified as the area where the most information asymmetry takes place during the price setting process, hence this approach is proposed to reduce this challenge (OFWAT, 2008b: 32-33).

Efficiency is driven by the nature of the incentives as well as comparative competition within the sector. The efficiency (water and sewerage) of companies is measured against its operating expenditure and capital maintenance levels (Figure 4-9). The benchmarking process considers using the most appropriate company as a benchmark against which other companies' financial performance is measured. In this regard, Yorkshire (in terms of size and stability) and Wessex was used as benchmark for water and sewerage efficiency rankings respectively (OFWAT, 2007b: 2,5).

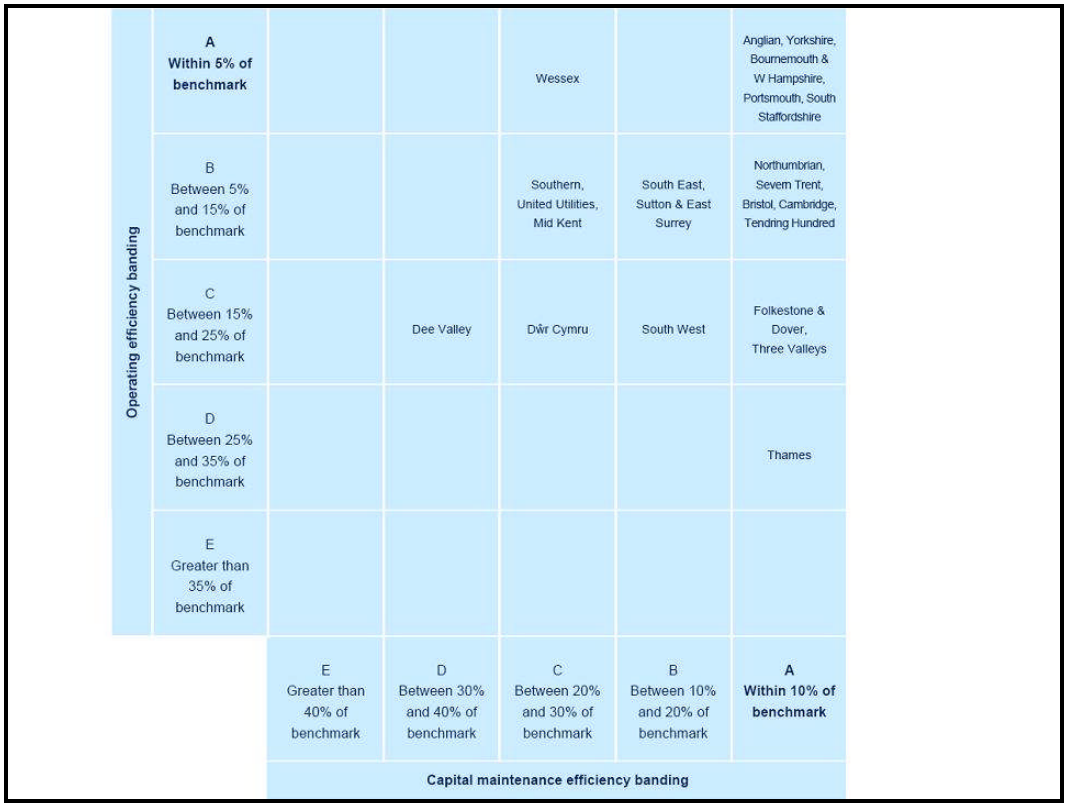


Figure 4-9 Water efficiency benchmarking across companies for period 2006-07. Source: (OFWAT, 2007b: 4)

Overall, to promote water efficiency is one of the major aims of water service delivery companies, therefore related initiatives are expected to be stipulated within the company long-term water resources plans. Consequently, the economic level of water efficiency targets are used to determine related incentives for companies (OFWAT, 2008b: 23-24).

Household bills components (Figure 4-10) are largely made up of operating, maintenance and capital charges, which reflect the change in bills for the following year. This is a clear indication of what consumers are paying for in relation to service quality levels.

		Total (£)	(£)
Average bill in 2004-05		**274**	
Less	(1) past efficiency savings and outperformance	**-3**	
Plus	(2) maintaining base services	**20**	
	Of which: a) changes in revenue		-7
	b) changes in operating costs		11
	c) changes in capital maintenance		8
	d) changes in impact of taxation		6
	e) financing		2
	(3) maintaining and enhancing security of supplies to all consumers	**12**	
	(4) the impact of improvements in services	**36**	
	Of which: a) drinking water quality		10
	b) environmental improvements		23
	c) improvements in service performance		3
Less	(5) scope for reduction through future efficiency improvements	**-14**	
Average bill at 2009-10		**325**	
Change from end of the last period		**51**	

Figure 4-10 Drivers of changes in average bills (2007/08 prices). Source(OFWAT, 2008b: 11)**.**

In addition to expectations of enhanced efficiency, the regulator only 'allowing' in price-setting for ever increasing efficiency as related to earlier expenditure, companies are also incentivised through the 'Overall Performance Assessment' (OPA) scoring process with well-performing companies being allowed an uplift of up to 1% of revenue in the subsequent price review period. The indicators include water supply; sewerage services; customer services and environmental impacts. The OPA is currently being reviewed to include qualitative aspects, such as consumer experience of interaction with companies, ready to be implemented as from 2010 (interviewee, 2008).

As part of the price-setting process, companies are obliged to include the following plans and targets in their business plan proposals as a result of cost benefit analysis approaches (OFWAT, 2008b: 21-24):

- Security of Supply Index (SoSI) as a measure to "guarantee" level of service outlined in their respective plans
- Water resource management plans including leakage management plans, with appropriate resource zone leakage targets
- Sewerage service supply/demand plans including plans for new developments, especially urban developers, which will form part of the water efficient measures.
- Asset management plans, including quality enhancement programmes for asset improvements (especially those at risk from surface water flooding), changes in operational procedures, drinking water quality improvements, which will be measured through serviceability indicators for all asset facilities

The price-setting process and the particular reporting style is believed to enhance transparency and understanding of consumers as to what investments they are paying for and the benefits they gain from it. It also ensures that companies continue to strive for efficiency through revision of approaches and initiatives based on the demand (Ofwat interviewee, 2008). Furthermore, all information about the sector is fully disclosed on internet (public domain), including June returns (financial reports) of companies; performance indicators and impact of prices on household bills. The annual reports of the regulator are also available, which is considered a good example of transparency, whereby salaries of senior staff, ethnic composition of staff and consultancy service expenses.

4.5 Consumer representation process

The Consumer Council for Water (CCWater) works closely with Ofwat and companies to ensure their customers that "price limits are no higher than they need to be to meet the outputs the company has to deliver" (OFWAT, 2004). The CCWater members interviewed, described history of the council as evolving from Customer Service Committees (pre 2000) and WaterVoice to CCWater (as known presently). The evolution of WaterVoice to CCWater was associated with its independence from

Ofwat in 2005. Since then numerous structural and functional changes took place, which are partly linked to the reduction of regions from 10 to 7, for which CCWater members are responsible. The various regional committees report to a national committee which is governed by a Board. Representation on the committees is selected through response to open public advertisements with a serving term of 4 years, now receiving some limited remuneration. The members normally comprise of ordinary consumers with specific interests, skills and experiences. CCWater is financed by the water companies through DEFRA approval, similar to Ofwat's funding, which is also supported by a levy on water companies, all of whose costs are paid by consumers (less than 25p (PPP US$ 0.16) per year).

The principles upon which the Council operates are to represent consumers' interests in terms of identifying major concerns of consumers; ensuring that consumers' complaints are properly dealt with and advising Ofwat on pertinent issues relating to consumer interests. The Council plays an active role during the price setting process and are involved in various consultations prior to final determinations. A three-stage consumer consultation process, which includes consumer research to be included in strategic direction statements and draft business plans of companies in consultation with various stakeholders both locally and regionally, takes place to "explore consumers views" and their willingness to pay for services. This consultation process is undertaken by Ofwat in conjunction with CCWater and other stakeholders including Countryside Council for Wales, Defra, DWI, Environment Agency, Natural England, Water UK and Welsh Assemble Government, for example.

The activities of the Council, as described by interviewees, includes policy reviews, promotion of affordability (developed qualitative life indicators in this regard) and networking with various other stakeholders, especially consumers, companies, local authorities and regulators such as Ofwat, Environment Agency. One interviewee mentioned that the Council members spend the majority of their time on handling complaints of customers regarding utility service provision as well as lobbying government and companies to address specific issues such as:

- Policy
- Affordability
- Water resources

- Metering
- Climate change
- Price review process and information sharing
- Cost of capital
- Water framework directive
- Debt
- Quality issues

The guaranteed standards scheme (GSS) regulations is also used by CCWater members as a guide to ensure that customers have access to minimum service standards, for which they can claim monetary recompense, should a company not meet set standards. These standards include issues such as response time to complaints; keeping appointments; minimum pressure levels; interruption of supply and flooding from sewers (OFWAT, 2008a: 1-8).

Consumer priority issues identified during a study in 2008, indicated concerns about affordability, while it was found that the majority of consumers takes issues of water supply sewerage disposal for granted, since quality of service are of high standard and they indicated they have no need for concern (Corr Willbourn Research and Development, 2008).

4.5.1 Perception of regulators on regulatory process

As part of the process, the Ofwat interviewee highlighted the revision of June returns as a major part of the process, which is to determine the financial performance of companies as a build up to the development of draft business plans which eventually evolves into final business plans. This process includes various consultations strategies (meetings, internet chats, workshops) with various stakeholders. The process is facilitated by guidelines and templates available (constantly being revised) from the regulator. Various ‘reporters’ (technical audit consultants similar to financial auditors) are appointed to assist with the audit process of companies, which is followed by a query process, where companies are exposed to stakeholders to clarify various issues. The National Environment Programme (NEP), part of the Environment

Agency also has a huge influence on the business plans of companies. This normally involves cost benefit analysis, in which transparency is taken very seriously.

Another interviewee described the price-setting process as “information hungry” and highly computerised. The interviewee claims that the process is done in a very transparent (especially the data requirements) and predictable manner, with limited timing and therefore the information sharing process is also very selective. In this regard, the regulator is constantly reviewing the process to “stay on top of things” and in fact the 5 year period is also under revision to a probable 6 year period to coincide with the implementation period of the Water Framework Directive (though this approach had been rejected at the previous review of pricing periods). The interviewee mentioned that the process has “grown” over the years and is becoming “easier” compared to when the regulator first started to operate. Regulatory tools are reportedly getting more complex to try and incorporate the various changes and specificities of companies. The current Project Reservoir financial modelling tool is developed to deal with this problem and it is intended to make reporting easier, especially in comparison to the Aquarius model.

The network regulation and consumer protection aspects are dealt with in close collaboration with CCWater, which was described as very good body by all regulatory interviewees and their involvement is seen as invaluable.

4.5.2 Perception of service providers on regulatory process

The role of the regulator is seen as ensuring the financeability of the water and sewerage companies by the service providers interviewed. This includes revision of turnover linked to the costs incurred in meeting the water demand, and determining the K factor target for the company. The incentive based system makes provision for out performance of companies relative to the K-factor, however 50% of the interviewees indicated that there are several trade-offs to be considered within the system. For example there are conflicts within the price-cap and revenue-cap systems which contradict with the conservation approach, because “if you are trying to sell water, how can you tell people to save water and money”. Preparation for price reviews is a 5 year process, 2 years of which includes preparing the business plan. One interviewee explained the process such that there are specific forecasts teams responsible for forecasting plans up to 2035 to determine the investments required to

ensure that the company continues to meet the efficiency targets based on the changing demands and challenges such as population growth and climate change, which is one of the biggest challenges for the company currently.

The price review process from 2004 was reportedly "better" compared to the current (PR 09) review process. The current process is described as "too complicated and tedious" in terms of the regulatory tools and information requirements. In particular the financial model, Aquarius, was rated poorly by all interviewees and its accuracy was questioned. The interviewees mentioned that the regulator is micro-managing the companies and this causes general frustration and influences the working relationship with the regulator. One interviewee further mentioned that the regulator operates on an assumption that the "company is hiding information from them", while in fact the information requested is not available. The interviewees felt that the regulator requires "too much detail", which they do not understand the use for. The June returns was the most frequently cited example in this regard. Another interviewee referred to the PR09 process as "opaque and too political" and the regulator as "cold and aggressive".

The company's working relationship with the CCWater, was reportedly very good and is described as a good initiative to ensure efficient services are provided to consumers. The views of CCWater members are taken very seriously and interviewees stated that on several occasions the Council's advice influenced decision-making processes. Reflecting back on the regulatory process since 1989, the interviewees agreed that "privatisation was good for increasing efficiency in the water sector".

4.5.3 Perception of consumer representatives about regulatory process

One interviewee mentioned that the role of CCWater in the PR09 process is not very clear and thus needs to be addressed. 50% of the interviewees indicated that there is a need for stable predictable revenue and hence the need to improve metering coverage. However another interviewee pointed out those metering made revenues much more unpredictable, becoming a function of hot and dry or wet and cold summers which is why the regulator was now introducing a revenue guarantee system. It could be said that CCWater members are representative of customers to the extent that they do not always agree. Transparency was seen as a key reason for regulation within the water

sector, as mentioned by all interviewees, and thus they indicated that CCWater contributes towards making the process more transparent. Information and results from CCWater's activities are mostly available on their web-site, however depending on the issue; various media (press releases, newspaper articles) are used for awareness raising and information sharing.

The 2004 price review process was reportedly done wrongly at the expense of consumers and Council members feel strongly that it is important to get the review process "right this time" (PR09). Another interviewee mentioned that the regulatory process was good when it started off, however more recently the "quality is slipping and unfortunately Ofwat is relying on their good reputation from the past". Though the regulatory process was described as being efficient (especially setting targets/indicators for companies) and "relatively" transparent, one interviewee added that the regulator is not progressive and is failing to "keep the pace" with companies. Transparency was particularly questioned by one interviewee, when Ofwat refused to incorporate "what-if" scenarios as part of the financial modelling process – and subsequently even refused to model 'what-if' questions for CCWater, something they had been pleased to do for WaterVoice in PR04.

The biggest challenges within the regulatory process, as identified by the consumer representatives interviewed, are:

- Failure to calculate the cost of capital properly
- Regulatory tools (especially the financial model-Aquarius) are complex and not working properly.
- Review of capital incentive scheme
- Compulsory metering enforcement
- Review of the Overall Performance Assessment and GSS

The revenue guarantee approach and menu regulation proposals are complimented by most interviewees, indicating that initiatives are taking place to ensure increased transparency and efficient service delivery. CCWater does not have access to all information (some information is considered highly confidential between Ofwat and companies), and therefore their response to issues are limited to Ofwat outcomes. However, there is a "no surprises" policy between Ofwat and CCWater in terms of

sharing information and hence the regulator keeps CCWater informed of major issues (even if it is not detailed). In this regard, the Council does not have any 'powers' to influence the process, and therefore acts only in an advisory capacity. However all interviewees indicated that more statutory authority would make the Council stronger and would enable them to speed up certain issues and would thus reduce the 'personality based characteristic of the Council members'. An alternative view expressed was that professionalising the Council yet further could turn it into a parallel regulator. Another interviewee highlighted that CCWater has a huge influence on the price-setting process and that its power to negotiate and persuade (based on evidence) is its strongest feature.

Contrary to popular belief, the majority of the interviewees hinted that consumers should not be represented directly on the committee, since the issues are too complex for the lay person and would result in a slower and less effective process. Experience has shown that consumers are generally not interested in other issues apart from their own, and thus it would limit the Council to deal with a variety of issues. It is important to be able to balance the issues and address it accordingly and the issue of representation (and feedback) of such a person might complicate the process. A complementary viewpoint is that CCWater should see itself as the equivalent of an ongoing 'deliberative focus group', very much being made up of consumers but consumers who have been 'educated' into some of the realities of delivering water and sanitation services, and who can therefore give a more helpful viewpoint on behalf of all consumers.

Overall, all interviewees rated the presence of a consumer representation body within the regulatory process as invaluable in terms of improved transparency and ensuring that consumers receive the services they pay for. The quality of interaction with other institutions during the process is described as good, but also highly dependent on the personalities of the representatives involved. One interviewee felt that CCWater is the link between the regulator and companies and the consumers and therefore such a body is needed to keep the connection and interaction. In addition the interviewee mentioned that companies have indicated that they work better with the CCWater than with the regulator.

4.5.4 Consumers perception about regulatory process

Information about CCWater and Ofwat is printed on the back of the bills, however only 12% of the interviewees knew about these services and what their activities entail. The rest of the interviewees did not know about it and did not show any interest as long as they receive the services they pay for; they had no reasons knowing about these institutions. Furthermore, none of the interviewees needed to make any complaints (even though they indicated that they do not understand their water bill) to the water company in the past three years.

Similar to the sentiments of the consumer representation interviewees, the consumer interviewees (except for one) indicated their non-interest in participating in the price-setting process, though they took comfort in the fact that there is a level of consumer representation.

4.6 Zambian case study: Institutions, Roles and Relationships

The Zambian reform process followed a similar pattern to that of England and Wales and therefore segregation of functions, water policy, provision and regulation were also key during their reform process (NWASCO, 2004b: 11). The Water Policy of 1994 guided the reform process (particularly the seven sector principles) and resulted in the promulgation of the Water Supply and Sanitation Act in 1997 (GTZ, 2008: 10). The seven sector principles are as follows (NWASCO, 2004c: 4):

- "Separation of WRM from WSS
- Separation of regulatory and executive functions within the water supply and sanitation sector
- Devolution of authority to LAs and private enterprises
- Full cost recovery in the long run
- Human resource development leading to more effective institutions
- Technologies appropriate to local conditions
- Increased funding by Government of Republic of Zambia (GRZ)"

This legal framework in Zambia makes provision for commercialization as well as private sector participation in the water sector (NWASCO, 2004b: 10) to increase

efficiency (NWASCO, 2004b: 4) under the auspices of the Ministry of Local Government and Housing which deals with water supply and sanitation services (GTZ, 2008: 10).

An independent economic regulator, the National Water Supply and Sanitation Council (NWASCO) was established and started operations in 2000 (GTZ, 2008: 10; NWASCO, 2004c: iii), regulating the commercial utilities, private utilities and local authorities, with economic and quality regulation functions with a strong emphasis on tariff adjustment reviews and performance monitoring for service provision sustainability (NWASCO, 2004b: 5). The Zambian regulator has built a successful reputation of managing with limited resources and investment in infrastructure, amongst the developing countries as well as the world (Rouse, 2007: 30-31). Similarly it is noted that "commercialisation and regulation helped to stop the decades long degradation of WSS and improved service provision in most towns" (NWASCO and DTF, 2005: 3).

In order to separate policy and regulatory functions, NWASCO reports to parliament through the Ministry of Local Government and Housing (MLGH) which is directly responsible for water supply and sanitation services. The Ministry also appoints the board members of NWASCO after an institutional nomination process (D'Sousa and Barmeier, 2006: 2). Initially NWASCO reported to Parliament through Ministry of Energy and Water Development (MEWD), however based on several oppositions, this was changed to MLGH. The major conflict was due to the fact that MEWD dealt with water resources, while MLGH was directly responsible for water supply and therefore it was deemed most appropriate to have the regulator reporting through the latter ministry (Government interviewees, 2008).

4.7 Providing water and sanitation services

The resultant effect of the sector reform was that the majority of Local authorities were transformed into water companies (commercial utilities (CUs)), which are contributing to provision of services for 92% of the population, while the remaining local authorities serve 7% and private contributors 1% of the population (NWASCO, 2008: 2). Hence this translates into "33 licensed service providers comprising of 10 CUs, 13 local authorities and 6 privately run schemes" (GTZ, 2008: 10) covering 68.6% of the urban population's water supply (NWASCO, 2008: 2). The average

hours of water supply by CUs are reported to be 15 hours in 2007/2008 period, while LAs provide average water supply for 7 hours with only one town (Mambwe) reaching 24 hour water supply services (NWASCO, 2008: 39-50). The private contributors only provide water to their employees and an average water supply service of 20 hours are noted (NWASCO, 2008: 50-51). The majority of the commercialised utilities are dependent on external investment, however there are some that are solely dependent on revenue from their water sales (NWASCO, 2004b: 4).

For the purposes of this study only two CUs, Lusaka Water and Sewerage Company and Kafubu Water and Sewerage Company, were researched to understand the financial performance, especially in terms of cost allocation and hence the tariff determination process, within a regulatory framework.

4.7.1 Lusaka Water and Sewerage Company

Lusaka Water and Sewerage Company Limited (LWSC) was established from the Water and Sewerage Department of Lusaka City Council (LCC) as one of the first Commercialised Utilities (1988) (LWSC, 2008: i) in Zambia. The company is registered as a "private-limited-liability, but operates as a parastatal with LCC as the sole shareholder" guided by a board of directors from both the public and private sector (LWSC, 2008: 1-3).

The main sources of water supply to Lusaka come from the Kafue River (43%) in conjunction with boreholes (57%) in the city (LWSC, 2008: 2). LWSC operates in Lusaka, where 65% of the 2.5 million people live in peri-urban areas. By the end of 2007, the company recorded 51 619 tap connections, and only 13% of the serviced area has a sewer network (LWSC, 2008: 1, 9). Approximately 49% of Lusaka is metered.

The company reportedly inherited many problems after transition, which limited them from meeting their demand. Their biggest challenges were dealing with old, dilapidated infrastructure coupled with lack of investment, leading to high unaccounted for water rates. Revenue collection and low tariffs equally adds to the challenges. Despite these challenges, official reports indicate the company's mission as providing "quality water and sanitation services to customers in Lusaka province at commercially and environmentally sustainable levels" (LWSC, 2008: iii).

A slight increase can be observed in the company's operational performance based on the performance indicators (Table 4-4) over period 2002-2007.

Table 4-4 Major Performance indicators of LWSC over a period of 6 years.

Performance indicator/year	***2002***	***2003***	***2004***	***2005***	***2006***	2007
Water Production capacity ('000m^3/day)	210	194	199	212	218	230
Service coverage water (% pop)	79	79	80	80	80	81
Service coverage sewerage (% pop)	12	12	12	12	12	13
No of customers	34, 930	36,263	41,145	45,972	47,705	51,500
Staff/1000 connections	14	14	13	12	11	11
Metering ratio (%)	41	40	38	36	44	48
Non Revenue Water (NRW) %	57	58	56	55	51	51
Collection Ratio (%)	72	74	82	79	82	91

Source: (LWSC, 2008: 7)

Official reports (LWSC, 2008: 7) confirms the interviewees' view points that low tariffs and high operating costs are the major contributing factors towards the poor financial state (Table 4-5) of LWSC. As a result, the company's liquidity status is very poor, such that the current assets are not sufficient to cover the current liabilities, and therefore the need to manage their liabilities as well as non revenue water (rated as high average of 55%) is inevitable. Senior LWSC officials interviewed predicted that the current African Development Bank and World Bank loans will drastically improve the capital structure situation (increasing the gearing ratio) of the company. However, official reports show that this would still need to supplemented with approximately US$80 million (PPP US$ 80 million) for the company to meet their demand (LWSC, 2008: 9).

Table 4-5 Financial indicators of LWSC for period 2003-2007

Indicator	2003	2004	2005	2006	2007
Profitability					
Return on capital employed (ROCE) [%]	1	-4	-5	-6	-1
Asset turnover ratio	0.31	0.38	0.43	0.64	0.68
Profit margin	5	-10	-12	-10	-2
Liquidity					
Current ratio	0.92	1.11	1.81	1.31	1.65
Quick ratio	0.79	0.98	1.52	1.13	1.47
Capital structure					
Debt-Equity ratio	9.87	29.19	-11.73	-8.04	-11.46
Debt-Asset ratio	0.82	0.87	0.77	0.76	0.74
Capital gearing [%]	91	97	109	113	110
Efficiency					
Collection period (debtor days)	125	125	398	345	248
Accounts receivable turnover	2.9	2.9	0.9	1.1	1.5
Creditor days	189	106	99	118	166
Stock days	28	24	92	58	128
Inventory turnover	13	14.8	3.9	6.3	2.8
Av. Tariff/m^3 billed [PPP US$]	1,031	1,127	1,290	1,727	2,029
	[0.49]	[0.47]	[0.48]	[0.61]	[0.66]
Av. Costs/m^3 billed [PPP US$]	1,364	1,680	1,454	1,903	2,119
	[0.65]	[0.70]	[0.55]	[0.67]	[0.70]
Operating and admin costs as a % of billing	129	143	113	110	104
Operating and admin costs coverage by billing	77	70	89	91	96

Source: (LWSC, 2008: 30)

Based on the financial indicators and interview results, the company is not recovering costs, and is thus financially not recovering its cost of capital. The interviewees attributed this aspect to old and deteriorated infrastructure, hence the need for capital investment. Therefore not only are the tariffs not cost reflective (comparing average tariff and costs), but also debt collection periods are worsening over time, not reflecting any progress in that respect. Overall, the interviewees stated that electricity and human resources contribute to major operational costs of the company. The planned company strategies, hence reportedly include focus on customers, reliable water (for example improve from 17 hours to 24 hours per day supply) and sanitation service provision (including to peri-urban areas), in an effort to increase bill

collection, based on the assumption that increase quality of service, encourages bill payment.

In terms of information and financial transparency, the researcher could not obtain annual reports only business plans from the company. The business plans were very detailed and the financial ratios of company performance were highlighted very well, to the extent that the tariffs against costs billed were calculated. The business plans also included detailed investment plans.

Official reports (NWASCO, 2008) indicate the average LWSC tariffs for domestic metered consumers at ZMK 6, 000 (PPP US$ 1.82) for 6 m^3; ZMK 34, 800 (PPP US$ 10.57) for 30 m^3; ZMK 79, 800 (PPP US$ 24.24) for 60m^3. However, LSWC officials stated that they operate on a 5 tariff block system. LSWC interviewees further reported a 60% and 80% recovery rate from the domestic sector and commercial sector respectively. Approximately 30% of debt owed by government institutions (eg hospitals, schools, defence and air force) is not recovered and these are the most problematic group of clients. Disconnections of services serve as a penalty of non-payment, however this measure does not work well in domestic areas, since people obtain water from neighbours and thus there is no means of control over non-payment in this regard. LSWC representatives also mentioned that they have a scheme in place for those in arrears of their payments, but in general they do not have 'special' tariffs for 'vulnerable' customers. They unanimously agreed that it is government's role to establish social schemes of those people that cannot afford basic services. LSWC reportedly allow free water services, for 'special' cases such as funerals for example, as part of their social responsibility.

Furthermore, 30% and 40% of the LWSC water bill for domestic and commercial industry respectively is charged for sewerage, while 30% of peri-urban areas are equipped with VIP toilets (Utility interviewees, 2008). LWSC interviewees stated that they operate on a 30 day collection period with major consumers, and do consider willingness to pay of their consumers during their consultation meetings.

4.7.2 Kafubu Water and Sewerage Company

Kafubu Water and Sewerage Company (KWSC) is a result of a joint venture amongst three LAs (Ndola, Luanshya and Masaiti), covering 600 000 population combined with 48 000 connections. KWSC operates in the Copperbelt Province and thus mainly

provides water to mining towns (KWSC Interviewee, 2008), hence the reason for this research to also include this company as part of the study. The company service area is comprised of both metered and non-metered areas, of which the average hours of supply is 18 (Figure 4-11). The population of Lusaka and the Copperbelt area makes up 64% of the Zambian population (NWASCO, 2008: 32).

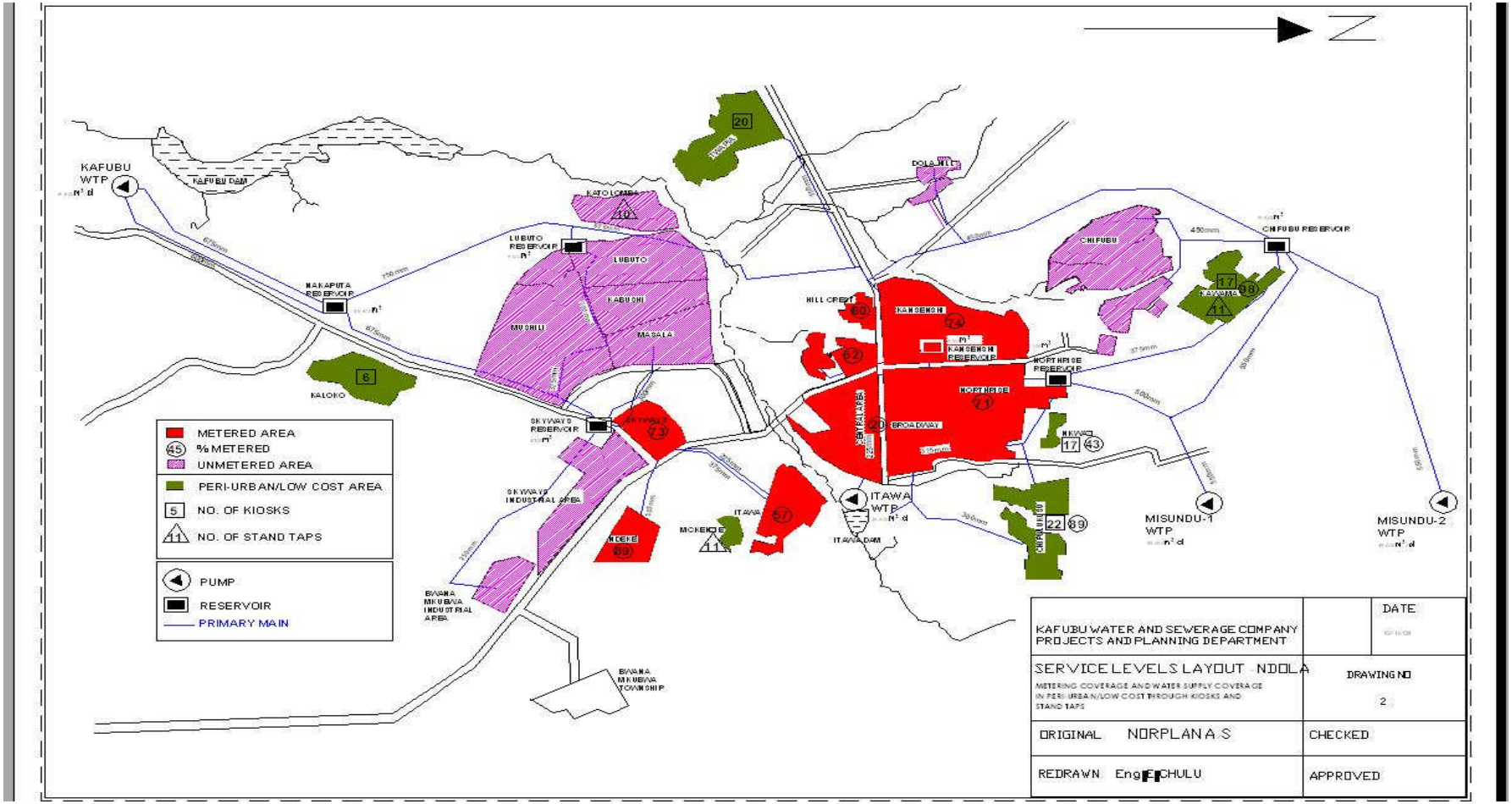


Figure 4-11 Maps of Ndola town, illustrating the type of water services available and the respective metering ratios within Kafubu Water and Sewerage company's service areas. Source: Kafubu Water Sewerage Company

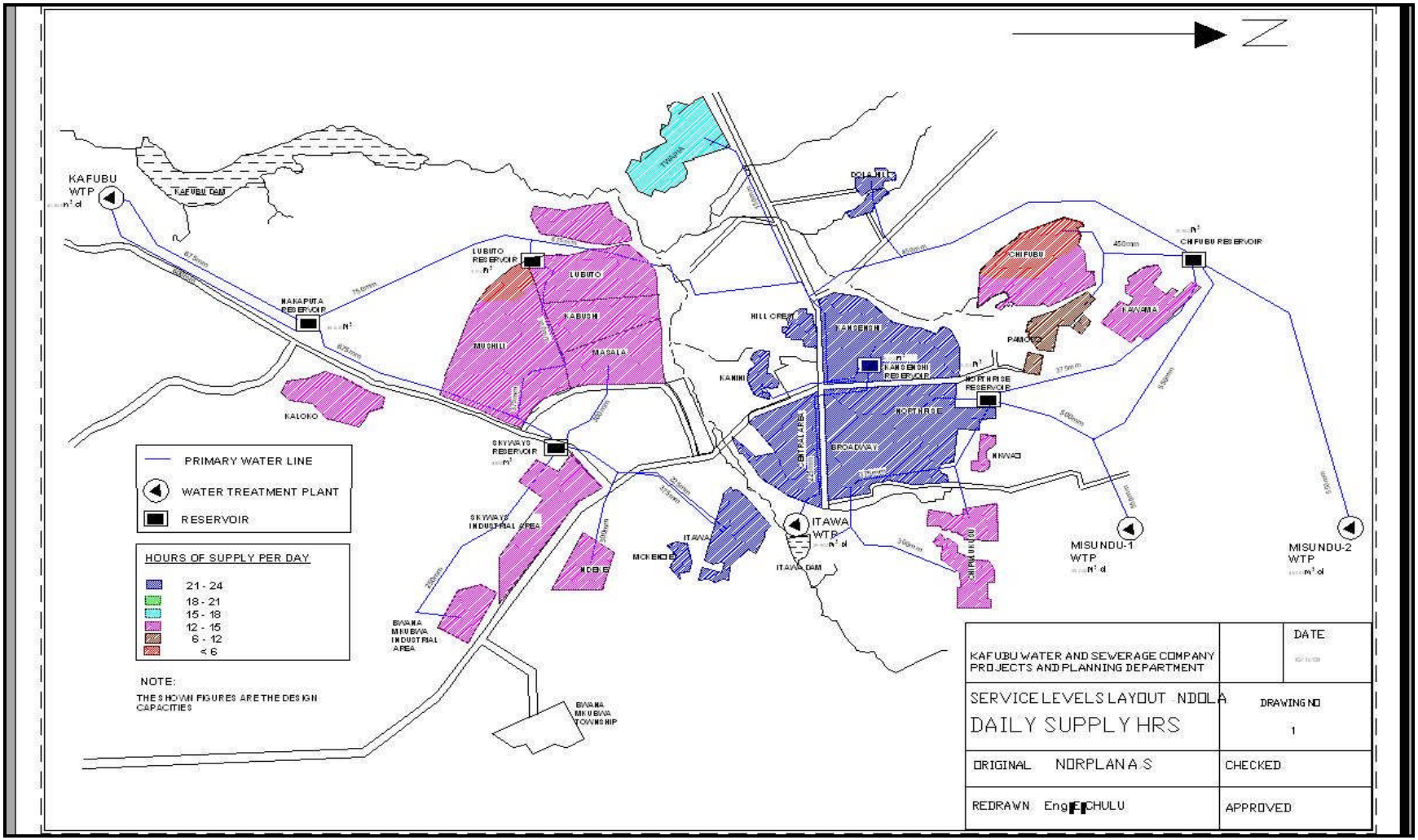


Figure 4-12: Maps of Ndola town, illustrating the hours of water supply per day within Kafubu Water and Sewerage company's service areas

There is a noticeable trend between hours of supply and metered household areas. Those with 21-24 hours of service are metered, while non-metered households (including peri-urban areas) receive between 15 and 18 hours of service. 15 % of the town is metered according to interviewees.

The domestic tariff structure (Table 4-6), (for those with individual house connections) adopted in Zambia is the rising block tariff, with three blocks, making provision for the first $6m^3$ at the social rate. Post-pay bills are received monthly, including once-off connection fees and standing fees (Utility interviewees, 2008).

Table 4-6 Tariffs (2008) for metered domestic sector in Ndola, with approved percentage changes in tariffs over a three year period

Domestic metered (m^3)	***Tariffs***		Approved % change		
	Current (ZMK)	**Current (PPP US$, 3,292.12, 2008)**	**2008/09**	**2009/10**	**2010/11**
0-6	1, 100	0.33	20	15	10
7-15	1, 200	0.36	20	15	10
>15	1, 600	0.50	20	15	10
Sewerage %	40	40	40	40	40

Source: (Zulu et al. 2008)

Non-metered household tariffs are classified according to high costs; medium costs; low costs, stand taps and communal taps (Table 4-7) and pay flat rates. There are also flat rates for non-domestic, commercial/governmental institutions and industries (Zulu et al. 2008).

Table 4-7 Current (2008) and approved tariff adjustments for the non-metered domestic sector in Ndola over period of 3 years

Domestic	***Tariffs***		Approved % changes		
	Current (ZMK)	**Current (PPP US$, 3,292.12, 2008)**	**2008/09**	**2009/10**	**2010/11**
High Costs	74,060	22.50	20	15	10
Medium costs	38, 800	11.80	20	15	10
Low costs	14, 324	4.35	20	15	10
Stand taps	7, 500	2.30	20	15	10
Communal taps	5,000	1.50	20	15	10
Sewerage %	40	40	40	0	0

Source: (Zulu et al. 2008)

Water kiosk systems are developed for low income users that cannot afford to have house connections. The kiosk systems operate on flat rate systems, which are equal or lower than the social block tariff for a certain volume of water. The non-domestic industry operates on a single block tariff system, charged at full cost recovery rates. However there is a limit which they are charged, to maintain the incentive of using the services of the provider, otherwise the incentive for drilling the borehole becomes cheaper and thus the provider forfeits an income generating opportunity. The tariffs for sewerage connections are calculated as a percentage of the water consumed (KWSC interviewee, 2008).

No financial data (annual reports) could be obtained from KWSC during the research and the research relied on interviewee information. It transpired from interviews that one of the reasons why KWSC was making a loss during the period 2002-2005, was primarily because of 'excess' personnel that they had to retain as part of an agreement with government. At inception of the company in 1998, it inherited 118 staff from Ndola City Council which they did not need, and for whom government promised to pay retrenchment packages, however the payment of ZMK 2.1 billion (PPP US$ 74 million) was only received in 2006. The other reasons included non payment of major clients, including government institutions. Furthermore, it is noted that during 2007, donations from donors to water and sewerage companies ranged from ZMK 673 million (PPP US$ 0.22 million) to ZMK 1 billion (PPP US$ 3.2 million) (KWSC officials, 2008).

KWSC reportedly recovers 65% of their debts, with the biggest challenge being recovering debt from government institutions which constitute for about 15% of their client base. Two of the interviewees from KWSC, indicated that there is a lot of political interference with regard to payment of government water bills.

KWSC representatives (30%) mentioned that the company has a high customer focus and thus puts a lot of effort into awareness raising campaigns, especially with regard to water conservation measures, payment of water services, sanitation/health awareness and measures against vandalism of meters. The company works well with other stakeholders especially WWGs and RDCs as well as the Local Authorities. Relevant information is reportedly included on the back of the bill to reach metered consumers.

4.8 Affordability of Water and Sanitation Services

Official statistics indicate that 53% of Zambian urban population is without access to clean drinking water and 56% without access to adequate sanitation facilities (D'Sousa and Barmeier, 2006: 1). Furthermore the newly established (in late 2000s) commercial utilities struggle to extend their services to low cost urban areas (where over 60% of the urban population resides), largely due to financial limitations and the poor condition of the existing network (NWASCO, 2004a: 171). In response to this challenge, NWASCO developed a Devolution Trust Fund (DTF) (through external support from the Danish and German Governments) to support providers in extension of services, specifically to the urban poor (NWASCO, 2004b: 11). However, the fund is separately managed from the regulator "to avoid conflict of interest" (DTF officer, 2008). The funds from the Trust are reportedly used to establish Kiosk systems in peri-urban areas, which are managed by the CUs to provide good quality to water services to the urban poor, and is therefore known in official reports as "the pro-poor fund", covering 47% of facilities (low cost technologies) in urban poor areas (GTZ, 2008: 10). The DTF not only provides technical infrastructural design guidelines, but also management guides for these kiosks, which ensures that national standards are adhered to and thus quality of water is assured (NWASCO interviewee, 2008). The basket financing comprises of various donors such as KfW, Danida, the EU and support from the Zambia government. Similar to the regulator, DTF is operated by limited number of staff (4) governed by a management committee 'board' (NWASCO interviewee, 2008).

The sources of water for per-urban users varies (Table 4-8), depending mostly on availability and distance of travel to collect water. Kiosks are reported to be the major source of water. Kiosks are compared to local shops within informal areas, where basic goods are sold, including water in 20 litre drums for a fix amount of ZMK 5 000 (PPP US$ 1.50). The most prevalent problems experienced by kiosk users range from non availability of water, frequent water interruptions to long distances to travel to collect water. Most low-income users interviewed linked the water interruptions to electricity cuts. The middle and high-income users interviewed indicated a preference to drilling their own boreholes and having storage tanks due poor service from companies and delays in repairs of pipe networks.

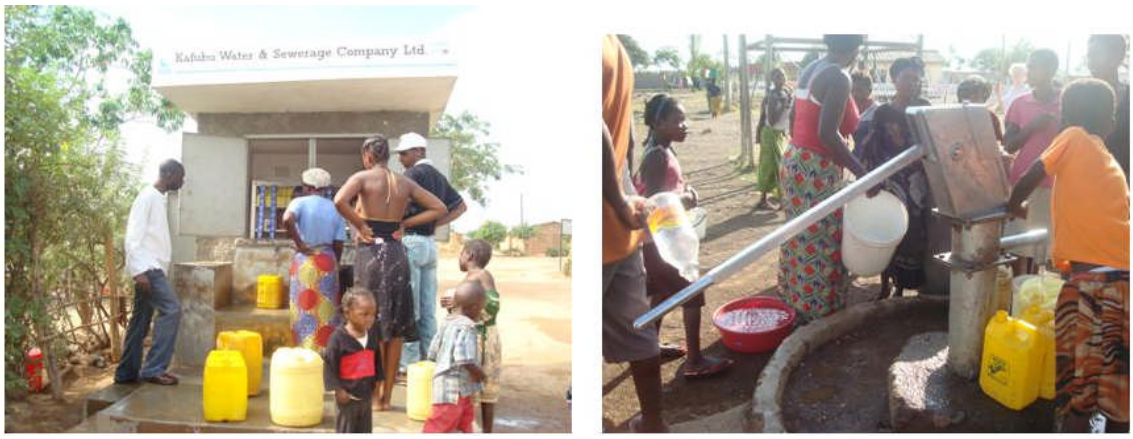
Table 4-8 indicates various sources of water, payment and related problems experienced by peri-urban consumers in Zambia

Source of water	*Payment for services(ZmK)*	*Payment for services (PPP US$)*	Major problems
Peri-urban Users			
Kiosk	5 000 per 20 litre	1.52	Frequent interruptions, long distances to walk
Standpost/shared tap	5 000 per 20 litre	1.52	Frequent interruptions/ no water available at intervals
School taps (within school premises)	free		Long distance to walk
Shallow wells	free		Poor water quality
Low-Income Users (monthly bill)			
In-house taps	200, 000- 400, 000	61-122	Frequent interruptions/ no water available. Sometimes buy water from kiosks
Middle-Income Users (monthly bill)			
In-house taps	400, 000 – 600, 000	122-182	Frequent interruptions/ no water available at intervals, but some have storage tanks at house
High-Income Users (monthly bill)			
In-house taps	600, 000- 900, 000	182-273	Frequent interruptions/ no water available at intervals but some have storage tanks at house
Own boreholes (once-off payment, including installation) with average of two 10 KL storage tanks	40, 500 000	12, 302	Mostly maintenance-related and electricity interruptions

Source: Interviews in Lusaka, 3-12 November 2008. *average between LWSC and KWSC.

The interviewees (37%) indicated that when water is not available, they make use of the shallow wells, while others (16% from Ndola town) permanently use shallow wells since the closest kiosk is about an hour walk away. The interviewees in Lusaka also mentioned that school taps are alternative water sources and is free to access. One interviewee mentioned that “if not for the distance to collect water from schools, all people would collect it from there”. The standpost/ shared taps are manned by ‘tap keepers’, who are selected during workshops held by the Utility companies, and they operate on tap opening hours similar to kiosk opening hours (6am-11am and 2pm-

6pm). These 'tap keepers' are paid 40% commission on water sales per day by the service provider.



Photograph 4: Water sources (Kiosk (left) and shared water pump (right) in Ndola and Lusaka respectively. Source: Author, Zambia. 2008

In addition to kiosks, which are company operated, the urban poor also buy water from Water Trusts, which are informal water service providers. The Water Trusts resulted from capacity building oriented projects (including construction of water supply infrastructure) implemented by CARE International (NGO). These projects work closely with Resident Development Committees (RDCs), which are community members elected to manage the water system within a given area, as part of the lowest level of governance structure of Local Authorities. (CARE interviewee, 2008). Literature (Kayaga and Kadimba-Mwanamwambwa, 2006: 158) further indicates that Water Trusts are community managed water suppliers, who primarily supply water through public standpipes as well as individual household connections. Although the Trusts seemed to have higher service quality provision, consumer satisfaction and charging rates compared to services by LWSC, through the Kiosks, the study results showed that it is not sustainable over the long-term (Kayaga and Kadimba-Mwanamwambwa, 2006: 160), therefore utility companies should strive to improve services to all consumers.

4.8.1 Perception of service providers on service levels

According to the providers (both from LSWC and KWSC) interviewed, metering is one of the best conservation techniques. They stated that their biggest challenge is to deal with the "water is abundant" attitude of the consumers and therefore their companies are placing huge emphasis on installing meters as much as possible. Lack of investment was mentioned by 70% of the interviewed providers as the major

hampering factor for infrastructural development (including installing meters) and maintenance and hence attributed to the reason for overall poor service provision. Sector investment is reportedly administered through government basket funding, which is based on national priorities (which at the moment seems to be rural water development), hence the companies has to wait until for government investment otherwise their "*hands are tied*."

Considering the non-payment history for water and sanitation services in Zambia, Utility interviewees (30%) mentioned that the companies faced many difficulties in introducing their tariffs. As a result, increments in tariffs were introduced in phases and hence cost recovering is a long-term goal. In essence the companies follow the NWASCO guidelines for reporting and accounting for their services, as well as planning for the future.

The LWSC interviewees consider their block tariff system equivalent to a cross-subsidy systems (first block serves as social tariff) and thus felt that it worked well. Similarly, the Kiosk systems were described as a success, especially in terms of revenue collection, since it operates on a "pay-as-you-go" principle.

Half of KWSC interviewees admitted that they are not effectively recovering costs due to poor services rendered. Erratic water supply (mainly due to old infrastructure and irregular electricity supply), no water availability, poor water quality, billing and late handling of complaints are reportedly the most frequent complaints received from KWSC consumers.

4.8.2 Perception of consumers on service levels

Most (79%) interviewees mentioned that water service payments are cheap to reasonable and they all had no problems with paying for water services. All interviewees from the peri-urban areas indicated that there are no toilet facilities provided and that they make use of own secluded facilities, which they mentioned are unhygienic and unsafe.

4.9 Price-setting process and regulatory tools

The priority role of the regulator, NWASCO, is to ensure that consumers are protected against unfair charges and costs of services provision is covered to guarantee sustainability. Affordability, especially for the "very poor", is a major focus for the

regulator (NWASCO interviewee, 2008). NWASCO sets out guidelines for tariff determination in accordance with the Water Supply and Sanitation Act, No. 28 of 1997, based on the following principles (NWASCO, 2004a: 38-40):

- "Sufficient revenues for the service providers
- Equitable and fair distribution of water
- Efficiency incentives for providers
- Conservation of treated water
- Protection of the environment"

The regulator promotes implementation of the full cost recovery principle, which is at the heart of all the principles. This implies that all operation, maintenance and investment costs are recovered, to ensure sustainability (and financial independence), and access to essential quality services through extension of infrastructure to all areas (NWASCO interviewee, 2008). However, official reports (NWASCO, 2004a: 39) indicates that minimum basic water provision is required at approximately $6m^3$ through a "social price", after which the full economic price can be charged through the increasing block tariff system. This system not only allows for financing of "subsidised prices for basic consumption", but also makes provision for water conservation measures. The regulator reportedly urges service providers to become more efficient in service delivery through making use of "efficiency incentives" to reduce costs (primarily personnel, energy and reducing unaccounted for water) and ultimately decreasing prices for service delivery (NWASCO interviewee, 2008). In this regard, more emphasis is placed on metering and proper billing systems, to enable consumers to 'regulate' their water use in accordance to their affordability levels. Official reports indicate additional incentive tools used by the regulator such as the performance oriented incentive scheme (POIS) focusing on performance of human resources and creating appropriate incentives to ensure staff motivation and effectiveness (D'Sousa and Barmeier, 2006: 2).

Many of the utilities are reportedly not recovering their costs due to several reasons, including under-pricing, and this prompted the regulator to adopt the "cost plus regulation" approach. The NWASCO interviewee described the approach as a two-step approach, which first ensures that utilities' operation and maintenance costs and

eventually "capital replacement" costs are recovered and then it focuses on "incentives for performance improvements". This enables the regulator to classify two types of commercial utilities, those that are below 100% O&M cost recovery rate and those between 100%-150% O&M cost recovery rate. The approach is implemented taking the consumers' ability to pay for services into consideration. Hence the types of tariff structure developed by utilities depend on the type of consumer groups. In this regard, official reports indicate (NWASCO, 2004a: 42) that the majority of domestic consumers in Zambia make use of individual house connections and water kiosks/public taps. The other consumer groups are comprised of non-domestic consumers such as industrial, commercial and administration (including government institutions). However, it is expected that these groups will decrease with the introduction of meters, which is believed to make the tariff system simpler (NWASCO interviewees, 2008).

A similar tariff adjustment process as in England is followed in Zambia, starting with utilities submitting annual company statements, followed by tariff adjustment proposals (in consultation with all stakeholders) and business plans and ending with medium strategic plans (5-6 years) to NWASCO (NWACSO interviewee, 2008). See Appendix F for detailed steps of the tariff adjustment process. The NWASCO official further explained that as part of the process companies are required to assess their performance indicators against minimum service level agreements (MSLA). Tariff adjustment analysis (Figure 4-13) is done through applying a point system to projected O&M costs of companies. This also takes into consideration the performance analysis (also point system), which will result in an average tariff, considering the quantity of consumers billed. This average tariff is further used to allocate the various tariff categories, specific to company conditions.

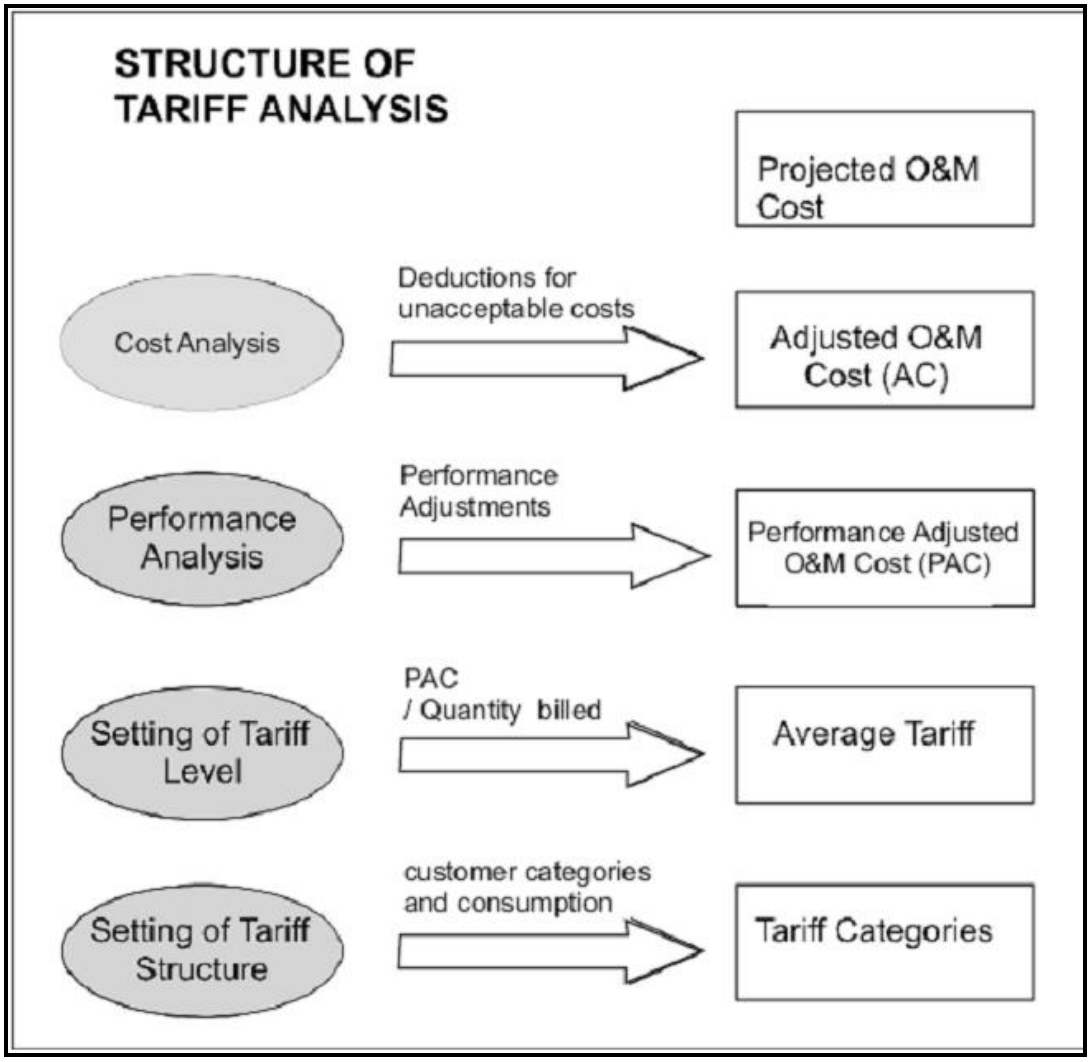


Figure 4-13 Tariff Analysis process in Zambia. Source: (NWASCO, 2004a: 52)

The tariff adjustment procedures form the major part of the regulatory tools (Figure 4-14), used by the regulator. In addition, the NWASCO Information System (NIS) is reportedly the heart of the system.

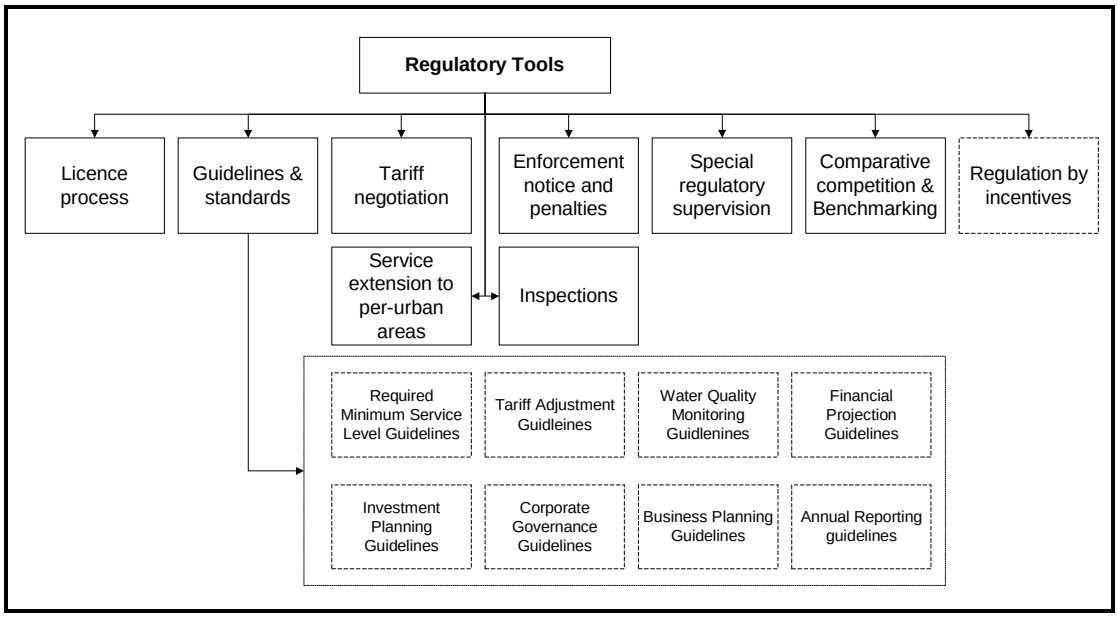


Figure 4-14 Regulatory tools used by NWASCO. Source: (Klawitter and Lang, 2008: 3)

These tools are described in the literature (D'Sousa and Barmeier, 2006: 3) as enhancing transparency and predictability of the work of the regulator, especially during the tariff adjustment process. The comparative competition tool is indirectly used as an efficiency incentive as well as creating competition through benchmarking service providers against certain performance indicators (D'Sousa and Barmeier, 2006: 4). The annual comparative sector reports (NWASCO, 2004a: 54) indicate that vast improvements are taking place in terms of the "technical performance" of the service providers, while the financial performance remains a huge challenge, given that many companies are still struggling to reach operational costs recovery levels. The performance indicators are strongly focused on the services levels and cost recovery of the providers based on a traffic light system (Figure 4-15) with red, amber and green indications compared to benchmark achievements (NWASCO, 2004b: 6). The performance of companies are measured against the following indicators (NWASCO, 2004a: 54) which are also used for benchmarking purposes:

- Metering ratio
- Water quality
- Service hours
- Specific efforts and initiatives to improve efficiency, service or access
- Unaccounted for water

- Collection efficiency

Overall, LWSC and KWSC are ranked 6th and 4th respectively out of a total of 10, based on the benchmarking assessment tool used by NWASCO. KWSC is showing vast improvements in 2008 from being ranked 8th in 2005, failing to meet the criteria for unaccounted for water (UFW) and metering ratio, while LWSC does not meet UFW, water service and sanitation coverage as well as staff per 1,000 connections ratios. Cost recovery remains a challenge for CUs, and it is primarily due to poor (old) infrastructure (poor maintenance) and lack of commercial orientation (considering the background of CUs) (NWASCO, 2008: 12).

	UFW [%]	Trend	Water Quality [% compliance to number of samples] #	Trend	Metering Ratio [%]	Trend	Water Service Coverage [%]	Trend	Sanitation Coverage* [%]	Trend	Hours of supply	Trend	Staff per 1,000 connections	Trend	Collection efficiency [%]	Trend	O+M Cost coverage collection* [%]	Trend			
LWSC	50	↑	79	↓	49	↑	67	↑	9	→	16	↑	12	↑	95	↑	111	↑	3	2	4
NWSC	40	***	81	***	47	***	82	***	47	***	16	***	9	***	88	***	105	***	4	4	1
KWSC	48	***	93	***	26	***	88	***	52	***	15	***	8	***	96	***	128	***	4	3	2
MWSC	42	***	95	***	36	***	84	***	72	***	17	***	7	***	77	***	111	***	5	2	2
LGWSC	58	↑	70	↓	30	↑	42	↑	8	↓	16	↑	18	→	65	↑	49	↓	1	0	8
SWSC	40	↑	93	↓	74	↓	85	↑	45	↑	14	→	10	→	108	↑	104	↑	4	5	0
CHWSC	53	↑	31	↑	8	↑	50	↑	23	↑	11	↑	15	↑	83	↑	80	↓	0	0	9
NWWSC	33	↑	97	↑	100	→	58	↓	4	→	20	→	12	→	87	↑	77	↓	5	1	3
WWSC	42	↑	85	↑	14	↓	55	↑	8	↓	8	→	15	↓	82	↓	78	↓	0	2	7
CWSC	30	↑	20	↓	100	↑	68	↑	45	↑	22	↓	13	↓	108	↓	82	↓	3	2	4
Av.	45 (w)	↑	74.4 (s)	↑	43(w)	↑	71.3 (w)	↑	29(w)	↓	15.5 (s)	↑	**		95(w)	↑	109 (w)	↑			

Worse than the relevant average and benchmark not achieved
Better than the relevant average but benchmark not achieved
At least "acceptable" benchmark achieved

(w) weighted average
(s) simple average

* No benchmark defined
** Different benchmarks depending on size of company, therefore no comparison to average
*** No comparison to previous year because of structural changes
# The water quality compliance indicator calculation has been revised in accordance to the new water quality guideline that incorporates the compliance to the required number of samples (see 7.1.9)

Figure 4-15 indicates the overall performance of CUs against key performance indicators. Source: (NWASCO, 2008: 5)

Regulation with an incentive scheme is only recently (September 2008) introduced and will focus on the internal performance of CUs. CUs are expected to develop incentive frameworks in consultation with NWASCO, which would facilitate efficient quality and service provision (especially to the urban poor) (NWASCO and CU officials interviewed, 2008). NWASCO, reportedly also acts as mediator between debtors and providers, to encourage punctual payment of debt to contribute to cost recovery and financial sustainability of providers. In return for services rendered and to keep water sector sustainable, NWASCO is financed by utility levies of 2%, which contributes to an 85% cost recovery rate for the regulator.

NWASCO also forms part of the sectoral committee of the African Forum for Utility Regulators (AFUR), which serves as regional platform to share and learn best practices across the continent. According to one interviewee, the idea of regulator for water sector is 'fairly new' and with increasing awareness, the demand for sharing information is developing and spreading fast across the region. Furthermore, the regulator has good support from donor community, especially GTZ, which also forms part of the Board as well as offering advisory services accordingly.

Access to up-to-date information about sector performance and development is made available on the internet including NWASCO annual reports, indicating their financial status. However, the financial data were understandably not as detailed as the England regulator.

4.10 Consumer representation process

The activities of the regulator include a high degree of stakeholder involvement, which is evident through the board representation (including government institutions, private sector and other agencies) as well as direct links to local community representatives through the Water Watch Groups (WWG). This group was established by NWASCO, consisting of voluntary community members, to act as an information link to consumers (focus on urban poor), which are believed to enhance the regulatory process in conjunction with NWASCO (WWG member interviewed, 2008). Based on an interview with the WWG member in Lusaka, the process of establishment (pioneered in 2002, by NWASCO) was not as smooth as illustrated in reports and other information. The process was described as lengthy (2 years) and difficult to convince providers of the benefits of a consumer representative body. The WWGs are primarily established to facilitate consumer complaints process between consumers and service providers. It is reported that consumers are actively involved in the tariff adjustment process, through compulsory consultative meetings held by providers prior to tariff adjustment proposals (WWG member interviewed, 2008).

Community governance structures (Figure 4-16) are two-fold and comprise of WWG members who are linked to CUs and Ward Development Committees, which are linked to local authorities. According to the WWG member interviewed there is a good working relationship between the two committees and active sharing of information is taking place.

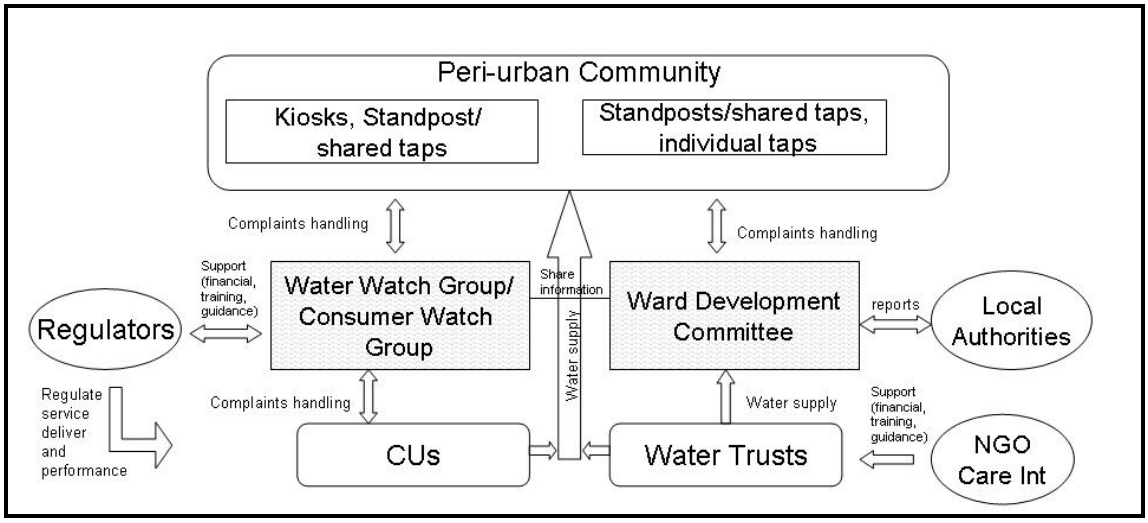


Figure 4-16 Shows peri-urban community governance structures and their interactions with other institutions. Source: Author's synthesis of interviews in Lusaka, 3-12 November 2008

The services of Water Trusts are not regulated by NWASCO and therefore (opinion of an interviewee) face several challenges with regards to tariff determination, especially regarding individual connections. Water Trusts are currently operating in 6 settlements in Lusaka namely Kanyama, Chipata, Chibolya, Chaisa, Chazanga and Garden, with Care International (NGO) playing a crucial facilitation role in their establishment process.

Lusaka WWG is comprised of 13 members dispersed across 33 wards (locations). The major role as described by the interviewee includes:

- Advocate the rights of people to the utilities (vice versa),
- Act as a link between customers, utilities and regulator,
- Deal with customer complaints and ensure that is dealt with in accordance with NWASCO guidelines (Figure 4-17).

The group primarily deals with peri-urban consumers who are making use of water kiosks (pay as you go); stand posts/shared taps and other alternative sources to collect their water. The other domestic consumers' deals directly with the service providers based on bills received (post monthly payments). The interviewed WWG representative explained that in 2006, the other regulators (telecommunication and energy), joined NWASCO's initiative and the concept of WWGs were expanded to form Consumer Watch Groups (CWGs), which were to focus on all three sector issues and not only water. The regulators jointly sponsored an office for the use of CWGs

and are also sharing the administrative and logistical costs incurred by members. The interviewed WWG member indicated that this was a good initiative; because it would further legitimise their existence as well as enable consumers to know where to table their complaints (because previously people had to wait until the members get to their area or go to the members houses). The Group activities are guided by various annual area specific plans (budgeted) and schedules subjected to approval by regulators (Interviewee, November 2008, Zambia).

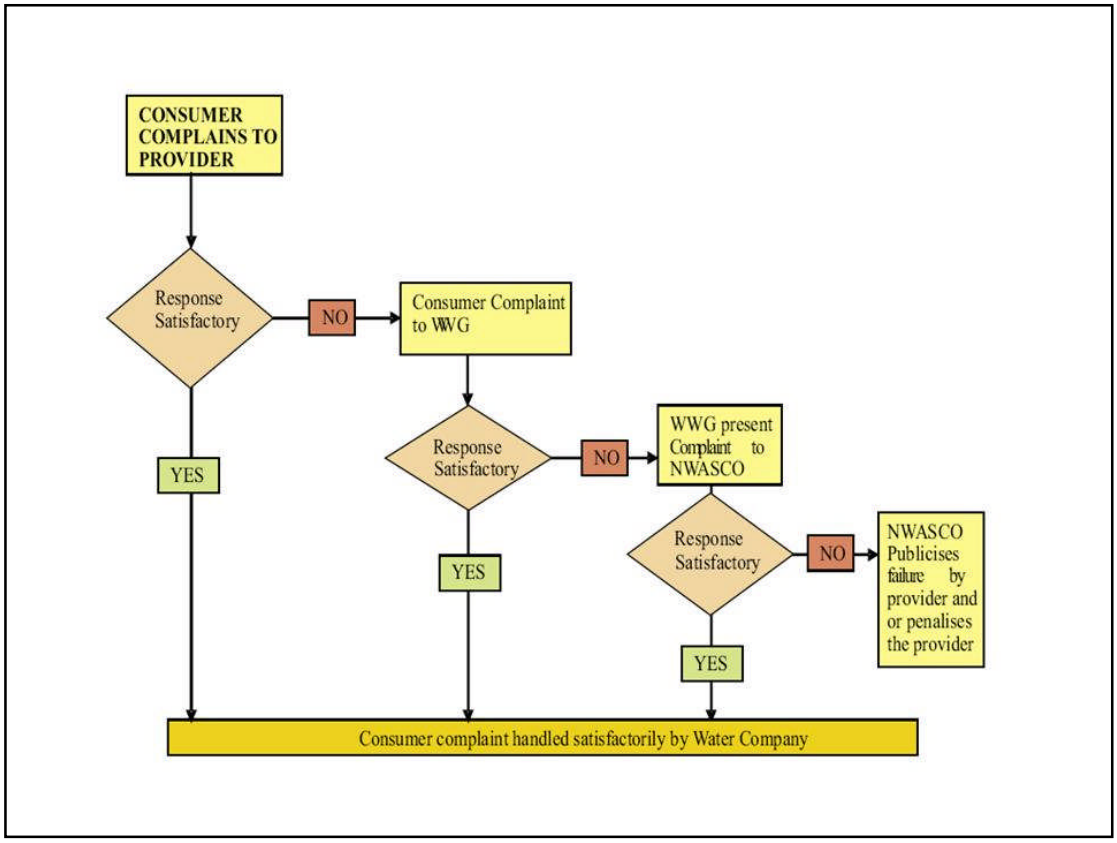


Figure 4-17 illustrate consumer complaints procedure followed by WWGs. Source: (NWASCO, 2007: 6)

There are several interactions between WWGs and service providers after a complaint has been launched. Only after a certain time period of disagreements with regard to complaints handling is the complaint forwarded to the regulator, who will then take the necessary steps to address the issue. The interviewed WWG member indicated that once a complaint reaches the regulator, the issue is solved; due to high efficiency level of the regulator (in this case specific reference was made to the director of NWASCO). Official statistics (NWASCO, 2008: 26) indicate that in 2008, 69,328 complaints were received of which 71% were successfully handled. The rest of the complaints are investment related and thus will take longer to address.

4.10.1 Perception of Regulator on regulatory process

The interviewees from the regulator's office indicated that the regulatory process is implemented based on the guidelines and the legal framework in place. The Act stipulates their working arrangements and operations. The interviewees further mentioned that the following 'independence' criteria are very clear (in the Act) hence the perceived success of the regulatory process:

- Decision-making power
- Financial independence
- Recruitment of personnel

During the start up phase of the regulator, financial sustainability was not clear since they depended heavily on donor funding and government input. However, since 2006, they are financially independent and operate from the 2% CU levies. One interviewee mentioned that though Government appoints two Board representatives, the operations of the regulator are not affected or politically influenced (as the perception of others might be). The biggest challenge the regulator faces is reportedly to avoid regulatory capture and therefore one of the NWASCO interviewees felt that having a governing Board neutralises the situation. Overall, all interviewees agreed that the regulatory process requires a high degree of objectivity. In this regard, reference was made to the recent price hikes during an election year, which is a sign of the degree of independence the regulator has and therefore proves that the price-setting process is relatively detached from politicians. The interviewee further elaborated that the presence of a regulator in the sector ensures that people do not relate the tariff adjustment process to the political situation, which places emphasis/importance on the transparency principles of the regulator. In addition, one of the benefits of having a regulator "*is having the comforting idea that prices are reviewed through an acceptable and creditable (respectable) system that both people and companies can trust*"; other benefits include ensuring all interests are met and being accountable (justifying) for the process.

The guidelines are constantly reviewed in consultation with the relevant stakeholders to ensure that they understand the process and the purpose of the information. In this sense the regulator tries to share as much information as possible in their attempt at

being transparent (NWASCO interviewee, 2008). Furthermore, the regulator has the challenge of setting quality standards and performance indicators given the poor state of CU infrastructure in Zambia, hence the emphasis placed on the tariff adjustment regulatory tool so as to ensure that operating and maintenance costs are recovered to reinvest in the infrastructure and improve services (including to peri-urban areas). In this regard, the regulator is trying to encourage meter installation as much as possible to encourage not only payment for services, but also conservation measures and effective measurement of non-revenue water. The NWASCO interviewees agreed that the biggest challenges of CUs are investment funding-related and therefore are highly dependent on external grants and loans. These are currently mobilised by government through a system of priority criteria as part of the National Urban Water and Sanitation Programme (NUWSSP). Another NWASCO interviewee mentioned that another challenge for CUs is their ineffective governing structures (boards), because the interviewee believes that Board members of CUs lack a sense of commercial (business) orientation, and this filters down to management of the companies. Hence the regulator is placing a stronger emphasis on the corporate governance regulatory tool and capacity building for CUs.

The personnel of the regulator is reportedly 'thin on the ground' and therefore they have to be very effective to deliver the best services, however it also limits them in certain operations, especially company specific inspections. These are only done once a year and in some cases they solicit part-time inspectors comprising of professionals working in the water sector to assist in the exercise.

One of the NWASCO interviewees mentioned that so far the regulator is struggling to keep up to pace with the sanitation demands, and they are encouraging CUs to prioritise these as much as water supply. Sustainable options are encouraged to form part of the business plans of CUs in line with the broader objective of achieving governments' Vision 2030 plans. The regulator takes issues of affordability very seriously, according to interviewees, and therefore the tariff setting process includes CUs to determine the affordability levels in consultation with consumers before setting tariffs. The interviewees indicated that there is a good working relationship with other regulators and there are numerous opportunities to share information and develop solutions to problems.

4.10.2 Perception of Government officials on the regulatory process

The water reform process was described by interviewed government officials as "*not easy*". They pointed out the importance of the history behind access to water in Zambia, which was free and gradually changed to being an economic good. This had vast financial and social implications, both for consumers and providers; therefore the need for a regulator was highlighted and was subsequently introduced. The hardest aspect of the reform process, according to one government interviewee, was changing the mentality of people, and it took a lot of effort from the MLGH to sensitise people with regard to transforming LAs into CUs. Traditional and cultural aspects also had a strong influence on planning and development of the water sector during that phase. Furthermore, the CUs were challenged to consider the income structure of the consumers while looking at their ability (financial and human) to deliver water and sanitation services based on the demand.

The reform processes of Zambia and Uganda reportedly coincided and therefore the two countries learnt a lot from each other during the process. In this regard, much improvement is noticeable in the water sector till date (November 2008). The major driver for change was to achieve effectiveness hence the establishment of CUs and the regulator. Initially the CUs had difficulties in accepting to pay (levies) to maintain the regulator, however it is believed (by interviewee) that they can now appreciate the work of the regulator and thus see value for their money.

Two of the interviewees felt strongly that privatising water utilities can work only if relevant investment plans and funding are available to implement the required activities, otherwise investment funds has to be sourced from donors or government. Overall they mentioned that the Zambian water sector is benefiting a lot from the donor community, for example through DTF, and that the presence of a regulator makes it easier (gives them confidence) for support from the international community. The donor funds are channelled through MLGH as a 'basket fund' to companies where it is needed (based on accepted proposals). This system was introduced to coordinate the funds specifically for the water sector and consequently the government applies for grants and loans on behalf of companies, indicating commitment from government (usually required to add certain percentage of funds or pay back if funds are not utilised), thus encouraging further donations. In essence these funds are earmarked for CUs to extend their services to areas such as the peri-

urban. Various elements are taken into consideration during the funding allocation process, for example, the state of infrastructure, geography of service area, as well as the regulator's assessment. The interviewee further alluded that in general, during the national budget planning, the water sector receives little attention because it has been proven that they (water sector) find it difficult to quantify their needs and therefore unable to define realistic investments and as such other sectors with clear plans and budget gets budget allocations.

Two government officials hinted that there are no subsidies per se for companies or consumers as part of a social grant, however there are some funds disbursed to companies as part of the NUWSSP, to serve as counter funding in times of need for companies. In general the notion of subsidies is not supported because it is believed to be unsustainable. One interviewee mentioned that the water services should not be treated any different from other services and that the principle of "*you don't go in the shop if you do not have money, unless you are a thief*" (making reference to illegal connections) should always apply.

"*The regulator is doing a good job*" was the most common response to what the interviewed government officials think of the regulator and the related process. The regulatory process is seen as independent with strong support from Government where necessary. In this case, the role of the government was compared to that of "big brother" in the sense that they take on a neutral role between regulators and companies. "*Water is the business of the state and therefore it is difficult to divorce the tasks*", however government gives the regulator freedom to operate, though they appoint two members on the Board, they do not consider government as interfering in the affairs of the regulator unless specifically requested to do so (for example in cases of withdrawal of licences).

Government depends on the regulator for information and thus feels that the regulator is very transparent (scored 5 out of 5) and it makes the decision making process easier. Furthermore, one interviewee mentioned that the regulator makes use of a 'bottom-up information feeding approach' (for example using WWGs as whistleblowers), which gives all stakeholders a sense of ownership and empowerment over the resources and services provided.

In general there is a good working relationship between government and the respective regulators. These include Environment Council, Water Board (government body responsible for abstraction and water resources licences), energy and communication and transport authority as well as NWASCO. All these regulators are seen to work towards implementation of government policies and more specifically the water related ones are working towards achieving the Millennium Development Goals (MDGs). Currently, government is conducting a study to estimate the costs and plans of meeting these goals. In this regard, the interviewees mentioned that the process is "*still young*" and would eventually expand to include rural areas. One interviewee mentioned that the strength of the regulator lies in its independence (financially and in decision making) and this improves the process and service conditions (aiming for universal service coverage) and subsequently ensures that quality standards are adhered to.

4.10.3 Perception of service providers on regulatory process

The regulatory process is described as 'improving' compared to its inception phase, by 50% of the service provider interviewees. However, the terms used to describe the regulator in the process included "*over-regulation*" and "*interfering with company management operations*". The major reasons for this was reportedly due to unclear roles and responsibilities and lack of technical staff, which leads to poor understanding of company operations. "*The regulator needs more hands-on people before they can get hands-on*". One interviewee further mentioned that the regulator undermines company management, because "*they feel like they have the power to just walk in and do what they want*" and therefore effective communication measures should be developed further, otherwise they strongly felt that the regulator hampers ("stumbling block") progress of the company. They further stated that "*the regulator needs to have a better understanding of the utilities before enforcing punitive measures*" (LWSC interviewees, 2008).

Furthermore, the utility interviewees indicated that some of the regulatory tools are not applicable to the company and need to be tailored for each company, because company operation conditions are different. For example, some information is cumbersome and the interviewees do not understand what it is used for. They also felt that the regulatory system is "*imported*" and is therefore "*out of touch with what is happening on the ground*". In this case more flexibility is required. The majority of

the interviewees (60%) mentioned that the benchmarking assessment does not take into account the different conditions (scope and scale) in which companies operate and thus needs revision. The regulator needs to "*compare like with like*".

On the positive side, the regulator is reportedly impartial (especially from political interference) with regard to tariff determination process and facilitates/guides the process quite well (Utility interviewees, 2008). The major advantages of having a regulator in place are seen by 60% of the interviewees as:

- ensuring improvement of services (upholding quality standards)
- establishing framework of operation and service provision
- protection of consumers interests
- conflict resolution (especially between government and service providers)

All service provider interviewees expressed their excitement about the 'regulation by incentive' initiative that has been introduced. There was unanimous satisfaction amongst all interviewees about the enforcement and monitoring tools and so far no companies opposed the claims from the regulator. The regulator was also described as very resourceful in terms of sharing information and transparent (received an average score of 4 out of 5). However 40% of the interviewees felt that the regulator should be instrumental in mobilising funds for the utilities (since lack of investment is the biggest problem in the water sector) as well as stronger support to providers in debt recovery efforts from consumers (especially government). Only two interviewees from both Utilities felt that there are no direct benefits from having a regulator in place and it is an issue that still needs to be addressed. In contrast, the rest of the interviewees mentioned that the regulator makes a huge difference in the system compared to the previous system, where water and sanitation services were provided by Local Authorities. The efficiency gains are visible. The interviewees further stated that the only problem with the transition from LAs to CUs was that it was done without capital investment.

The regulator further has a good reputation in stakeholders' engagement (including with consumer groups) including providing/identifying relevant training (Utilities interviewees, 2008). For example, they initiated the Public Relations Officers and Chief Executive Officers platforms that takes place every quarter, and forms a

platform of discussion and learning from each other. For example, the billing system of KWSC has been a seen as a good example, from which other utilities can benefit. Other issues of discussion at the fora, include interpretation of the Water Act and its implementation thereof.

4.10.4 Perception of consumer representatives about regulatory process

Initially all WWG activities were regarded as suspicious and the reactions from providers were very 'aggressive'. Thus the providers were very hesitant to provide information to the group members and cooperation was very poor. The benefits of having such a group only became apparent after several workshops and meetings, and since 2004, the providers make active use of the consumer group to spread information to the consumers (especially during tariff adjustment consultations). In that sense, acceptance and recognition of their existence was important to carry out their duties.

In general the opinion of the consumer representatives about the regulatory process was very good especially the monitoring of progress in peri-urban areas and the annual reports are very valuable and of good quality. The interviewee feels that the NWASCO director was described as very reliable and "*is not influenced by company or government politics*" when handling cases. He further stated that "a*ll cases receive equal priority after reaching the regulator*" (WWG Interviewee, 2008). The benefit of having a regulator is reportedly to ensure the rights of beneficiaries are not violated in a negative way by the service providers and vice versa. The WWG interviewee further stated that a lot of improvement (because of the regulator) can be seen within the water sector and this also serves as an additional incentive to be part of the consumer representative body. However, the interviewee also recommended that the board selection of NWASCO by the Ministry needs to be reviewed, since it might give the impression of political interference. Another NGO interviewee indicated concern about the non-inclusion of community service providers (Water Trusts) in the regulatory process and feels that this limits the opportunities for motivating and encouraging community participation in alternative service provision. The interviewee further suggested that "mechanisms should be put in place to reward CUs that effectively support community based service providers as a way of encouraging the CU role in peri-urban areas". Furthermore, the regulator is seen to interfere with CU operations, especially with regards to their role through DTF, which gives the

"impression that they are indirectly controlling the CUs both on operational policies and support to community based service providers leaving very little room for innovation". In some cases the regulator is seen to overstep the boundaries with regards to developing sanitation policies, which is the mandate of the MLGH.

4.10.5 Perception of consumers regarding the regulatory process

A sizeable majority (74%) of interviewed consumers did not know about WWGs or NWASCO and therefore could not comment on their efficiency; however they all agreed that they needed such bodies to "fight" for them.

4.11 Chapter summary

The regulatory processes in England and Zambia are well established and operating to the satisfaction of the majority of the interviewees. There are a few similarities between the two country processes as indicated through the perceptions of the stakeholders. Both regulatory processes are strongly guided by their respective legislation, which clearly stipulates roles and responsibilities, including procedures and enforcement tools, which makes the regulators fairly independent and 'successful' to a large extent. However, there are several challenges highlighted that need improvement and consideration within the price-setting processes respectively. Though a regulatory process is in place, service delivery and efficiency cannot be guaranteed. The processes are perceived to be transparent and accountable for the stakeholders involved. Utilities mainly described the process as being 'over-regulated' and too much information expectations from the regulators. The utilities in Zambia performed poorly in financial terms, primarily due to the lack of infrastructural investment and maintenance of a deteriorated state of service networks. In contrast, the English water utility focuses on improving innovation to address climate change challenges and also includes subsidies for their 'vulnerable' consumers. The consumer representation processes as part of the regulatory process, were seen as very valuable and improves transparency within the system. Interestingly, the consumers of both case countries, were not aware of the processes, though many were satisfied with the services provided and payment for services were considered as reasonable and affordable for the majority of consumers.

The experiences from the two cases, further highlights the complex process of decision-making and balancing the four major conflicts (authority, cognitive, value

and interest) as indicated in the literature. Hence the importance of accurate information (especially financial and operating statistics) and transparency required in price-setting processes to address principal-agent challenges within regulatory frameworks cannot be overemphasised.

"Learn from the 'mistakes' of others". John Luther

Chapter 5: Namibia: a water-stressed country with a highly skewed income distribution

This chapter provides results from the fieldwork conducted in Namibia, in terms of the relevant policies to price-setting process; resource and service availability; costs of service provision; affordability of services and the perceptions of stakeholders about a proposed regulatory system in Namibia for the water sector, all within the context of the principal-agent challenge. The results presented in this chapter were obtained from semi-structured interviews as well as secondary data and reports. The interview data reflect the perceptions of a total number of 109 individuals representing 18 organisations interviewed over the periods April-June 2007 and October-December 2008.

5.1 Institutions, Roles and Relationships

The Ministry of Agriculture, Water and Forestry (MAWF) and Ministry of Regional Local Government and Housing and Rural Development (MRLGHRD) are the primary government institutions dealing with the price-setting process in the water sector. These ministries' hierarchy devolves to the level of divisions responsible for specific functions, while taking the overall coordination roles (Figure 5-1). During the fieldwork, it was difficult to determine which divisions are specifically responsible for the tariff-setting process, since it appears that all divisions have a role to play, to some extent. Coordination between divisions and directorates is missing to a level where internally the roles are not clear as to which division is responsible for which aspect. The sanitation function was recently (last year) moved from the Ministry of Health and Social Services in recognition of the strong link between water and sanitation issues. However, the emphasis is more on rural sanitation than on urban sanitation. In response to this need, a Water and Sanitation (WATSAN) committee, with a special focus on water and sanitation, has been established by the City of Windhoek, consisting of various City departments (sustainable development, community development, environment, health, bulk water and solid waste), and it is mainly responsible for equitable water and sanitation for Windhoek residents, with special emphasis on informal settlement areas. Within informal settlements, the City, through

WATSAN, facilitates a process of establishing community organisations, which consist of community leaders/chairpersons, vice-chairpersons, treasurers, secretaries and additional members, with the exact composition depending on the specific community. The community organisations are formed to represent the consumers living within a certain settlement area (mostly where communal services are in place) and to ensure that the municipal bills (in many cases only water bills) are paid and other needs of the community are addressed adequately, through regular meetings and feedback session with either the community or City officials. The committee members are elected every two years. Similarly there is a Rates and Tax payers association, which represents formal households in the central business district on various issues, including water and sanitation services. However, the research found that social welfare services were treated separately, in the Ministry of Health and Social Services, from the issues of water and the research observed little to no coordination between these ministries with regard to water and sanitation services and price-setting processes.

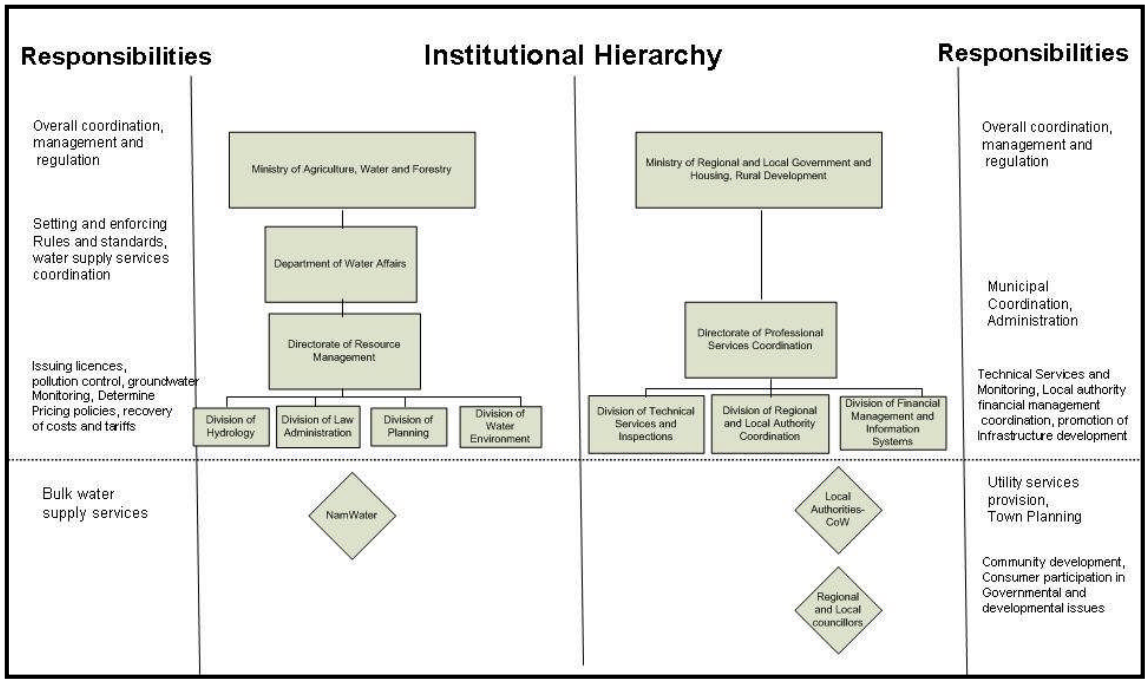


Figure 5-1 Institutional hierarchy of water sector principal ministries and service providers. Note: There are several other institutions in-directly involved in the urban water price-setting process, but for the purposes of the study, only the major players are highlighted in illustration. Source: Researcher's synthesis from information gathered.

For the purposes of this investigation, the various roles and responsibilities in the water sector were divided into categories directly linked to price-setting, service provision and monitoring. Table 5-1 indicates the various institutions that are directly

involved in urban water sector management, in particular price-setting and related activities, according to stakeholder perceptions gained from the interviews.

Table 5-1 Perceived institutional activities and responsibilities in the urban water sector

Activity (What has to be done?) / *Responsibility* (Who is doing it?)	*Legislation Development*	*Allocation of finance/ budgetary Approval*	*Price-setting/ economic regulation/ Approval of Tariffs*	*Monitoring of service, water quality and env'mental regulation*	*O&M-treatment/ distribution*	*Management of customer/ community involvement*	*Evaluation/ performance auditing*
Ministry of Agriculture, Water and Forestry (MAWF) -Department of Water Affairs	X	X	I				I
Ministry of Regional and Local Government and Housing and Rural Development (MRLGHRD)	X		I				
NamWater (Bulk Water)		O	I	X	X	X	X
Local Authorities			I	X	X	X	X
Communities/Consumers (Community Management committees)			O			I	O
Non-governmental organisations (NGOs)	I		O				O
Private sector						O	O
Regional Councils	I						

Key: Perceived responsible (X), Perceived Involvement (I), Perceived Interest (O). Source: Matrix adapted from Franceys, (2006). Contents from results obtained in April-June 2007, Windhoek, Namibia.

Table 5-1 indicates that the providers are *involved* in self-regulation, since they are primarily setting their own tariffs, monitoring themselves as well as assessing their own performance. The various ministries shown are legally *responsible* for the indicated activities, though from the interviews a sense of *involvement* was revealed instead. For example, the interviews revealed a widespread perception that the local authority tariffs are always approved by the government as proposed, without enquiry or investigation from the responsible ministry. Many of the people interviewed attributed this to the fact that the local authority contributes 5% of their income to

sustain the Regional Councillor's operations, a financial tie which is thought to result in the tariffs never being questioned. This was often the reason given to explain why no provision (or no special arrangements) is made to supply the urban poor with water and sanitation services. Interviewees felt that it was the *responsibility* of the Government to subsidise those who cannot afford to pay for these services. Government officials, on the other hand, often felt that the local authority is *responsible* for subsidising urban poor "since they make so much profit from water supply services".

Non Governmental Organisations are primarily *involved* in capacity building and awareness raising initiatives, however those NGO members interviewed (22%) noted that they have never been involved in the price-setting process and only have input to general water conservation and management activities. They all mentioned that it would be ideal to participate in price-setting.

Regional Councillors are political officials appointed to govern various constituencies (ten) within Windhoek, by ensuring that living condition standards (most specifically social welfare) are upheld and that the needs of residents are catered for respectively. The Regional councillor *responsibilities and involvement* were perceived differently by various stakeholders, ranging from political interests to no involvement or interaction with consumers on water related issues. Similarly, the role of the private sector in water and sanitation and more specifically the price-setting process was perceived to be very limited or non-existent by the majority of interviewees (76% out of 74).

Overall, no clear perceived linkages between the various institutions and organisations in the interview results were observed. It seems that the organisations involved operate in isolation and exchange information only on a need-to-know basis. Many of the interviewees in the provider category (59% out of 18) mentioned that the lack of communication might be due to a lack of clear price-setting policies or guidelines. Stakeholder involvement was deemed very important for understanding and transparency of the tariff determination process. The rest were of the opinion that the tariff-setting process is very technical and need not to include all stakeholders; suggesting that the involved organisations should select representatives which they feel are most suitable to determine these tariffs.

5.2 Providing water and sanitation services

The water supply and distribution function in Namibia is sensitive, in the sense that it is done in two-parts. Firstly by the bulk water supplier, NamWater to the Local Authorities (municipalities) (Figure 5-2), Village Councils, Mines and Industries and private consumers and secondly, these recipients further supplies water to the end users, where applicable. Currently there are 244 bulk water supply points which are located in 10 areas and 3 regions (DWA, 2007). This study is focused only on the Central region; thus it mainly makes reference to Khomas water supply region, since that is the origin of city of Windhoek's water supply. The City of Windhoek (municipality) is responsible for water supply and sewerage disposal to Windhoek, with a population of 250 000 residents (Du Pisani, 2006:80).

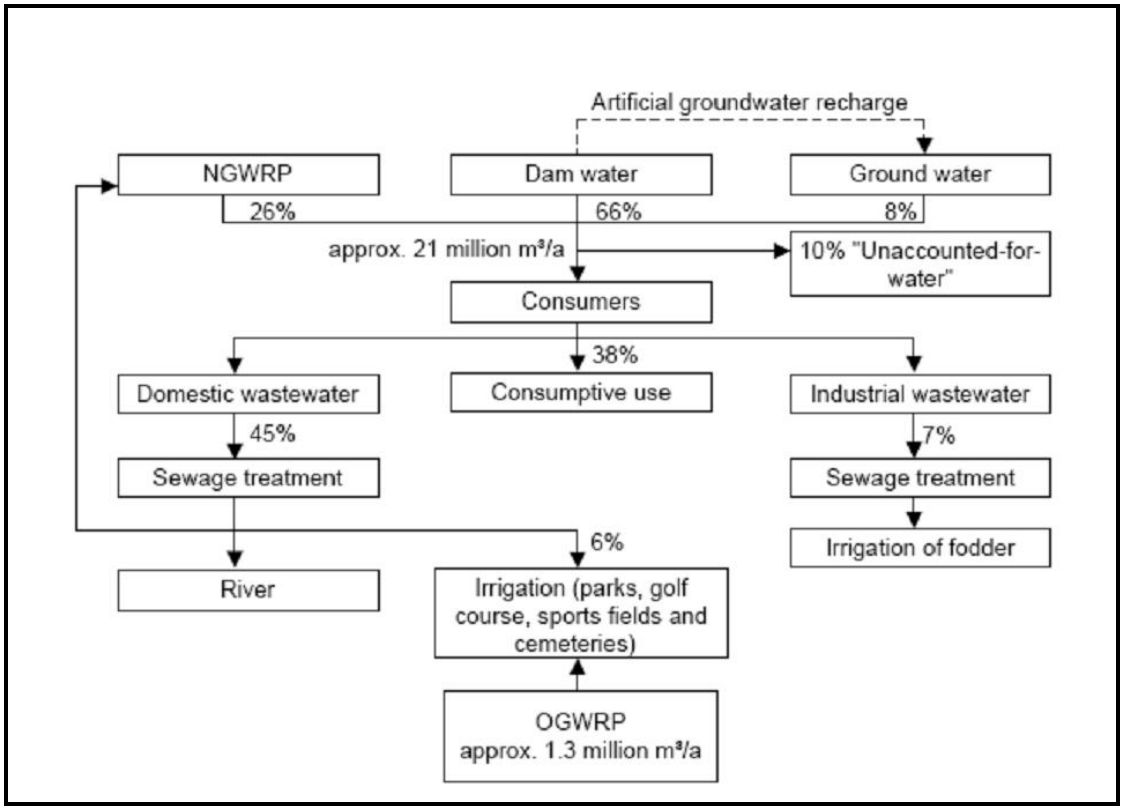


Figure 5-2 Bulk water supply sources to Windhoek. Note: NGWRP- New Goreangab Water Reclamation Plant; OGWRP-Old Goreangab Water Reclamation Plant. Source: (Van der Merwe, 2000 **as cited by** Lahnsteiner and Lempert, 2007:442)

Windhoek's available water resources (NamWater, boreholes and reclamation) totals 22.2 Mm^3 per annum, based on 95% reliability from dams (Van der Merwe, 1998:10-3). Figure 5-2 is an indication of the distribution of these resources to consumers. As a result of regular droughts, reuse of municipal waste water was found to be the best

alternative source of water to meet the City's growing demand. In this regard, Namibia's wastewater treatment is renowned for its treatment plant and is used an exemplary model for many countries. Public acceptance for drinking reclaimed water is high based on well designed education programmes and indication of good quality water with no evidence of health related impacts. It is further reported that the Cities' population takes pride in being known as the only City making use of direct potable water reuse worldwide (Lahnsteiner and Lempert, 2007:447).

5.2.1 NamWater

NamWater is expected by the Ministry of Agriculture, Water and Forestry to account for costs at each of their schemes, so that any tariff adjustment can be approved. The government officials interviewed from the MAWF (33% of 9) revealed that due to the inability of NamWater to calculate their costs per scheme in a transparent manner, the 2007/2008 tariff adjustment proposal for a 10% increase across all schemes has not yet been approved.

NamWater was given the infrastructure (much of it reportedly to be more than 50 years old) at book value and the replacement value of assets amounted to approximately N$ 3-4 Billion (PPP US$ 1-1.4 Billion) at the time of the transfer from the Government to the company. Government is the main shareholder of NamWater, and does not require payment of dividends or tax (Government interviewee, April 2007). An interviewee from NamWater further mentioned that when NamWater took over bulk water supply operations from Government the tariff was far below any cost-recovery level, which severely affected the viability of the company (Figure 5-7). Hence they have been subsidised by government, with N$ 20 Million (PPP US$ 7 Million) given over a 5 year period.

In order to understand the financial position of the bulk water supplier as it relate to possible tariffs for bulk water supplied to the City of Windhoek as distributor, the researcher collected the annual financial statements of NamWater for analysis. This process was not straightforward as the financial statements were not readily available. The researcher was able to collect Annual Reports of 1998-2006, and has been informed that reports from 2007 and 2008 have yet to be published and made available in the public domain. The Company web-site does not provide much

information on cost elements of providing the service, and needless to say, on the price charged for the services.

The financial performance of the main service provider was then assessed to investigate the costs involved in providing water and sanitation services and consequently to consider the extent to which tariff determination is based upon financial analysis are subsequently the affordability of services to consumers at all levels, especially the urban poor. Costs estimates and prices are converted to 2008 real values with a US dollar figure given (at Purchasing Power Parity, (PPP US$)) given for international readers. A summary of the financial statements can be seen in Appendix H.

A common measure of efficiency of a company is the debt collection period as a share of annual revenue. In this regard, in 2005, the NamWater reported 62% doubtful recovery of debt, with only 29% certain recovery, out of a total outstanding debt of N$ 111.6 million (PPP US$ 26 million) (Figure 5-3) (NamWater, 2005: 15).

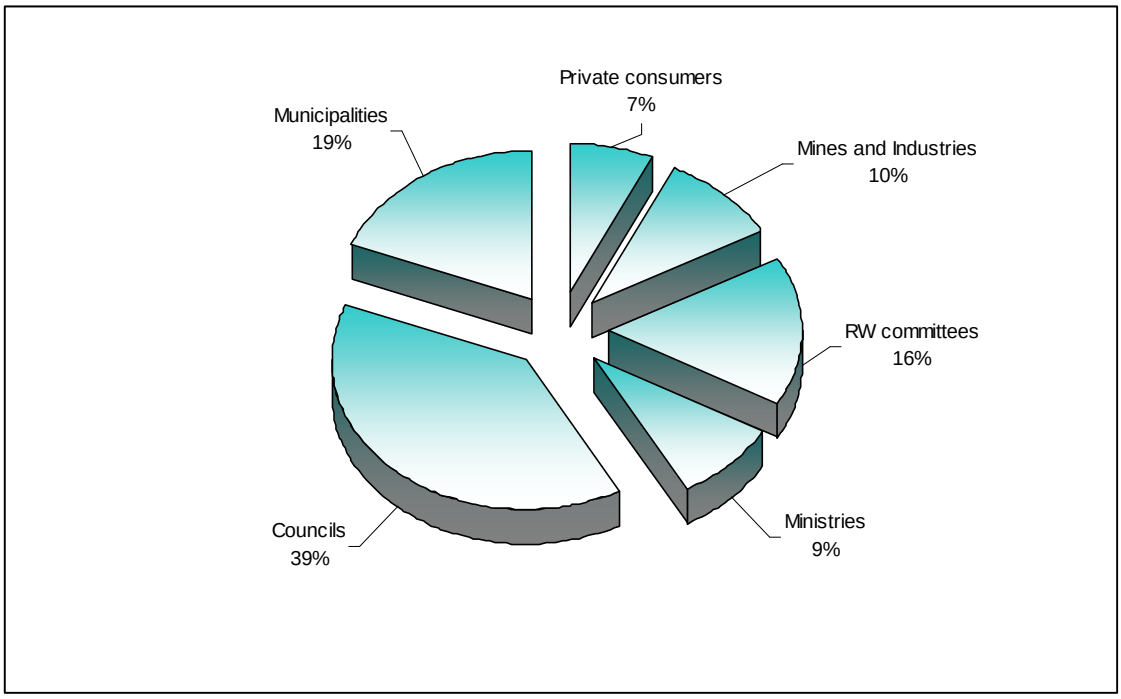


Figure 5-3 Total outstanding debt of N$111.6 million (PPP US$ 26 million) distributed according to customer type. Source: (NamWater, 2005: 15)**.**

However, calculations of collection ratios indicated a different picture, for that same year (2005). The average debt collection ratio (Figure 5-4) shows an improvement in 2005/6, reducing significantly from 90 days to 50 days. A possible explanation is that recovery from local authorities was high, as opposed to government institutions,

which even if they do not pay their bills cannot be denied access to services. These include government institutions such as health and defence related for example. Though there is a gap between the debtors and creditors collection period, it indicates that the credit rating of NamWater is relatively good, following the trend of debtor's payments.

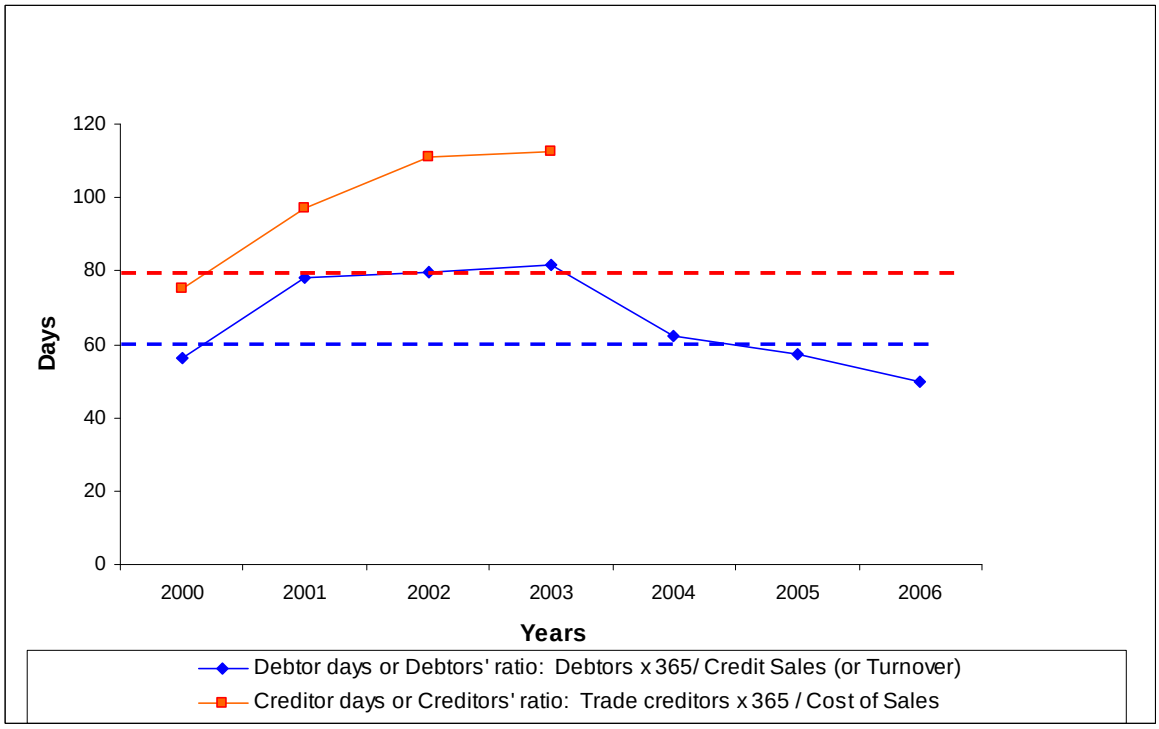


Figure 5-4 NamWater's debtor and creditor collection ratios. . Top dotted line (top) represent the generally accepted standard for creditors days, while bottom (blue) represents the acceptable standard for debtor days. Source: Author's calculations from Annual Reports

NamWater reportedly have no debt management policy in place yet (they are supposedly in the process of drafting one), hence there are no enforcement mechanisms in place for payment of water services provided. This forms a major contributing factor as to why NamWater is currently facing significant problems with debt recovery; hence their need to make use of a scheme based cross-subsidisation policy, to subsidise those schemes where payment is not forthcoming (NamWater interviewee, April 2007).

The operating ratio (Figure 5-5) further indicates that the operating expenses exceed the income; however, the company is still able to recover its operating costs from annual revenue, but is not recovering capital costs. In this respect, the company is not making full use of their fixed assets and indicates a concern for capacity utilisation. Operating costs increased in 2004, reportedly due to major maintenance projects, for

example the rehabilitation of the Ombalantu scheme and the building of the pipeline bypass on the Windhoek-Von Bach scheme. It is not clear whether these investments should be seen as capital maintenance funded through depreciation rather than as operating costs. A clear indication of the challenges of price-setting. If these, and other similar investments, were stripped out of the operating costs the resulting return on capital can be seen in Figure 5-7.

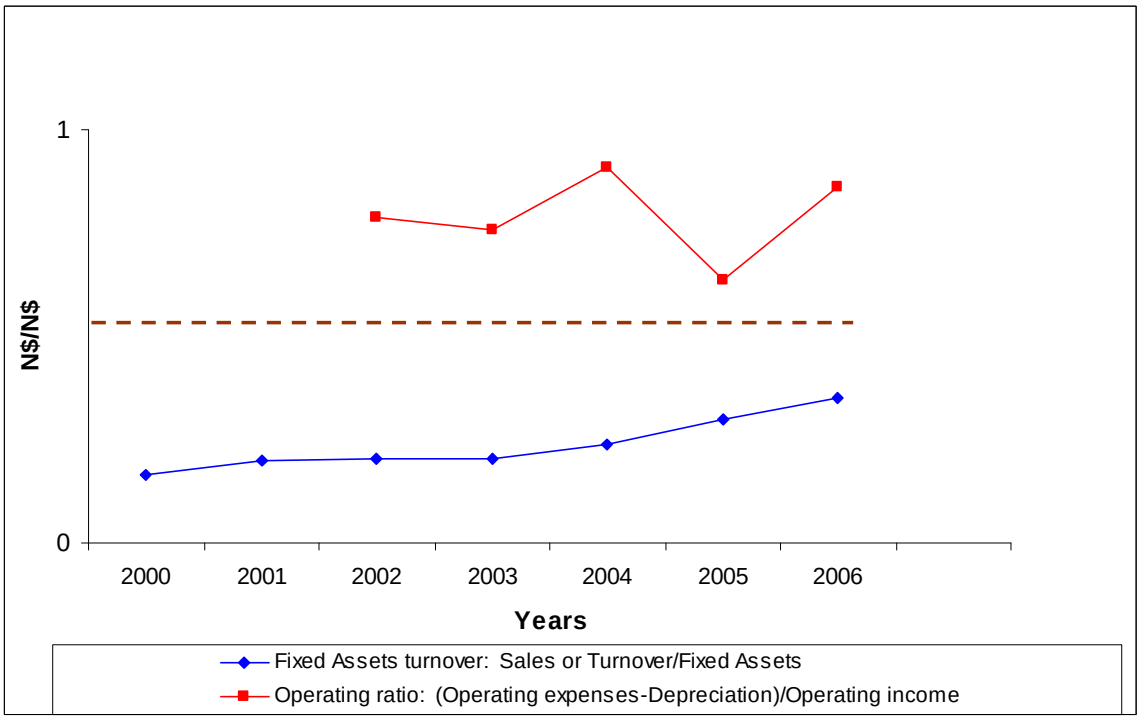


Figure 5-5 Operating and Fixed Assets turnover ratios. Dotted lines indicate generally accepted levels below which the operator recovers both operating and capital costs. Source: Author's calculations from Annual Reports.

Closer investigation reveals that the biggest ambiguity of the financial data lies with the operating expenses. The costs items, such as administrative expenses and other operational expenses are not explained or differentiated in financial notes. Furthermore, as from 2002, the operating expenses were labelled as 'expenses', in addition to administrative and other operational expenses. Furthermore, no entries for the cost of sales were done from 2002, hence the researcher assumes that these 'expenses' item could be used interchangeably for costs of sales.

The trend of fixed assets, converted to 2008 real values, shows a general decline, indicating that the company is not investing in that regard. However the revenue generated (considering the fixed asset turnover ratio in Figure 5-5) is enough to indicate a positive fixed asset trend. Also noteworthy (from other further calculations)

is the decline in long-term liabilities, indicating perhaps an excess of cash return which is being used to avoid on-going borrowing to finance this capital intensive business.

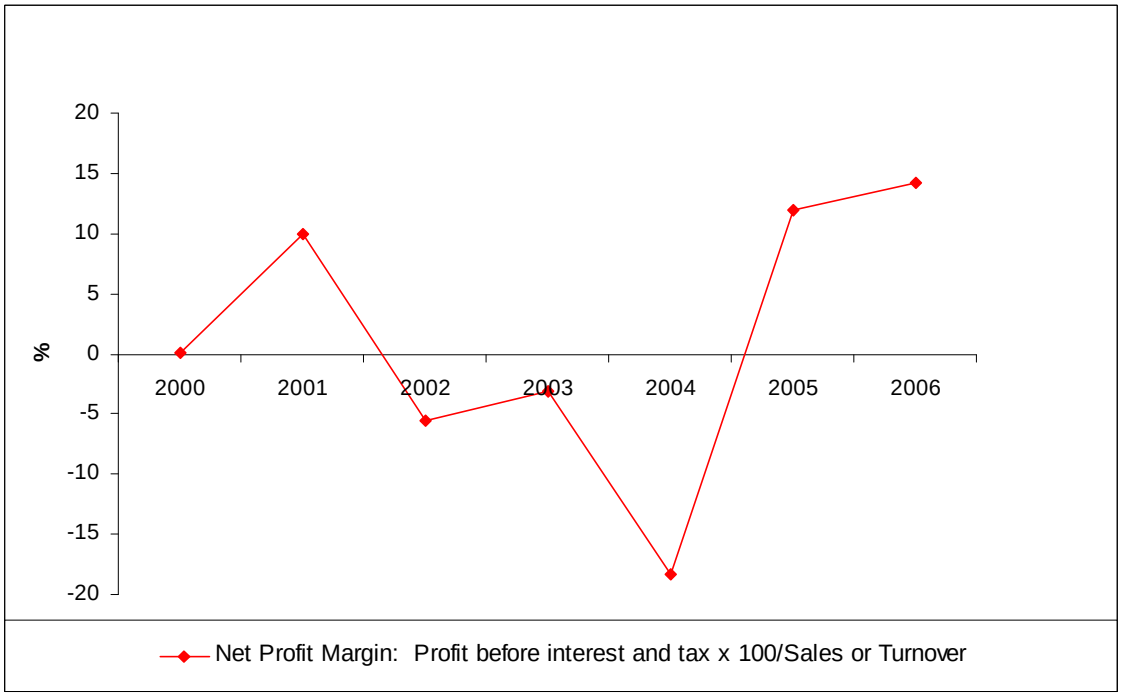


Figure 5-6 Trend of Gross and Net profit margins of NamWater over period of years. Source: Author's calculations from Annual reports.

In general the profitability ratios show considerable fluctuations across the various years, with significant losses in 2002 and 2004, followed by a steady recovery in 2005. Profitability ratios (Net Profit Margins, Figure 5-6 and Return on Capital Employed (ROCE), Figure 5-7), were calculated to understand the viability of the company. In this regard, the company targets a significant profitability ratio of 12% as part of their corporate strategic goals (NamWater, 2005: 4). However, they were not able to meet this target until the 2006/2007 financial year. The ratios follow similar trends, though raises different causes of concern. The calculated Net profit margin indicates the financial sustainability of operations, reflecting the ability of the company to maintain service quality levels. On the other hand, the ROCE, reflects the financial stability of the company, which raises the concern of tariffs not being cost-reflective and therefore there is need for capital management to be able to recover capital costs as well as operation costs.

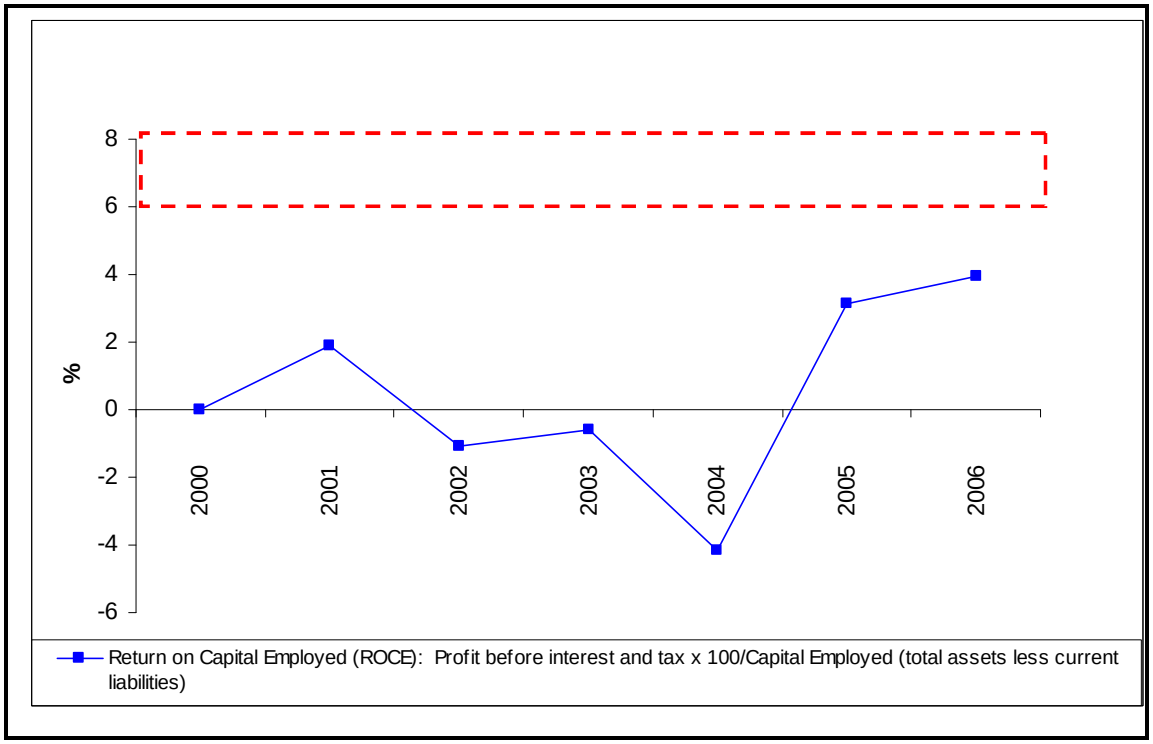


Figure 5-7 Profitability ratio- Return on Capital Employed (ROCE) of NamWater over a period of 9 years. The dotted lines represent a generally accepted cost of capital for lower-income economies of between 6-8%. Source: Author's calculations from Annual reports.

Further calculations show a decrease in operation, maintenance costs capital charges which could explain some of the concerns expressed by government officials about maintaining the system. It may equally indicate the use of historical accounting procedures for a capital intensive business when current cost accounting needs to be used to ensure an appropriate level of capital charges that is capital maintenance charges/depreciation. This would also take inflationary changes into account.

The major cost components (Figure 5-8) of the water supply budget (excluding overhead costs) were reportedly depreciation, indicating NamWater's commitment to long-term infrastructure sustainability, and electricity-related costs. This was confirmed with financial calculations, although not as high as reported during the interviews. Calculations indicate depreciation as a component of costs at 25% for 2006. The difference in figures could be attributed to different reporting periods (2006 and 2008).

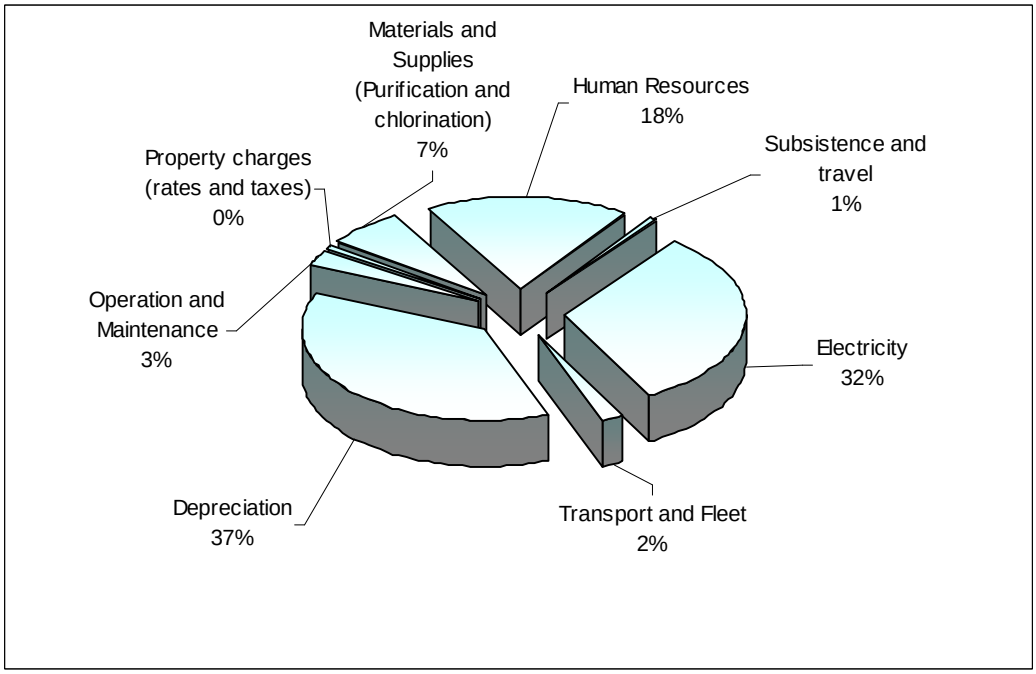


Figure 5-8 Cost components of NamWater (Bulk Water Supplier) water supply budget (excluding overhead costs). Source: (Matros-Goreses and Franceys, 2008: 351)

From the interviews, the biggest concerns expressed by government officials overseeing the tariff-setting process were lack of transparency and clarity of depreciation charges (as a major cost element). Furthermore, the government stakeholders indicated that it is not clear what the depreciation costs are used for since replacement or capital maintenance costs are not corresponding accordingly.

The NamWater tariffs are basically determined by using a cost allocation model. These cost components are prepared through a computerised software; System Application Process (SAP) (ever since 2005), which records costs and revenue for different supply schemes. The costs are normally divided into direct costs, overheads and indirect costs, according to the SAP programme. Cross-subsidisation across schemes is used to ensure all schemes are financed appropriately to deliver the required services. Profits (if made at all) are reportedly spent on maintenance of infrastructure and the purification process. In this regard, a section of the NamWater Act was cited, which indicates that the company is allowed to make profits (contrary to popular belief and the opinion of government officials): “the corporation shall be entitled to capitalise such portion of its profits….for financing of future capital works”….. “establish and operate…reserve funds…” (Government Gazette 1997: 21). It is a normal process for such an entity to use retained earnings to finance future investment, often being cheaper in the long-run than borrowing. However, the price-

setting process has to ensure that this is undertaken with proportionality such that this generation's consumers are not over-paying for the next generation's consumption. This is one of the major challenges of price-setting.

In this context, a major issue highlighted by government officials is that they fail to understand why NamWater is unable to indicate how the company calculates its tariffs. The tariff calculation of NamWater has been different for every tariff submitted for approval to the MAWF since its inception. Official records (DWA, 2007) show that in 1998, tariffs were calculated based on full cost-recovery, complemented with subsidies from the Government. The tariff calculations for subsequent years are unknown to Government officials, which is why no tariff approvals have been agreed recently and reportedly will not be agreed until issues such as these are sorted out (Government interviewee, October 2008, Windhoek). The 'principal' is saying that the 'agent' has to explain more of its workings.

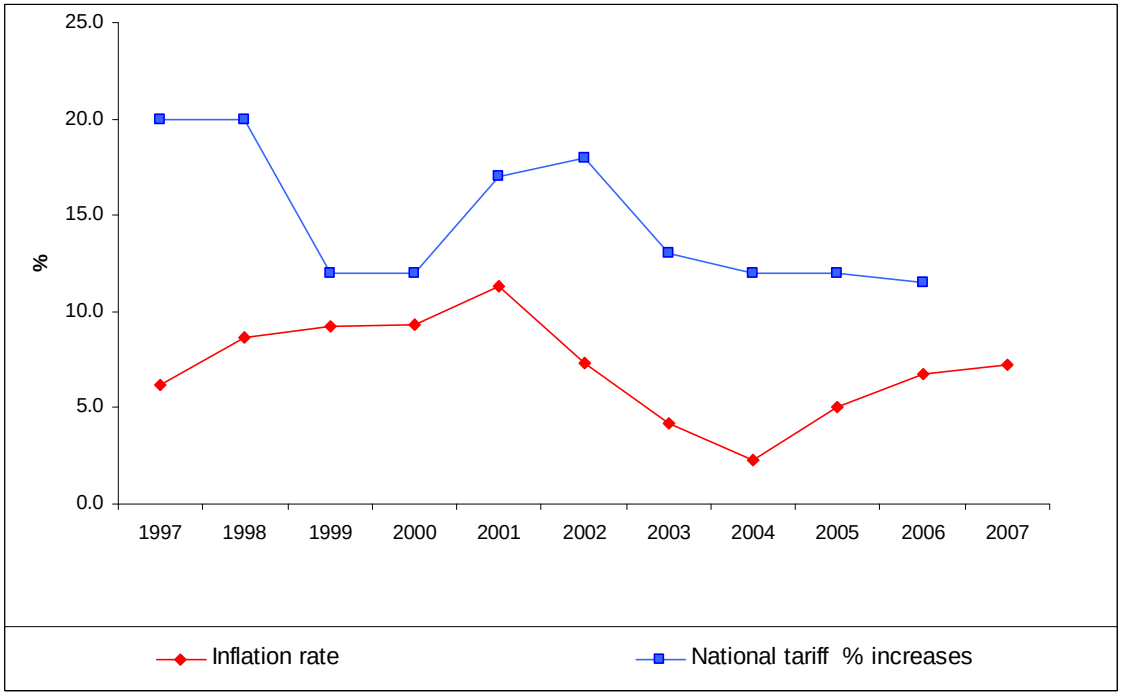


Figure 5-9 National bulk water tariff % increases over past years in comparison to inflation rate changes. Source: author's analysis of (DWA, 2007) **and Government Gazettes, June 1998- March 2005.**

To indicate, the affordability levels of the tariffs (keeping in mind that these are bulk water tariffs, which are used for the first block of the tariff structure of the City of Windhoek), it was compared with inflation rate changes, based on the NamWater strategic framework which stipulates that the target for achieving affordability is that

is should be benchmarked with inflation. There is no correlation between the two parameters, though it gives an indication that the tariffs were above inflation, which raises concerns in terms of affordability issues. Further analysis of the price increases over the past decade indicate that there has been an overall price rise of 16% (Appendix I) relative to a consumer price index value of inflation of 5% (CBS, 2007). This could be a reflection of the skewed income distribution and hence indicates that government should consider subsidisation as part of public service obligations. Subsidisation in this case can be done through encouraging differentiated tariff charges per locations (since locations are based on income levels), however first the tariff calculations should be clarified.

Information required for any external check or assessment of tariff calculations (specifically the quantity of water quantity) could not always be obtained from the annual reports, except for 2005, 2006 years.

For those years approximate tariffs were calculated based upon various cost elements and the total revenue required compared with water supplied (Table 5-2).

Table 5-2 NamWater Tariff calculations based on cost elements for 2005 and 2006.

Cost elements	***2005***	***2006***
Operating expenses [PPP US$'000]	47, 501	51, 798
Depreciation charges [PPP US$'000]	18, 395	17, 412
Cost of capital [12 % of Net investment]	33, 207	33, 475
Total Revenue Requirement [add all above]	99, 103	102, 685
Potable Water supplied [m^3' 000]	70, 001	67, 280
Tariff	1, 42	1, 53

Note: Equation used for tariff calculation: Tariff = [OPEX+ depreciation + capital costs + tax]/Volume water supplied. Source: Author's calculations.

The tariffs calculated for these years using this methodology were in close correlation with the average tariffs being charged, as obtained from official gazetted information (which were PPP US$ 1,20 and 1, 27 for 2005 and 2006 respectively. This indicates that information is available to derive at approximate tariffs, hence the problem could be with the accuracy of tariff equations or the specific cost elements used for the calculations. Further calculations and interpretation of financial notes from annual

reports indicate that cost of capital is primarily on interest paid on operations rather that on fixed assets, since they inherited the majority of fixed assets from government. A further observation is made that, as NamWater is a bulk water supplier, no allowance has been made for leakage as any leakage in transmission mains tends to be very visible and quickly fixed. This assumption has to be further investigated.

In response to the lack of clarity in the tariff calculations, NamWater interviewees mentioned that the NamWater Act is does not specifically define 'full cost-recovery' and hence that term is open to various interpretations. Their interpretation includes a wide range of issues and is based on historical cost calculations. Water is reportedly, treated as a political issue and there is a misconception of water supply costs, which is why the tariff for 2007/2008 has not yet been approved.

In 2008, according to a NamWater interviewee, the company was granted an inflationary increase of 6.9% in April; however due to poor communication, this information was not shared with the company until September 2008, and in this regard, government paid N$26 million (PPP US$5 million) to the company to make up for the loss. Tariffs have still not been increased to the requested average of 8% (12% urban areas and 6% in rural), pending the approval of a study seconded by government (committee on tariff determination in consultation with private consultants) on principles and methodology to calculate costs and tariffs by NamWater.

In addition, during interviews with NamWater officials, reference was made to a strategic business plan (in the drafting stage) for the next five years, which would include 5 year projections of tariffs as well as benchmarking processes for comparison with other SADC countries. Indicators will be used for performance management using a balanced score card with objectives, measures, targets and initiatives. The cornerstones are people learning (human resource); estimated water consumption (which includes compliance, unaccounted for water, sales meters (accuracy of meters); scheduled maintenance (total maintenance); compliance water quality maintenance (bacteriological), customer satisfaction (bulk customer agreement) and days of collecting outstanding payments.

The type of information required (based on consumer and consumer representatives interviews) to make the price-setting more transparent is focused mainly on

operational expenses and capital charges. The research found this area to be the most fussy, unclear and inconsistently presented in the financial statements. Further calculations from the financials also indicated an inverse relationship between employee numbers and salaries expenses. The biggest challenge for the researcher was to get an idea on domestic costs of services, since the accounts provided included all sectors (mining, irrigation and potable water supply). The research also recognises that national accounting procedures are followed for annual reporting, which does not allow accounting separation (only revenue was differentiated per sectors, but not for costs); however it is critical to have annual reports that enable consumers to understand (easily) how tariffs are calculated. Hence, the information required in context of proportion to expenses of service provision includes:

- Salaries of senior management (as well as board member allowances)
- Impact of services on household bills (average) in comparison to inflation
- Unaccounted for water in comparison to volumes of water produced and consumed
- Tariff calculations and tariffs in comparison to costs, to indicate the relationship in terms of full cost recovery.

Other non-financial information, but equally important for consumers to know includes:

- Roles (related qualifications) of board members (including election/nomination procedures)
- Company staff composition

It should be noted that this level of detailed company information (and much more) is available and accessible to the public in England. This level of information was reportedly available from Zambian companies, but could not be accessed during the fieldwork or any follow-up attempts. Access to this level of financial information has to be the starting point for any external stakeholder understanding of the reasonableness, or otherwise, of water tariffs.

5.2.2 City of Windhoek services

As already described, NamWater supplies bulk water to the City of Windhoek for distribution to customers. The city council of Windhoek is responsible for the construction, operation and maintenance of the distribution system along with associated billing.

The water charging system, used by the City of Windhoek, is based on an increasing block tariff (City officials, 2008), (Table 5-3). The system was described as consisting of a basic charge depending on the diameter of the meter inlet, as well as a volumetric charge which is added according to usage. The first block of the tariff system is charged at the NamWater bulk water tariff with no distribution costs added. The City is therefore subsidising this first 6 m^3 per month of water to domestic consumers, a valuable subsidy particularly to low-income users). The third block is referred to as the penal block, targeting the high water consumption users, and is basically the block that is used to recover costs from basic charges not paid for by other customers. Thus it provides the majority of the cross-subsidisation amongst consumers. However this block is also the conservation block which serves to encourage users to use less water.

In addition, a one-off connection fee is charged, which applies to all water users, except for low-income users accessing water through pre-paid meters.

The commercial and industrial tariff (non-domestic) water users are charged a flat rate as well as a percentage, an additional charge which is used as a cross-subsidisation tool. The low-income domestic water users are charged a flat tariff (with no basic charges) for communal taps. All taps (including communal taps) are metered, and the City is currently using pre-paid water meters in some informal areas and is considering extending this system more widely (based on requests from the residents) mainly due to delays or non-payment for water services. Currently the piloted pre-paid meters are adapted from the Netherlands (tag meter system). The challenge with these meters is maintenance, which needs to be addressed before the system can be fully implemented. The estimated cost for pre-paid meters for the City, according to an interviewed City official, is approximately N$ 2500 (PPP US$ 585) per tap.

Table 5-3 Tariff structure with tariffs charged over the years.

Tariff structure	*Tariff (N$) per Kilolitre [PPP US$]*						
Domestic (m3)	2002/ 03	2003/ 04	2004/ 05	2005/ 06	2006/ 07	2007/ 08	2008 /09
0-6	3.97 [0.92]	4.17 [0.97]	4.75 [1.11]	5.22 [1.22]	5.75 [1.27]	6.27 [1.31]	6.27 [1.21]
6-45	6.61 [1.53]	6.94 [1.62]	7.91 [1.84]	8.70 [2.04]	9.57 [2.12]	10.43 [2.17]	10.43 [2.01]
>45	12.17 [2.81]	12.78 [3.00]	14.57 [3.40]	16.02 [3.75]	17.62 [3.91]	19.21 [4.00]	19.21 [3.71]
Non-domestic*						12.73 [2.65]	12.73 [2.46]
Communal water points	6.61 [1.53]	6.94 [1.62]	7.91 [1.84]	8.70 [2.04]	9.57 [2.12]	10.43 [2.17]	10.43 [2.01]

* figures include VAT. Source: Tariff Booklets, 2002-2008 of City of Windhoek.

The tariff structure makes provision for "times of limited availability" of water where the volume of water allowed for in each block is reduced, charged at the same tariff.

According to one City official, the tariffs are not beneficial to the urban poor, in the sense that they are paying more per cubic meter of water, because the poor use very limited volumes of water. The interviewee further mentioned that, ideally, the first 10% of water should be given free as basic services; however the city has to recover its costs and therefore is not in a position to subsidise water to the domestic sector. "*It should be government responsibility*", he noted.

The main sources of income for municipalities are rates and taxes, electricity and water services. Water constituted 21% of the City's income in 2006. However, with the introduction (in 2002) of Regional Electricity Districts (REDs), income from electricity was lost. This means that, reportedly, water prices will have to increase to make up for the gap in income (City official, 2008).

Financial analysis could not be undertaken for the City of Windhoek's water distribution costs for this research, since it was impossible to obtain financial statements for water specific activities only. The financial statements that could be obtained include for all municipal services with no breakdowns for the various sectors. The researcher's approach was to investigate from a civil society point of view and thus if it is not possible to determine relevant information at this level, then it will also not be possible for any member of the public to access these figures and to

understand the costs of water supply. Hence it is not at all clear how the City determines their water tariffs.

Nevertheless, interviewees from the City (22% of 13) indicated that the City of Windhoek is operating on a 90% recovery rate based on the capital charge from basic charges. Another interviewee indicated that the City is recovering 103% of its debt collection (possible through recovering past outstanding debts). Approximately 42% of the customers are reportedly paying at 120 day recovery rate but in more affluent areas payment is recovered within 30 days. The official view (DWA, 2006) is that "Windhoek's water revenues are reported to have exceeded their supply costs by 11%, with an average user charge per m^3 of N$7.34 (PPP US$ 1.84) and costs of N$6.59 (PPP US$ 1.65) in 2001/02". As a consequence, according to (DWA, 2006) households pay 23% more than the cost of their water to make provision for subsidies to some manufacturing and service industries as well as low-income households. These figures could not be confirmed during interviews. The researcher was given the sense that it was 'classified' information. To be subsidising manufacturing and service industries, in addition to low-income consumers, would be a significant departure from normal practice.

The City is also responsible for sewerage services, and uses a tariff system that is based on the size of land occupied (Table 5-4). There is a flat rate system that applies to low-income area occupants and those making use of communal toilets in informal areas of the city, who are not paying for these services yet.

Table 5-4 Sewerage tariffs charged over the years.

Tariff structure	*Tariff (N$)*				
Domestic (erf size)	2004/05	2005/06	2006/07	2007/08	2008 /09
<400m^2	46.74 [10.90]	-	44.99 [9.98]	50.39 [10.50]	56.84 [10.97]
>400m^2<899m^2	56.08 [13.07]	-	53.99 [11.97]	60.47 [12.60]	68.21 [13.17]
>899m^2	59.20 [13.80]	-	64.77 [14.36]	72.54 [15.11]	81.83 [15.70]
With swimming bath +1m		-	68.38 [15.16]	76.59 [16.00]	86.39 [16.68]
Low-income areas (Katutura)	5.76 [1.34]	-	6.66 [1.48]	7.46 [1.55]	8.41 [1.62]

Note: Figures for 2005/06 were unobtainable. Source: Tariff booklets, City of Windhoek.

The same information requirements as outlined for NamWater apply to the City of Windhoek. This level of information is even more critical for the City to reveal, since they directly supply the services to consumers. The research found that NamWater information was easier to access than the municipal information, indicating the need for higher level of transparency for the municipal price-setting process. A newspaper article (25 July 2009), stated that the City of Windhoek increased their tariffs, while NamWater had no tariff increment since 2006. The proposed increments tariffs were indicated as follows: low-income households, 11.85%, middle-income 12.04% and high-income 11.58%. This indicates the need for more transparent price-setting system to justify tariff calculations and hence enhance consumer trust in service providers.

5.3 Affordability of water and sanitation services

Unemployment was described by community committee members as a huge problem prevalent in informal settlements in Windhoek. Domestic and industry-related work forms major part of the income source for these residents. For example, the average monthly income is N$ 300-500 (PPP US$ 63-104) and N$ 500-1500 (PPP US$ 104-313) (Table 5-5) for informal areas visited, placing them within development level 1 and 2 of the Upgrading and Development strategy of the City of Windhoek (Table 1-1) accordingly. The leadership committee members interviewed (66% out of 18) confirmed that it was difficult to obtain payment for water services from all the residents and that they have huge outstanding debts with the municipality.

In areas with high debt the community development officers from the City of Windhoek facilitate the process of identifying an amount payable per month to incorporate the arrears payments as well. In general, the communities interviewed are paying between N$ 20-39 (PPP US$ 3.86-7.53) per household per month (Freedomland A, Havana and Greenwell Matonga) for their water bill. The interviewees explained that the arrears are mostly due to relocation of some members away from the area and thus the bill remains high, with fewer people to pay for it. For example, the arrears bill in Freedomland A used to be N$ 22 000 (PPP US$ 5,125), shared between about 150 households at average N$25 (PPP US$ 6) monthly payments but has decreased to about N$ 9000 (PPP US$ 2,108) over a period of 2 years (2005-2007). There are other expenses that are also deducted before the water bill is paid such as N$ 200 (PPP US$ 42) for the treasurer to collect fees; N$ 200 (PPP US$ 42) for the community leader to clean toilets and N$ 25.30 (PPP US$ 5.27) for receipt book.

There is a strong sense of support within the community and thus if some members of the community cannot afford to pay they make arrangements with the leadership to pay either in kind or by doing odd jobs in the area. In this regard, the leadership hardly denies people access for water, because of non-payment. For control and saving purposes, the water points are open between 08:00-13:00 and 16:00-19:00. An estimate of 25 litres per day per household is collected for general domestic purposes, while those selling the local beer collect up to 8 times per day. In extreme cases where the community members do not pay for their contributions towards the water bill (by the 15th of every month), water gets cut-off until payment is received by the community committee. The community in Freedomland A has reportedly had their water cut off at least 6 times since Independence (1990).

The community leadership structure feels that it is unfair to those who pay, when the water gets cut-off, therefore they prefer the pre-paid meter system (which the municipality claims they can only get once their arrears are cleared). For example in Havana they have only 2 communal taps for supply to 219 households, supplemented by pre-paid taps next to every toilet (77 toilets, of which 33 are flush toilets). This gives an opportunity for those that do not want to share communal bills to buy their own water with the pre-paid cards. However, there is no control over the system and some people use both the communal and pre-paid taps depending on availability of

funds. The community leader predicted that the communal taps will gradually fade out, so people will start getting used to idea of pre-paid taps (Photograph 5). Pre-paid meters were identified as the best option for informal areas by most people (even though some complained about the frequent breakage of some of the pre-paid taps). However, this majority opinion changed in 2008 (second visit), since the majority of taps were not in working condition at that time. One community leader indicated that prepaid meters require high security (against vandalism) and thus they are not advisable in certain areas.

Photograph 5 Communal tap with water borne toilets (left). People collecting water from a prepaid meter (right). Source: R. Franceys. Windhoek, 2007

It was toilet facilities (the lack thereof) that most people mentioned to be a problem. The community is currently not paying for toilets, but they were informed by City officials that once relocation process is done, that it will become part of the lease fees. In Havana people are already allocated land and are paying a lease payment of N$ 29 (PPP US$ 6) per month per household in addition to the water bill. Many (78 %) people interviewed prefer the flush toilets because they feel the dry latrines require too much maintenance and work. Similarly, the Namibian government is promoting waterborne sewers, which, in the opinion of NGO representatives interviewed, are not feasible in a water scarce country such as Namibia and which send the wrong signal to consumers. In fact, they reckon that "*dry toilets are the answer for informal areas, especially since people cannot even afford to pay their water bills*". In this regard, the Habitat Research and Development Centre in Namibia is currently investigating various options of toilets for low-income groups. There are 6 different types that are

being tested (in various parts of Namibia), including Jo-Jo; enviro-loos, composting loos, urine diverter, vacuum systems and Otji-toilet (named derived from a town in Namibia where these were first piloted, Otjiwarongo). The pilot projects are in different stages and no results are yet available, however the enviro-loo and VIPs are mostly used in Windhoek. The enviro-loo is most preferred; if designed and built properly it only needs cleaning once a year.

The estimated costs (according to interviewee) of these dry systems vary from N$ 1,000-4,000 (PPP US$ 208-833) per facility. The City of Windhoek has estimated (as part of a long term solution) that the cost of installing waterborne sewers would be N$ 8,200 (PPP US$ 1,708) per unit. Appendix J indicate the costs implications for installing these systems, with either 5 or 10 households sharing a facility, based on the toilet need currently evident in informal areas. The current budgeted amount for toilets according to the Upgrading and Development strategy is a meagre amount of N$ 100,000 (PPP US$ 20,833) for the city for a year, which needs to be reviewed if proper sanitation standards are to be followed in these areas (WATSAN, 2007).

The perceptions from high-income users were that of ignorance. The interviewees in some cases indicated that they do not know how much they are paying for services, but indicated that they were satisfied with “high” quality of services. The middle-income group had the opposite opinion in terms of price, and indicated that the bills are too high.

Table 5-5 Prices of water and sanitation services in various visited informal settlements and income levels (after tax deductions) in Windhoek

Area	*Number of respondents*	*Services available*	*Average Income level(N$)*	*Average Income level (PPP US$*	*Average Price(N$) for water bills*	*Average Price (PPP US$) for water bills*
Low-income						
Greenwell Matonga C	14	Communal taps and Shared flush toilets	700	135	25-35	5-7
Okahandja Park A	5	Communal taps and Shared flush toilets	1, 000	193	30	6
7de laan	4	Communal taps and Shared flush toilets	1, 000	193	78*	15
Kapuka A	2	Communal taps and Bush	800	154	20	4
Onyika 2	6	Communal taps and Bush	800	154	15-20	3-4
Freedom land A	3	Communal taps and Shared VIPs	1,500	290	20-39	4-8
Havana Proper	2	Communal taps, Pre-paid meters, Shared VIPs, Shared flush toilets	1,000	193	20-39	4-8
Build-together group:	7	Taps in yards and Toilets (waterborne) in yards	1,500	290	35	7
New Hope, Dipasen, Tulipamwe						
Middle income						
Khomasdal (Extension 8)	3	Full in house services	3, 500	676	200-250	39-48
Katutura (luxury hill)	1	Full in house services	6, 000	1, 158	200-250	39-48
Dorado Park	2	Full in house services	8, 000	1, 544	200-350	39-68
Cimbebasia	2	Full in house services	6,000	1, 158	200-300	39-58
Acacia	2	Full in house services	15, 000	2, 896	300-350	58-68
High income						
Suiderhoff	2	Full in house services	20, 000	3, 861	350-400	68-77
Kleine Kuppe	1	Full in house services	25, 000	4, 826	400-500	77-97
Eros	1	Full in house services	20, 000	3, 861	300-400	58-77

Source: Interviews conducted in April-June 2007 and October-December 2008, Windhoek, Namibia. *this figure includes rates and taxes.

In informal areas, the taps and toilets share the same meter and thus the water bill includes water used for flushing of toilet as well (if excreta disposal is waterborne). The majority (65%) of residents interviewed in informal areas indicated their contentment with services provided, and added that in most cases these services are much better (24 hours, 7 days a week) compared to where they originally came from (mostly rural northern areas in Namibia). However there were the odd few (17%) that mentioned that they prefer taps in their yards and not communal facilities. Overall people understood the reasons for payment for services and thus also indicated that the prices were reasonable, though 33% of the committee members interviewed thought that water services are too expensive.

Another government official indicated that government does not have appropriate subsidy mechanisms in place to support 'vulnerable' groups that cannot afford basic services. However various studies are being undertaken (2008/2009) to address these issues as well as to develop corresponding subsidy (urban and rural) policies. The challenge highlighted by the interviewee is to define 'vulnerable classes' and mechanisms for access to subsidies. Service provider and government interviewees (55%) were sceptical towards any emphasis on the urban poor, because they felt that people are selective when it comes to payment for certain services, in the sense that *the majority of the 'urban poor' can afford to have cell phones, and abuse alcohol which is much more expensive than water services - however when it comes to payment for water services, they need to be considered urban poor*. In this sense the interviewees did not support the notion of subsidies or special rates for the urban poor. There needs to be a clear definition for the urban poor, before considering any additional support for such groups, over and above the existing block tariff system. Indicative client proportions in Windhoek are 35%, 45% and 20% (Author self-calculations) for low-, middle- and high-income groups respectively; hence this can be used as an indication of subsidy allocation based on the income of consumers and the general standard of living. This would facilitate the process of subsidy target group identification.

Some of the interviewed City officials (44%) also felt that people in general can afford to pay for water and sanitation services. In many cases of non-payment, they expressed the view that there is a "mindset" that militates against payment according to which such services are seen as "*a free gift from God*". The City officials also

mentioned that there is a public participation process followed whereby people can decide which type of services they can afford, therefore people should take responsibility and pay and maintain the selected services.

5.4 The Price-setting process

The price-setting process was generally known to all the providers interviewed and even to a few stakeholders from other types of institutions (57% out of 18). There are two separate processes taking place as mentioned by the people interviewed. The first part of the process (Figure 5-10) starts with the bulk water supplier, NamWater, which proposes tariff adjustments on an annual basis to the Ministry of Agriculture, Water and Forestry.

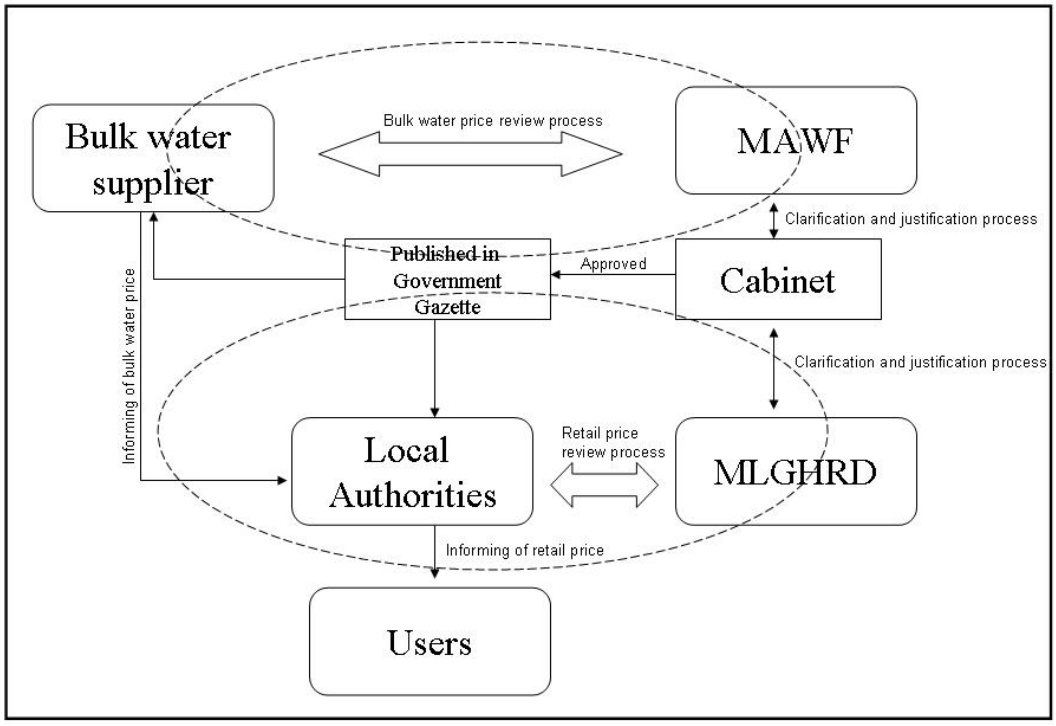


Figure 5-10 Describes the price-setting process and the various institutions involved. The tick arrows are the focus process areas of this study and will be investigated in detail. MAWF=Ministry of Agriculture, Water and Forestry; MLGHRD=Ministry of Local Government and Housing and Rural Development. Source: (Matros-Goreses and Franceys, 2008: 349)

MAWF, then reviews (a working group or committee is normally established in this regard) the tariffs and provided that all relevant information is in order (for example all financial information reflecting costs per schemes, operating and maintenance expenditure, capital costs), the Minister tables the request for tariff adjustment and

sends it to the Cabinet for approval. Once it is approved by Cabinet, as normally happens, the tariffs are published in the Gazette, whereupon they become official for that financial year. NamWater informs their clients of the approved tariffs, who in turn review their own tariffs (second part of the process) and submit tariff adjustment recommendations to the Ministry of Local Government and Housing and Rural Development. A similar process takes place whereby the Minister, after reviews, submits the tariffs of local authorities to the Cabinet, which results in the publication in the Government Gazette, once approved. The local authorities are also obliged to inform their clients about tariff adjustments where applicable.

5.4.1 Perception of Government officials on the price-setting process

Even though this process is in place, all of the Government officials interviewed mentioned that to date there was no significant monitoring of the price-setting process. It was only in 2007 that closer attention was given to the tariffs proposed by NamWater and that resulted in the proposed tariff adjustments for 2007/2008 financial year to remain unapproved at the time of writing. One interviewee mentioned that there are no performance indicators against which monitoring or enforcement can be implemented. The government interviewee described the tariff-setting process as "*complete chaos*", saying that the government is in a process of developing national guidelines in an attempt to control the tariffs in the country. Another government interviewee mentioned that it is difficult to manage in a situation where the Water Resources Management Act has not yet commenced. The official also commented that there is a Central Governance Agency in place, within the Office of the Prime Minister, which in actual fact should be responsible for implementing governance principles. It was confirmed that this Agency does in fact exist (as from 2003) but it is not yet in operation, since it is waiting on implementation of the State-Owned Enterprises Governance Act, which provides it with operational guidelines.

According to one interviewee, the bulk water provider lacks any fundamental principles for tariff determination. The official pointed out that the recently developed WSASP (2008) focuses on such principles, including defining full-cost recovery. The interviewee further mentioned that the bulk water supplier needs to clarify overhead costs allocation, and to differentiate between scheme costs abstracted from different sources (ground and surface water). These deficiencies add to the reasons why tariffs have not been approved since 2007. The biggest challenge faced with regard to tariff

determination, as identified by another interviewee, is that the cost of supply per scheme of the bulk water supplier is unknown; therefore full-cost recovery levels cannot be known. If this is true, then there is no basis upon which the tariff approval can proceed.

5.4.2 Perception of service providers on price-setting process

In the case of the City of Windhoek, the majority of City officials interviewed (55%) felt that the process of submitting tariff adjustments to the Ministry is just a formality, and pointed out that the Ministry have in fact never declined any of the proposed tariffs. Thus the process is a bit of a sham, and it is the Municipal Council that has the final deciding power. It is, however, not clear what the funds provided by City to Regional Council are being used for, since the Regional Council is not obliged to report on this usage. There was an anonymous feeling amongst the NamWater officials that the price-setting process is highly politicised and hence prevents the company from operating at financially sustainable levels, while demanding quality affordable services.

5.4.3 Perception of consumer representatives and users on price-setting process and services

The interviewed committee members are of the opinion that people are generally willing to pay for the services (there are extreme cases of people that cannot afford these services), because these services (water and sanitation) are basic services that they cannot live without.

Representatives from NGOs interviewed (22% out of 18) mentioned that clear policies regarding support and assistance to the urban poor should be developed both from the City of Windhoek and the Government. Once these principles are agreed upon, then the technicality regarding tariffs and prices can be determined. The interviewee further suggested that the block tariff system should start at different levels for different income level consumers. Similarly, one of the recommendations from the Development and upgrading strategy indicates that support would be sought from Government to assist (subsidise) those people living development levels 0-1, in line with the National Housing Policy. In this respect the interviewee indicated that water services should not be rendered for free and that special rates should be available for those that cannot afford services. Furthermore, the interviewee was

adamant that "*water is a human right*" which is interchangeably linked to the "*right to life and to dignity*" such that enforcement mechanisms in the attempt to recover costs for these services should be done with these in mind. The current repossession of houses (from the poor), as result of defaulting payment for municipal bills are against these internationally recognised principles.

As a solution to ensure universal water access, one interviewee suggested that payment for water services (equivalent to other services such as defence (police) and health) should be fused into the tax system, such that the funds can be recovered, but that it should be paid for indirectly. In general, interviewees indicated that there is a well spread perception that the municipality is making huge profits from municipal services. One interviewee's view was that "*the price of water is measurable by the cars of senior management of both water service providers, meaning that people are paying too much for water*". As such, there is an urgent need for transparency in how the increasing block tariffs are determined, as well as the issue of affordability, both of which were brought up consistently during interviews with representatives and users.

This issue of 'cars' also brings out the important point, little referred to elsewhere, that tariff-setting is not simply a 'cost plus' exercise but also needs to incorporate appropriate drivers and/or incentives for future efficiency gains on behalf of customers. This point will be considered further with regard to future possible regulatory roles.

Low-income water users (76% out of 29) indicated that they would not like to be involved in the process but would like to be represented by the current community committees, which they claim are doing a good job at keeping them informed and updated with regard to status of municipal services. The middle and higher-income groups on the other hand, felt that simplicity in water bills would assist in understanding the process better.

5.5 The Need for a regulator

Reasons and explanations from respondents indicate a relatively well-managed system for delivering of water and sanitation services to all urban consumers. However, it is also clear that government, responsible for policy and tariff-setting, have limited input (and insight) to the tariff-setting process whilst consumers (and civil society

representatives) have no involvement whatsoever. With the hypothesis that some form of regulator would be beneficial, particularly where there appears to be such a large gap between the principal and its agents, the need for a regulator for the water sector was assessed through a combination of methods during this study. These included focus group discussions, face-to-face interviews and a workshop. In cases where interviewees mentioned an intervention by "a third party" or "regulator-type" entity, these parties were defined and their potential roles further explored. In this case, perceived roles ranged from "someone needs to make sure the prices are right and that companies are not making a profit" to "avoiding political interferences" (Table 5-6).

Table 5-6 perceived role of a regulator from various interviewees

Interviewee types	*Proposed Role*
Consumer representatives (including consumers)	- Ensure that prices are affordable and consider those that cannot pay
	- Ensure that providers are not overcharging consumers and making profits from poor people
Other institutions/NGOs	- Ensure that people know ("and can trust the system") what they are paying for (ensure transparent system)
Service providers	- Ensure process of tariff determination is done accurately and that full cost recovery principles can be followed
	- Avoid political interferences during price adjustments
	-Would play an important role in debt recovery, especially from government institutions
Government officials	- Implement the Act and ensure cost recovery principles are adhered to
	- Hold service providers accountable for pricing and performance levels

Note: proposed roles were summarised according to interviewee types. Source: Interviewees during April-June 2007 and October-December 2008, Windhoek, Namibia

This exercise was primarily undertaken to create a common understanding of what a regulator is and what its role might be during the interview sessions. Overall most people had the basic idea that it should be an institution or person that monitors the price-setting process to ensure that justice prevails (in terms of fair (affordability) and equitable (including urban poor) and sustainable (financially, resource-based).

Reflecting on the current water sector situation (hence the question "where are we now"), with regard to the price-setting process, interviewees were very pessimistic, such that they admitted that the process needs improvement, however mentioning that establishing a regulator might not be the best or only way to improve the process. Other interviewees (20%) indicated that the price is driven by politicians and as such they dictate the tariff-setting (they can overrule justifications for increments

requested, thus leaving LAs, for example, to find other sources of income to bridge the gap of not covering full costs) and therefore "it is not easy to divorce political interferences with the price-setting process".

The government officials explained that an ad-hoc committee is formed annually to address issues of tariff determination prompted by bulk water supplier requests. The biggest challenges facing the water sector currently are lack of written information, guidelines and standards (performance indicators). Recently, the WSASP (2008) was approved by cabinet which stipulates principles of tariff determination that can guide the process, as well as reinforcement of the need for a regulator for the water sector. Several studies are on-going to improve the price-setting process, such as development of a tariff methodology for the bulk water supplier and government water services subsidy policy for urban and rural areas. However, the implementation of the findings of such studies and policies can only be done through a "regulator" type institution (interviewees, December 2008).

Basic utility regulation is so far only implemented for the electricity sector in Namibia, and during the interviews it was recommended that the water sector could benefit from experiences from the establishment of an independent regulator for electricity (Appendix K). The Electricity Control Board (ECB) interviewees stated that the starting point for establishing a regulator is to strengthen the legislative framework, in which case they referred to the current Water Resources Management Act as "weak and toothless". Some of the interviewees (33%) did not agree with establishment of any utility regulator and were not convinced by the value (as explained by electricity regulator interviewees) that the ECB brings to the process and in this sense questioned the transparency of the regulatory body.

5.5.1 What would it take to establish a regulator?

In general the interviewees were very optimistic about the idea of a 'regulator-type' institution (interviewees were sceptical to use the word regulator) and the majority (65%) were in favour for it (Figure 5-11). Government officials made reference to the Namibia Water Resources Management Review recommendations that indicated that a Regulator (similar to that of the UK (OfWAT)) is needed, however since the regulations for the Water Resources Management Act is not drafted (due to capacity constraints), this has been neglected, but pointed out that Government is still in favour

of the idea of a regulator for the water sector. A NamWater official also highlighted that provision for the establishment of a regulator was made during the early stages of the establishment of NamWater (as early as 1995) as well as in the Water Resources Management Act (2004) and in this sense sees it as beneficial for the company, because it would enable them to start operating on full cost recovery (as they should). Another interviewee also made reference to the State Owned Enterprises Governance Act, which also makes provision for a regulator to be in place. Other reasons included lack of expertise in this field in which case a regulatory body would be able to analyse the financial situation of providers and provide expert advice, especially regarding tariff determination.

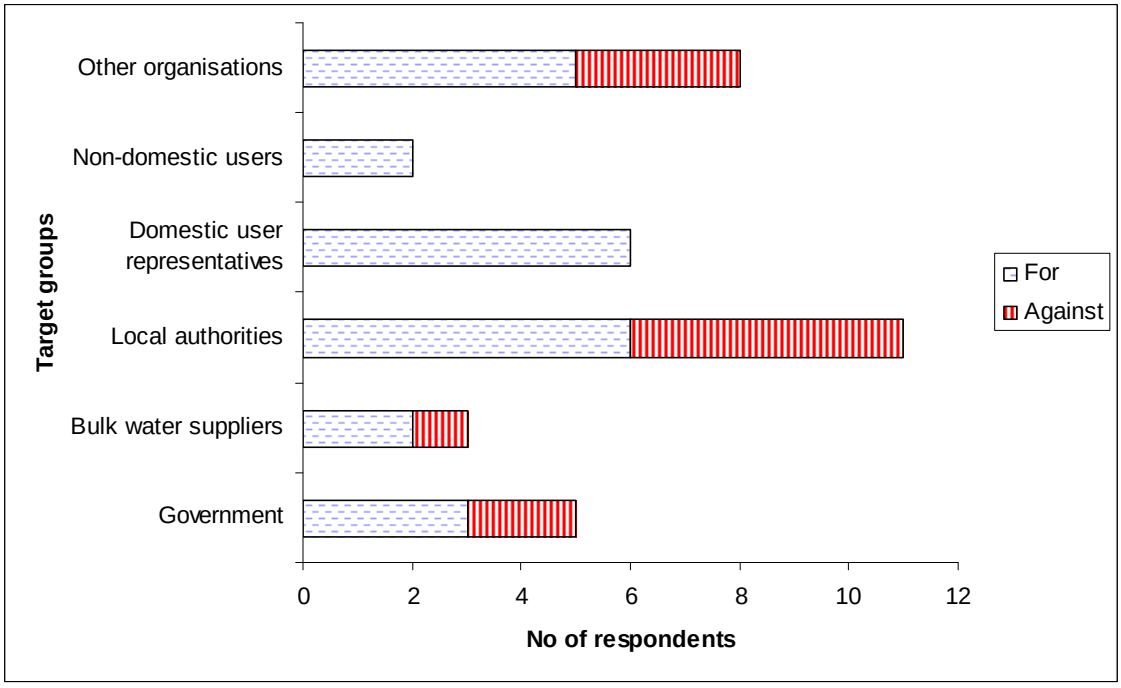


Figure 5-11 Perceptions of respondents on introduction of regulator for water and sanitation services in Namibia. Source: (Matros-Goreses and Franceys, 2008: 352)

Transparency was the most obvious motivation, for establishing a regulator given by the interviewees, elaborating that Namibia has a 'democracy deficit' and this might be a way of making the price-setting process more understandable (people need to know what their money is used for) and therefore change the perceptions of the public towards payment for water and sanitation services. Another obvious reason mentioned is to avoid perceived political interference in tariff determination. The benefits of having such a system in place were predicted to include prices determined on affordability levels of the end users and a suitable subsidy system established to

benefit the urban domestic sector. However, the interviewees further mentioned a few conditions on which a regulatory system can work in Namibia (Matros-Goreses and Franceys, 2008: 352):

- It needs to be composed of very knowledgeable people with integrity
- It has to be independent and free from political influence
- It must have enforcement principles based on operational performance indicators (eg introduce fines if indicators are not met)
- The system should be practical and sustainable (considering dry climate and costs of delivering water over long distances) avoiding "copying" European standards in Namibia.

5.5.2 How could the success of a regulator be ensured?

The interviewees unanimously agreed that establishing a 'regulator-type' institution is not an easy process and the institutional positioning (Table 5-7) plays a critical role during this process. The following expectations from such as body were raised:

- Developing enforceable standards, guidelines and agreements with Local Authorities and NamWater
- Performance assessments (strongly emphasise on non revenue water losses) of LAs across the country
- Training and capacity-building (especially financial management and accounting) across stakeholders to enable adherence to standards and guidelines

There were split views amongst interviewees with regards to the detail of the Water Management Act in terms of clarity of roles and responsibilities of the regulator (as suggested by ECB interviewees). The argument was that the Act is a guide and it is the regulations following the Act that need to have the details clarified. Furthermore, it was highlighted that the Act is currently under review (since 2006-2008), which makes the discussion very timely and important. The challenge of implementing the Act was attributed primarily to lack of capacity (especially at LA level) and misinterpretation of the principles in the Act which was also listed as issues for the 'regulator-type' body to focus on. Another interviewee mentioned that irrespective of

the institutional positioning of the regulator, the Act should guide the process and thus it is up to decision makers to strengthen the Act, so as to provide clear mandate for such a body.

The incentives for service providers to 'buy into' the idea of having a 'regulator' were not obvious according to interviewees, since they felt that the current governance systems (of having institutional Boards) sufficient to deal with price-setting issues and having a separate institution to deal with regulatory issues will be "over regulation". One interviewee felt that any regulatory body would be appointed by government, which will not defuse the politics and thus the price-setting process will not be any different from the current situation. The presence of a regulator was associated with price increments, which was not deemed advantageous towards the urban poor. This perception was mainly influenced by the current electricity regulation system and thus "if the water sector should be caught in a similar system, that there will be chaos" (City official, December 2008).

Table 5-7 Institutional position of potential regulator for water sector as selected by different stakeholders.

Institutional position	Government/ Department (self-regulation)	Expert Panel/Advisory Board (temporary-change annually)	Merger with ECB	Government Department-phased out towards Independent body	Ofwat type-totally independent	No regulation
Scores (voting)	●●●●●●	●●●●	●●●	●●●●●	-	●●●●

Notes: n=22, interviews (including workshop) October-December 2008, Windhoek, Namibia

Logistically government (and financially i.e salaries of staff already paid for) was indicated according by some interviewees as being in the best position to take the lead in the process of establishing a regulatory institution. Government already has the legal mandate to implement policies, so it will avoid confusion among consumers. It was suggested that a dedicated division (within Department of Water Affairs and Forestry (DWAF)) focusing on the development of price-setting procedures and guidelines (including various other aspects) be established, with appropriate training and capacity (and clear responsibilities) offered to qualified staff.

The difficulty of regulating LAs, in the case of having a regulator within DWAF was posed, since it is the MLGHRD instead of MWAF who is responsible for operation of

LAs (this was the same reason used to have an independent body instead). Another challenge for the proposed regulator that was discussed, was how to deal with water related information only for LAs, since they include a range of services (remunerative and non-remunerative).

The water regulator idea reportedly has similarities with the environmental commissioner as stipulated in the Environmental Management Act (2007), who is given powers by the Ministry to select a panel of experts to conduct specific duties. In this regard, the panel of experts option is thought to better for the water sector, since there is only one bulk water supplier with 15 local authorities to deal with. It is also envisaged that the experts would not be required on a permanent basis, in which sense a secretariat (government based) could deal with administrative issues. Based on this argument, another option was discussed: *Initial expert panel within government and phase-out eventually to independent agency*. The experts can be used to build the foundation of procedures and terms of references for what needs to be done. Once this is firmly in place and the necessary human and financial resources are obtained, the agency moved towards some level of independence. However, external monitoring was suggested to play crucial role in the process. The reason why expert panels are proposed while government acts as secretariat is to avoid the normal "government working and thinking style", that is to influence within the process. Interviewees felt strongly that forces and resources should be pooled to create commitment and ownership over the process.

The option of merging a water regulator with the ECB was severely declined by interviewed municipal officers. The argument was that it will become a "power" issue between the two sectors, which will impact badly on consumers. Therefore interviewees stated that "*it is two separate types of services, and it operates in different ways and therefore it should be kept separate"*. Opposing arguments indicated that an optimal option would be a merger, because ECB is an independent institution already, with process guidelines, procedures and standards, which can be tailored to the water sector. The opinion here was "*it is better not to re-invent the wheel*". These interviewees did not agree with the emphasis on political interference, since the latter argument is that "as *long as the Act clearly stipulates the role of the Ministers (of both water and electricity industry) in the process, the politics are avoidable*".

The issue of cross-subsidies within the water sector should also be strongly addressed and assessed in term of sustainability, given the Namibian conditions. One of the interviewees further explained that legally NamWater is a company, and therefore should be treated as such and the issue of profit-making be clarified in that context, thus service standards and enforcement mechanisms can be set accordingly.

A neutral body (Ofwat type) would have severe financial implications (linked to independence and functionality), and therefore will take longer to establish and hence this option was not strongly considered.

Other interviewees (13%) were not convinced that establishing a regulator is the best option. They indicated that "some sort of regulation is needed", but it is not obvious that establishing a regulator is the answer; in the absence of cost benefit analysis it is difficult to select the institutional positioning of the proposed regulator. Certain LAs already operate as businesses and focus on financial sustainability as well as providing quality services, and thus do not require a regulator to determine price limits for them, since they operate on simple principles of "what goes in (costs) and what comes out (price)" and therefore "there is nothing to regulate". The boards of service providers are there to make sure business principles are adhered to and thus having a regulator will be duplicating and complicating existing structures and systems. In this regard, the City official stated that "the idea of having an economic regulator is good in principle, but is not suitable for Namibian conditions. The current system should be strengthened to incorporate the necessary principles" (City official, December 2008).

The major drivers behind the urge to have a regulator were identified as transparency and accountability by the interviewees. It was further indicated that accountability takes into account identifiable indicators which is necessary to improve the current process. In this regard, the sentiment was "*if you cannot measure it, how can you manage it*?" and thus responsibility of such a system has to be directed to "someone". In this respect, the interviewees rated the level of transparency (Table 5-8) required to improve the current price-setting system.

Table 5-8 Level of transparency required by interviewees to improve the price-setting process.

Level of transparency	None	Roles and responsibilities (institutional set-up)	Costs of operation and maintenance information (eg. Annual reports)	Tariff calculations and future projections/ Investment options (eg. Business/strategic plans)	All information (detailed) in public domain
Scores		●●●●	●	●●●●	●●●●●●

Notes: n=15, interviews October-December 2008 (excluding workshop), Windhoek, Namibia

Interviewees mentioned the benefits of the identified transparency levels primarily as understanding the motive behind certain procedures and the consequent results, thus making the entire process easier (and better), especially with regard to payment for services. One of the identified challenges of achieving relevant transparency levels was to improve and maintain good electronic data systems for ease of access and monitoring of service levels. These functions require strong coordination by a central institution, with effective information dissemination ability. The system should be consistent, yet flexible and simple, so that consumers also understand the process. In this regard, the desired consumer involvement (Table 5-9) was further identified as having a need for consumer representation during the price-setting process. Representation was highlighted as one of the biggest challenges when it comes to consumer involvement and interviewees emphasised the need to have clear roles and responsibilities, as well as procedures (indicators) in place, to keep representatives accountable.

Table 5-9 Indication of consumer involvement required within the price-setting process

Consumer involvement levels	No involvement	Manipulation (community committees)	Consultation (public meetings)	Placation (consumer representatives)	Delegated Power (influence of stakeholders on process)
Scores			●●●●	●●●●●●●●●	●●●●●●

Notes: n=19, Source: consumer involvement levels adopted from Arnstein ladder (Rouse, 2007: 82); interviews October- December 2008, Windhoek, Namibia (excluding workshop).

One interviewee felt that people vote for who they feel can represent their interests well; therefore it should also be a participatory process. In fact the interviewee indicated that the entire process of establishing a regulator should be treated as a

'democratic election' (for example after capable candidates has been short listed and public debates) where the public have the opportunity to select the director of any regulatory body, since the regulator would be representing consumer issues. Overall the results indicate that accountability through transparent information sharing and consumer involvement are considered to be the key elements for ensuring the 'success' of a 'regulator type' institution in Namibia, particularly given its scarce resource and highly-skewed income distribution challenges.

5.6 Chapter summary

Namibia's water sector is well managed and the provision of water and sanitation is above average compared to other lower-income countries. To ensure that this state of quality is maintained (and improved), in the midst of extremely unequal conditions, in terms water resource availability and income distribution, relevant institutional development initiatives are required. In general, a state of confusion prevails over the roles and responsibilities of various water sector institutions with regard to price-setting process. The price-setting process in Namibia is currently undertaken in an apparently haphazard manner with no official records of the process being available. Crucial information regarding the break-down of the costs of service provision are not readily available (bulk and local authority level), due either to mismanagement or lack of appropriate skills and knowledge. In this regard, financial transparency is a huge challenge given the fact that water prices are set at two separate levels with two different accounting systems, both of which effectively hide specific costs related to water supply in particular areas.

The results indicate that it is not possible for a civil servant, let alone a representative of civil society, to understand how prices are set from the financial information in the public domain. Hence it is clear that a more transparent information system about supply costs and pricing calculations would assist in allowing independent assessment of the efficiency of water providers (both bulk and local authority level), especially where resources are limited. Furthermore, it is difficult to assess the affordability levels of low-income users, since access to services are priority based. There is strong sense of understanding of why basic services are priced (but not how) as well as a strong sense of willingness to pay. The major stakeholders in the water sector include government, service providers and users, which have conflicting interests with regard to water and sanitation services. In this regard, it is proposed that a regulatory type

body be established to balance these interests and to facilitate information sharing imperative for a transparent and sustainable price-setting process.

"If the rhythm of the drum beat changes,
the dance step must adapt"
Kossi, Burkina Faso as cited by Berg,2007

Chapter 6: A framework for the price-setting process

This chapter addresses a cross-country case analysis, reflecting mainly on the price-setting processes and water and sanitation services with related perceptions of stakeholders in England, Zambia and Namibia (Chapters 4 and 5). Based on these results and other literature, this chapter includes further detail on the proposed options for the price-setting process in Namibia in terms of policy, institutional and implementation of a proposed regulatory framework through specified set of questions and criteria identified through literature.

The results are discussed within the context of the principal-agent theory, which highlights the need for transparency and stakeholder involvement to reduce challenges of information asymmetry. This is particularly important given the Namibian challenges of setting prices at two levels (bulk and retail water service provision), within highly skewed income distribution and water scarce conditions.

6.1 Provision of Water and Sanitation Services

Water provision in Namibia is undertaken by a parastatal company operating public assets, while in England and Zambia the majority of operators are private and commercial respectively, though the latter country has partly public governing bodies of which local authorities are major shareholders. Therefore the management style of the service providers is different. In Namibia, for example, based on interviews, the challenge of service providers are water scarcity and finding new water sources to meet the demand, while in Zambia their biggest challenge is dealing with deteriorating infrastructure and in England it is population growth and coping with climate change effects. Furthermore, the most remarkable similarity observed across the service providers is that of dealing with issues of affordability and differential (quality) services to meet the demand of a wide range of consumers within different social classes and hence consequently the challenge of recovering costs. In that regard, the providers are not compared to each other, but merely referred to for the purpose of describing country situations, and drawing lessons for the Namibian challenges within the price-setting process.

Financial data was primarily used to assess the financial performance of service providers in the selected countries. The financial information reflects the efficiency of

the providers' operations. Regulators require audited financial statements to assess the performance of providers, hence expect complete financial transparency from the providers. Selected financial ratios (author's calculations) were used to analyse the financial performance of the case country companies (Table 6-1).

Table 6-1 Financial elements (2006) to describe water providers in selected countries

Finance elements (2006)*	***England (Anglian Water)***	***Zambia (Lusaka Water and Sewerage Company)***	***Namibia (City of Windhoek)***
Major service	Water and wastewater services	Water and wastewater services	Municipal services including water and wastewater
No of customers	4.2 million	2.5 million	200 000
Average tariffs [PPP US$/$m^3$]	2.24	1.29	2.11
Average bill [PPP US$]^	58	15.96	67.57
Financial performance			
Turnover [PPP$'m]	599	49	176
Operating profit [PPP US$'m]	232	(4)	(6.76)
Operating efficiency			
Non-revenue water [%]	29	51	33
Debt collection period (days)	102	345	75
Service coverage [%]	100	65	88
Average Hours of supply	24	18	24

Note: *2006 elements were selected because it represents the latest figures obtained from all countries. ^ Figures do not include communal services. Sources: Annual reports of service providers; Zambian financial performance figures: (World Bank, 2006: 78).

The tariffs charged in Namibia are comparable with England tariffs; however it is considered high compared to southern African countries as confirmed through the literature (Gumbo, 2004: 1228). This is primarily due to the water scarcity challenge and the willingness of Government to charge viable tariffs. In general the research concludes that the service provided by the municipality in Namibia is considered good in comparison to LWSC and thus the problem is more of a procedural nature (in terms of tariff determination) rather than quality of service.

The biggest problems with regard to financial data from service providers were interpretation and understanding, and therefore it was not clear how tariffs are

calculated for the local authority and the bulk water supplier in Namibia. It was further clear that the Namibian price-setting process of the water sector is politically managed though administratively driven and that there is no common understanding and interpretation of full cost recovery principles. There is no mechanism to challenge the administrative demand for cost plus (at whatever level of cost-reflectivity) tariffs. LWSC is currently not meeting appropriate financial targets for viability, primarily due to a lack of infrastructural maintenance, reflected in the appalling unaccounted for water numbers as well as high debt recovery costs. Anglian Water's financial statements were also difficult to understand because the company forms part of the Anglian Group and some of the financial information did not differentiate between the Group and the company. However, company information was more easily accessible from public information available from the regulator, Ofwat. Furthermore, Anglian Water is performing well financially and this can be seen in their high customer satisfaction rates for service delivery though some would challenge the level of profitability that the regulator has allowed and incentivised Anglian to outperform.

6.1.1 Perceptions of stakeholders on water and sanitation services

In Namibia (interviewed informal area residents), access to water was regarded as third priority after the need for registered 'erf' (land) and electricity. Furthermore, payment for water and sanitation services was not generally a problem, it was the priorities of consumers that made affordability for services difficult to assess. In this sense, defining eligibility (and design) for subsidies proved to be a major challenge for government officials as part of the price-setting process. The issue of priority assessment is important both at considering consumer's behaviour and attitudes towards the services, but also on the side of providers and decision makers. The perceptions of stakeholder groups of water and sanitation services (Table 6-2), are very diverse given the different country conditions. Sanitation services in urban poor settlements are found to be significantly neglected in both Zambia and Namibia.

Table 6-2 perceptions of stakeholder groups with regard to status of water and sanitation services delivered in England, Zambia and Namibia

Stakeholder groups	***England***	***Zambia***	***Namibia***
Government		-High dependence on donor funds - Poor water services (improving)	-Poor infrastructural maintenance (depreciation charges unclear) -Unclear tariff determination
Providers	- High consumer satisfaction rates - Services cater for poor residence	-Block tariff (including social tariff) system works well -Lack of infrastructural investment is major reason for poor services - History of non-payment culture -Slow debt recovery major concern for full cost recovery	-Scarce water-focus on conservation measures -Flat rate for communal services (subsidised) -History of non-payment culture -Vandalism (maintenance) of communal water points -Slow debt recovery major concern for full cost recovery
Consumer representatives	-Improving services (especially consumer relations) - Metering needed for fair billing	-Kiosk system working well	-Good services -Good communication with municipal officers -Debt recovery for communal services
Consumers	-Good services (hardly ever problems) with reasonable charges -Unclear bills -Prefer paying flat rate as oppose to metered bills	-Intermittent services -Long distances to collect water - Poor water quality -Unclear bills - No toilet facilities-health implications	-High debt (arrears communal accounts) -Pre-paid meters preferred (although mostly out of working order) -Water cut-off due to unpaid communal bills is unfair to those that pay. -No toilet facilities-health implications

Source: Interviewees during fieldwork (Namibia: April-June 2007 and October-December 2008; Zambia: November 2008; England: July-August 2008)

Namibia and Zambia share a common history or culture of non-payment for water and sanitation services leading to difficulties in debt recovery by providers. The kiosk system is seen as “pay as you go” system that works well in Zambia and it instils the culture of accepting that water is like any other good (which you can get from the

kiosk) that you have to pay for. On the contrary, informal area residents in Namibia prefer pre-paid meters as a fair system in communal water service conditions; however the challenge faced by providers is in maintaining these systems. The providers in Namibia and Zambia also share a similar opinion that subsidies form part of the first block of the tariff system for basic services, however additional subsidies for the urban poor falls under the social responsibility of government. In England, the social responsibility is with the providers to ensure that they are financially sustainable as well as making sure that their low-income customers are provided with good quality services (through, for example, the WaterSure scheme). The major complaint of consumers in all countries against service providers is that the billing system is unclear. Hence based on interview results the following issues are deduced with regard to providing water and sanitation services (especially with a focus on the urban poor):

- Adequate revenue generation is crucial for infrastructural maintenance and quality service provision, hence the importance of proper structure of tariff determination strategies
- Subsidy needs and target beneficiaries require clarification and definition since consumer needs are priority based and the general assumption is that services are affordable to all, including urban poor
- Adequate debt recovery procedures have to be in place to ensure sustainability
- Consumer involvement (interest) in the price-setting process depends on consumer satisfaction of service provision.

Overall from the results, consumer representation is found to add significant value to the price-setting process in terms of increase transparency and interpretation of related information.

6.2 Price-setting processes

The price-setting processes are very country specific and thus are not directly comparable; however general process related issues are highlighted from the research, which could inform the process in Namibia, given country challenges. compares the institutional arrangements across England, Zambia and Namibia to illustrate the

differences that exists in these countries (Table 6-3) in order to sketch the context against which lessons are drawn from the former countries .

Table 6-3 Comparison of water sector institutional arrangements across England, Zambia and Namibia

Institutional arrangements	*England*	*Zambia*	*Namibia*	
Water sector Reform	1989-Privatisation process following the 1974 reorganisation when all Local Authorities were absorbed into regional water authorities.	1993- Commercialisation process- Local Authorities were entrusted with all water and sanitation services provision	1998- Namibia Water Resources Management Review team facilitated process	
Legal framework	Water Industry Act, 1991 updated to Water Act, 2003	Water and Sanitation Act, 1997	Water Resources Management Act, 2004	
Responsible Government entity	Department of Environment, Transport and Regional Affairs	Ministry of Local Government and Housing and Ministry of Energy and Water Development	Department of Water Affairs and Forestry (DWAF)- Ministry of Water, Agriculture and Forestry and Ministry of Local Government and Housing and Rural Development	
Regulator status	Independent regulator, non-ministerial department, Water Services Regulatory Authority (OFWAT)	Autonomous regulator, National Water Supply and Sanitation Council, started operations in 2000	DWAF, setting/approving tariffs through ad-hoc committee	
Regulatory tools used	-Incentive Based Regulation derived from five-yearly price reviews -Overall Performance Assessment (OPA)	- Monitoring Performance indicators - Incentive Based Regulation introduced 2008	Not in place	
Performance indicators	-Levels of service -Security of supply and efficient use of water -Financial performance and expenditure -Water and sewerage service unit costs and relative efficiency	-Water and sanitation service coverage -Hours of supply -Staff per 1000 connections -Collection efficiency -O&M coverage collection	NamWater Introduced in 2007: -financial performance -Employee productivity -customer/ stakeholder satisfaction	CoW - Not accessed
Consumer representation	-Independent Consumer Council for Water (CCW) since 2006, out of Ofwat's Customer Services Committees	- Water Watch Groups (WWG), semi-autonomous to NWASCO	Community Committees supported by Local Authorities	
Water suppliers status	10 water and sewerage companies 12 water only companies	23 Local Authorities 51 Commercial Utilities 10 Private utilities	1 Bulk Water Supplier (since 1997) 14 Local Authorities	
Regulator Sustainability	193 staff (2008) Less than 0.2% of industry turnover	16 Staff (2008) 2% of levy on service provider's turnover	Not in place, currently Government regulated/ self-regulation	
Incentives to serve the urban poor	Vulnerable charges Scheme ('WaterSure'), complemented by service provider 'Charitable Trusts'	Devolution Trust Fund (DTF) (through external support from the Danish and German Governments) establish Kiosk systems in peri-urban areas	No subsidies or support for urban poor	

Source: Franceys and Gerlach, 2008; NWASCO, 2004; MAWRD, 2000; Interview results April-June 2007; July-August 2008 and October-December 2008.

The English and Zambian processes are very similar, in the sense that Local/Regional Authorities were transformed into private utilities and are regulated by independent economic regulators, while the Namibian system is based on a public system through local authorities. The Water Act of Namibia makes provision for a "regulatory board" however it has not yet been implemented, since 2004 due to lack of relative capacity, political support and will. The consumer representation bodies in England represents all consumers, while in Zambia and Namibia, they only represent those consumers in the peri-urban areas. The rest of the consumers deal with the service provider directly. The greater majority of consumers in all countries indicate ignorance towards the price-setting processes taking place, which strengthens the point that consumers are not particularly interested in the price-setting process; unless they experience service related problems or very sudden price rises.

6.2.1 Price-setting priorities of regulators

The priorities set by regulators (or government) are country and demand specific; however various similarities could be drawn from the research (Figure 6-1).

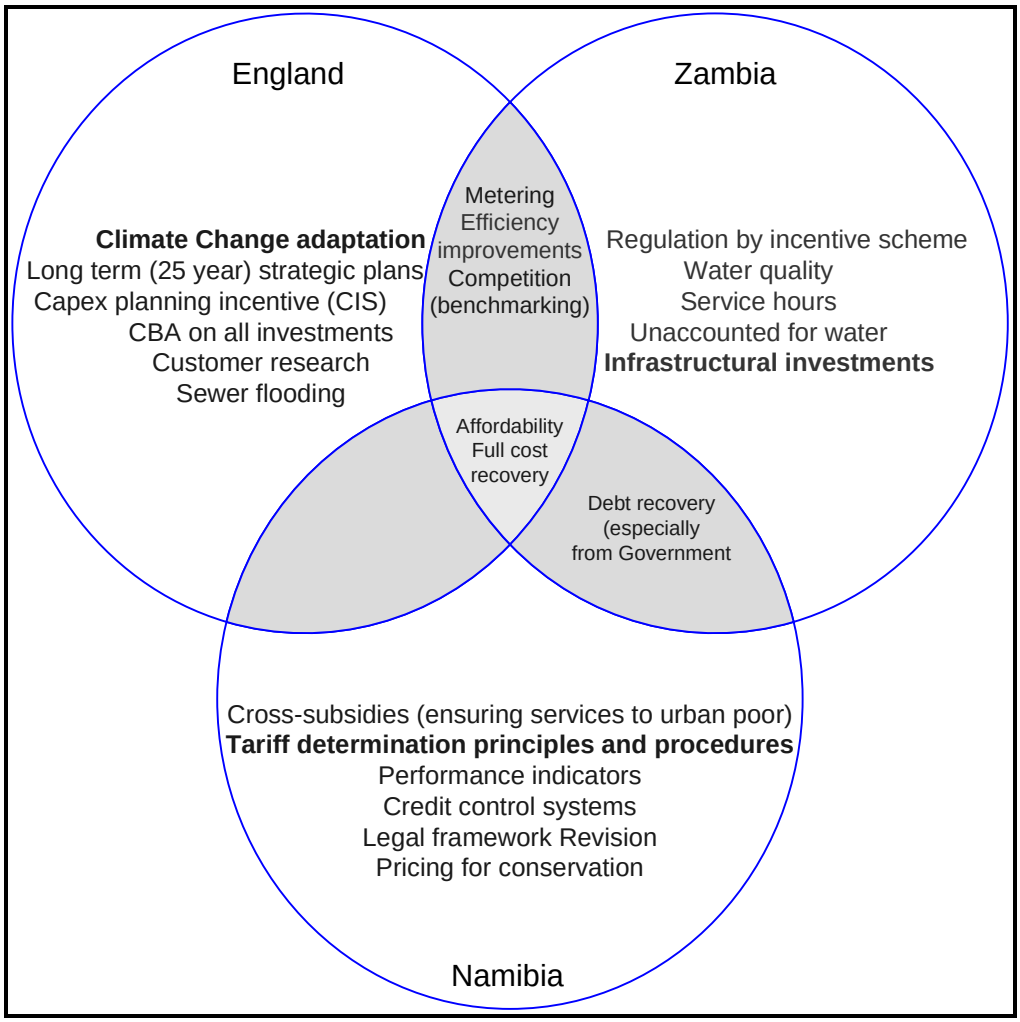


Figure 6-1 Regulator priorities (most urgent-in bold) and respective similarities faced in England, Zambia and Namibia. Source: Author's analysis based on interview results

Many of the challenges highlighted by regulators are in fact service provider challenges, which regulators need to, monitor and ensure that they are implemented according to standards and procedures. It can thus be seen from the interview results that all regulators/governments are mostly concerned with reaching an acceptable level of cost recovery of service providers to be able to deliver the desired and affordable services to consumers. Full cost recovery (however defined) is at the heart of regulation, after which the focus changes to efficiency improvement, as in the case of England. In the Zambian context full cost recovery refers to recovery of cost of operation and maintenance as well as cost of investments of water and sanitation services (NWASCO, 2004a: 38). Based on the literature (Rogers et al., 2002: 3), full cost recovery refers to the combination of full supply, economic (opportunity and economic externalities) as well as environmental externality costs. In that sense, it is understood that the definition of full cost recovery used in Zambia and Namibia refers mainly to the full supply costs instead of full costs (which include

economic and environmental externalities). England and Wales believe that the requirement to achieve the Water Framework Directive will deliver an acceptable level of economic externality.

Effective sector regulation approach consists of three strategies; identification of priorities; building the foundation for effective regulation and establishing the full scope of regulation (Figure 6-2) (DWAF, 2008: 8). In this case, England and Zambia are operating on a full scope of effective regulation. Namibia can be classified under the second stage of effective regulation; however the research indicates that these foundation blocks can ideally be achieved under coordination of a regulatory body (irrespective of institutional positioning).

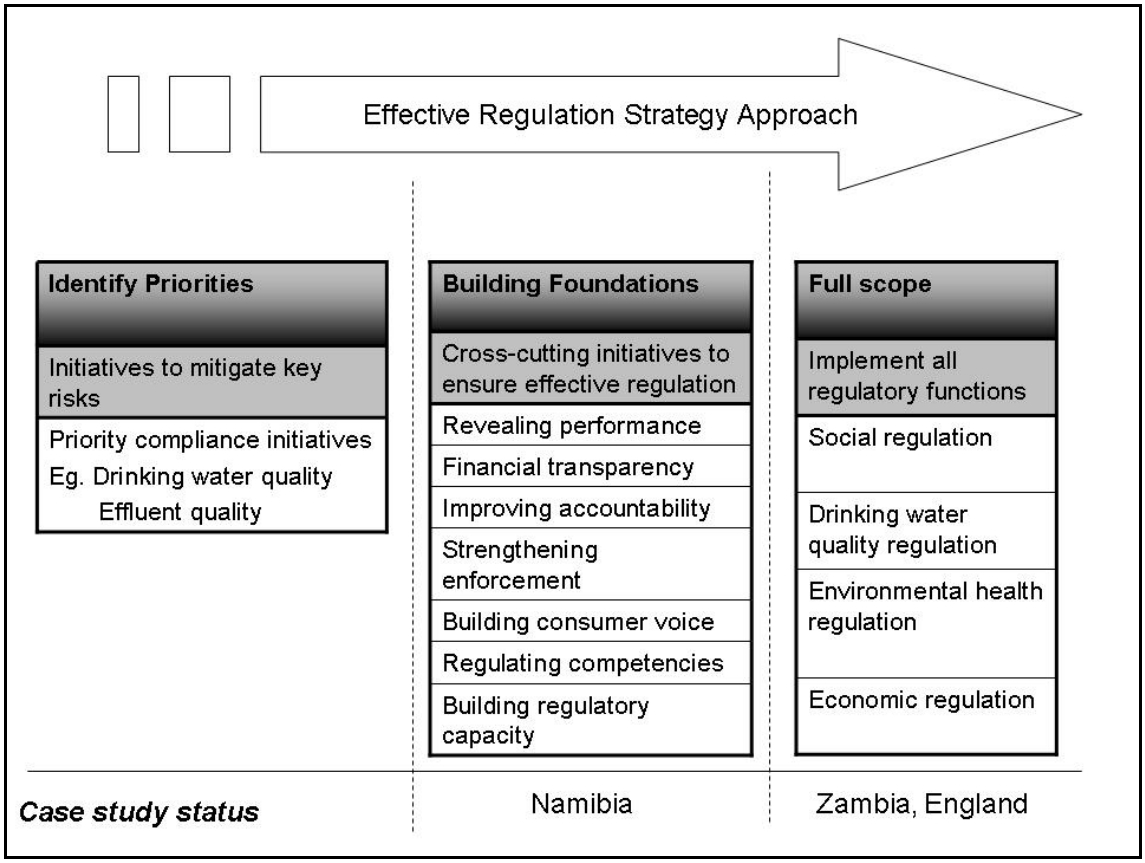


Figure 6-2 the case study country status against the effective regulation strategy approach. Ref: Adapted from (DWAF, 2008: 8)**.**

In this regard, the literature (DWAF, 2008: 8) highlights four regulatory domains under which effective regulation can operate:

- Social regulation (universal access to services)
- Water resources and Environmental regulation (wastewater discharges, licences)

- Public Health Regulation (drinking water quality and safe removal of household wastes)
- Economic regulation (tariffs, contracts, service quality, price and incentives)

These are indicative of sustainable development pillars, with the addition of public health highlighting the important link between the water and health sector. For purposes of coordination of the full scope of the regulation stage, this research further identifies a further domain, called ***"governance regulation"***, which could be considered the coordination of all regulators (whether it is separate entities or one unit with separate domains as units within). This is suggested to be the ultimate tool for transparency to address concerns of "who regulates the regulator" as the role of an independent public body, equivalent to an 'Ombudsman' or Competition Commission in England, to conduct in-depth enquiries into regulation within the context of policy implementation and monitoring. In the case of water sector, the governance regulator would measure performance of regulators, against effective governance criteria, with the most important being transparency through access to accurate information and stakeholder involvement.

6.2.2 Perceptions of stakeholders on price-setting process

In the fieldwork, tariff determination as part of the role of regulators, was seen to be one of the major activities within the price-setting process and hence transparency and accountability within these processes were deemed most important for interviewees from all countries concerned. Transparency is mostly needed to boost the understanding and willingness to pay of consumers for relevant services. Political influence was highlighted as one of the biggest hindrances to derail the process from charging full costs, therefore compromising financial sustainability of service providers. Another challenge identified was limited information (especially financial) available within the system to enable decision-makers to make informed decisions with regard to price-setting process. The boards of regulators and of service providers are considered as governance structures and as such the interests (representation) of board members (seen as governing structures) are questioned and this could influence credibility of price-setting process, especially the presence/role of government officials on such boards.

Table 6-4 Comparison of perceptions of stakeholder groups across the study countries on price-setting processes

Stakeholder groups	*England*	*Zambia*	*Namibia*
Regulator	-information intensive highly computerised system	-high degree of objectivity and transparency	- Not in place
	-very transparent and adaptive to changes	-independent and free from political interference	
	-complex tools (in process of simplifying)	- basic and simple guidelines for providers to follow	
	-good working relationship with other regulators, service providers and CCW	- good working relationship with regulators, providers and WWGs.	
Government	Not interviewed	-independent process; -efficient improving process	-ad hoc process, no operational guidelines (monitoring or enforcement mechanisms) in place
		-transparent and informative process to facilitate decision making processes	-tariff determination procedure unclear
		-bottom-up information feeding approach	-no performance indicators
Providers	-complex and information intensive (detailed) process	-micro-management of companies (over-regulation)	-non existent and non-transparent process
	- micro-management of companies (over-regulation)	-unclear role and responsibilities	- high degree of political interferences
	- process political and non-transparent	- lack technical expertise	
		- certain tools for regulation inapplicable to companies	
		-too much information requirements ; - independent process; - good urban poor focus	
Consumer representatives	- efficient process	- high degree of transparency, accountability and stakeholder involvement	- unaware of detailed process
	-good working relationship with regulator and service providers	- interference in service providers and government activities	- understand reasons for payment for services
	-CCW have negotiation and persuasion power to influence process (requires more statutory power)		-good relationship (good information flow) with local authority
	- process is 'relatively' transparent- no access to financial model- 'what-if' scenarios refused		-insensitive to urban poor needs and capacities
	-regulatory tools are too complex and needs revision		
Consumers	- unaware of the process	-unaware of the process	-unaware of the process
	- not interested to participate in process (in favour of representation)	- in favour of representation	-interested to participate in process

Source: Interviewees during fieldwork (Namibia: April-June 2007 and October-December 2008; Zambia: November 2008; England: July-August 2008)

There are similarities amongst stakeholder group responses across the three countries regarding the price-setting processes. The regulators perceive the process to be highly transparent with very minimal interference from government, while service providers and consumer representatives indicated a degree of political interference in the process. Overall consumers did not show much interest in the process and were more concerned about the services they received, though the Namibian consumers indicated interest to be involved in the process. Consumer representation for Zambia and Namibia is on a volunteer basis while in England they are now (since 2006) paid allowances for their services, hence there is a noticeable difference in levels of competence and selection procedures (which influence operational styles) in these countries. The Zambian and Namibian representatives are more localised (elected and work closely with community) and based on reputation and trust amongst the community, whereas the English representation is based on skills and experiences in specific areas (positions advertised with appointments based primarily on professional competence). Community structures are in place in Namibia to create a sense of ownership and responsibility amongst informal area residents, as well as representing community on relevant issues, however, the structure has no decision-making power and is only used as an information channel between the community and City officials. In this regard, the English consumer body has more influence on official procedural and decision making processes, though no statutory powers exist either. Based on these results, the following key issues are deduced for price-setting processes:

- The perceptions of stakeholders depends on their involvement (and experiences) and knowledge in the process, hence should be taken very subjectively
- The price-setting process is complex and needs to take into consideration various opinions (adapt to changes and demands) and thus should be very goal oriented
- Expectations and target stakeholders (beneficiaries) of the price-setting process needs to be clarified continually
- The efficiency of the price-setting process was based on robust system (guidelines and procedures) in place
- The price-setting process is at some level personality based which influences the operations and relationships of regulators with their various stakeholders.

6.3 Conceptual framework: Application of theory

This research builds its foundation on theories of regulation which apply to utilities in general. There are two prominent theories in this context: positive or normative theories of regulation. The positive theory addresses why regulation is required, while the latter deals with how regulation occurs, which relates to the regulatory process issues such as obtaining credible and accurate information to identify performance standards, price structures and incentives for economic efficiency (Jamison et al., 2004: 217). The research is thus focused within the normative theory of regulation, specifically focusing on minimising the costs of information asymmetry through establishing regulatory processes. This results in directly applying the principal-agent theory in the context of regulatory governance within the water sector, in which case the government is the principal, the agent being the service providers. However, realising that more stakeholders are involved, the study also draws on interest group theory (Jamison et al., 2004: 217), taking into consideration the interests of consumers and other organisations.

There are four issues as summarised from literature (Wheelen and Hunger, 2002. 30; Mallin, 2007: 12; Brealey et al., 2006: 299) to be considered when dealing with principal-agent problems. These include:

- Process (process of developing business plans and procedures)
- Information (access to accurate information)
- Incentives (ensuring that appropriate rewarding systems are identified)
- Performance measurement (measuring means of rewards through monitoring)

Asymmetry with respect to objectives and information are the biggest problems faced between principal-agent relationships. In this case, the agent has an advantage over the principal due to access to more detailed information. In this case, regulation is suggested as a monitoring tool to minimise the identified problems, such as lack of financial transparency, as indicated from the research results. The key thus for the proposed institutions such as independent regulators are to ensure that companies perform well, the interests (often conflicting) from key stakeholders namely, consumers, shareholders/investors, board of directors and management are synchronised (balanced) for sustainability of the sector.

Managing or resolving the relationship (interests) between 'principals' and 'agents' involves the application of agency theory, (Baldwin and Cave, 1999; Wheelen and Hunger, 2002.: 30; Mallin, 2007: 12) in the sense that procedures can be developed for two reasons to primarily mitigate the informational disadvantages faced by politicians dealing with agents. This is in line with the lessons learnt from case studies (England and Zambia) which include ensuring that roles and responsibilities are clarified and that the appropriate mandate is given to "regulatory body" to address the water sector problems as well as ensuring common interpretation and understanding of the legal framework. The essence of the study thus revolves around information sharing (including participation of consumers to ensure their issues are represented and considered during decision making processes) in the quest of improving transparency (especially financial) within the price-setting process. Gathering sufficient and accurate information forms one of the biggest tasks of regulators to address the information asymmetry challenge between principal-agent relationships (Table 6-5), as transpired from interview results. For example, many of the utility interviewees indicated a sense of "over-regulation" from the regulators in England and Zambia in terms of intensive information requirements. In this regard, the purpose (objective) of gathering information needs to be clearly defined and understood by all stakeholders so as to address specific problems in the system.

Table 6-5 Principal-Agent relationships and related information asymmetry challenges identified within study

Principal	***Agent***	***Information asymmetry challenge***	***Role of regulator to address challenge***
Government	Regulators	Transparency requirements (as part of regulatory principles) and expectations in line with stakeholder interests	-Standard setting -Regulating prices and service quality -Providing policy advice -Settling disputes -Clear identification of responsibilities and procedures
Government	Service Providers	-Financial and operating statistics	-Monitoring and enforcement mechanisms -Monitoring competition
Regulators	Service Providers	-Price and non-price issues	-Assess performance of provider (ability to operate efficiently) -Assess financial condition of provider -Assess market demand -Monitoring and enforcement mechanisms
Service Providers	Customers	-Willingness and ability to pay (addressing affordability) and ability to pay (income levels)	-Open and accountable regulatory processes -Mechanisms of feedback and information sharing -Consumer representation (handling complaints)

Source: Author's analysis of results

Research results indicate that there are various types of information asymmetry challenges from all stakeholders, hence the need for a regulator to make the system more transparent. This need for transparency is even more necessary in a country like Namibia, which faces three levels of extremes; separate levels water service provision, skewed income distribution and water scarcity. In this regard, the information requirements of a regulator are defined by its role and responsibilities as well as specific country conditions. The results also indicate that major consequence of information asymmetry is financial distress for operator (mainly due to political influence on pricing aspects) and as a consequence inefficiency and poor quality of service. These findings are in line with findings by (Jamison et al.) (2004:215) who further states that the capacity of the

regulator also plays a crucial role in addressing information asymmetries within principal-agent relationships in order to determine "informational requirements; obtaining and managing information; data quality assessment; reporting information and ensuring public access to information".

Result analysis highlights that though stakeholder interests' are different; they all share a central need for sustainability of the water sector. Hence the research suggests that it is the key role of the regulator to steer the sector towards this common goal. Therefore the need for effective information sharing and understanding the underlying benefits cannot be over-emphasised. Based on the research findings, the types of information required in a price-setting process (and its related benefits) are highlighted (Table 6-6).

Table 6-6 Type of information and related purpose and benefits targeted at specific stakeholder groups

Type of information	**Target groups**	**Purpose**	*Benefits of information*
Public information	Consumers	Transparency	Enhance and improve customers understanding and awareness/perceptions towards payment and conservation of water services. It also allows customers to put pressure on service providers to uphold service standards
Social information	Consumers and Government	Sector performance (sustainability)	Includes holistic picture of the sector, including coverage, access for the poor, water resource availability to make informed water use/investment decisions.
Managerial information	Service providers and Regulators	Accuracy and Reliability	Keeping a (centralised) comprehensive information systems- database (including historical data) enables managers to know what to measure and manage for future development. This is essential for inclusion in business plans. Clear definitions for targets are important. Logical data collection (procedures), verification processes (and analysis) need to be in place for effective information flow within organisation.
Financial and operational information	Regulators	Financial transparency- Realistic price	This will enable service providers to be held accountable for performance of services
Evaluation information	Service providers, Regulators and Government	Improved performance	National evaluation of services, based on combination of social, financial and operational information. This would also assist in shaping sector priorities and objectives

Source: Author's analysis of results

In general, the results conclude that transparency (as a result of information sharing and analysis) as implemented through regulators improves confidence of both consumers and providers in the system and indirectly results in improved performance of companies. However, further results indicate that simplicity (and targeted/specific) in regulatory information requirements would result in improved price-setting processes. The perceptions of stakeholders, as found during the fieldwork, are formed based on the information received, and since the medium of information translation and analysis is

missing in Namibia, the price-setting process was seen as “chaotic and disorganised”, while in the countries where regulators were established the process was rated transparent and effective to a certain degree. The incentives of sharing information thus can summarise as:

- Mitigating information asymmetries
- Addressing institutional challenges (transparency and information flow (internal and externally)
- Identifying sector trends and priorities
- Improving sector performance (beneficial for all stakeholders)

6.4 Proposed options for regulation in Namibia

Evidence from England and Zambia illustrates the role of economic regulation. Results from Namibia provide evidence of weakness in legislative framework, clarity on roles and responsibilities and lack of financial transparency, which are clear examples of the principal-agent challenge. To overcome this, it is clear that a ‘body’ or institution of some kind is needed and will help clarify the price-setting processes. There is also a clear need to document the process and develop guidelines following a consistent system. The first focus for this process (based on research findings) is to review (finalise the process) the Act (especially the regulatory section) and make it as clear and specific as possible. Strengthening of the legislative framework was mentioned as a driving force behind the electricity regulator development process in Namibia and thus this is strongly recommended (by research findings and interviewees) for the water sector. The results also indicate that transparency and accountability principles are required to improve the price-setting process, irrespective of the institutional positioning of a regulator. Currently skilled capacity in this field is lacking and therefore it is imperative that thorough research is undertaken to provide a system that is fully adaptable and practical given the Namibian conditions.

6.4.1 Addressing policy gaps

The legislative framework of England, Zambia and Namibia (Table 6-7) were reflected upon in terms of its institutional provisions and price-setting related clauses for water and sanitation services. Reflecting on the legislation of England and Zambia, there is a

significant difference especially with regard to details of the price-setting process and the role of the water service providers compared to the Namibian Act. The Water Act, 2003 for England and Wales is very detailed on the roles and functions of the regulator and the consumer representation bodies and includes the type of information required and shared to consumers and the relevant authorities involved. There are further performance standards that are linked to the remuneration of the directors of companies, which are assessed by the water regulator as well. The English Act also requires all specified decisions made by the regular to be in the form of public notices and it specifies the relationship between other regulators; Secretary of State, Assembly, Environment Agency and Water Service Regulation Authority, in terms of cooperation, exchange of information and consistency of procedures.

The Zambian Water and Sanitation Act, 1997, was also found to be very clear and detailed with regard to functions and powers of the Regulator as well as the water suppliers. It does however, not make explicit provision for consumer representation, though strong bodies (WWG) are in place and working well according to interview results.

Table 6-7 Legal frameworks guiding the water sectors in England, Zambia and Namibia

Policy items	***England***	***Zambia***	***Namibia***
	(Water Act, 2003 updating the Water Industry Act, 1991)	***(Water Supply and Sanitation Act, no.28 of 1997)***	***Water Resources Management Act, no. 24 of 2004)***
Provision for Regulator	Establishment of corporate body called Water Services Regulation Authority	Establishment of corporate body called NWASCO	Establishment of Water Regulatory Board proposed to consist of 5 persons
General functions	-Protect interest of consumers -Develop standards of performance for water and sewerage services -Ensure functions of utility companies are executed properly -Ensure that companies "secure reasonable returns on their capital" to finance their activities - Promote effective competition -Provide guidance on social and environmental matters -Provide standards of performance in relating to water supply and sewerage services	-Advisory capacity to government, local authorities and utilities - Licence utilities -Develop sector guidelines (including complaints handling procedures) -Establish and enforce standards -Disseminate information to consumers	-Control pricing in water supply and effluent disposal -Provide "quality independent assessments of water pricing proposals by water utilities and suppliers" -Determine maximum charges, fees and tariffs of water supply, licences for water abstraction and use, permits for effluent discharge and disposal.
Powers	-"Promote economy and efficiency on part of companies" -Ensure no preference or discrimination against companies during fixing charges -Operate within principles of best regulatory practice -Enforce financial penalties of companies	-Ensure service delivery in compliance to Act -Access to information to monitor utility performance	Not explicitly mentioned
Institutional support	-Enforcement authority -Competition commission	-Technical advisory committee (board)	-May establish committees to perform various functions
Financial capacity	-Payment from companies to cover costs of the Authority, CCW and Secretary of State, Assembly	-"Funded by moneys appropriated by Parliament" -Licence fees, grants/donations, loans	-"Funded by moneys appropriated by Parliament"
Duties of water providers	-General duties of water undertakers (including duties of bulk water suppliers) to "maintain an efficient and economical system of water services" -Financial conditions and compliance of providers	-Functions of water supply and sanitation utilities to "provide efficient, affordable and sustainable water supply or sanitation service" -Licence conditions and compliance	-Functions of any water supplier to "ensure adequacy, affordability, reliability of water supply" -No specific duties of providers are indicated
Consumer representation	-Establishment of Consumer Council for Water and committees with advisory role and detailed functions	Not explicitly mentioned	Not explicitly mentioned

Source: Author's synthesis of Water Act, 2003-England; Water supply and sanitation Act, 1997-Zambia and Water Resources Management Act, 2004-Namibia

Similarly, the Water Resources Management Act, 2004 of Namibia makes provision for the Water Regulatory Board which is primarily responsible for tariff assessments, while setting performance standards and monitoring of service providers are delegated to the Minister of Agriculture, Water and Forestry. This Act was found to be vague (as indicated during fieldwork) in terms of functions of the water suppliers (though the NamWater Act and Local Authorities Act are in place in this regard), in compliance with licence conditions. A major gap in the Namibian legislation (Water Resources Management Act) is that there are no clear enforcement mechanisms outlined and hence as a result there is no clear monitoring or performance assessments of urban water and sanitation service provision.

Based on this analysis, the research agrees with interviewees with regard to the fact the Namibia Water Act needs to be strengthened in the areas of the functions and powers of the 'proposed' regulator and hence a review is justified (which is ongoing since 2007). Furthermore, consensus of all stakeholders on policy principles is highlighted as an important basis (and provides focus) for the price-setting related policies. The research is in further agreement with official reports (GTZ, 2008: 13) on common policy principles shared amongst other African countries such as Kenya, Tanzania, Uganda and Zambia includes the following:

- Separation of policy and coordination roles from operation or service provision roles
- Separation of water resource management from water supply and sanitation
- Decentralisation to regional or local government level
- Full cost recovery especially for urban areas
- "Participatory approach" including all stakeholders, especially women
- Continuous public financing towards the sector

Development of procedures, data collection, analysis and distribution is highlighted as the strength of price-setting processes, supported by appropriate legislation. Results indicate that effective communication and stakeholder involvement is necessary from early stages of the price-setting process, however the process should not underestimate the strength of political support within the process. This was particularly evident from the Zambian price-

setting process and their initial experiences during the formation of the regulatory framework.

6.4.2 Level of institutional positioning

It is clear from the results that the institutional roles and responsibilities are unclear and there is uncertainty in terms of the activities and responsibilities of certain players in the Namibia water sector, both on vertical and horizontal scale. The tested options for potential institutional positioning were further categorised according to a modelling framework process into preliminary, basic, intermediate and advance frameworks accordingly (Figure 6-3).

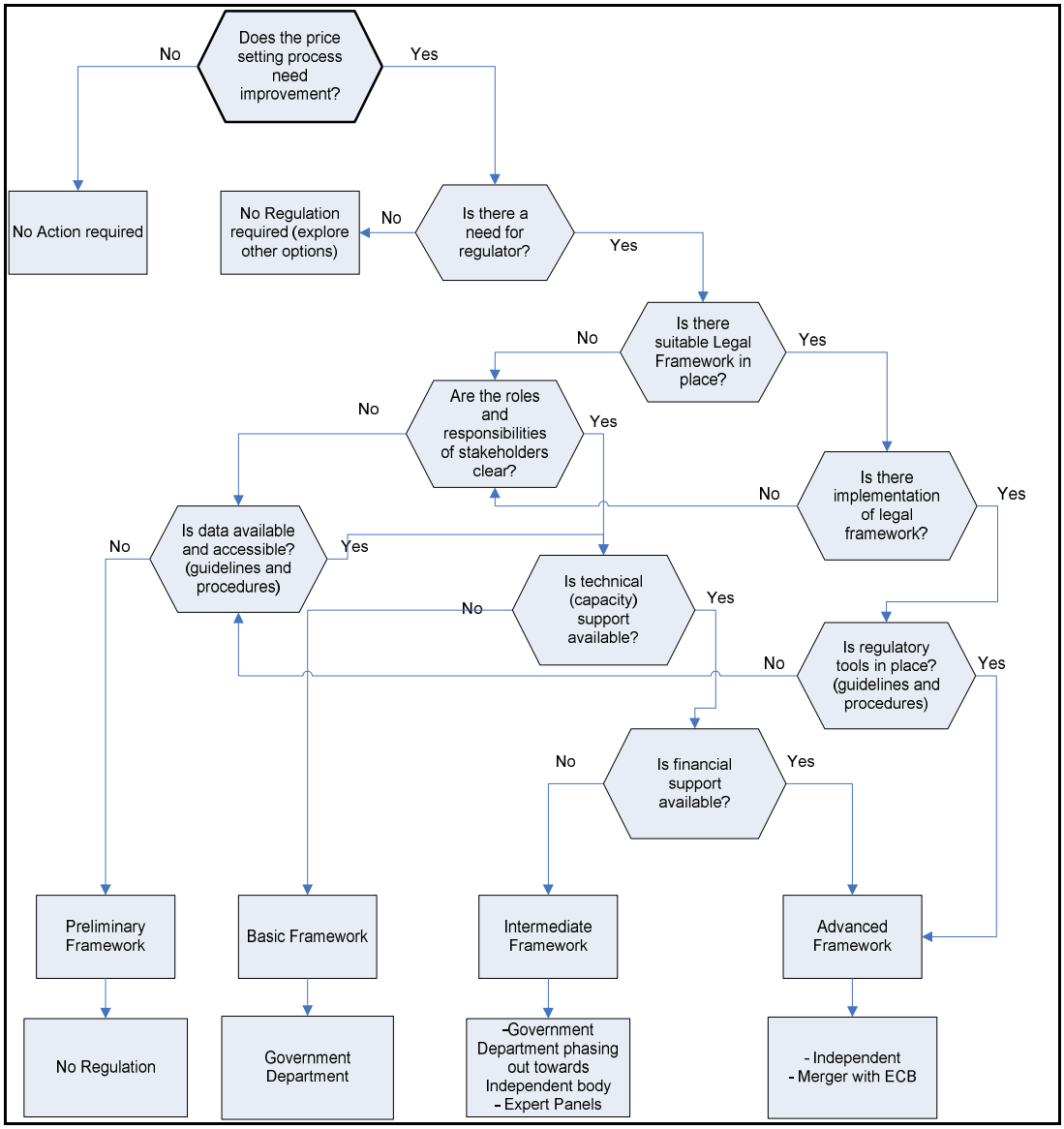


Figure 6-3: Process for selecting modelling framework for institutional positioning of potential regulator in Namibian context. Source: (Adapted from UKWIR, 2001: 42)**.**

The modelling framework suggests that there are 8 basic guide questions that leads to selection of specific frameworks, which in the case of Namibia resulted in 6 options (based on literature review and interview results) available for selection. The framework questions were developed based on issues that were highlighted during the fieldwork as basis for current price-setting situation and future projections of the process. The intermediate framework options are identified by the research as the most appropriate frameworks for Namibia, even though the majority of the interviewees' preferred the basic framework which represents the current situation, where government, Department of Water Affairs (DWA), regulates the tariff determination process in Namibia. The primary reason was lack of technical capacity (which was also the reason as to why the current section about regulation within the Water Management Act, 2004, has not yet been implemented) as well as logistical and financial implications (making use of current staff within the government office). However, the advantages and disadvantages of these options (Table 6-8) based on interview results, justifies the selection option to suit the Namibian price-setting process, considering the one of the water sector objectives of "appropriate and transparent water service charges" (MAWF, 2007: 9).

Table 6-8 Advantages and disadvantages of various framework options for service providers

Framework options	*Advantages*	*Disadvantages*
Preliminary		
No Regulation	No advantage perceived	-Providers 'profiteering' of consumers -Poor quality of services -No transparency
Basic		
Government Department	-Administrative and logistically convenient -Legal powers- can exert more compliance	-Political interference -Lack of separation between policy and operations -Limitations imposed by financial and cost structures -Lack of separate and transparent accounting -Lack of transparency (no direct public participation) - Resistance to change - Overstaffing -Low productivity and staff motivation (limited incentives and responsibility)
Intermediate Government Department phasing out towards Independent body	-Administrative and logistically convenient - Legal powers- can exert more compliance	- No clear time frame for phasing out - Lack of transparency - Political interference
Expert Panels	- Increased Transparency - Focused targets; - Increased objectivity - Increased credibility; - Experts used when needed -International networks	- Continuity and representation issues - Limited authority in terms of decision making
Advanced Independent	- Independent decision making power - transparency of budgets and accounts (Published targets and decisions) - Effective monitoring and public reporting of required deliverables - Objectivity; - Credibility (knowledgeable team) - Benchmarking	- Lack of finances to operate (Dependence on donors or service providers) - Complex system of regulatory tools and implementation
Multi-utility (merger with ECB)	-Financial incentives (means of preventing water income being used for other purposes) - Work towards full cost recovery - Separate from policy and operations	-Lack of operational autonomy - No clear separation of sectors

Source: Author's analysis

The primary reasons for having a regulatory body were identified from the research as transparency and accountability. Transparency is considered a function of accountability. However research results have indicated that it is possible to achieve accountability with low transparency. Hence, the options of institutional positioning were further measured against these two elements (on a scale of 0-5) (Figure 6-4) to see how much these options would be able to fulfil these requirements.

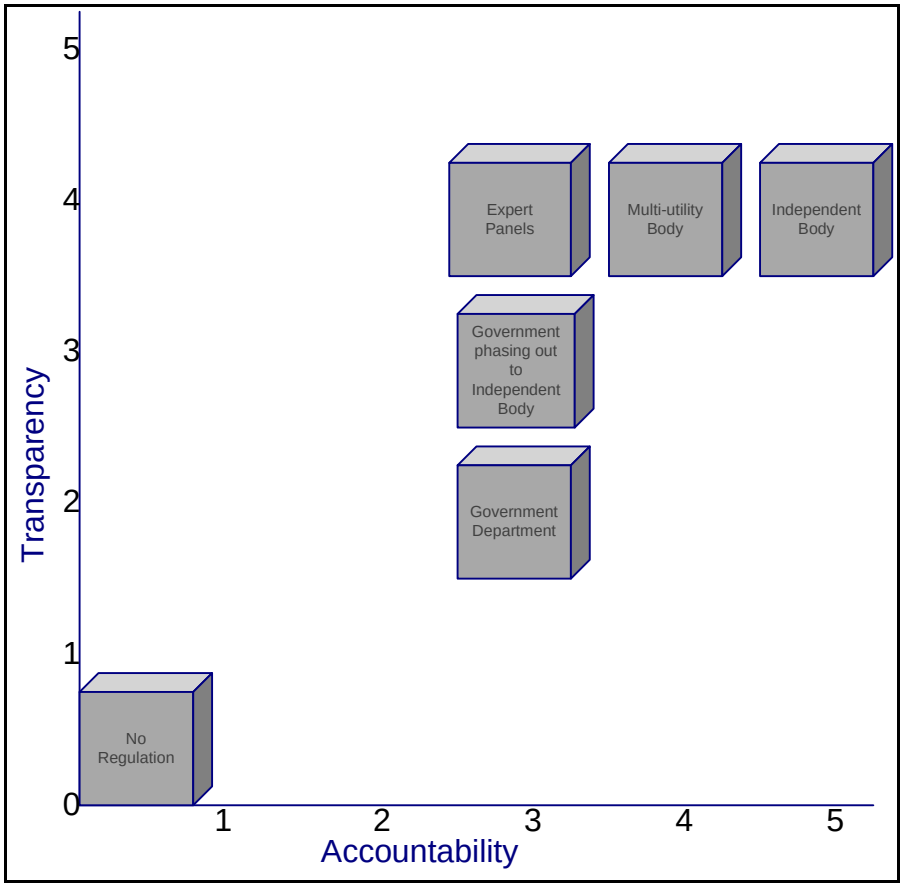


Figure 6-4 Illustrates the levels of transparency and accountability attributed to the various institutional positions of potential regulator. Source: Author's analysis from interviewees, n=24 (including England and Zambian perceptions on transparency).

Accountability was described as the measure that is desirable, but which is influenced by the level of transparency. In essence many interviewees indicated that the more transparent institutions operations are, the more accountable such an institution is for their actions. In this regard, a government department was rated as the opposite, such that they are less transparent, though they could be seen as being more accountable, since they "make the rules". In this sense, accountability was linked to decision-making power as well, which is why expert panels were thought to be very transparent, but less accountable, for the reason that the experts are appointed by government and are seen as not having sufficient power to

make decisions. Most interviewees found it difficult to rank the option 'Government phasing out towards independent body', since it was unsure of how it would work and thus both transparency and accountability would be unsure, until it is known "what it is phasing out into". The multi-utility body (merger between water and energy utilities) and an independent body were both seen as very accountable and transparent. The interviewees in England and Zambia were also asked to rank their regulators in terms of transparency and it scored 4 and 5 respectively on average, thus corresponding to the Namibian indication. Though Multi-utility bodies were regarded so highly (based on the assumption that the necessary guidelines and tools are already in place and are used), many interviewees did not favour this option primarily due to sensitivity of water resources being both social and economic resources as opposed to energy. On the contrary, some interviewees from England and Zambia indicated that more information requirements are making the system more complex and hence blurs transparency, and thus information requirements should be kept simple.

Based on the results it is further suggested that the institutional positioning of a potential regulator for Namibia be placed within the Intermediate framework, but to combine the two options within this framework, thus resulting in an hybrid solution between establishing expert panel within government, which would eventually be phased out towards an independent body.

In essence, research findings indicated that the water sector characteristics warrant 'some form of regulation' irrespective of the type (private or public) of service provider. The overall role of regulator, based on results from country experiences of England and Zambia are defined as:

- Protecting customers against high prices and services of inferior quality
- Ensuring the financial viability of the service provider
- Ensuring transparency and comparative competition in the sector

Further lessons, specifically from the Zambian experience that could be highlighted as essential for the improvement of the Namibian process includes ensuring high political commitment and strong coordination across various ministries to ensure effective participation from all sectors, in this case, water, health and environmental in particular.

The challenges of establishing regulatory bodies are summarised based on interview results into three categories of independence (Table 6-9).

Table 6-9 Categories of independence that is needed when establishing regulatory bodies

Category of independence	***Example***
Structural	- recruitment of competent personnel (from public and private sector) based on market related incentives and performance assessments to avoid 'promoting seniority above competence syndrome'. - essential skills required are finance, IT, engineering, economics and management
Functional	- establishing mechanisms of decision- making processes, separate from short-term political influences - establishing regulatory processes and tools are time-consuming and needs constant updating to adapt to global changes - establish active stakeholder involvement in decision-making process
Financial	- securing self-financing sources

Source: Author's analysis from results

Interviewees from regulators, especially in Zambia, mentioned that financial independence is very important and significantly influences decision-making power. Furthermore, the development of regulatory tools (standards, guidelines, information systems, comparative reporting and tariff adjustment procedures) were recommended to be done by the regulator staff, rather than making use of 'consultants' to increase understanding and implementation capacity. This is in line with GTZ (2008:24) recommendations which also further states that issues such as "cultural sensitivity" should be taken into consideration when making use of external (international) expertise, for example. The water sector reform requires a shift towards performance management (especially drawing from experience in the private sector/commercially oriented background) as opposed to the 'business as usual' attitude. Results further indicated that the regulatory process is highly dependent on the strength and influence (as well as personalities) of the individuals involved, which presents a challenge in terms of reputation of the regulator, which shape the perceptions of stakeholders and hence influences the credibility of the system. Overall, to overcome, this challenge, the research agrees with reports (Bartle and Vass, 2005: 46; Tremolet, 2006: 2) that all stakeholders should have a sense of ownership over the process to ensure effective participation and implementation. Proper attention (and time) should also be given to

developing sustainable facilities/approaches to cater for the urban poor; therefore it has to be specifically stated in all major policies, strategies and legislation.

6.4.3 Proposed implementation of regulation and governance criteria

It is clear from the results that issues of transparency, fairness, affordability, access to good quality services and participation are common issues across stakeholders. Various areas of interest (Table 6-10) are in conflict between stakeholders, for example consumers want improved services at the lowest price, while providers need to recover all their costs in providing such services under extreme conditions while at same time government would like universal access to water services for free, without subsidising those that cannot afford. Hence, the research proposes that these challenges are best addressed by establishing regulatory body (ideally independent) to "balance" these various conflicting issues. In this regard, the role of an independent regulator would be to ensure that appropriately charged service delivery meets the quality requirements to ensure sustainability of service. This is even more pertinent in a water scarce and income skewed country, such as Namibia.

Independent regulation constitutes a balance between the legal mandate, resources and operating principles. One without the other is not ruled out; however it is most likely to affect the performance of the sector as well as the creditability and legitimacy of the institution. This being said, it is recognised (based on results) that political interests are, in almost all cases inevitable, thus it is the 'art of regulation' to know the boundaries of such pressure influences.

In addition, literature (Rouse, 2007: 25; Bartle and Vass, 2005: 15-18; van Baston, 2007: 5) indicates that in many cases local government is responsible for water services, and therefore sets the prices through an internal process (self-regulation), however due to large budget allocation system (for mixed services) the process is often not transparent. The challenge remains that water supply is necessarily run as a monopoly service where market signals relating to service levels against price cannot operate. However well-managed, producer interests always tend to overwhelm consumer interests for the lowest reasonable prices.

Table 6-10: Stakeholder interests and challenges and the proposed role of a regulator

Stakeholders	*Interests/issues*	*Challenges*	*Proposed regulator's role to address challenges*
Consumers	- Access to information, to understand bills, payment and service options available	- Awareness raising/ proper representation	Establish Customer representation body (informed) to assess consumer complaints (procedures in place to measure consumer satisfaction)
	- Negative perception against providers	- Transparency	
	- Lower prices for Improved services (affordability/willingness to pay)	- Appropriate technology selection	Ensure effective public consultation and information dissemination process takes place
	- Involvement technology choices (eg. Sewerage/pre-paid water meter preferred)		
	- Special rates for urban poor required	- Identification and criteria of those in need (needs assessment)	Subsidies directed at the poor to provide assistance on access charges, and either low-tariff pre-payment meters or means tested direct support on water bill payments
Providers (Bulk and Local)	Financial sustainability	- Acquiring relevant information (especially financial)	- Timely (advance schedule) price adjustment application process/mechanism in place
	- expanding their revenue base	- Transparency	- Information requirements and analysis guidelines (cost declaration procedures)
	- develop new tariff structure		
	- reduction of non core assets		- Identify Performance indicators
	Full cost recovery (high debts)		Enforceable sanctions (both for providers and consumers)
	- improving debtors management and collection of revenue		
	Good quality service delivery	Service deterioration	Monitoring of service levels- benchmarking
	Operation performance	Service deterioration	Asset management plan monitoring procedures/guidelines
	- efficiency improvement		
	- expanding water network		
	-replace worn out infrastructure		
	-revised structures (introduce business development and revenue sections)		
	Finding alternative water sources	Water resource depletion	Water conservation and management initiatives
	- develop and implement water master plan		
	Maintaining water quality	Health implications	Quality standard monitoring
	-follow Namibian guidelines for evaluation of drinking water for human		

Stakeholders	***Interests/issues***	***Challenges***	***Proposed regulator's role to address challenges***
	consumption (based on WHO standards)		
Government	Legal framework implementation	Institutional development and Capacity building required	- Review, update and implement legal framework - Role and responsibility clarification/identification in process
	Access to water for all-political front-more votes	Political will	- Engage with all stakeholders and information sharing
	Non-existent tariff development procedure	Capacity building	- Review tariff structure/rates and - Establish procedures/guidelines for process
	Unclear public subsidies	- Dependency syndrome - Untargeted beneficiaries - Fairness - Transparency	- Review subsidy capacity and sustainability across all sectors (participatory) - Investigate cross-subsidisation procedure/sustainability - Solicit external support

Source: Interest issues and challenges raised during interviews conducted in April-June 2007 and October-December 2008, Windhoek, Namibia. Proposed regulator's role was taken from experiences from other countries, especially England (interviews during July 2008) and Zambian (interviews during November 2008) regulatory system.

Steady policy regulations should be developed to ensure that mechanisms are in place to make the transition from 'Government to Independent regulator' (as proposed by interviewees) over a specific time frame. Figure 6-5 is an attempt (based on experiences from England and Zambia) to predict the Namibian process towards phasing out.

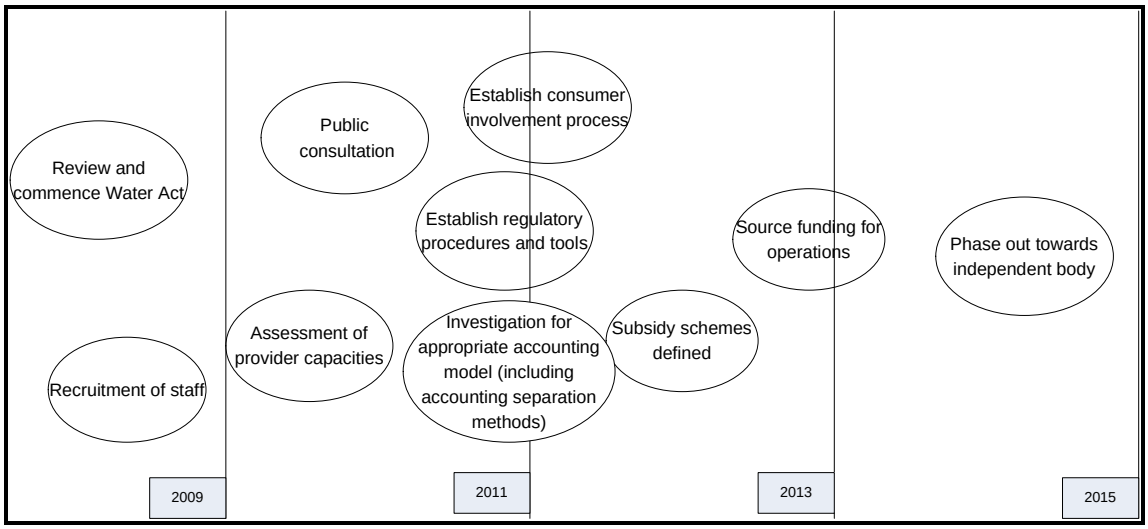


Figure 6-5 Proposed timeline for implementation of immediate regulatory framework in Namibia. Source: Author's analysis based on results.

The interview results indicate that the process of establishing a regulatory framework is timely and iterative, and thus the research estimates that it will take approximately 6 years to set the initial foundation towards a regulatory body in Namibia. However, the implementation of the proposed regulatory framework options requires operating principles as a condition for 'good regulation'. Therefore, the regulatory framework options were tested against commonly advocated principles summarised (Table 6-11) from literature (Berg, 2000; (BRC, 2005); Stern and Holder, 1999) to identify the principle requirements for implementation in Namibia.

Table 6-11 Regulation principles measured against the proposed regulatory frameworks

Regulation principles	***Preliminary Framework***	***Basic Framework***	***Intermediate Framework***	***Advanced Framework***
communication (information to stakeholders on a timely and accessible basis)^	-	-	-	x
consultation (participation of stakeholders in meetings)^	-	x	x	x
Consistency^*	-	-	-	x
Predictability^	-	-	x	x
Flexibility^	-	x	x	-
independence ^' (autonomy in that decisions are free from political influence)	-	-	-	x
effectiveness and efficiency^	-	-	x	x
Accountability^*'	-	-	x	x
Transparency^*	-	-	x	x
Proportionality*	-	-	-	x
Targeting*	-	x	x	x
Clarity of roles'	-	-	x	x
Securing adequate resources^	-	-	-	x
Quality of staff^	-	-	x	x

Source: (Berg, 2000) ^; (BRC, 2005)*; (Stern and Holder, 1999)'

In the Namibian context it is recommended that the establishment of a regulator should be based on six primary elements: 1) clarity of roles; 2) autonomy; 3) accountability; 4) securing adequate financial resources, which should reflect 'financial sustainability'; 5) independence (i.e autonomy free from political influences)' and, based on fieldwork experiences, 6) 'quality' of the staff employed. So far, the ideal scenarios of good regulation were identified, however in practice all the 'right' elements are not present, which makes the task of independent regulators very complicated, yet not impossible.

In summary, the following lessons were directly deduced from the three (England and Zambia) country case studies (including the Electricity sector of Namibia):

- Develop sound objectives, policies (including clear roles and responsibilities) and guidelines including the need for adequate cost recovery for sustainability
- Ensure effective public consultation and information dissemination takes place

- Monitor compliance (including system extension and increased access targets) by service providers
- Establish agreed process for setting tariffs and standards (defined key performance indicators required)
- External support to pay for the start-up costs of regulator (or similar body) is critical
- Local water committees (consumer representatives) to provide the focus for public participation
- Empower regulators (or equivalent bodies) to hold service providers to account for delivering efficient and affordable services to the poor
- Give priority to the needs of the poor in public investment and service provision strategies for water and sanitation

Finally, there are various types of regulation (Table 6-12) depending on sector objectives which influences the model of regulation that is implemented to suit the specific needs of a country.

Table 6-12 types of regulation available and countries where it is implemented

Type of Regulation	*Description*	*Example*
Structural*	-Contribute to better organisation and clarification of roles of various institutions in accordance with legal framework. -Direct monitoring of holistic process -Indirect control over operators	Portugal, Sweden,
Behavioural*	- Concerned with behaviour of operators to ensure service quality	Portugal; Netherlands, Canada, USA
Economic*	-Function of behavioural regulation - Monitoring economic and financial feasibility (includes evaluation of operator's investments to "ensure long term service and short, medium and long-term maintenance of service levels) -Monitors operator's performance -Promotion of competition (benchmarking)	England, Scotland, Wales Portugal; Zambia, Australia, Canada
Incentive-based^	-Controls the overall price level (rate of return; price-cap; revenue-cap and benchmarking (yardstick)) of operators	England

Source: *(Alegre et al., 2006: 82-84); ^(Jamison et al., 2004)

Fieldwork results from England suggested strongly that economic regulation assumes that social interests are included in the investment plans or policies of the operators and this indirectly caters for social welfare of the consumer base. There is a thin line between behavioural and economic regulation and thus the major difference is the detail in which the latter is implemented. However, various country conditions requires various regulation types, for example, a country with infrastructural challenges, requires behavioural regulation, whereas countries with "more dynamic technology" might opt for structural regulation instead (Alegre et al., 2006: 84-85). In this case, the research proposes that Namibia focus on **structural regulation**, so as to avoid issues such as 'over-regulation' as mentioned in the other case countries. This type of regulation is also selected, due to the size (one bulk water supplier) and nature (local authorities) of the water sector in Namibia.

Finally, the research identifies the following major regulatory tools are recommended as 'stepping stones' to achieve transparency in the Namibian process, based on England and Zambia experiences:

- Financial model[5]: There is a clear need for a shared financial model between the providers and regulators to ensure that all relevant information is captured in one system to come up with an appropriate tariff. In this regard, the research suggests separate, yet linked models (spreadsheets) for bulk and municipal services- for bulk water services, accounting separation for domestic, mining and irrigation services and for municipal services. Accounting separation of water services from other municipal services is also advised, to clearly understand the costs involved for water and sanitation services. Hence this process will address the separate pricing processes (double principal-agent challenges that exist on bulk and retail price determination levels) in Namibia, and thus will indicate how prices of bulk and retail levels are interlinked. Furthermore, the research suggests an inclusion of tariff basket approach as part of the financial model, as per the England case. The tariff basket allows for tariffs to include different customer income levels per service levels as well give an indication of how tariffs can be shared out across customers of different income levels (basis for cross-subsidy calculations). Although a financial model could not be developed during the research period (due to limited access to relevant data), the research strongly advocates for a financial model – similar (matching the financial revenue and revenue from tariff baskets) to that being used by the Water Industry Commission of Scotland. This model is perceived as simpler than Aquarius combines financial and customer base information in one single file. (Illustrated in Appendix K) to enable providers and the proposed regulator to do basic tariff calculations. Based on literature (Gunatilake et al., 2008: 12; OFWAT, 2008b: 11), the model should be designed to calculate required revenue with the appropriate regulatory framework, using the basic formula of:

Operating costs (OPEX) + Taxes + depreciation + capital costs (allowed return)

[5] The suggestion is mostly based on England's financial model, Aquarius, which was studied by the researcher during fieldwork period as a result of June returns submitted by companies to Ofwat.

- Cost of capital for state owned enterprises: is a contentious issue (especially in England, for private companies) and thus the research suggests that it be defined in the Namibian context as well as the appropriate profitability levels. The internationally accepted level of profitably is at 6-8%, however, the research, based on fieldwork experience, recommend that an appropriate cost of capital level be developed for state owned enterprises, from which full cost recovery can then be defined.

- Tariff structure: To address affordability of water and sanitation services, the research supports the Walker reviews (Walker, 2009: 51) in terms of application of fairness principles, of which the increasing tariff blocks is a good reflection. This tariff structure should thus be used to further indicate the ability of higher income users to subsidise those that cannot afford, hence customer income profile (based on skewed income distribution) should be reflected in the tariff structure. Furthermore, clear indicators to measure affordability should be developed, to facilitate the role of the regulator to set achievable standards. Such indicators could include coverage, cost of new connections and waiting time and procedures for new connections.

- Incentives for efficiency: Based on the fieldwork results, especially from the regulatory process in Zambia, the research suggests that the proposed regulator places a strong emphasis on identifying incentives for NamWater and municipalities to improve service efficiency, especially due to the nature of state-owned service providers and in the absence of competition. Efficiency gains in Zambia focuses on issues such as reduction of major costs items, such as personnel and energy costs, but also high emphasis is placed on reduction of non-revenue water levels. As such, performance analysis forms part of setting a tariff. Similarly, the research recommends that improvement of service providers serve as incentives for the company to eventually reduce costs of providing an existing service level, which will translate into quality services at lower prices for consumers. The research further supports a similar (traffic light approach with key performance indicators in Zambia) benchmarking regulatory tool to assess performance of service providers.

- Consumer involvement: The importance of consumer involvement cannot be overemphasised as a result of the fieldwork in England and Zambia. Hence in this regard, the research recommends the establishment of a consumer body, which is a

combination of the consumer representation found in England (skilled interested) and Zambia (community elected). In this regard, the research envisages a consumer representation body that is consists of a combination of skilled experts (that knows the technical details of the process) and community committee members as facilitated by the City of Windhoek. At National level, a Board is suggested, with regional committees consisting of not more than 10 members, with a dedicated number of staff (approximately 15) in office. Though results indicated that the interests of low-income users were mostly represented, the body should concentrate on all income level consumers. The body should be entrusted with legal mandate to represent consumers and should have advisory powers to support the proposed regulator. The committee should be research oriented, guided by indicators similar to the Overall Performance Assessment (OPA) undertaken in England, with an allocated budget and allowances for members as incentives to ensure consumer consumer's rights are protected.

The research strongly advocate that the water and sanitation service function remains within service delivery functions of local authorities, however accounting separation is highly recommended, such that the costs for service provision is clear and not part of the cross-subsidisation across services within the municipality. Furthermore, the research recognises that regulation cannot be done without having a financial model in place and hence forms a major part of the implementation of a regulatory framework. The research also recognise the fact that a gradual approach is required (hence the recommendation for structural regulatory framework) for tariff setting in Namibia, such that the initial stage should be to set tariffs to achieve cost recovery of operation and maintenance; followed by recovery of capital charges and eventually reaching full cost recovery (including economic and environmental costs) as indicated by (Rogers et al., 1998: 7). However, before that stage is reached, additional measures such as improved governance, institutional development (especially a regulator) and service quality is required to take into account willingness (and ability) to pay as indicated in Figure 2-4 (Gunatilake et al., 2008: 24) given appropriate consumer involvement and information sharing mechanisms are in place to address relevant principal-agent challenges.

Different from the England case study, the research suggests that given the Namibian political environment, the proposed regulator would not initially start off as independent, meaning to set the prices, but would play a very strong advisory role to the Minister. The

regulator would ensure that the final tariffs are based on clear regulatory principles; however the Minister would have the final decision over tariff approvals.

6.5 Chapter summary

Overall, transparency is very important to improve the price-setting process, provided the information is available (and reliable) and expectations, roles and responsibilities are developed inline with sector objectives. The notion of recovering full costs mostly refers to full supply cost as opposed to full cost (which includes economic and environmental externalities) and hence needs to be understood in that context. In applying regulation theories the study suggests that institutional development forms part of the solution to address the problems facing the water sector in Namibia, which to a large extent is due to information asymmetry from the service providers (both bulk and local providers).

The research further develops a modelling framework for regulation options that can be applied in general. In this case, establishing a hybrid regulatory body (consisting of a combination between government and independent expert panels) within an intermediate framework is identified by research to improve the price-setting process. Given the specific country conditions and the status of water sector in Namibia, the research further suggest that structural regulation is best suited, to keep the process as simple as possible. The research also further suggests an additional domain: governance regulation as part of the effective regulation approach, as the role of government to "regulate the regulator". Though subsidies are seen as unsustainable, it is inevitable in a highly skewed income country like Namibia and therefore it has to be imbedded in policies and should form part of the price-setting process to ensure that the urban poor can afford these basic services. Finally, the research identifies crucial operating principles specific for the price-setting process in Namibia, consisting of 1) clarity of roles; 2) autonomy; 3) accountability; 4) securing adequate financial resources; 5) independence (i.e autonomy free from political influences)' and 6) 'quality' of the staff employed. Regulatory tools, especially the development of a shared financial model are identified as key to the regulatory framework, to ensure that the identified principles are implemented efficiently. In essence, accountability through transparency (effective information sharing and stakeholder involvement) is identified by the study to address the principal-agent challenges faced within Namibia, especially given the extreme conditions of Namibia.

"Because things are the way they are, things will not stay the way they are"- Bertold Brecht

Chapter 7: Conclusions and Implications

This chapter presents the major conclusions of the research, drawing from both literature and results from the fieldwork conducted in England, Zambia and Namibia (focus of study). This chapter will make ultimate conclusions about the research hypothesis, problem and the investigated objectives. It further highlights the implications of the research on theory and policy and practice for the major water sector stakeholders. The major limitations to the research are indicated, reflecting on alternative options of conducting the research, which may have been more beneficial for obtaining the thesis objectives. Finally further research implications and opportunities are highlighted

7.1 Conclusions about the research proposition

Reflecting on the proposition of the study:

Access to information and stakeholder involvement is required for a sustainable urban water and sanitation price-setting process, especially in a water scarce and skewed income distribution country,

the researcher finds the research statement true, such that it is presently not possible for a civil servant, or civil society, to understand how prices are set from the financial information available from service providers or responsible government institutions, in the public domain. Hence it is clear that a more transparent information system about supply costs and pricing calculations would assist in allowing independent assessment of the efficiency of water providers (both bulk and local authority level), especially where resources are limited, a point categorically confirmed by fieldwork respondents.

The regulatory processes in England and Zambia presented important insights through which the research could draw conclusions that can be related to improve the Namibian price-setting experiences. These conclusions include identifying clear roles and responsibilities for the water sector stakeholders (guided by very specific and detailed legislative frameworks). Expectations from such stakeholders should be clarified and publicised such that there are no misconceptions and misguided perceptions from involved stakeholders. Clear procedures, guidelines and enforcement (and incentives) mechanisms makes the regulatory process for sustainable price-setting more transparent, consistent and predictable, which are elements very important for legitimate institutional frameworks.

7.2 Conclusions about the research problem

Namibia, like other lower-income countries, is prone to the challenges of catering for the growing water and sanitation requirements placed on water utilities and governments. However, Namibia's situation is more sensitive in the sense that it operates within extreme unequal conditions, both in terms of water availability (access) and income distribution. Further it is faced with a multiple relations of principal-agent challenges, of which information asymmetry within the water sector is present from all stakeholders. In the midst of these challenges lies the problem of improper accountability for price-setting for urban water and sanitation services, which is undertaken by two levels of service providers (bulk and retail), which magnifies the problem of financial transparency (reporting on capital, operating and maintenance costs involved) and hence attributes to improper pricing and cost-recovery. Though Namibia's water sector is providing a relatively good service, in comparison to other countries in the region, it makes it even more pertinent to address these principal-agent relationships to ensure that utilities are able to maintain, repair and expand their systems, avoiding any deterioration of the quality of water and sanitation services. Furthermore, the need for users to understand the process of "putting a price on water", given the scarce resource, is very important to be sufficiently used as means to solve the problem of cost recovery and wastage. The research problem was addressed through a set of objectives, through which specific conclusions were drawn. The conclusions per objectives are as follows:

- Identify specific lessons/experiences from price-setting processes in selected counties, England and Zambia, to suggest improvements to the Namibian price-setting process

Independent economic regulators improve both efficiency of service deliver and transparency and hence accountability of service providers, though it does not guarantee affordability or debt recovery from consumers. Consumer representation bodies in support of the regulatory process play a crucial role in ensuring that consumers' views are well represented and that they do not pay higher than necessary for good quality services. Hence information asymmetry can be reduced by having well defined regulatory frameworks in place; however it should also be recognised that financial regulatory tools could over-complicate the process and hence a major lesson from these countries is to keep the tools as simple as possible.

- Understand the current price review process in Namibia, within the legal framework in terms of its capacity to deliver water and sanitation services to urban consumers (particularly the urban poor)

The current price-setting process in Namibia is characterised by lack of information (access), financial transparency with no information database or procedures for tariff determination in place. Hence the process needs improvement as well as stakeholder involvement to facilitate common understanding of the process. The legal framework needs to be more detailed and specific on the roles and responsibilities of the stakeholders. Furthermore, it is clear that the proposed regulatory board needs to be implemented as one of the solutions to address the challenges of the price-setting process. The issues of political interests will be addressed through having clear guidelines and procedures as well as clear Act on the role of government within the regulatory framework.

- Determine the affordability levels of water and sanitation services for urban poor in Namibia and the potential role of cross-subsidisation amongst domestic water users.

Affordability is a function of priority preferences over access to water services. A level of information asymmetry also exists on the part of consumers, such that their income levels are not known and thus information to support a targeted sustainable and transparent subsidy system is lacking. There is a strong sense of understanding of why basic services are priced (but not how) as well as a strong sense of willingness to pay. Subsidies in general are considered unsustainable; however it is inevitable in a highly skewed income country like Namibia. In this regard, the responsibility of who should provide such subsidies to those that are unable to afford basic services are unclear and should be defined based on sector objectives and needs. Services are perceived to be well maintained and operated, though access to information and transparency, especially regarding operational expenses (mainly salaries of utility directors) as a function of profit and hence the price paid by consumers is required.

- Identify the perceived level of transparency and stakeholder involvement required for the price-setting process in Namibia

The need for a regulator is highlighted with the primary roles of tariff determination, ensuring financial viability of service providers through regulatory tools, procedures and guidelines. Information requirements include full costing of service related information, such that consumers can (with relative ‘ease’) understand how the prices are determined.

Consumer representation is preferred as opposed to individual involvement in the process. In general consumers are reluctant about the details of the price-setting process as long as there is satisfaction from the services delivered.

- Identify the appropriate regulatory framework needed to improve current price-setting process in Namibia, especially towards the urban poor, to inform relevant policy accordingly

An intermediate regulatory framework, with a hybrid system of making use of expert panels within government, which will eventually phase out towards an independent agency (proposed within 6 years) is identified for the Namibian process. The focus of such an agency is proposed to be of a 'structural regulation' nature, which will initially focus on roles and responsibilities, establishing procedures, guidelines and enforcement mechanisms. This falls within the 'building foundations' category of the effective regulatory approach. The capacity of the regulator also plays a crucial role in addressing information asymmetries within principal-agent relationships in order to determine "informational requirements; obtaining and managing information; data quality assessment; reporting information and ensuring public access to information".

The general conclusion from the research is that a regulatory framework would not only facilitate the process of transparency through access to information and stakeholder involvement in the price-setting process but it would also enforce incentive mechanisms for service providers to deliver sustainable (through adequate tariff determination strategies to recover costs) water and sanitation services to all consumers. Hence a regulator is not only essential, it is critical for the price-setting process in Namibia to understand the high costs of service provision in water scarcity conditions and how to manage it according to the acceptable standards of all involved stakeholders.

7.3 Implications for theory and contribution to knowledge

The research rationalised regulation theory through the use of the principal-agent challenge in the water sector. In this sense the major contribution to academic knowledge and understanding of this research is that it suggests that the intersection between the principal-agent theory and stakeholder theory is regulation theory. Regulation theory deals with the technical financial details, which are necessary to understand the nature of setting prices on water and sanitation services, while also considering non-price issues such as stakeholder interests (including political interests and their unwillingness to charge for water services).

The emphasis is that regulatory frameworks (including related institutions) form the solution (or part of) to addressing information asymmetry relationships between stakeholders with conflicting interests.

Thus to further academic understanding, the research makes a new synthesis of existing theories applied to new area (Namibia) that have not yet been researched. Hence the research indicates that it is even more challenging to achieve such regulatory frameworks in the complex price-setting conditions faced by decision makers in Namibia, given the extreme inequality and water scarcity nature. In this regard, the major conclusion is that in Namibia three major principal-agent relationships exists; between government and service providers, service providers and consumers and vice versa and therefore there is a need for a regulator to address these issues. The need for a regulator is even more pertinent given the 'double information asymmetry' existing amongst two separate levels of service providers. A further conclusion from the research is that government does not have the necessary psychology or capacity to handle such demands and hence an independent regulatory agency is necessary to act as an 'insulating layer' to be accountable for setting efficient prices and promoting service quality and reliability as a priority and promoting the necessary investment for sustainable service delivery to all.

7.4 Implications for policy and practice

The research has established that a regulatory framework is very important for sustainable water and sanitation services, especially with regard to the price-setting process. The role of the stakeholders within the regulatory framework needs to be clarified, to avoid misperceptions. The perceptions of the consumers are mostly determined by the quality of service provided, as well as the level of transparency, which is driven by information available and customer service of providers.

Reflecting on price-setting processes taking place in England and Zambia provides good insight into how regulators operate and guides the price-setting process towards efficient service delivery. The conditions of each country are different and thus regulatory operations are driven by country specifications. It has been further established in this research that all stakeholders, irrespective of their different interests, have aims for a sustainable water sector, and hence there is an important role for a regulator (especially in Namibia) to ensure that that goal is met, while balancing the conflicting interests of stakeholders. Information and stakeholder involvement is considered as the key of regulation, which enables not only

consumers, but also service providers, to consider the regulator as credible, competent and reliable. Hence technical expertise is an essential ingredient for interpreting, analysing and implementing legal and regulatory frameworks.

7.4.1 Implications for policy makers (government)

Separation of functions, service provision, regulation and monitoring, is one of the important lessons learnt from England and Zambian experiences. Hence this study advocates clear roles and responsibilities specified in detail within the legal framework. The delay in revision (since 2006) of the Water Act and hence the consequent non-implementation of the regulatory board is a clear indication of the lack of commitment (priorities) or political support for the water sector. However, also noteworthy is the fact that the tariffs are being thoroughly investigated which has resulted in no tariff increments for the past 3 years, based on the request of basic information and transparency from the bulk water providers. This research hopes to facilitate (initiate) the process of establishment of a regulatory agency with government taking the leading role. The research further agrees with literature that regulatory processes cannot be divorced from government completely; however with the appropriate information and level of transparency, the process can result in an efficient and effective system. It will also encourage service providers to strive for service improvement and expansion to all consumers.

A challenge within the Namibia water sector is that the service providers are governed by separate ministries. Coordination across ministries and legal frameworks are required to ensure that prices are set as one process and not at two different levels as it is currently taking place. Coordination is also considered to be a critical role for the regulator, to ensure adequate stakeholder involvement in the process.

The legal and regulatory framework should ensure that regulators take into account the pillars of sustainability (economic, social and environmental), as well as a specific focus towards service improvement for the urban poor, with the related support for necessary investment. Hence the research emphasises structural regulation as a stepping stone for the Namibian process.

The research strongly recognises that other countries experiences can be used as a guide, with specific Namibian conditions shaping the implementation of the sector objectives.

7.4.2 Implications for service providers

The service providers need an intervention to gain trust and confidence from their consumers. The current perceptions of consumers and other stakeholders are such that service providers are profiteering from them. The role of a regulator is such that it facilitates the process of trust-building with service providers and stakeholders through information sharing and stakeholder involvement efforts.

Regulatory tools, especially financial, needs to be purpose oriented and simple. Based on results from England and Zambia, service providers' perceptions were influenced by the efficiency and practicality of the regulatory tools. Measurable performance indicators are necessary to service providers to measure their performance. Hence the research advocates for clear targets and indicators upon which consumers can hold the company accountable. The role of the regulator in this regard is to monitor achievement of targets and to ensure that the price for services is adequately reflected. Further, the research indicates that service providers respond to appropriate incentives to encourage sector performance, hence another task for the regulator to ensure. As much as financial viability (cost recovery) of service providers is crucial for the water sector, so is the presence of a regulator to ensure that services and prices are sustainable for all.

7.4.3 Implications for consumer representatives (including consumers)

The research shows that for the fee that consumers pay (as part of their water bill) to have a regulator in place, the benefits are much more. Consumers are concerned with quality of services for an affordable price. Furthermore a clear indication of what is being paid for is a minimum requirement from consumers, which are more than willing to pay for quality services. Consumer representation (in support of the regulatory process) is important to ensure that consumer's rights and needs are catered for. However, similarly, information is required to ensure that service providers are aware of demands.

7.5 Limitations to research

Ironically, the major difficulty in the research was the lack of written information/procedures (including performance indicators, monitoring and enforcement guidelines) regarding the tariff-setting process in Namibia. Overall the process was found to be highly sensitive (and political) and significant elements of financial information, regarding the breakdown of costs and the detailed methods by which tariffs are calculated, could not be accessed during the research. This aspect in itself is a result of the research in

helping to identify the types of information requirements needed to make the process more transparent. The research also attempted to gather the perceptions of middle and high-income consumers' representative bodies but these could not be located, though it was indicated that such a body exists. In this regard, consumers from those categories, indicate that they contact the service providers directly and as such the conclusion is that consumer representation is more needed for low-income user groups. It was not always possible to ensure consistency in interviewing consumers and government officials throughout the research, due to time limitations and accessibility of those target groups. Hence the research draws the conclusion that low-income users are more interested and accessible for research on setting prices of water than middle and high-income users. This perhaps indicates that it is those (low-income users) that have problems with the services that were more responsive, whereas the rest were more ignorant and complacent with the process details.

Finally, the financial data limitations to the research presented opportunities for further probing and therefore further confirmed the research proposition. Thus it can be concluded that the best possible methods were explored during the research, which yielded and contributed to interesting discoveries.

7.6 Implications for further research

The research findings are considered to be a very good starting point for addressing the establishment of a regulator for the water sector. Further research opportunities thus are to undertake an in-depth cost benefit analysis to understand the implications (in terms of costs) of the suggested regulatory framework options and financial requirements to sustain such an institution. Further related research can focus on designing (country and need specific) regulatory procedures and tools (especially financial models-focussing on accounting separation for bulk and municipal services), guidelines, enforcement and incentive mechanisms required for the proposed regulator.

It would also be of great interest to explore and compare water sector regulatory frameworks across SADC region, and to identify the role of government within such frameworks. This exercise would be beneficial to clarify the misconception that 'regulators take over government's role'. The various types of regulators (single or multiple sectors) and their benefits should also be investigated, to add to regulatory studies in developing countries. Of particular, interest would have been the case of Tanzanian regulator, which regulates energy and urban water and sewerage services.

This research can be used to define full cost recovery for the water and sanitation sector in the context of Namibia and what it will take to reach this optimum point. Such research would be interesting to understand if a regulator has an influence in reaching full cost recovery. Related research to assess the capacity and capability (what would it take) of local authorities in all towns of Namibia to reach full cost recovery levels can be conducted. Special emphasis should be placed on pricing and access to sanitation services, which is a vastly neglected within the sector. The research also forms the basis of understanding affordability issues, given the skewed income distribution conditions and thus further research and be conducted on identifying targeted subsidies (or cross-subsidies) for the urban domestic sector and the sustainability thereof.

7.7 Closing statement

The research aimed to adapt a framework for determining a price-setting process and investigate the potential role of a regulator to inform the process and policy accordingly in a water scarce, highly skewed income distribution challenged country. In this regard, the author feels that this aim and related objectives has been adequately fulfilled, irrespective of the identified limitations. Important cross-case analysis and insights gained from England and Zambia strengthened the research for the Namibian price-setting process tremendously and as such it is believed that this research will inspire further research to implement effective strategies for "***putting a price on water for all***".

References

Abbott, M. and Cohen, B. (2009), "Productivity and Efficiency in the water industry", *Utilities Policy,* vol. In press, pp. 1-12.

Alegre, H., Baptista, J. M., Cabrera, E.,Jr, Cubillo, F., Duarte, P., Hirner, W., Merkel, W. and Parena, R. (2006), *Performance Indicators for Water Supply Services. Manual of Best Practice,* IWA Publishing, London, Seattle.

Alexander, I. (2006), "Capital efficiency, its measurements and its role in regulatory reviews of utility industries: Lessons from developed and developing countries", *Utilities Policy,* vol. 14, no. 4, pp. 245-250.

Allan, T. (2002), "Water Resources in semi-arid regions: Real deficits and economically invisible and politically silent solutions", in Turton, A. and Henwood, R. (eds.) *Hydropolitics in the developing world : a Southern African perspective,* African Water Issues Research Unit, Centre for International Political Studies, University of Pretoria, Pretoria, pp. 23-36.

Allouche, J., Luis-Manso, P. and Finger, M. (2007), "Conclusion: Institutional and organisational dynamics and trade-offs: no single path for water", in Finger, M., Allouche, J. and Luis-Manso, P. (eds.) *Water and Liberalisation. European water scenarios,* IWA Publishing, London, pp. 217-223.

Almagro, A. J. (2005), "Efficient use of subsidies in the financing of water and wastewater investments", *Water Science and Technology: Water Supply,* vol. 5, no. 6, pp. 197-207.

Andres, L., Guasch, J. and Straub, S. (2007), *Do regulation and institutional design matter for infrastructure sector performance,* Policy Research Working Paper-4378, The World Bank, Latin America and the Caribbean Region, Sustainable Development Department.

Anglian Water Group (2003), *Delivering Results. AWG Plc Sustainable Development Report. 2003,* Anglian Water Group Plc, England.

Anglian Water Services (2009), *Your guide to Anglian Water,* Anglian Water Services Ltd, England.

Anglian Water Services (2008a), *Annual Report and Accounts 2008,* Anglian Water Services Limited, England.

Anglian Water Services (2008b), *Strategic Direction Statement. 2010-2035.* Anglian Water Services Ltd, England.

Aubin, D. and Varone, F. (2007), "Policies regulating the water supply and sanitation sector in nine European countries", in Finger, M., Allouche, J. and Luis-Manso, P. (eds.) *Water and Liberalisation. European water scenarios,* IWA Publishing, London, pp. 34-53.

Baker, B. and Tremolet, S. (2000), *Utility reform: Regulating quality standards to improve access for the poor*, Public Policy for the Private Sector: Note number 219, World Bank: Private sector and infrastructure network group.

Baldwin, R. and Cave, M. (1999), *Understanding regulation: theory, strategy, and practice*, Oxford University Press, Oxford ; New York.

Ballance, A. (2006), "The regulation of capex in water", *Utilities Policy,* vol. 14, no.4, pp. 234-239.

Ballance, T and Taylor, A (2005). *Competition and Economic Regulation in Water: the future of the European water industry*, IWA publishing, London

Bartle, I. and Vass, P. (2007), "Independent economic regulation: A reassessment of its role in sustainable development", *Utilities Policy,* vol. 15, no. 4, pp. 261-269.

Bartle, I. and Vass, P. (2005), *Self-Regulation and the regulatory state- A survey of policy and practice,* Research Report 17, Centre for the study of Regulated Industries, University of Bath.

Berg, S. V. (2008), "Water Utility Performance in Central America: The political economy of coverage, quality and cost",

Conference on Universal Service Obligations and Regulatory Regimes: The Latin American Experience, 6-8 March 2008, Barcelona, pp. 1-24.

Berg, S. V. (2000), "Sustainable regulatory systems: laws, resources, and values", *Utilities Policy,* vol. 9, no. 4, pp. 159-170.

Bernard, H. R. (2002), *Research methods in anthropology: qualitative and quantitative methods,* 3rd ed, AltaMira Press, Walnut Creek, CA ; Oxford.

Boland, J. J. and Whittington, D. (1998), *The Political Economy of Increasing Block Tariffs in Developing Countries,* International Development Research Centre, Ottawa, Canada.

Braga, B. P. F. (2003), "The role of regulatory agencies in multiple water use", *Water Science and Technology,* vol. 47, no. 6, pp. 25-32.

BRC (2005), *Five Principles of Good Regulation,* available at: http://archive.cabinetoffice.gov.uk/brc/upload/assets/www.brc.gov.uk/principles.pdf (accessed April 2009).

Brealey, R. A., Myers, S. C. and Allen, F. (2006.), *Corporate finance,* 8th ed. ed, McGraw-Hill Irwin, New York.

Byatt, I. (2004.), "Managing water for the future : the case of England and Wales", in Trottier, J. and Slack, P. (eds.) *Managing water resources past and present,* Oxford University Press, Oxford, pp. 185-73-88.

Cashman, A. (2006), "Water regulation and sustainability 1997–2001: Adoption or adaptation?", *Geoforum,* vol. 37, no. 4, pp. 488-504.

CBS (2007), *National Accounts: 1996-2006,* Cenral Bureau of Statistics, National Planning Commission, Republic of Namibia.

CBS (2006), *2003/2004 Namibia Household Income and Expenditure Survey- Main report,* , Central Bureau of Statistics, National Planning Commission, Windhoek.

Commission on Sustainable Development (CSD) (2004-2005), *Making water part of economic development: the economic benefits of improved water management and services*, , SIWI in cooperation with WHO and Norwegian Agency for Development Cooperation.

Corr Willbourn Research and Development (2008), *Deliberative research concerning consumers' priorities for PR09 for the Water Industry Stakeholder Steering Group*, 916, Corr Willbourn Research and Development, London.

CoW (2006a), *Development and upgrading strategy*, , Department of Planning Urbanisation and Environment, City of Windhoek (CoW), Windhoek, Namibia.

CoW (2006b), *Procedures and work flow organisation of the registration, reorganisation and relocation phases in the upgraded areas: 2000-2006*, City of Windhoek, Windhoek, Namibia.

CoW (2005), *Water production from different sources and population curve for Windhoek*, available at: http://www.windhoekcc.org.na/Repository/Services&Procedures/Water/Water%20Production.pdf (accessed 24 July 2009).

Denscombe, M. (2003), *The good research guide: for small-scale social research projects*, 2nd ed, Open University P., Maidenhead.

DFID (2007), *Governance, Development and Democratic Politics. DFID's work in building more effective states*, Department for International Development, UK.

Dinar, A. and Subramanian, A. (eds.) (1997), *Water Pricing Experiences: An International Perspective*, World Bank Technical Paper No. 386 ed, World Bank, Washington, D.C.

Dinar, A. and Subramanian, A. (1998), "Policy implications from water pricing experiences in various countries", *Water Policy*, vol. 1, no. 2, pp. 239-250.

D'Sousa, A. and Barmeier, N. (2006), *Regulation and Supervision in Water Supply and Sanitation (WSS). Casesheet: Zambia*, Deutsche Gesellschaft fur Technische Zusammenarbeit (GTZ), Germany.

Du Pisani, P. L. (2006), "Direct reclamation of potable water at Windhoek's Goreangab reclamation plant", *Elsevier, Journal of Desalination*, vol. 188, no. 1-3, pp. 79-88.

Dutta, V. and Tiwari, A. P. (2006), "Cost of services and willingness to pay for reliable urban water supply: a study from Delhi, India", *Water Science and Technology: Water Supply*, vol. 5, no. 6, pp. 135-144.

DWA (2007), *Terms of Reference for Tender to review and evaluate current tariff system; draft recommendations on tariff reform and development of tariff setting guidelines.* , Ministry of Agriculture, Water and Forestry, Department of Water Affairs, Windhoek, Namibia.

DWA (2006), *Technical Summary of Water Accounts,* Ministry of Agriculture, Water and Forestry, Department of Water Affairs, Windhoek.

DWAF (2008), *National Water Services Regulation Strategy. Protecting the interests of consumers and public through effective regulation of water supply and sanitation services.* , Department of Water Affairs and Forestry, Republic of South Africa.

ECB (2006a), *Annual Report: 2006,* Electricity Control Board (ECB), Namibia.

ECB (2006b), *Profile of the Electricity Control Board: 2000-2006,* Electricity Control Board (ECB).

Ehrhardt, D., Groom, E., Halpern, J. and O'Connor, S. (2007), *Economic Regulation of Urban Water and Sanitation Services: some practical lessons,* Paper no.9, Water Sector Board Discussion Paper Series, World Bank, Washington,USA.

Foster, V., Pattanayak, S. and Prokopy, S. (2003), *Water Tariffs and Subsidies in South Asia: Do current water subsidies reach the poor?* Paper 4 (34961), PS Press Services Pct, Ltd.

Franceys, R (2008), GATS, 'Privatisation', and Institutional Development for Urban Water Provision: Future postponed'? *Progress in Development Studies*. Vol. 8, issue 1. pp 45-58

Franceys, R. and Gerlach, E. (eds.) (2008), *Regulating Water and Sanitation for the Poor*, Earthscan, UK and USA.

Franceys, R, Perry, C and Fonseca,C. (2006), *Guidelines for User Fees and Cost Recovery for Water, Sanitation and Irrigation Projects* (unpublished Consultancy done on behalf of African Development Bank), IRC, The Netherlands and Cranfield University, UK.

Franceys, R.W.A., (2009), *Discussion on CCWater activities as part of the price-setting process in England*, Cranfield University. *Personal Communication*.

Franceys, R. W. A. (2005), "Charging to enter the water shop? The costs of urban water connections for the poor", *Water Science and Technology: Water Supply*, vol. 5, no. 6, pp. 209-216.

Garcia, S., Guerin-Schneiner, L. and Fauquert, G. (2005), "Analysis of water price determinants in France: cost recovery, competition for the market and operator's strategy", *Water Science and Technology: Water Supply*, vol. 5, no. 6, pp. 173-181.

Gaudin, S. (2005), "Using water bills to reinforce price signals: evidence from the USA", *Water Science and Technology: Water Supply*, vol. 5, no. 6, pp. 163-171.

Gerlach, E. and Franceys, R. (2009), "Regulating water services for the poor: The case of Amman", *Geoforum*, vol. Article in Press.

Gonzales-Gomes,F and Garcia-Rubio,M (2008). Efficiency in the management of urban water services. What have we learned after four decades of research? *Hacienda Pública Española / Revista de Economía Pública*, 185-(2/2008): 39-67

Government Gazette, (1997), *Namibia Water Corporation Act, 1997 (Act 12 of 1997)*, Government Notice No 199 ed., Republic of Namibia, Windhoek.

GTZ (2008), *Water Supply and Sanitation Sector Reforms in Kenya, Tanzania, Uganda and Zambia. Challenges and Lessons*, GTZ (Deutsche Gesellschaft fuer Technische Zusammenarbeit), Dar es Salaam, Tanzania.

Gumbo, B. (2004), "The status of water demand management in selected cities of Southern Africa", *Physics and Chemistry of the Earth*, vol. 29, pp. 1225-1231.

Gunatilake, H., Perera, P. and Carangal-San Jose, M. (2008), *Utility Tariff Setting for Economic Efficiency and Financial Sustainability- A Review*, ERD Technical Note Series No. 24, Asian Development Bank-Economics and Research Department.

Herrington, P. (2007), *Waste Not, Want Not: Sustainable Water Tariffs*, WWF-UK, UK.

Heyns, P. (2004), "Water institutional reforms in Namibia", *Water Policy 7*, , pp. 89-106.

Hirji, R., Johnson, P., Maro, P. and Chiuta, T. (eds.) (2002), *Defining and Mainstreaming Environmental Sustainability in Water Resources Management in Southern Africa*, SADC, IUCN, SARDC, World Bank, Maseru/Harare/Washington DC.

IWA (2004), *The Bonn Charter for safe drinking water*, International Water Association, UK.

Jamison, M., Berg, S., Gasmi, F. and Tavara, J. (2004), *Annotated reading lists for body of knowledge on the regulation of utility infrastructure and services*, available at: http://www.regulationbodyofknowledge.org/documents/bok/bok_narrative.pdf (accessed April 2008).

Kayaga, S. and Kadimba-Mwanamwambwa, C. (2006), "Bridging Zambia's water service gap: NGO/Community partnerships", *Water Management*, vol. 159, no. 3, pp. 155-160.

Kayaga, S. and Franceys, R. (2007), "Costs of urban utility water connections: Excessive burden to the poor", *Utilities Policy*, vol. 15, no. 4, pp. 270-277.

Kavezeri-Karuaihe, S. T. (December 2005), *Economic issues of water price identification and demand estimation when price is cryptic: Experience from Windhoek, Namibia* (unpublished Doctor of Philosophy thesis), Washington Sate University, Department of Natural Resource Science

Kemper, K. E. (2001), "The role of institutional arrangements for more efficient water resources use and allocation", *Water Science and Technology*, vol. 43, no. 4, pp. 111-117.

Kerlinger, F. and Lee, H. (2000), *Foundations of Behavioural Research,* 4th ed, Harcourt College Publishers, USA.

Klawitter, S. and Lang, H. (2008), *Water Regulatory regime and GTZ services in Zambia,* GTZ.

Lahnsteiner, J and Lempert, G. (2007).Water Management in Windhoek, Namibia. *Water Science and Technology*. Volumer 55, 1 (2). Pp 441-448

Lawrence, G., Simmonds, G. and Vass, P. (2002), *The Regulatory Framework-Institutional Responsibilities and Relationships,* Research report 13, Centre for the study of regulated industries, University of Bath.

Liu, J., Savenije, H. H. G. and Xu, J. (2003), "Water as an economic good and water tariff design Comparison between IBT-con and IRT-cap", *Physics and Chemistry of the Earth, Parts A/B/C,* vol. 28, no. 4-5, pp. 209-217.

LWSC (2008), *Business Plan: Towards Success-2008-2012,* Lusaka Water and Sewerage Company Limited, Aquila Printers Ltd, Lusaka, Zambia.

Mallin, C., A. (2007), *Corporate governance,* Oxford University Press, Oxford.

Mandri-Perrott, X. C. (2009), *Public and private participation in the water and wastewater sector : developing sustainable legal mechanisms,* IWA, London.

Mara, D. D. (2005), "Sanitation for all in peri-urban areas? Only if we use simplified sewerage", *Water Science and Technology: Water Supply,* vol. 5, no. 6, pp. 57-65.

Matros-Goreses, A. and Franceys, R. (2008), "Price setting and regulation in water scarce developing country", *Water Science & Technology: Water Supply,* vol. 8, no. 3, pp. 347-354.

Matros-Goreses, A., Franceys, R. and Trawick, P. (2008), "Affordability of Basic Services under conditions of extreme inequality", in Jones, H. (ed.), *Proceedings of 33rd WEDC International Conference on Access to Sanitation and Safe Water: Global Partnerships and Local Actions,* 7-11 April 2008, Accra, Ghana, Water Engineering and Development Centre, Loughborough University, UK, pp. 295.

MAWRD, (2000), *National Water Policy*, White Paper ed., Ministry of Agriculture, Water and Rural Development, Republic of Namibia, Windhoek.

MAWF (2008), *Water Supply and Sanitation Policy*, 7/3/78/P, Ministry of Agriculture, Water and Forestry (MAWF), Namibia.

MAWF (2007), *Water Sector Strategic Plan: 2007/8-2011/12*, Ministry of Agriculture, Water and Forestry, Namibia.

Merrett, S. (2005), *The price of water: studies in water resource economics and management*, IWA Publishing, London.

Metha, M. (2004), *Meeting the financing challenge for water supply and sanitation. Incentives to promote reforms, leverage resources and improve targeting*, Summary report: 33065, World Bank and Water and Sanitation Programme, Kenya.

Miles, M. B. and Huberman, A. M. (1994), *Qualitative Data Analysis*, Second Edition ed, SAGE Publications, USA.

Morrison, K. (2003), "Stakeholder involvement in water management: necessity or luxury", *Water Science and Technology*, vol. 47, no. 6, pp. 43-51.

Mugabi, J., Kayaga, S. and Njiru, C. (2007), "Strategic Planning for Water utilities in developing countries", *Utilities Policy*, vol. 15, pp. 1-8.

NamWater (2005), *Strategic Plan*, NamWater.

Neuman, W. L. (2006), *Social research methods: qualitative and quantitative approaches*, 6th ed, Pearson/Allyn and Bacon, Boston.

Ndokosho, J., Hoko, Z., and Makurira, H (2007), "Assessment of management approaches in a public water utility: A case study of the Namibia water corporation (NAMWATER)", *Physics and Chemistry of the Earth*, vol. 32, pp. 1300-1309.

Nickson, A. and Franceys, R. (2003), *Tapping the market: the challenge of institutional reform in the urban water sector*, Palgrave Macmillan, Basingstoke ; New York.

Ntengwe, F. W. (2004), "The impact of consumer awareness of water sector issues on willingness to pay and cost recovery in Zambia", *Physics and Chemistry of the Earth, Parts A/B/C*, vol. 29, no. 15-18, pp. 1301-1308.

NWASCO (2008), *Urban and Peri-urban Water Supply and Sanitation Sector Report. 2007/2008,* NWASCO (National Water Supply and Sanitation Council), Zambia.

NWASCO (2007), *Water Watch Groups. Involving consumers in monitoring water supply and sanitation services in Zambia,* National Water Supply and Sanitation Council (NWASCO), Zambia.

NWASCO (2004a), *Regulatory Tools and Legislation,* National Water Supply and Sanitation Council (NWASCO), Zambia.

NWASCO (2004b), *Urban and peri-urban water supply and sanitation sector report. 2003/2004,* , NWASCO, National Water Supply and Sanitation Council, Zambia.

NWASCO (2004c), *Water Sector Reform in Zambia,* National Water Supply and Sanitation Council, Zambia.

NWASCO and DTF (2005), *Reaching the Millennium Development Goals for Water Supply and Sanitation in Zambia. The urban perspective.* NWASCO and Devolution Trust Fund (DTF), Zambia.

NWRMR (2000), *Socio-Economics and Financial Issues: Theme Report,* Namibia Water Resources Management Review, Ministry of Agriculture, Water and Rural Development, Windhoek, Namibia.

OFWAT (2009), *Financial Model Rule Book: A technical paper,* OFWAT, England.

OFWAT (2009), *Ofwat holds bills down for customers,* available at: http://www.ofwat.gov.uk/pricereview/pr09phase3/prs_pn0309_pr09dd.pdf (accessed 23 July 2009).

OFWAT (2008), *Annual Report. 2007-08,* The Stationery Office (TSO), England.

Ofwat (2008), *Financial performance and expenditure of the water companies in England and Wales, 2007/08*, Ofwat, UK.

OFWAT (2008a), *The guaranteed standards scheme (GSS)*, Office of Water Services (Ofwat), England.

OFWAT (2008b), *Setting price limits for 2010-15: Framework and approach*, available at: http://www.ofwat.gov.uk/aptrix/ofwat/publish.nsf/AttachmentsByTitle/pr09_methodologypaper181007.pdf/$FILE/pr09_methodologypaper181007.pdf (accessed March 2008).

OFWAT (2007a), *International comparison of water and sewerage service: 2007 report*, OFWAT.

OFWAT (2007b), *Relative Efficiency Assessment 2006-2007*, RD 21/07, Office of Water Services (Ofwat), England.

OFWAT (2004), *Future water and sewerage charges 2005-10: final determinations.* Office of Water Services (OFWAT).

OFWAT (2004), *What has happened to price limits since privitisation?* available at: http://www.ofwat.gov.uk/pricereview/pr09faqs/prs_faq_prcltssinceprivat (accessed March 2009).

OFWAT (1999), *Draft Determination: Future Water and Sewerage charges: 2000-05*, Office of Water Services (Ofwat), England.

Olmstead, S. M., Michael Hanemann, W. and Stavins, R. N. (2007), "Water demand under alternative price structures", *Journal of Environmental Economics and Management*, vol. 54, no. 2, pp. 181-198.

Parker, D., Kirkpatrick, C. H. and Centre on Regulation and Competition (2002), *Researching economic regulation in developing countries: developing a methodology for critical analysis*, Centre on Regulation and Competition, Manchester.

Prosser, T. (1999), "Theorising Utility Regulation", *Modern Law Review*, vol. 62, no. 2, pp. 196-217.

Punch, K. (2000), *Developing effective research proposals,* SAGE, London; Thousand Oaks, California.

Robson, A. (2006), *The Aquarius 3 price-setting model for the Consumer Council for Water* (unpublished Master of Science thesis), Cranfield University, England.

Robson, C. (2002), *Real world research: a resource for social scientists and practitioner-researchers,* 2nd ed, Blackwell Publishers, Oxford, UK ; Madden, Mass.

Rogers, P., Bhatia, R. and Huber, A. (1998), *Water as a social and economic good: how to put the principle into practice,* TAC Background paper no. 2, Global Water Partnership, Sweden.

Rogers, P., Silva, R. d. and Bhatia, R. (2002), "Water is an economic good: How to use prices to promote equity, efficiency, and sustainability", *Water Policy,* vol. 4, no. 1, pp. 1-17.

Rosegrant, M. W. and Cline, S. (2002), "The politics and economics of water pricing in developing countries", in Spangenberg, N.,E (ed.) *Water Resources Impact,* Volume 4, No 1 ed, American Water Resources Association, , pp. 6-8.

Rosenthal, R. and Rosnow, R. (2008), *Essentials of Behavioural Research: Methods and Data Analysis,* 3rd ed, McGraw Hill, New York.

Rothert, S. (2000), "Water conservation and demand management potential in southern Africa: an untapped river", *International Journal of Water,* vol. 1, no. 1, pp. 118-144.

Rouse, M. (2007), "Institutional governance and regulation of water services", *Water21,* , pp. 57.

Saleth, R. and Dinar, A. (2005), "Water Institutional Reforms: Theory and Practice", *Water Policy,* vol. 7, pp. 1-19.

Sansom, K., Kayaga, S., Franceys, R., Njiru, C., Coates, S. and Chary, S. (2004), *Serving All Urban Consumers. A marketing approach to water services in low and middle-income countries. Book 1: Guidance fo governments' enabling role,* Water, Engineering and Development Centre, Loughborough University.

Savenije, H. H. G. and van der Zaag, P. (2002), "Water as an Economic Good and Demand Management. Paradigms with Pitfalls", *Water International,* vol. 27, no. 1, pp. 98-104.

Schouten, M. and van Dijk, M. P. (2007), "The European Water Supply and Sanitation Markets", in Finger, M., Allouche, J. and Luis-Manso, P. (eds.) *Water and Liberalisation. European water scenarios,* IWA Publishing, London, pp. 11-33.

Silverman, D. (2006), *Interpreting qualitative data: methods for analyzing talk, text and interaction,* 3rd ed, SAGE, London.

Simmonds, G. and Vass, P. (2002), *External Review-Theory and Practice for the regulatory state,* Research Report 12, Centre for the study of Regulated Industries, University of Bath.

Smithson, J. (2008), "Focus Groups", in Alasuutari, P., Bickman, L. and Brannen, J. (eds.) *The SAGE Handbook of Social Research Methods,* SAGE Publications, London, pp. 357-369.

Sohail, M. (2004), *Water and sanitation tariffs for the poor: guidance notes,* Water, Engineering and Development Centre, Loughborough University, Leicestershire.

Speers, A. (2007), *The price of water,* Bon Charter Principles Series No 4, IWA Publishing.

Stern, J. and Holder, S. (1999), "Regulatory governance: criteria for assessing the performance of regulatory systems: An application to infrastructure industries in the developing countries of Asia", *Utilities Policy,* vol. 8, no. 1, pp. 33-50.

Summerton, N. (1998), "The British way in water", *Water Policy,* vol. 1, no. 1, pp. 45-65.

Swatuk, L. A. (2005), "Political challenges to implementing IWRM in Southern Africa", *Physics and Chemistry of the Earth,* vol. 30, pp. 872-880.

Tremolet, S. (2006), *Adapting regulation to the needs of the poor: Experience in 4 East African countries,* Building Partnerships for Development in Water and Sanitation (BPD) Research Series, London, UK.

Tsagarakis, K. P. (2005), "New directions in water economics, finance and statistics", *Water Science and Technology: Water Supply,* vol. 5, no. 6, pp. 1-15.

UNDP (2006), *Human Development Report 2006. Beyond Scarcity. Power, Poverty and the Gloabl Water Crisis,* United Nations Development Programme, Palgrave Macmillan, New York.

UNEP FI (2004), *Challenges of Water Scarcity: A business case for financial institutions,* United Nations Environmental Programme- Finance Initiative.

UKWIR (2001), *The Economics of balancing supply and demand (EBSD) Guidelines,* 02/WR/27/4, UK Water Industry Research (UKWIR) and Environment Agency, UK.

Uitto, J. I., Biswas, A. K. and UNU Global Environmental Forum (6th: 1997 : United Nations University) (2000), *Water for urban areas: challenges and perspectives,* United Nations University Press, Tokyo ; New York.

Vairavamoorthy, K. and Mansoor, M. A. (2006), "Demand management in developing countries", in Butler, D. and Memon, F. A. (eds.) *Water demand management,* IWA Publishing, London, pp. 180-214.

van Baston, C. (2007), *Economic Regulation of SA's Public Utilities. A concept paper,* , Trade and Industrial Policy Strategies (TIPS), South Africa.

Van de Ven, A. H. (2007), *Engaged Scholarship. A guide for organisational and social research,* Oxford University Press, New York.

Van der Merwe, B. (1998), *Case study on water demand management in Windhoek,* City of Windhoek.

Van Hofwegen, P. (2006), *Task Force on Financing Water for All: Enhancing access to finance for local governments. Financing water for Agriculture. Chaired by Angel Gurria,* , World Water Council, Marseille, France.

van Ryneveld, M. B. (1995), "Cost and Affordability of water supply and sanitation provision in the urban areas of South Africa", *Water SA,* vol. 21, no. 1, pp. 1-14.

Walker, A. (2009), *The Independent Review of Charging for Household Water and Sewerage services. Interim Report,* Department for Environment, Food and Rural Affairs, UK.

Weeden, R. (2003), "Water Regulation", in Vass, P. (ed.) *Regulatory Review: 2002/2003,* Centre for the Study of Regulated Industries, University of Bath, , pp. 137-150.

Wheelen, T. L. and Hunger, J. D. (2002.), *Strategic management and business policy,* 8th ed, Prentice Hall/Pearson Education International, Upper Saddle River, N.J.

Whittington, D., Hanemann, W., Sadoff, C. and Jeuland, M. (2008), *Copenhagen Consensus 2008 Challenge Paper: Water and Sanitation Challenge paper,* Copenhagen Consensus Centre.

Winpenny, J. (2003), *Financing Water for All. Report of the World Panel on Financing Water infrastructure, chaired by Michel Camdessus,* World Water Council; 3rd World Water Forum and Global Water Partnership.

Winpenny, J. T. (1994), *Managing water as an economic resource,* Routledge and Overseas Development Institute, London ; New York.

World Bank (2006), *Project Appraisal Document on proposed credit to the Republic of Zambia for a water sector performance improvement project.* 37166-ZM, World Bank.

Yin, R. (2009), *Case Study Research. Design and Methods,* Fourth Edition. Applied Social Research Methods Series. Volume 5 ed, SAGE Publications, Inc, USA.

Yin, R. K. (2003a), *Applications of case study research,* 2nd ed, Sage Publications, Thousand Oaks ; London.

Yin, R. K. (2003b), *Case study research: design and methods,* 3rd ed, Sage Publications, Thousand Oaks, Calif.; London.

Zulu, M., Mwansa, R., Sinyanwe, K., Billima, P. and Kasanda, M.(2008), *Approved Tariffs effective 1st November 2008-2011*, Issue No. 2 ed., The Clarifier-Monthly Staff Newsletter, Zambia.

Appendices

Appendix A: General overview of water and sanitation services in Windhoek

Description	*Statistics/ Data*	*Source*	*Information date*
Population of Namibia	1, 409, 920	Namibia Population and Housing Census	1991
	1,800,000	Projections: National Planning Commission	2001
Population of Windhoek	147 000	Namibia Population and Housing Census	1991
	251 545	Windhoek Residents' Survey: Probable Variant Projection	2001
Formal/informal population split in 2001	186 045 Formal 65 500 Informal	Projection (Windhoek Urbanisation Report by City of Windhoek)	2001
% of Windhoek population with access to water, sanitation and electricity	% having all (individual) services: **73,96%**	Estimations by Department Planning, Urbanisation & Environment : Division Sustainable Development)	July 2001
	% without access either to individual/communal water supply: **0,3%**	Estimations made by the above Division, based on Informal Settlement Health Report (Department Infrastructure, Water and Technical Services: Division Health & Scientific Services)	
	% having access to communal water taps: **25,74%**	Estimations by Department Planning, Urbanisation & Environment : Division Sustainable Development)	
	% without access to individual or communal sanitation: **± 16%**	Estimations by Department Planning, Urbanisation & Environment : Division Sustainable Development based on Informal Settlement Health Report (Department Infrastructure, Water and Technical Services: Division Health & Scientific Services)	
Primary Household Subsistence Level for Windhoek (per month)	N$ 1 526.67 for Low Income Groups	Household Subsistence Level Study for Windhoek and Swakopmund by J F Potgieter	March 2001
	N$ 1 815.48 for Low-Middle Income Households		

Source: City of Windhoek: Demographic and Other Urban Data, November 2001

Appendix B: Status of all Informal settlements in Windhoek.

Zone/Area Name	Area (ha)	Households	Population (@4 persons/hh)	Water services	Sanitation services
Okahandja Park A	20.442	368	1471	-	-
Okahandja Park B	7.377	270	1080	-	-
Okahandja Park C	9.788	131	523	-	-
Ongulumbashe No 2	12.069	281	1122	-	-
Ongulumbashe No 1	6.844	176	705	-	-
Havana Section 1 (Township)	8.253	205	820	-	-
Havana Section 2 (Ext1)	28.807	879	3514	-	-
One Nation No 2*	17.528	313	1253	-	-
Okantunda	8.274	204	816	-	-
Samuel Maharero	10.142	242	969	-	-
Okandundu	4.807	185	739	-	-
Onyika No 2	4.966	255	1019	-	-
Twahangana (Former Greenwell Matongo A and B)	8. 698	376	1502	4 WP	5 TB
Greenwell Matongo C	8.730	291	1163	5 WP	4 TB
Greenwell Matongo D	4.697	273	1093	4 WP	3 TB
Ombili No 1	1.707	41	163	-	-
One Nation No 1	10.741	172	688	3 WP	-
Omuthiya	3.895	191	762	2 WP	-
Onghuwo Ye Pongo No 2*	5.481	271	1083	2 WP	-
Omuramba	4.156	181	725	0 WP	-
Freedomland A	2.146	154	616	-	-
Freedomland B	1.863	184	736	0 WP	-
Jonas Haiduwa	5.477	272	1088	4 WP	-
Ondelitotela*	4.191	266	1063	-	-

Source: T. Van der Westhuisen, May 2001. Useful data on settlement development projects of the City of Windhoek as of 1992. (note some of the data is not updated and is from the 1997 informal census conducted by the City of Windhoek) . (-) means that no information is available about this area; WP – Water Points; TB- Toilet Blocks.

Appendix C: Information needs table

Subject	***Characteristic***	***Requirement***	***Comments***
Policies/Legislation	- policies in place -roles and responsibilities	Activity and Responsibility matrix	- who is responsible for it- who is doing it (involved) and who is only interested
Socio-economic	Population figures	Number of resident persons and households	- this is to ease sampling process
	- Existing water coverage by levels of service (measured as percentage of population). - population figures	Maps illustrating- coverage area, population in areas and type of water services across Windhoek (and if possible price ranges across map) - total amount of users of service - hours of water provision - target dwellings - delivery type - payment (connection costs)	-the extent to which the poor is served and gives an indication of justification and necessity of subsidies. (Franceys 2006-lecture notes) -Differentiate between water and sanitation per service levels and population
	Customer differentiation	- means of identifying different income level consumers - current availability of socio-economic data to carry out a tariff study	- Map including residential locations and water sourcing points socio-economic profile of the population presently served and unserved?
	Household income/expenditure	- (ideally)spatial representation on income across the supply area - (adequate) income distribution of the current or intended supply area - potential area of supply is changing or has changed, why?	- income or expenditure data are seldom available, except on national or regional basis and are often out of date and unreliable. - change question is aimed at eliciting whether income are growing or expected to grow faster or slower than national average.
	Change in income and demand pattern as coverage increases	- who has no public supply at present? (describe)	- is the market to be diluted as service area expands? - incentives to supply becomes important in this regard
	Willingness to pay for piped service or an improved service	Willingness to pay survey (previously done studies?) - Willingness and Ability to Pay graphs - Attitude and ability and take action graphs	Evaluate the tendency to connect on part of those groups currently without piped supply.
Future options of service	Water and sanitation	-details of options, costs	- options to be used

Subject	***Characteristic***	***Requirement***	***Comments***
improvements	service options to all areas	implications for consumers	during willingness to pay surveys
Financial	Tariff systems	-Tariff systems implemented over years	- Demand and Supply patterns??
		- Price/tariff trend graphs (over years)	
	Costs	- specify total revenue requirements	
		- Operating and maintenance expenditures and cost of capital	
	Investments	-Investment figures	- is the focus of investment also directed to poor?
		- types of investments	
		- Capital investment graphs (over years)	- full cost recovery?
	Subsidies	- Who is it targeted? Who benefits?	
		- How is it calculated?	
Water Use	implications for water allocation	Are there any possibilities of inter-sectoral/multi-use/alternative uses of water and? Are there any resulting implications for charging?	
	Consumption rates	consumption profile of the served population by socio-economic strata and by levels of service	
		- Water consumption vs cost graphs	
Monitoring of prices	Institutional arrangements	- management and admin	- give an idea of need for independent regulator
		- organisational autonomy	
		-enfoncement abilities	
		- commercial orientation	
		-consumer orientation (transparency/information sharing)	

Source: adapted from (Sohail, 2004)

Appendix D: Interview Guides

Note: Similar interview guides were used for all Country interviews. The guides are specific to target groups.

Service Providers/Goverment

General

- What is the company mission/vision? Is it targeted to the poor as well?
- Which price-setting policies guide your institution? Is there a need for these to be reviewed?

Coverage

- What is the present coverage in the area, by levels of service?
- What is the socio-economic profile of the population presently served?
- What is the consumption profile of the served population by socio-economic strata and by levels of service?

Price-setting process

- Are you currently operating on a cost recovery basis?
- What is the justification of the present tariff structure? (economic/political) who designed it? When? On which basis? Is the tariff study available?
- How are constraints of water availability reflected in the price setting process?
- How are the costs of sanitation services reflected in the price setting process? Is it a separate process to water services? How different is it?
- Which consumer groups are principal contributors to revenue?
- What proportion of costs (with or without capital charges) are recovered? Do most users pay close to average costs and high users meet capacity expansion costs? Are the marginal expansion costs high compared with average costs?
- How are connection charges related to costs? Are they relative to income? Is there evidence that they discourage legal connection?
- How many of the consumers pay minimum charges and why?
- How functional are the meters (what is replacement rate?)
- What is the operators perception about the current tariff structure and its efficiency for extending the provision of services (improving the level of service) to the poor?
- What is the demand for service from the population presently not served/improperly served?
- What objectives are set in the contract, in terms of extension/improvement of the service (to the poor?)
- What would be, under the present tariff structure, the consequences (in terms of financial sustainability) of extending the service coverage to that population?
- How effective are the current tariff structures for cost recovery from urban poor? How do measure it?
- Can the urban poor afford the current prices charged for water and sanitation services? What can be done?
- What is the socio-economic profile of the population presently not served/improper served?
- What is the current availability of socio-economic data to carry out a tariff study?
- What subsidies are embedded in the present tariff structure (how are they distributed between socio-economic strata, and by levels of service? Do you think there is a justifiable need for extra-sectoral subsidies?
- Are there other general issues regarding the tariff structure in terms of: economic efficiency (such as deterrent industrial rates); equity (such as: next door neighbour is charged at a different rate); financial sustainability (such as revenue declines faster than consumption due to block rates)

- Is it possible to specify total revenue requirements
- Operating and maintenance expenditures and cost of capital
- How do you ensure sustainability of institution through pricing system
- What are the future costs required to ensure sustainability?
- Should there be a need for user charges- what would be the basis of it?
- To what extent can existing patterns of charging be adapted to ensure financial cost recovery

Monitoring of price-setting process

- How are the prices monitored and by whom? Is it effective?
- Are there issues regarding the timely application of the price adjustment mechanism, or other threats on the general tariff level for regulatory (political) reasons?
- What is the position of the client/regulator regarding a reform of the tariff structure (who is in charge? Where is it written? Is it a national tariff structure? Is there an explicit procedure for undertaking a reform? By law?
- Do you think there is a need for independent regulator? Why? What would its role be? How will it benefit the urban poor?

Relations with other water and sanitation institutions

- Which other institutions are involved in your price-setting process and for what purpose?
- How do your institution operations affect the other water providers, if any?
- What do you think there is a role for PPP in the water and sanitation sector? And how can it work?

<u>Guides for domestic users</u>

Household information

- How many people in the household

Water availability (conservation measures)

- What is the interest of the institution: cost recovery or water conservation?
- What kind of water conservation techniques are you using? Is it working? What cost implications does it have for customers?
- What do you think will lead to better water use?
- What is the water status of Windhoek and how will Windhoek be supplied with water in the future? (given the present urbanisation rate?)

Service provision and Customer relations

- How would you describe the quality of the services provided to the urban poor by your institution? (table for water and sanitation)
- Can services be provided through alternative means? How and which means?
- What is the population's perception about water tariffs? What is the awareness of the subject? Is the utility/public authority communicating on the subject?
- What is the level of participation of customers in selection of type of services provided?
- What is the level of participation of customers in price determination?
- Is there willingness and ability to pay for these services?

Other

- Is there anything else you want to say on this topic, that I haven't asked? Do you know anyone else I can talk to about this topic?
- Is there anything else that you want to ask me?

- How long have you been here
- Gender and age composition of household
- Gender and age of persons collecting water
- Education level of the household head
- How many people are working in the house
- Occupation of all adults in household
- Total household income per month/expenditure per month

Existing water services information

- What kinds of services are provided to you? (water/sanitation –make tick boxes)
- Ownership of water using fixtures; bath, shower, WC, sink, dish water, washing machine, garden water items
- Volume of abstracted water used in litres per head per day
- Composition of use (%): cooking and drinking, bathing, showers and personal washing, washing of clothes, house, vehicles, sanitation, garden other
- Water storage: type storage by volume
- Total monthly expenditure on water services
- How would you describe the quality of the services (good, average, bad)
- How would you describe your water situation in your household (good, average, poor)
- What do you think about water availability in Windhoek
- Have you receive any information on how you should use water? Was the information useful?

Existing sanitation services information

- Type of service: water closet with piped connection to sewer; own latrine, communal latrine, septic tank, open areas
- Type of treatment at point of service
- Means of removal of urine and faeces: flushing to sewer or septic tank, collection from latrine, direct to lake or river, other
- Charges for services; collection; treatment and disposal
- Total monthly expenditure on waste water services
- Service times
- Service reliability

Ability to pay for water and sanitation services

- Refer to Income level of household (ranges)
- What other expenses do you face and how do you prioritise payment?
- How much of your income are you spending on water? (maybe not necessary to ask?- can be calculated from income level and price they pay for water??)

Service Providers/ Management preferences

- Who provides you with water and sanitation services?
- How is the relationship between you and the service providers?
- What happens if you do not pay for your services?
- What is your opinion on the water and waste water tariffs and billing arrangements established by source owners/managers
- Do you have other alternatives to get these services from? Is it better?
- Have you been involved in determination of prices for these services?
- Have you received any information about payment of water and pricing of services? Was information useful?

<u>Guide for Regulators</u>

Roles and responsibilities

- What is your role as economic regulator?

- How independent are you in executing your duties?
- What regulatory targets must you meet?
- Is there a transparent, adequate and agreed upon system for measuring achievements of these targets? Elaborate on regulatory tools enforced.
- How do you monitor the standards of performance of the services?
- What is the service quality levels required for efficiency? Which key performance indicators are used to measure these standards?
- How do you monitor the utilities response to customer/consumer complaints
- What are the major challenges faced during the price setting process? How is this dealt with?
- What are the reporting requirements that a utility must adhere to?

Guides for other stakeholders

General

- Describe the major activities of your organisation.
- Which groups to represent? How and why? (get population figures, geographic locations)
- How would you describe the water situation in Windhoek? Explain
- What in your opinion is a good way to manage water demand in Windhoek?
- Representation information regarding water and sanitation services
- What are the major problems faced by the group represented?
- What are the consequences of these problems for group represented?
- What is being done to solve these problems (by whom and how?)
- How effective are the actions taken to solve these problems? Why?

Perception on price setting process

- Do you think public in general should pay for water and sanitation services?
- What is your general perception about the price for water and sanitation services in Windhoek?
- Do you think is the amount the represented group pay for water and sanitation services?
- What do you think can be done to provide affordable water and sanitation services to all (especially urban poor)
- Who do you think sets prices of water and sanitation services in Namibia/Windhoek? Should there be a change? How? Why?
- Do you know how prices are set in Windhoek? Is there a need for change?
- What do you think should be considered when prices are set in Windhoek?
- Do you think the group represented should be involved in determination of prices for these services?

Appendix E: Transcribed interview data

Note: Not all transcribed data are presented- this is presented to give a sense of the responses. The interviewees are not revealed due to confidentiality clause agreed upon during fieldwork; however codes were used to classify interviewees in different categories. Tape recorder was mostly used.. Key: C= City of Windhoek official; G=Government Officials; N=NamWater, O=Other (NGOs/Consultants); D=Domestic users; DR=Domestic Community Representatives.

NAMIBIA

- **Which price-setting policies guide your institution?**

N1: There is a strategic water sector plan available. Since Oct 2006, Namwater convinced the shareholders that tariffs be increased, but it was not granted. Apparently they were granted an increase of 6.9% (inflation) since January 08, but this information never reached them. They received a subsidy of 26 M for the time period where there was no increment to make up for it. So for the next price increment- this will be considered and maybe there will be some back-payment. NamWater has been involved in a study with independent consultants, with regard to subsidy scheme (since Nov 2007). A tariff committee was establish to oversee this process. The document was tabled for cabinet approval and is still not in public domain. The report: principles and methodology to calculate costs and tariffs for water supply by NamWater (18 Sept 08). The report includes:

- how to develop an accurate system,
- FCR per scheme (excluding depreciaton)
- Re-evaluation of assets (replacement of assets- 2010)
- Credit control policy
- Differentiate between retail end use subsidies and municipality.

The cross-subsidies depend on the re-evaluation of assets exercise. Other issues covered in the report:

- O&M costs (eg. Payroll, electricity)
- Depreciation (excl dams)
- Inability of clients to pay (urban and rural)
- Impact of no tariff increase (Kavango- have been over charging so tariffs will not be increased there)
- Tariff increased in areas like Kunene, mines
- Align retail tariffs with commenercial retail tariffs.

The plan was to submit the report as well as re-worked tariffs (according to methodlogy) to cabinet for increment for the next financial year. The document was sent off 22 Oct 2008. Some of the recommendations in the report is to ask for 12% increase per scheme, 6% increase in rural areas- on average 8% increase to recover the costs of current year. It is anticipated to start implementing credit control policy in March 2009. "there should be independent regulator" was in the cabinet decisions when Namwater was established in 1995 already- there is nothing new about what you are suggesting. The need for independent regulator is primarily to protect consumer interests. There are no subsidies from government at the moment. But do not support government subsidies- not viable for water schemes.

N4: Tariff is the unit costs at sales point. NamWater tariff is selling m^3. Currently NamWater is making use of cost allocation model which includes overheads (assigned to schemes); looking at costs specific to schemes. There are various schemes- where at some places costs are over recovered and others under recovered- that is why they did the cross-subsidisation of schemes. However there are other socio-economic factors that has to be taken into account. 5 year financial business plan is drawn up- viable for sustainability.

The WASSP- talks about financial costs- as well. The definition of full costs recovery needs to be clarified. It states in the NamWater Act, that NamWater is allowed to make profits….(page 20) financial provisions, in which reserve funds and capitalisation of profits… financing of future expenditure…. It is a company and should act like it.

C1: Do not know details about price-setting process-referred to Q2 and Q3 for further details. However interviewee mentioned the planning process for informal areas: They follow the development and upgrading strategy- which have specific objectives for informal areas. This strategy is mostly based on land delivery- but is also based on recovering development costs- because the CoW, does not receive subsidies from government. The process involves: a)feasibility studies and EIAs with community involvement-

furthermore needs assessment is conducted to determine what the community needs are, what they want and based on their income- whether they can afford it. [this has discrepancies, because people are not honest with their income- and thus the City never knows that the real income levels are. Income levels are compared with services available and based on an compromised agreement a Social Compact Agreement (example from Okahandja park A, B and C received) is signed with community leaders. In certain instances WATP surveys are done by consultants??. The strategy includes 6 development levels- that caters for different needs- current the strategy is being reviewed. However challenges being faced with the strategy includes customers being dissatisfied- feeling discriminated against because they feel their neighbours are receiving a better service. They prefer uniform charges??

G1: There are principles highlighted in the WASSP water tariff policy- which also includes full costs definition. At the moment the allocation of costs, calculation of tariffs (fundamental principles of tariff determination are missing) is unclear. NamWater is currently in the process of developing a model- but not sure what its about. The biggest challenge with NamWater is that the overhead costs allocation needs to be sorted out. In the past they increased tariffs- until 2007. For example before then, 11.5% increase was done across schemes- which is not right. There needs to be a scheme specific calculation. These are easy processes- but do not understand why it is being complicated. It should be as easy as [total costs/m^3 sold]. Last year (2007) the tariff was approved based on inflation (6.9%) and no-one seems to know why and how it is calculated. The biggest problem is that NamWater does not consider costs (eg. Difference between groundwater and surface water costs of treatment- etc etc. There are no formulae for these things- which is shocking for such a big company. Until these things are sorted out- the tariff will remain the same as 2007…..

O9: Water is a human right and it is important for people to know their rights. The right to water is related to the right to dignity and the right to life. In 1956, water services were for free and now people are expected to pay for it. The international law talks of human rights, the rights of children and water is included in this. Convention Right to child and women. Article 144 of International law - applicable to SADC. Namibia has a highly skewed income and there are poor- which contrary to public believe do not waste water- since they use so little of it anyway. It is the rich people that waste water- so they should be punished for it. It is important to note that the argument is not against payment for water- but we should note how we should pay for it. The government has their priorities wrong- looking at recent expenses that were incurred- eg. State house that was built- while the hospitals to treat the sick are not up to standard. Looking at other basic services- Safety and security- do we have to pay for the police before we can be helped by them? So why should we do it for water- which is also a basic right. To keep prisoners in jail- we don't receive a bill before they can be kept in jail? So we need to think of how to charge for water- why cant we tap into the tax funds as well for it- Maybe we should explore how SA is doing it- a technical solution is needed to tackle this issue.

Lack of access to water- government excludes poor people- so we should think of the impact of lack of access to water? It is unfair that people are evicted from their houses for non-payment of water bills. The money should be diverted to basic needs. Cross-subsidies should be considered- for those that cannot pay- we have get creative to find solutions.

In 1998- Water Act in the UK banned pre-paid meters. What about diseases that goes along with lack of water. The health implications are massive. Think of people suffering from Aids- these can die if they do not have water.

When thinking of SA- you need to know that the payment is coming from somewhere- and so ask yourself- who is paying for taxes? The principle should be that nothing should be for free- even if you pay little. In fact water is much cheaper compared to brandy or cigarettes and that don't stop the poor to use it- so why should the basic rights issue only come in when it comes to water?

Why cant the water sector follow the basic income grant scenario- this has a people centred approach- it is important that we change our thinking in that way. It is an issue of priorities!! At all levels- including government.

What about the poor- normally arrangements can be made- but if there is no income- what kind of arrangements can be made? The quantity- number of households- influences the payment- the rich are normally fewer and thus pays less, while the poor are more and pay more.

The bottom line is that someone has to pay for it….. the question is who and how much? There needs to be a sense of appreciation for the valuable resource.

Namwater is a non-for profit company- so they should not be making profit out of water services. "The price of water is measurable by the cars of CEOs. That means they are over charging water- people are paying too much for water."

- **What elements are being considered when setting prices?**

C1: Do not know about price setting process- however know that people are charged for water services. Prices are determined by technical personnel. Prices are included in erf prices and people pay monthly levy- determined by the land manager.

C5: The costs delivered at the first block is at a subsidised rate (Namwater price). There are two tariffs- basic (covers capital costs and interests) and volumetric (first block at Namwater's price+10% admin charge+ penalty costs (long run marginal costs-15 years). The price setting process is very political and thus even if the City proposes a certain increase to meet their costs- the politicians will set it where they want it (eg. City propose 20%, but will only allow 10%). For the non-domestic (subsidies are very little- not formal). Politicians consider social reasons such as job creation etc as well. The City is operating at 90% cost recovery (domestic water use- 70% and the rest- wastage. A regulator will be beneficial to the system. When setting prices- also think of quality standards and drought conditions (physical conditions) and the costs o getting water where it is needed. The bills to consumers should be easy as well [costs/volume of supply=unit costs].

O8: It might be a good idea to follow the parliamentary debates on water and pricing issues- visit parliament archives. Don't know much about the debate- There is no doubt that people should pay for services to recover the costs. Refer to Act- also check out: 'a place we want to call our own' paper- 2005. The water act review process- needs a knowledge base body (expert panel) is a good idea-but ultimately they will be picked by government. See equivalent to what you are suggesting in the Environmental Management Act- give power to 'hand-pick' people with expertise- environmental commissioner. …

- **What is the demand for service from the population presently not served/improperly served?**

C1: Urbanisation rate increased after Independence and became unmanageable for the City. Temporary reception areas were created, while the City started with Greenfields (areas that are being developed in advance and then residents are resettled later after services are provided- alternatively they are called in-situ upgraded areas. Babilon area, there are communal water and sanitation services within 200m from erven.?? Relocation mostly takes place due to unsuitable geographical reasons- people tend to start shacks in rivers etc- these are referred to as 'natural informal settlements'. The new inhabitants are expected to apply for erven to Property management- which will allocate an erf in a developed area- Greenfield areas. In many communities people organise themselves and form saving groups. Informal

settlement committee are formed with assistance from the City with financial and technical assessments. WATSAN committee is established to assist informal areas with planning, payment for communal services (see ToR received). Funds are being recovered differently- the self help saving groups are very successful and there are about 40 established [need to indicate it on map]. In the natural informal areas- there are no services, however in some areas taps and toilets are done on emergency cases- not part of formal plans-.

C5: Sanitation is neglected from the process- should also consider the sustainability of VIPs. Promotion of waterborne sewerage in informal areas. The best option is to put infrastructure for water borne systems in place- and if people get money eventually- they can just connect- but do not promote VIPs, because nobody will use it- do not make people use things that you will not use- even if they are poor. The so-called poor people- all manage to have cell phones and are paying for all other services….. re-evaluate who is poor and who really needs support.

C10: The resettlement process has started from 1998- where an initial survey was done on people who owned and are registered for land. In those early years- land were give to those that were staying there for long (priority was given to them). There are two land occupier status- those that live on CoW land (lease agreements) and those that have bought the land as a group as part of the Shack Dwellers Federation initiative. In this case those from the federation is 80%, while 20% lives on CoW land in Greenwell Matongo D (area we went to). Normally the City has nothing to do with the federation group. During the resettlement process- the city makes sure that the rightful owners settle on the land (due to many illegal occupants), so there is always a comparison between what was on the list in 1998 vs with who lives there now- if the names are different the land is taken back. All houses and erfs are numbers- so the City can keep track of what is going on. The City officials work very closely with the community leaders on this issue- and they normally assist with getting people together and spreading the word about relocation updates and when people will be given land etc etc. Mostly community leaders are involved to avoid conflicts.

Prepaid meters (in Babilon) does not work so well- because there is only one collection point for many households and there are long queues always. They need more water points and security

(to control vandalism) in this area. The issue with prepaid meters is also to consider the security that goes along with it. To get the card for the meters is (N$150- which could be considered as connection fees. Another problem is that it breaks too frequently which is why people do not prefer it anymore- in the beginning it seemed like a good idea- but not anymore. The long term sustainability of this system is questionable. To address the issue of security- it is suggested that the prepaid meters be placed at the community offices (only problem might be travel distances), where there are security guards already. [the idea of having kiosk was tested]: "This will take us back to old age". The problem will be to control who owns the kiosks and preventing people to start building their own kiosks. The issue of sanitation-VIP toilets is also a huge mistake. Many people did not know what the toilets were and given the name (VIP- misunderstood it for Very Important People). People prefer flush toilets. The approach used to sensitise people about the toilets is wrong- that is why people agree to it and when it comes to the maintenance aspect- then people refuse to do it. The Otji toilets work on a small scale, but not in a communal setting. People now have to start paying for VIPs as well- it is part of their lease agreement. In some areas they are also testing with communal showers (Okulumbashe), but this has not been working well- wastage of water and unhygienic. "the bottom line is that- if you stay in a municipal area- you have to pay for services- otherwise you are free to move to a rural area".

- **Perception of services (Quality, prices, preferences)**

D11: No not happy with services. Prefer tap on erf. The distance is not far to walk and in some instances it is better than what they are used to- because they come from Owambo land where they had to walk long distances to collect water- so this is better. There are very seldom interruptions with water services- 24 hours, 7 days a week supply. The important services are:-electricity, - toilet, - water (there will always be water-even if they have to walk distances to get it- so not too important). N$ 30 per month per household- they pay to committee ad receive receipts for it. There is no toilet facilities here and the use the bushes- [correction from one member] – there are 6 toilets, but they are out of order- there are about 300 people per 2 toilets (estimate). Payment is not a big problem- if you cant pay you can sell things and pay later- so good understanding with committee members. People are willing to pay for water services. Fairly good value for money- the toilet facilities are the biggest problems. Not really interested- maybe if had their own taps- do not really want to be involved in price setting or decision making. Committee is useful and do give them information and also take their issues on board and so think the committee members should be involved in the bigger decision making process- as long as they get feedback.

DR5: Most residents pay on time- but there are the odd few that do not pay and are being problematic- but they do pay in the end. Some people- (those that are noticeably suffering) pay half the price- agreed by community members. On average most residents are domestic workers, own business (selling home made food) or security guards- the average income: between 700-1500. Yes they are part of setting the monthly fix payment- but that depends on the meter reading and the outstanding bills. It is important that the affordability is taken into consideration- but they do not think the rates can be different for different areas- depending on income- so its fine as it is. The committee reps felt that it is difficult to control continuity within committee- and people also do not attend meetings when arranged- so its difficult- since it's a voluntary effort (apart from treasurer)- not much is done about. The city keeps them well informed.

DR 6: Mostly in debt- always behind with payments- have too many other obligations- but make arrangements with community representatives. She is currently unemployed- but used to pay on time when she was working. Most people in the area are unemployed and trying to make a living by selling things (beers) or have casual jobs. But there is always someone that works (At least 1 in the households). Guess the average is less than N$1200. Use little water- and are already saving water- the community members are also aware of water saving.

D12: use public taps and feel its unfair that in the same area those that can afford have taps in their yards and houses. But even if they could afford- they need to move before getting a tap fitted- because currently they are on lease property. They have problems with toilets- there are no toilets and have to use the bush- its unsafe, and unhygienic- especially for ladies. Electricity is most important for them. N$ 78 including water and erf. Have no problem of paying. Price is affordable. They have been relocated to this area since 2004 and have been paying that same amount since then. They use approximately 2 x 25 litres of water per day- mostly for basic use such as cooking and washing. want their own taps- currently get collective bills- which they sometimes do not see- so just keep paying the fix rates.

- **Subsidies: What subsidies are embedded in the present tariff structure (how are they**

distributed between socio-economic strata, and by levels of service)?

G1: There is currently a study going on- national subsidy policy aiming at urban and rural- this is done by Herald Koch and has a period of 4 months November 2008-March 2009. This would look at definition of poor and these subsidies should be targeted.

G2: There is no information about subsidies- and government does not have any mechanisms in place for this purpose. That is why the study is being undertaken now- trying to develop subsidy policy (urban and rural)- there is a call for a consultant out to undertake the study- but have not found anyone yet. If no consultants show interest- then government has to do it.

C5: Issue of subsidies- needs to be clarified as to who the players are and their roles and responsibilities. Subsidies for poor is responsibility of government- but in absence of that the City is taking responsibility. The issue of cross-subsidies from rich to poor also needs to be looked at carefully- because its very seldom that others will pay for other people. Prepaid meters is an option- some prefer it, others don't. Majority is willing to pay for water services- that is not the issue.

O3: A cross-subsidisation scheme similar to that of Rehoboth case- should be considered. The system does ensure that there are affordable end user tariffs in place. However this system has also been changes since 8 months ago- where those in power has changed it back to the old system- (for unknown reasons). An performance study has been done on the Rehoboth case and they realised that Namwater bills are not paid- there are a lot of politics involved in the process.

There is no subsidy system for Windhoek- volumetric charges are set at Namwater prices (subsidised), but a basic charge is added so the end user tariff includes basic charges+namwater volumetric charge. This system is such that the poor are paying more money than the rich??

The national resource accounting report includes full cost recovery calculated vs tariffs charged- 2001 reports- also check these out.

Most recent study was done together with Lund Consulting and partners to develop tariff determinations procedures seconded by DWAF staff (committee). The draft report includes methodology to determine tariffs; general requirements and recommendations on how to take the process further. The report is not yet in public domain- check it out.

Last year the tariff (2007) was based on inflation adjustments only and since no consensus was reached on the tariff increments- there was no increment. The biggest problems were that there are no calculations of costs per schemes done since 1998 (find out why this is?). Also since 1998, they only incorporate inflation and then raise tariffs based on fixed percentages. Currently they operate on depreciation charge- that is not known and the cross-subsidies across schemes are also not justified. Currently the biggest questions to address are:

- the cost of supply (since 1997- this has never been calculated)
- Khomas region is also not reaching full cost recovery levels??.

- **The need for Regulator and its role?**

C5: The regulator should not be merged with ECB- it becomes a power issue- therefore it should be DWAF's responsibility- since they are the leading ministry. Neutral body would have financial implications which will complicate the process. The water act should be clear on this and should highlight how the body should work. The perception against ECB is negative and we don't want to include water in their 'mess'. The questions that needs to be address with regard to ECB is: Does it add value? Currently, I cannot see the bottom line costs, for what the money is being used for. The system is not transparent enough. There is a need for a model (with clear and simple figures) with basket indications of inflation- with related predictions. Need knowledgeable people to run the process- that is lacking at the moment.

O3:The job of a regulator is straight forward- it is to know the costs of supply water and sanitation services and determine the price (or agree with utility the price). Those that cant afford it- it is just too bad. After the price is set- then focus on the debt collection process, keeping in mind that water services cannot be cut off.

O9: The ECB has worked out mechanisms together with municipality to improve debt collection. It should be understood that water is different from electricity in the sense that it is social responsibility and that is politically motivated. This makes provision of water tricky and sensitive. In this regard, it is important to have clear methodology on how to determine tariffs (bulk and retail). This would need a clear mandate to request specific information from providers as well as enforcement mechanisms- should the information not be provided. This is all provided (or should be) in the guiding legal framework- Act. This also includes the mandate to ensure

implementation of the Act. This is where the problem is in the water sector- the fact that the Act is very weak ("toothless")- once this problem is solved- you are at least half way there. The Act needs to be clear.

O6: Administration for bulk water service providers should be robust and should have the relevant information at their finger tips- but due to political interference, the information is manipulated. It really depends on who the regulator is.

C4: The price setting process for LAs are also dictated by government- because if certain price increase is requested, government has the power to say "cut it in half" and its up to the LA to find other sources of income to bridge the gap of not covering full costs. It is not easy to divorce political interferences with the process setting process.

G1: It is difficult to regulate currently- because the process is done at an ad-hoc basis, and the ministry appoints anyone to sit on the committee. There is no continuity and no clear guidelines as to what the elements are that needs to be addressed. Even the revised WASSP is not clear- especially in issues such as subsidies. The issue of cross-subsidies across schemes as practiced by NamWater to date is not justified- but there is nowhere said that they can't do it either. The Act is not suppose to be a detailed document- it is guide as to what needs to be done- it is the regulations that goes with the Act that needs to specify everything. It is unfair to expect the Act to be detailed. The legislation is very clear. The implementation or defining of Act also depends on capacity existing in the water sector as well as the leadership (minister) involved. The job of a regulator (or similar body) would thus be to assist in clarification of documentation for example. The difficult tasks is dealing with LAs capacities, rather than bulk water supply (should be fairly easy and straight forward).

O1: The performance of LAs across the country needs to be assessed, because the situation is getting worse. For example, Keetmanshoop municipality can hardly account for one third of their water. There should be sanctions and mechanisms in place to deal with such situations. The decentralisation policy enable many of these services to be localise, but there is no capacity and skills to handle these demands and in such cases, even the existence of a regulator would not be able to solve these problems. The problem lies with capacity building and training. These municipalities are already bankrupt- they cannot recover the costs and therefore would not even be able to support any regulatory services in this regard.

O6: Consider government to be the regulator, since the salaries are catered for already and it has the authority already so it is easy to give the mandate to a certain department within the ministry to run as the regulator. To regulate NamWater should not be a problem, but the LAs will be a problem since they have a range of products they trade with (remunerative and non-remunerative services) and these are being trade-off against each other (cross-subsidising across services). The regulator would have to do much more there- since LAs are not allowed to make profits and it is important to keep them at bay. The best option is to leave it in government and just empower those involved in the process and give them a clearer mandate. They should have the appropriate budget to train and build the necessary capacity. The process can be made clear and roles and responsibilities spell out clearly. Logistically government is in the best position to take the lead in this process. They already have certain power to implement policies, so it will avoid confusion among consumers.

C5: There is no way that the price-setting process can be without political interference, so it is up to you to determine what is the minimum required and how it can be ring fenced to be outside politics.

O9: It is optimal to have a merger, because this is a independent standing institution already and its better not to re-invent the wheel. The Act is clear and thus it will be easy to adapt the Water Act accordingly, with the respective Ministers as guardian of the process. Though the politics around water is different and difficult to handle (since what is a basic right), but once procedures are in place, the process should be easier. It is clear that there is a need for a regulator in the water sector. Do not agree that Minister will interfere- since the Act is clear on roles and responsibilities, but it is important to include government in the process. It is important to determine how minister, NamWater and LAs will work together to protect consumers. Another important aspect is to include economy into the equation- to understand how it works and thus determine the tariffs accordingly. Strongly disagree with subsidies- it is unsustainable but given the Namibian situation it is needed- but this has to be integrated into the whole sector and not just for certain aspects. Consider the whole sector (holistic picture). By law NamWater is a company, but the act is contradictory in the sense that is only allowed to recover costs, while it is company- it does not work that way. If it is a company then it should be allowed to make profits. There are lots of issues that needs to be addressed, but that is part of the process. The

issue of dividends of NamWater also needs to be looked at.

C7: Certain LAs are operating as businesses and they concentrate on what goes in (costs) and what comes out (price) and therefore there is nothing to regulate. The boards are there to make sure business goes well and so having a regulator is just duplicating existing structures. There are certain allowable costs- so there is nothing wrong with filling up funds to cover all costs

O2: There is a regulator needed, because somebody has to be accountable/responsible for the process and a coherent effort has to be done towards this. "if you cant measure it- how can you manage it". It is not necessary clear that a regulator is needed, but something is needed. Maybe just focus on what is there currently and build the capacity instead of starting something new.

Zambia

Note: L=LWSC; K=KWSC; O=NGOs; R=NWASCO; ZMG=Government; W=WWG; D= Domestic users

- **Price-setting process**

G2: When NWASCO was formed, it was first reporting to Ministry of Energy and Water. This created a conflicting situation- because many of stakeholders felt that the ministry is mainly responsible for water resources and it was too broad to include distribution as well. In fact it was apolitical move, so as to control all the funds that are linked to water distribution, because at that point there were many donors involved (eg DTF). This issue was solved and now NWASCO is directly reporting to Parliament through Ministry of Local Government and Housing. The biggest disadvantage of LAs were that they had a big income base and effectiveness specific for water sector was not good. The size of the LAs also played a big role on the income base. Provisional water authorities except those on copperbelt- usually had human capacity problems. The presence of the regulator increase donor support confidence as well, and it makes it easier for them to support companies or the water sector.

L1: NWASCO guidelines apply and guides their cost structure. It is economically viable- because Zambia has a history of free water for all- and so it was necessary to start at low levels- but they still found it difficult to change the mind-set of consumers- therefore they implemented price increases in stages. The cost structure includes electricity as one of the major contributors to the structure-based on source- and considering that they have to pump at an elevation of 350 km- and therefore have many booster pumps. Other elements includes chemicals, operation and maintenance costs (fuel), staff. They also consider affordability of consumers when developing their cost structure. The recovery rate is very variable and approximately 60% is recovered from domestic sector- which is broken down in various sections. The peri-urban debt collection depends on the type of water source. Those with taps fitted inside the houses- have meteres and receive bills to pay. Approximately 49% of Lusaka has metered taps. The commercial sector (eg. Breweries, steel plants) uses more that $100m^3$ and are metered and pays well and no big problems experienced (20% of debt irrecoverable) there-however it's the institutions such as government institutions (hospitals, schools, Universities, defence barracks, airforce etc) that they are experiencing problems with. Approximately 30% of debt from these are not recovered. The payments are inconsistent and if they do not pay- they disconnect the water as a measure of enforcement and this normally helps with getting the bills paid. However disconnections do not work in the domestic are- because once water is disconnected- people get water from their neighbours etc, so its difficult to control. The Local Authority management structure is not operating well- and that presents a big challenge of debt recovery? There are specific payment schemes for those in arrears payment. There is also a lot of political interference- especially when water is disconnected. In general customers and make arrangements should they feel they cannot make the full payments. There are no 'special' tariffs for pensioners for example- that is the responsibility of government social schemes. The company as part of their social responsibility also allows for certain amount of free water- if consumers are have funerals- these should be arranged with company.

K1:Make use of increasing block tariff and that consists of 3 blocks (see newsletter). There are three categories- metered, fix rates and industrial rates. The metering is for individual connections, joint connections and shared connections, There is also a category for semi-communal (7-25 household sharing taps)and the Kiosks and these are also metered. The Kiosks contribute to better revenue collection and contributions and therefore it works for the company. No WATP studies have been done- again this will be done once the services are improved, because believe that the willingness to pay is linked to the quality of services. Currently those with high incomes can afford to get better service- but low income groups depends on some sort of cross-subsidisation scheme. NWASCO has been encouraging services to the low income groups

O1: From experience, the Water and Sanitation Council negotiates with the CUs on the water tariff for a given period in a given locality. However, experience has shown that CUs have had difficulties controlling the water tariffs because service providers at community level apply the same within a given range rather than a fixed tariff applied across board. The other contributing factor is that the service providers such as Water Trusts have to take into account their over heads related to administrative and running costs which are important for sustaining the water scheme. Thirdly, various approaches are used in deriving the water tariff. In the case of Water Trusts, the Residents Development Committee now known as Ward Development Committees base their tariffs on the needs and community's willingness and ability to pay. Once they agree, the tariff are revised giving reasons for the same. Within these communities, other complications related to those who have individual connections. These are charged a higher tariff than those who use communal facilities. In my view, CUs are under charging in the inner city due to political interference while the community based service provider like the Water Trusts are charging in accordance to the level of service being provided. Water is paid for as and when it is collected but in town some homes are charged a flat tariff because meter are non functional and in other cases water service is erratic making tariff increase by CUs very difficult.

- **Service provision**

G1: The policy direction should be that all people should be provided with water services, therefore the regulator should facilitate the empowerment process to LAs and CUs for service provision. It should have a role to liaise relevant resources and it should create for a for sharing information and interaction. Overall, CUs are suppose to sustain themselves such that they are able to provide water even to peri-urban areas. However, these are the so often forgotten areas and so its government's role to look for funding to cover these areas. The geographical differences in areas should also be considered in the supply of water. Government provide 'soft loans' or grants to support the companies to extent to peri-urban areas- based on geography, it depends on the costs to deliver services, CUs can request government to assist them in that way. It is easier for government to apply for grants on behalf of the companies- than companies to apply themselves. … Donors are very much involved in the process. Investment in urban sector is more costly compared to rural- which is why the services are more expensive as well, therefore it is very important to be strategically placed for money to be recovered from investment. Yes, the water sector is very donor dependent- the infrastructure is over 30 years, and therefore it is important to get donor funds especially for infrastructural development. Privatising water utilities can apply work if own investment plans are in place- otherwise the investment has to be sourced from donors or government. Such funding is channelled through decentralisation scheme through government to reach companies that needs to funds for investment. In the past, money was operated very centralised, through project proposals. Government's role is to make sure that donor funding is utilised, otherwise government has to pay it back.

W1: The complaints vary from location- but in general it includes: -Non availability of water; Eradic water supply (limited hours); Connection fees are too high; Time frame for taps to be connected takes too long. After receiving the complaints- they verify it according the procedures in NWASCO guidelines (check out guideline procedures). Report it to company (both verbal/writing) to respond to complaint within a given time (guidelines). Then follow-up procedures takes place and still if nothing is done- then the matter is taken to NWASCO (also cc to company). Then do a follow-up on how NWASCO deals with the issue- then it gets back to consumer. Normally after it is reported to NWASCO the issue is solved, WWG thinks that the regulator is very effective and strong and does not get influenced by company or government (politics). Regulator operates on good transparent system and really has the interest of consumers at heart. The water kiosk system is good and is really being support by the companies and regulator, however WWG feels that is a system that can work in rural areas- but not in urban. People need to have their own connections- therefore some system should be worked out to address the high connection fees. The issue of high percentage of unaccounted for water- is a concern for WWG- because those costs are transferred to consumers- which is unfair.

The mindsets of people must change- they need a leader to take process further. " start pay as long as you pay- you can complain

- **Affordability perceptions (service provision, quality, price)**

D9: shared tap- service is very irregular- the day of interview- there was no water since previous evening 6 until 11:00 next day.- no warning was issued. Shortage of water is biggest problem. They are tired of reporting it- because nothing is done

about it. Don't know how many people sharing- more than 100. Make 28 thousand ZamK per day. Furthers traveller walks about 20 minutes to collect water.

D10: Kiosk- opening hours 06:00-11:30, then 14:00-18:00. Hours were decided upon by shop attendant. The water is metered- he receives a book from company, to record the meter readings. If no water is available- due to electricity cuts, he informs people. He reports it to the office directly. There are water tankers as back-up running- but very seldomly. Suggested that maybe company should consider having tanks installed- like what Water Trust is using. Do not know about NWASCO or DTF.

D7: Stand post- Shortage of water- in which times- people that have water sell it illegally (for double the price). If no water- borehole/shallow well. Don't know about NWASCO or WWG. Only know Lusaka water. The customers (collecting water) did not have any problem- since they are use to it. The commission for manning the tap is 40% (is about 300 thousand per month) of water sales. They get paid every day after taking water to company office. They were selected in a workshop and have been serving for 5 years. People have no problems with paying for water. Opening hours:06:00-11:00 then 14:00-18:00. : No toilet facilities- make use of pit latrines- no complaints about it.

- **Regulatory process (perceptions of services, regulatory tools)**

L3: NWASCO- in general the regulator is good- but there is a tendency of over-regulation. Especially in the beginning after the regulator was formed- there were many stumbling blocks or "hampering blocks" which affected the pace of the providers. The roles and responsibilities of the regulator were not clear in the beginning- but it is improving now. There is no clear line between regulating and interference with company management operations. The regulator feels that they have power to walk in and do what they want- and that is undermining management of company. Communication between regulator and providers- were not good as well- because the regulator does not know what is happening on the ground- yet would like to "decide" what the company should do. This causes a lot of frustration. The regulator needs more technical expertise "they need more hands-on people- before they can get hands-on".

The information required by the regulator is cumbersome and we are not sure what they use half of the information for. Some of the tools they use are not applicable and needs to be adjusted to company specifics. The regulatory system is "imported" and is out of touch with what is happening on the ground. The regulator needs to be more flexible and communication needs to improve. A lot of progress has been made since the inception of the regulator- and there are many improvements. The benchmarking assessment presents a problem, where companies of different scope and scales are compared and this is unfair to companies. "compare like with like".

K2: The regulator is doing a good job, with minimal interference by government, especially when it comes to tariff setting. The regulator is making it easier for the company to set their own tariffs. The regulator is considered as very professional and hardly allows government interference in their operations and decisions. The major benefit of having a regulator is for the consumers- because it ensure service improvements for a fair price. The regulator is also known to defend companies- especially if a price hike is needed. At one time- the regulator even forced the company to increase their prices for their own sustainability and they defended the company in public. The regulator however needs to have a better understanding of the utilities before enforcing punitive measures against it. For this- more interaction with utilities is needed to understand the challenges. Otherwise the tools of the regulator are good and simple and are easy to understand. The regulator has now introduced 'regulation by incentive'. Many companies inflate their figures and therefore it is necessary to have a regulator to ensure that companies perform according to their plans. However, the regulator should take into account the differences amongst companies and should be utility specific. There is a point system that the regulator uses which works well. The regulator has introduce a "regulation by incentive scheme as appose to regulation by enforcement".

The penalties are very effective and is fair and works well. Companies always adhere to decision of Regulator- have not heard of any company that has resisted the claims from the regulator. There is also provision made- should companies want to dispute the claims from the regulator- they can go to court.

The company has a good working relationship with the regulator and they often have very good training opportunities for staff to attend. It operates well, very transparent (4 out of 5) and good well with government as well. They are also good at sharing information and protects both the interests of companies and consumers. The regulator however needs to market themselves very well-especially to the consumers and link the consumer groups to companies and consumers.

G2: The regulators are as follows: Environment council, water board (government body responsible for abstraction and water resources licences), energy and communication and transport authority, NWASCO. These bodies work well together. There is a national programme, which is aiming to meet MDGs (including costs involved) which is looking at national water sector and what it will cost to meet the goals. There are strict guidelines which are followed and it involves all stakeholders. It is very rare that there are conflicts while the guidelines are followed between company and regulator- and in such cases, government acts a the "father of two children fighting", and guides them so that in the end the situation is controlled. The role of government in this situation is to just to guide them and advice on how things should be done… just like a father does. Government does not want direct involvement and is only involved in appointment of 2 of the NWASCO board members- chair and vice-. They do not interfere in the day-to-day operations of the regulator. Overall the system is working well. "water is a state business and therefore it is difficult to divorce the tasks".

W1: Though the regulator is doing a good job- there are issues of concern with regard to appointment of the board of the regulator. The fact that government has to appoint some of the members (political appointees) makes the system vulnerable to political interference and this issue needs to be dealt with.

O2: The guidelines for tariffs is currently being reviewed. The financial sheets prescribed (excel sheets) to utilities are not used properly by CUs. This needs to be improved. Overall the regulator is effective and is working well- there is a sound procedure in place as well as good description of tools available. It is important that when it comes to tariffs- there should be a balance between viability and affordability (poor focus). The income levels of consumers has to be considered at all times during the tariff setting process.

W1:The beginning was not easy- there was a perception that they are policing and the companies were hesitant to provide information and working together with the group. The benefits of having such a group only became apparent later such that they could also use the group to get information across to the people (acceptance of their existence was important to carry out their duties). The area has 33 wards, and the members are all dispersed across these wards. Their roles include the following:

- Sensitise the rights of people to the utilities (vice versa)
- Act as a link between customers and utilities and regulator.
- Deal with customer complaints and ensure that is dealt with according to NWASCO guidelines.

They have an office- and the joint regulators are paying for administrative and logistical expenses of the members. This is good because this will enable consumers to know where to take their complaints to- because previously they had to wait until the members get to their area or go to the members houses. The members have various plans and schedules and have certain areas they monitor after problems have been reported. Much of their work is in the peri-urban areas, because most of the other areas where people receive bills- they deal directly with the company. WWG mostly makes use of the media through regular radio programmes (on general awareness issues and what they do- advertisement) and if urgent issues are to be dealt with they call press forums- but they try and refrain from using newspapers- to avoid conflict of interest issues with the regulators.

R2: The regulator makes use of the information system which is guiding the utilities on how to determine their tariffs. This information system is supplemented by inspectors going out to the utilities to update the information. At once a year inspectors visit all companies. There are also part-time inspectors that are professionals (not working for the companies- they are external from outside) that are used to get the experience and to assist in updating the relevance of the information. Sanitation is one of the biggest challenges the sector is faced with and there is a need for new entrants. Facilities such as pit latrines are encouraged through utilities to cover public toilets as part of their expansion projects. There are some options such as cost sharing that can be done. For example Lusaka water tariff- 10% increase in sanitation levies and these are subsidised. The most important thing is that it should be sustainable options that will fit in the broader government options as well as the Vision 2030 process (specific for investment programmes).

The challenges faced by utilities are largely investment funding related. Companies are dependent on external grants and loans. These are being mobilised by government through a system of priorities. Cost of capital is high (with high interests rates) and it is not cost effective for local conditions. The national urban programme (find out more about it) will try and address these issues. Overall it is important to always engage with customers- because the customers do not know what is happening behind the scenes.

They work very well with the water board (though NWASCO is not involved in water permits etc) but they mostly collaborate on water quality issues. NWASCO is also responsible for environmental protection together with the council of Zambia- which looks at sewerage collection, treatment and disposal. They ensure that is done at acceptable quality (end product). GTZ- also a good relationship- they act as technical advisory committee and also sits on the water board as well as board of NWASCO. There are other platforms of sharing information- such as CEO forum, where al CEOs are invited and discuss issues of concern. This takes place quarterly. In this sense most stakeholders are involved in the process most of the time.

There is the African Forum for Utility Regulators (AFUR), which also shares information across the region- and it includes all utilities (energy, gas etc etc). Nwasco is part of the sectoral committee. There are also guidelines for African regulators. (check out). There is a lot going on in the sector, there are too many demands- especially on him (regulator) sharing best practices, and international travels- so the challenge is prioritising and managing local regulatory challenges. As more and more people gets expose to the idea- the demand is increasing.

England

D= Domestic users; C=CCWater members; O=Ofwat officials; A=Anglian Water Services officials

- **Price-setting process**

C2: There are 3 companies within the region which is managing the demand quite well- but realising that this is the driest region in the country- compulsory metering should be enforced to conserve water. The companies are slowly introducing meters which is good way to go. Own opinion: the current way of management is poor- eg. Managed by engineers vs managers- all companies are into building infrastructure- had level of foresight- Reduction in rainfall and population increase and steep increase of water usage- there is a high percentage of few people living in households so increase in demand therefore it is important to think about balance between supply and demand. Anglian region is fortunate that the infrastructure is in good conditions. Since the recent drought- the customer relations of companies has improved, especially in terms of sharing information (through media)- however there are still a number of things that are critical for companies to improve.

- **Regulatory process (perceptions of regulator services, tools, consumer representation)**

A1: PR04 was better than current review process. Things are now too complicated. The companies need shorted questions and need to be more simplified than that. Aquarius is not working and there are many questions regarding its accuracy. The regulator is micro-managing the companies and this is frustrating. Too much detail required for the June returns and there is an imbalance on the regulator information. The regulator is of the opinion that companies are hiding information- but sometimes they ask for things that don't exist. PR09 is very opaque and Ofwat is not very transparent. The regulator is very 'cold' towards companies. It depends on the personality and attitude of the staff of the regulator. They feel companies are misleading them and that is not true- its because they do not have the kind of details that are required in some instances- and it is not very clear why such details are necessary. Companies do not know what Ofwat does with most of the information they request. The previous DG of Ofwat was beter, because companies have more respect for him and he was doing things with more authority. Currently it is "regulation by doghouse"- it is very aggressive and political.

C2: Their role is to start discussion that would benefit the consumers. They are particularly strong in the following: build better relationships with customers-providing what customers like, need and feel is essential; promoting issues such as metering-where appropriate; be involved in planning (town planning). This is good to be more proactive and anticipate planning of growth- and this is something that the Anglian committee pushed for and is now taking the lead in this for other committees to follow. : The OPA is outdated and needs to reviewed as well as GSS. The evolution of the regulators tools are not good. They need to change their strategic thinking and introduce at least 20 year forward planning- they need to get up to date with what is happening in the industry.

C1:CCW aims at getting the views of consumers across as well are interested in sustainability issues. Would like to be part of the softer solution to environmental and sustainability issues- also want to ensure that customers pay a fair price for their services. Process of getting money back to consumers: Build a good relationship with the companies, for example through our regional Chairs to enable CCWater to have open discussions with them.

- A few months before the companies' financial results are announced, the Chief Executive writes

to companies asking them to return money (i.e. profits) to customers.

- As part of the bi-monthly meeting between regional chairs and companies, the message of "returning money to customers" is re-emphasised

- The regional Policy Managers mention this again to their companies

-When the financial results are announced (June) we send local and national press releases either praising the companies for returning money to customers or criticising them for their very high profits

A1: CCW plays an important role and are doing a good job as watch dogs of the industry. Their views are quite often taken on board and influence decisions. They are also an important part of annual billing literature

C1: OFWAT is efficient- yet complex. They got the cost of capital calculations wrong, but overall the process is getting better. The quality of regulation could be improved. When they started off it was really and thus they raised their profile of customer relationships. But since then- they have been slipping up and now they keep on relying on their good reputation from the past. They are being outstripped by the companies and their tools are not progressive enough to catch up to companies pace. After the Water Act 2004, Ofwat started to change and they realised that they need to get modernised in line with companies. The problem with Aquarius is that they need to get it right too- because currently its too complex- especially for members of the committee to use. It shows the level of complexity in the system- but it needs to be a single model and they need to highlight certain elements to make it transparent.

O2: June Returns-looking at the financial performance of companies over the years. The process includes: consultation strategy- including meetings/internet chats) and individual responses. (This includes responses from companies on the strategy as well)- August Business plan- drafts; Templates developed for all the information required. The process is highly data hungry and computerised. It is efficient (look at number of staff?) and is very transparent- data requirements, but the timing is limiting and therefore the information sharing process is selective. There are talks of reviewing the time period for reviews- and making it 6 years to coincide with water framework directive. [Personal opinion: this would be better]. The process has "grown" over the years- making it easier- compared to when they started. The tools could be easier with computer systems- but this is the best it could be at the moment. The Reservoir will help to clarify a lot of issues within Aquarius model. Project Reservoir is good timing- and this allows them to review the information requirements as well.

- **Service provisions (quality, price, affordability)**

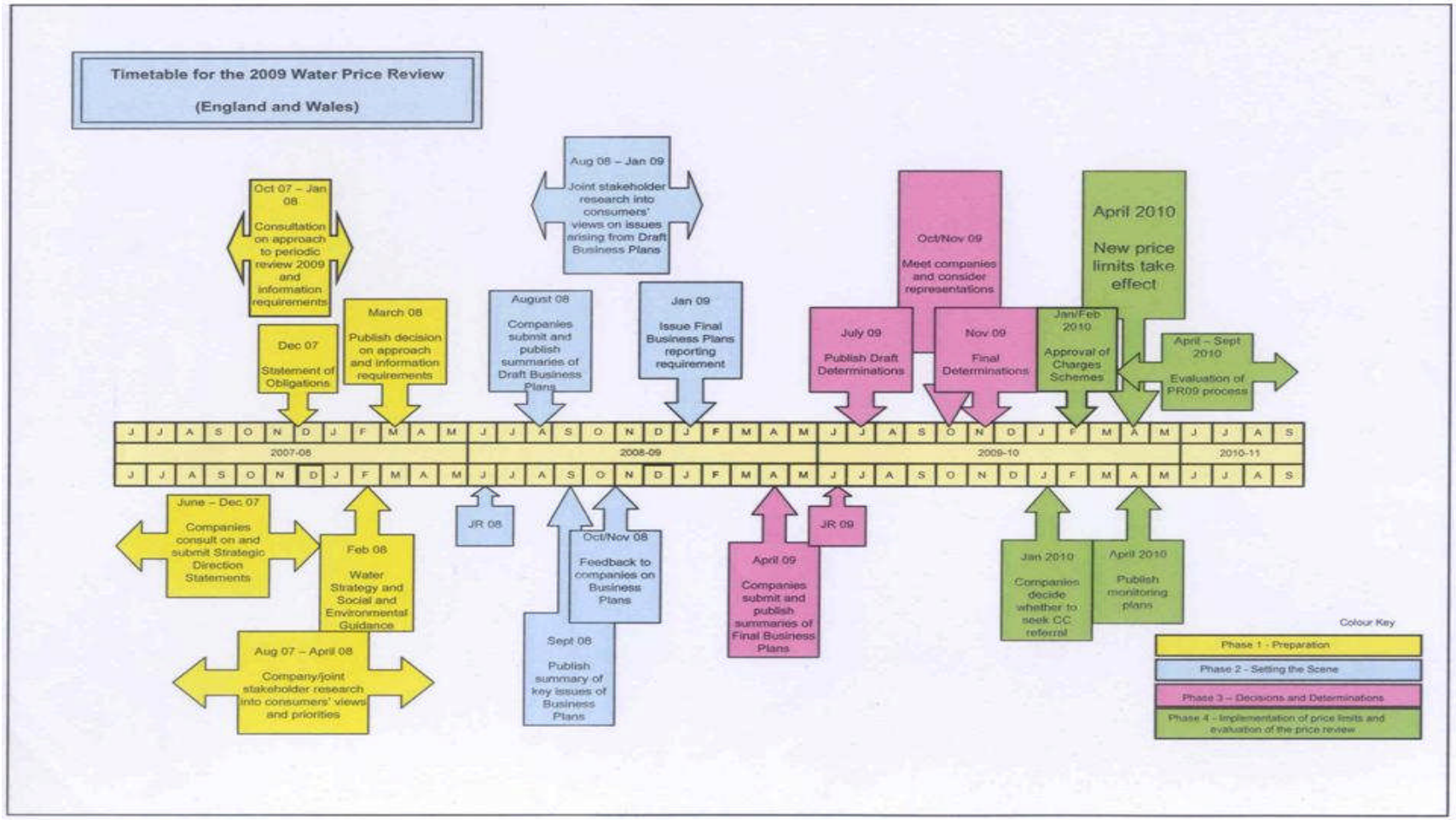
A1: Currently they have 62% meter coverage in the area. They are operating in one of the driest areas in the country and therefore always strive to save water and balancing it with water efficiency. The make use of radio advertsing, tv (bbc) and have strong marketing strategy. For example they promote a lot of retrofits, especially for toilet facilities- and install them for free eg. Shower timers. The metering system works well. Meters are installed free of charge. There is a leakage control team out constantly and the company spends £15M annually on leakage targets. The support for meters from customers are varied and therefore there is a testing period- if people do not like it- they can remain on the flat rates.

D7: Pay £30 per month- prefer flat rates, give me control over bills. Anglian water services are good- no problems, though bill is unclear. Do not know Ofwat or CCWater.

Appendix F: NWASCO Price-setting Schedule

	Step	Timeframe
1)	Before submitting a tariff proposal to NWASCO each CU is to undertake a **consumer consultation meeting** to explain the reasons for the planned tariff adjustments and get feedback from the consumers. Minutes of Meeting (MoM) shall be recorded and be attached to the tariff applications. The consumer consultation meeting shall consist of: • The Water Watch Groups (WWGs) in the area, ten domestic consumers representing a cross section of consumers, who will be picked from a list of people who have indicated their willingness to attend the consultation meeting to the WWG. The CU will therefore inform NWASCO at least four weeks ahead of the scheduled consumer meeting of their intention to have a tariff adjustment process, commence and publicise the same in an appropriate media that will reach at least 75% of the customers. • Where there is no WWG, the representation of the domestic consumers shall be increased to fifteen, picked from a list of people who have indicated their willingness to attend the consultation meeting to a community based organisation.	May - July Notify NWASCO of intention to submit a tariff adjustment proposal.
2)	The CU shall enter into **negotiations with big consumers** (>5% of revenues) before the submission of the tariff proposal to NWASCO. The results shall be included in the tariff proposals.	May - July
3)	Depending on the outcome of Steps 1) and 2), the CUs shall **adjust their tariff proposals** to take care of the concerns raised.	August
4)	**Submission of the tariff proposal** to NWASCO.	**Deadline: 30th September**
5)	**First screening** of submitted tariff proposal by Inspectorate	
6)	**Presentation** of the proposal by the CU before the NWASCO management. NWASCO provides feedback to the CUs	Oct 1-16
7)	**Adjustments** to be made or additional documents to be submitted by the CU if necessary.	Oct 17 - 25
8)	**Analysis** by inspectorate according to the procedure laid out in Chapter 6 including feedback if necessary.	Oct 17 – 31
9)	**Presentation** of the analysis of the proposal to the Administration and Finance Committee (**AFC**) by the NWASCO management at the latest, two weeks after receiving comments from the CUs.	November 10-20
10)	**Consideration and endorsement** of the AFC recommendations by the **Council**.	December 5 - 15
11)	**Communication of the Council's decision** to the CU indicating the following information: • Standard format showing proposed and approved tariff • conditionalities (if any) • explanations for deviations from proposals • effective date	December 15 - 21
12)	The CU shall: • if decision is accepted: advertise new tariffs - 30 days notice	
13)	The appeal will be considered by the NWASCO Council. In case the grounds for appeal are not accepted, the CU is advised to appeal to the Minister of Energy and Water Development for arbitration.	

Appendix G: Detailed Schedule of Ofwat, PR09 Price-setting process



Appendix H: Summary of NamWater Financial Statements (and related calculations) as collated from the Annual Reports.

Conversion Rates-Namibia					PPP (Int $)	
Year	Inflation rate	Indexed	Real	PPP (Int $)	England	Zambia
1997		100.00	2.11			
1998	6.2	106.19	1.98	2.809	0.652	836.77
1999	8.6	115.38	1.83	2.969	0.646	1064.96
2000	9.2	126.05	1.67	3.661	0.644	1292.79
2001	9.3	137.77	1.53	3.979	0.653	1522.9
2002	11.3	153.34	1.37	4.329	0.659	1786.62
2003	7.3	164.49	1.28	4.282	0.655	2090.05
2004	4.2	171.36	1.23	4.294	0.649	2414.81
2005	2.3	175.23	1.20	4.265	0.645	2660.91
2006	5.1	184.09	1.14	4.511	0.646	2839.26
2007	6.7	196.46	1.07	4.803	0.647	3082.42
2008	7.2	210.60	1.00	5.18	0.655	3292.12

Sources:

2008, World Development Indicators

Bank of Namibia

Bank of Namibia

PPP Figures- IMF @ 24 April 2009

Income Statement (Re-worked) from period 1999-2002

Convertion rates	Nominal	2008 Price Real 1.83	2008 PPP 5.18	Nominal	Real 1.67	2008 PPP 5.18	Nominal	Real 1.53	2008 PPP 5.18	Nominal	Real 1.37	2008 PPP 5.18
Items	**1999**	**1999**	**1999**	**2000**	**2000**	**2000**	**2001**	**2001**	**2001**	**2002**	**2002**	**2002**
Treated Water Volume Sold (m3)				N$'000			N$'000			N$'000 71,014		
Re-worked Toal operating income		0	0		0	0		0	0	**247,990**	340,606	65,754
		0	0		0	0		0	0		0	0
Revenue	**160,116,125**	**292,273,416**	**56,423**	**168,434**	**281,428**	**54,330**	**210,421**	**321,669**	**62,098**	**231,769**	**318,327**	**61,453**
Reworked Revenue	**160,116,125**	**292,273,416**	**56,423,439**	**168,434**	**281,428**	**54,330**	**210,421**	**321,669**	**62,098**	**231,769**	**318,327**	**61,453**
		0	0		0	0		0	0		0	0
Cost of Sales	140,308,696	256,117,252	49,443,485	150,661	251,732	48,597	173,853	265,768	51,306	214,427	294,508	56,855
		0	0		0	0		0	0		0	0
Gross Profit	**19,807,429**	**36,156,164**	**6,979,955**	**17,773**	**29,696**	**5,733**	**36,568**	**55,901**	**10,792**	**17,342**	**23,819**	**4,598**
Reworked Gross Profit	**19,807,429**	**36,156,164**	**-49,387,061**	**17,773**	**29,696**	**5,733**	**36,568**	**55,901**	**10,792**	**17,342**	**23,819**	**4,598**
		0	0		0	0		0	0		0	0
Other operating income	22,941,079	41,876,279	8,084,224	21,771	36,376	7,022	21,161	32,349	6,245	16,221	22,279	4,301
Reworked operating income	**22,941,079**	**41,876,279**	**8,084,224**	**21,771**	**36,376**	**7,022**	**21,161**	**32,349**	**6,245**	**16,221**	**22,279**	**4,301**
Administrative expenses	*41,150,697*	75,115,825	14,501,124	*36,453*	60,907	11,758	*36,638*	56,008	10,812	*46,585*	63,983	12,352
Other operating expenses	*5,977,276*	10,910,824	2,106,337	*2,921*	4,881	942		0	0	*0*	0	0
Expenses		**0**	**0**		**0**	**0**		**0**	**0**	**261,012**	**358,491**	**69,207**
Expenses		0	0		0	0		0	0	0	0	0
Reworked expenses		**0**	**0**		**0**	**0**		**0**	**0**	**261,012**	**358,491**	**69,207**
Advertising and community outreach		0	0		0	0		0	0	1,912	2,626	507
Auditors remuneration		0	0		0	0		0	0	195	268	52
Bad debts provision		0	0		0	0		0	0	6,669	9,160	1,768
Impairment charge for bad and doubtful debts		0	0		0	0		0	0	0	0	0
Bank charges		0	0		0	0		0	0	145	199	38
Changes in inventory, operating gains and asset clearings		0	0		0	0		0	0	-14	-19	-4
Clearings		0	0		0	0		0	0	0	0	0
Consultancy and contractor fees		0	0		0	0		0	0	7,142	9,809	1,894
Courier services		0	0		0	0		0	0	139	191	37
Depreciation		0	0		0	0		0	0	65,672	90,198	17,413
Depreciation and amortisation		0	0		0	0		0	0	0	0	0
Directors fees		0	0		0	0		0	0	65	89	17
Employment costs	78,214	142,771	27,562	89,471	149,492	28,860	91,552	139,955	27,018	105,049	144,281	27,854
Entertainment		0	0		0	0		0	0	226	310	60
Fleet services		0	0		0	0		0	0	17,602	24,176	4,667
Impairment of fixed assets*		0	0		0	0		0	0	28,469	39,101	7,549
Insurances		0	0		0	0		0	0	2,442	3,354	647
Maintenance		0	0		0	0		0	0	14,616	20,075	3,875
Materials and supplies		0	0		0	0		0	0	12,325	16,928	3,268
Membership and subscriptions		0	0		0	0		0	0	300	412	80
Other sundry expenses		0	0		0	0		0	0	107	147	28
Printing and stationery		0	0		0	0		0	0	928	1,275	246
Property charges		0	0		0	0		0	0	944	1,297	250
Security services		0	0		0	0		0	0	1,371	1,883	364
Training courses		0	0		0	0		0	0	559	768	148
Travel, subsistence and accomodation		0	0		0	0		0	0	2,215	3,042	587
Utilities		0	0		0	0		0	0	31,939	43,867	8,469
Recoupment of internal charges and project costs capitalised		0	0		0	0		0	0	-40,005	-54,946	-10,607
		0	0		0	0		0	0	0	0	0
Profit/(Loss) from Operations	**-4,379**	**-7,994**	**-1,543**	**170**	**284**	**54,835**	**21,091**	**32,242**	**6,224**	**-13,022**	**-17,885**	**-3,453**
Reworked Profit/ (loss) from operations	**89,876,481**	**164,059,092**	**31,671,639**	**78,918**	**131,860**	**25,456**	**94,367**	**144,258**	**27,849**	**80,148**	**110,081**	**21,251**
		0	0		0	0		0	0		0	0
Interest received	6,860,952	12,523,872	2,417,736	5,105	8,530	1,647	4,567	6,982	1,348	4,567	6,273	1,211
Reworked Interest received	**6,860,952**	**12,523,872**	**2,417,736**	**5,105**	**8,530**	**1,647**	**4,567**	**6,982**	**1,348**	**4,567**	**6,273**	**1,211**
Interest received		0	0		0	0		0	0	1,642	2,255	435
Interest received-trade debtors		0	0		0	0		0	0	2,925	4,017	776
		0	0		0	0		0	0		0	0
Finance Costs	10,416,581	19,014,261	3,670,707	4,105	6,859	1,324	8,300	12,688	2,449	22,234	30,538	5,895
Reworked Finance Costs	**10,416,581**	**19,014,261**	**3,670,707**	**4,105**	**6,859**		**8,300**	**12,688**	**2,449**	**-22,234**	**-30,538**	**-5,895**
Interest paid		0	0		0	0		0	0	-14,322	-19,671	-3,797
Profit/(loss) on foreign exchage transactions		0	0		0	0		0	0	-7,912	-10,867	-2,098
Gains on foreign exchange transactions		0	0		0	0		0	0	0	0	0
		0	0		0	0		0	0	0	0	0
Profit/(Loss) before Tax	**-7,935,094**	**-14,484,594**	**-2,796,254**	**1,170**	**1,955**	**377**	**17,443**	**26,665**	**5,148**	**-30,689**	**-42,150**	**-8,137**
		0	0		0	0		0	0		0	0
Reworked Profit/(loss) before tax	**17,273,154**	**31,530,138**	**6,086,899**	**9,380**	**15,673**	**57,806**	**33,958**	**51,911**	**10,021**	**13,779**	**18,925**	**3,653**
Taxation	0	0	0	3,647	6,094	1,176	-7,009	-10,715	-2,068	6,240	8,570	1,655
	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit/(Loss) for the Year	**-7,935,094**	**-14,484,594**	**-2,796,254**	**4,817**	**8,048**	**1,554**	**10,434**	**15,950**	**3,079**	**-24,449**	**-33,580**	**-6,483**
		0	0		0	0		0	0		0	0
Reworked Net Profit/(loss) for the year	**-7,935,094**	**-14,484,594**	**-2,796,254**	**4,817**	**8,048**	**1,554**	**10,434**	**15,950**	**3,079**	**-24,449**	**-33,580**	**-6,483**

Income Statement (Re-worked) from period 2003-2006

Convertion rates	Nominal	Real 1.28	2008 PPP 5.18	Nominal	Real 1.23	2008 PPP 5.18	Nominal	Real 1.20	2008 PPP 5.18	Nominal	Real 1.14	2008 PPP 5.18
Items	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2006**	**2006**	**2006**
	N$'000			N$'000			N$'000			N$'000		
Treated Water Volume Sold (m3)	64,575											
Re-worked Toal operating income	246,962	316,191	61,041	272,270	334,623	64,599	321,478	386,375	74,590	362,991	415,263	80,167
		0	0		0	0		0	0		0	0
Revenue	**236,885**	**303,289**	**58,550**	**263,466**	**323,803**	**62,510**	**314,547**	**378,045**	**72,982**	**349,979**	**400,377**	**77,293**
Reworked Revenue	**236,885**	**303,289**	**58,550**	**263,466**	**323,803**	**62,510**	**314,547**	**378,045**	**72,982**	**349,979**	**400,377**	**77,293**
		0	0		0	0		0	0		0	0
Cost of Sales	203,190	260,149	50,222		0	0		0	0		0	0
		0	0		0	0		0	0		0	0
Gross Profit	**33,695**	**43,141**	**8,328**		**0**	**0**		**0**	**0**		**0**	**0**
Reworked Gross Profit	**33,695**	**43,141**	**8,328**	**263,466**	**323,803**	**62,510**	**314,547**	**378,045**	**72,982**	**349,979**	**400,377**	**77,293**
		0	0		0	0		0	0		0	0
Other operating income	10,077	12,902	2,491	8,804	10,820	2,089	6,931	8,330	1,608	13,012	14,886	2,874
Reworked operating income	**10,077**	**12,902**	**2,491**	**8,804**	**10,820**	**2,089**	**6,931**	**8,330**	**1,608**	**13,012**	**14,886**	**2,874**
Administrative expenses	*51,181*	65,528	12,650	*37,385*	45,947	8,870	*40,998*	49,274	9,512	*60,923*	69,696	13,455
Other operating expenses	*0*	0	0	*283,119*	347,957	67,173	*243,011*	292,068	56,384	*252,458*	288,813	55,755
Expenses	**254,371**	**325,677**	**62,872**	**320,504**	**393,903**	**76,043**	**284,009**	**341,342**	**65,896**	**313,381**	**358,509**	**69,210**
Expenses	0	0	0	334,493	411,096	79,362	0	0	0	0	0	0
Reworked expenses	**254,371**	**325,677**	**62,872**	**320,504**	**393,903**	**76,043**	**284,009**	**341,342**	**65,896**	**313,381**	**358,509**	**69,210**
Advertising and community outreach	1,049	1,343	259	660	811	157	571	686	132	855	978	189
Auditors remuneration	594	761	147	339	417	80	249	299	58	325	372	72
Bad debts provision	13,464	17,238	3,328	0	0	0	24,713	29,702	5,734	30,092	34,425	6,646
Impairment charge for bad and doubtful debts	0	0	0	29,986	36,853	7,115	0	0	0	194	222	43
Bank charges	181	232	45	287	353	68	180	216	42	0	0	0
Changes in inventory, operating gains and asset clearings	0	0	0	0	0	0	-1	-1	0	-71	-81	-16
Clearings	0	0	0	23	28	5	0	0	0	0	0	0
Consultancy and contractor fees	4,493	5,752	1,111	2,601	3,197	617	2,838	3,411	658	2,107	2,410	465
Courier services	177	227	44	160	197	38	153	184	35	203	232	45
Depreciation	67,782	86,783	16,753	72,854	89,538	17,285	79,282	95,287	18,395	0	0	0
Depreciation and amortisation	0	0	0	0	0	0	0	0	0	78,843	90,197	17,412
Directors fees	234	300	58	80	98	19	57	69	13	48	55	11
Employment costs	100,530	128,711	24,848	96,876	119,062	22,985	92,322	110,959	21,421	105,475	120,664	23,294
Entertainment	247	316	61	115	141	27	49	59	11	77	88	17
Fleet services	18,006	23,054	4,450	14,391	17,687	3,414	11,632	13,980	2,699	11,719	13,407	2,588
Impairment of fixed assets*	9,829	12,584	2,429	56,194	69,063	13,333	336	404	78	6	7	1
Insurances	4,122	5,277	1,019	4,311	5,298	1,023	2,800	3,365	650	2,704	3,093	597
Maintenance	16,649	21,316	4,115	12,162	14,947	2,886	9,218	11,079	2,139	9,942	11,374	2,196
Materials and supplies	12,888	16,501	3,185	10,990	13,507	2,607	11,452	13,764	2,657	12,508	14,309	2,762
Membership and subscriptions	349	447	86	221	272	52	237	285	55	1,716	1,963	379
Other sundry expenses	421	539	104	179	220	42	179	215	42	118	135	26
Printing and stationery	380	487	94	434	533	103	588	707	136	310	355	68
Property charges	801	1,026	198	780	959	185	846	1,017	196	894	1,023	197
Security services	1,362	1,744	337	1,740	2,138	413	1,610	1,935	374	1,538	1,759	340
Training courses	723	926	179	198	243	47	363	436	84	568	650	125
Travel, subsistence and accomodation	1,770	2,266	437	1,255	1,542	298	1,102	1,324	256	1,267	1,449	280
Utilities	39,132	50,102	9,672	42,904	52,730	10,179	48,374	58,139	11,224	55,434	63,417	12,243
Recoupment of internal charges and project costs capitalised	-40,812	-52,253	-10,087	-29,236	-35,931	-6,937	-5,141	-6,179	-1,193	-3,491	-3,994	-771
	0	0	0	-297,108	-365,149	-70,492	0	0	0	0	0	0
Profit/(Loss) from Operations	**-7,409**	**-9,486**	**-1,831**	**-48,234**	**-59,280**	**-11,444**	**37,469**	**45,033**	**8,694**	**49,610**	**56,754**	**10,956**
Reworked Profit/ (loss) from operations	**94,953**	**121,571**	**23,469**	**592,774**	**404,724**	**78,132**	**605,487**	**349,672**	**67,504**	**676,372**	**773,771**	**149,377**
		0	0		0	0		0	0		0	0
Interest received	9,279	11,880	2,293	6,240	7,669	1,481	7,496	9,009	1,739	14,878	17,020	3,286
Reworked Interest received	**9,279**	**11,880**	**2,293**	**6,240**	**7,669**	**1,481**	**7,496**	**9,009**	**1,739**	**14,878**	**17,020**	**3,286**
Interest received	4,204	5,382	1,039	5,044	6,199	1,197	5,638	6,776	1,308	12,229	13,990	2,701
Interest received-trade debtors	5,075	6,498	1,254	1,196	1,470	284	1,858	2,233	431	2,649	3,030	585
		0	0		0	0		0	0		0	0
Finance Costs	24,604	31,501	6,081	27,150	33,368	6,442	17,076	20,523	3,962	21,697	24,821	4,792
Reworked Finance Costs	**-24,604**	**-31,501**	**-6,081**	**-27,150**	**-33,368**	**-6,442**	**20,134**	**24,198**	**4,672**	**-21,697**	**-24,821**	**-4,792**
Interest paid	-26,110	-33,429	-6,454	-27,973	-34,379	-6,637	18,605	22,361	4,317	-23,087	-26,412	-5,099
Profit/(loss) on foreign exchage transactions	1,506	1,928	372	0	0	0	0	0	0	0	0	0
Gains on foreign exchange transactions	0	0	0	823	1,011	195	1,529	1,838	355	1,390	1,590	307
	0	0	0	0	0	0	0	0	0	0	0	0
Profit/(Loss) before Tax	**-22,734**	**-29,107**	**-5,619**	**-69,144**	**-84,979**	**-16,405**	**27,889**	**33,519**	**6,471**	**42,791**	**48,953**	**9,450**
		0	0	-83,133	-102,171	-19,724		0	0		0	0
Reworked Profit/(loss) before tax	**26,474**	**33,895**	**6,543**	**-14,844**	**-18,243**	**-3,522**	**62,041**	**74,565**	**14,395**	**86,185**	**98,596**	**19,034**
Taxation	0	0	0	0	0	0	0	0	0	-593	-678	-131
	0	0	0	0	0	0	0	0	0	0	0	0
Net Profit/(Loss) for the Year	**-22,734**	**-29,107**	**-5,619**	**-69,144**	**-84,979**	**-16,405**	**27,889**	**33,519**	**6,471**	**42,198**	**48,275**	**9,319**
		0	0	-83,133	-102,171	-19,724		0	0		0	0
Reworked Net Profit/(loss) for the year	**-22,734**	**-29,107**	**-5,619**	**-69,144**	**-84,979**	**-16,405**	**27,889**	**33,519**	**6,471**	**42,198**	**48,275**	**9,319**

Notes to Income Statement- colour coded to match colors in Income Statement

2005 Annual Report-different figure compared to 2004 Annual report

Detailed income statement only available since 2002

Find out more about these

Detailed income statement items-Hidden

*- note in 2004 mentioned (as analyses in the Directors' Report- find out about this!!

Find out more about these-hidden

Have detailed items hidden

Administrative and other expenses are summed up under detailed income statement under expenes

Need clarification!!

Recorded and reworked not matching!

major hidden items for further calculations

Figure different from 2004 Annual Report

Not included in income statement- added from notes of Annual Report

Figures not adding up with detailed income statement info

Balance Sheet for period 1998-2002:

Convertion rates	Nominal	2008 Prices Real 1.98	PPP 5.18	Nominal	Real 1.83	PPP 4.27	Nominal	Real 1.67	PPP 5.18	Nominal	Real 1.53	PPP 5.18	Nominal	Real 1.37	PPP 5.18
Items	**1998**	**1998**	**1998**	**1999**	**1999**	**1999**	**2000**	**2000**	**2000**	**2001**	**2001**	**2001**	**2002**	**2002**	**2002**
							N$'000			N$'000			N$'000		
ASSETS												-2,851			-12,178
Non-current Assets	**954,731,563**	**1,893,487,378**	**365,538,104**	**960,208,713**	**1,752,749,643**	**410,961,229**		**0**	**0**			**-15,280**			
Property, plant and equipment	954,731,563	1,893,487,378	365,538,104	955,056,069	1,743,344,089	408,755,941	978,390	1634740.5	315,586.96	1,053,854.00	1,611,018.03	311,007.34	1,145,243.00	1,572,953.67	303,659.01
Intangible Assets	0	0	0	5,152,644	9,405,554	2,205,288	4,656	7779.4658	1501.827375	636	972	188	883	1,213	234
Deferred tax assets	0	0	0	0	0	0	29,098	48618.32	9385.775979	0	0	0	2,878	3,953	763
Total non-current assets	**0**	**0**	**0**	**0**	**0**	**0**	**1,012,144**	**1691138.2**	**326,475**	**1,054,490**	**1,611,990**	**311,195**	**1,149,004**	**1,578,119**	**304,656**
Reworked total non-current assets	**954,731,563**	**1,893,487,378**	**365,538,104**	**960,208,713**	**1,752,749,643**	**410,961,229**	**1,012,144**	**1691138.2**	**326474.5633**	**1,054,490**	**1,611,990**	**311,195**	**1,149,004**	**1,578,119**	**304,656**
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Current Assets	**64,389,772**	**127,702,095**	**24,652,914**	**75,935,290**	**138,611,065**	**32,499,664**		**0**	**0**		0	0		0	0
Inventories	243,441	482,808	93,206	209,369	382,179	89,608	250	417.71187	80.63935647	209	319	62	213	293	56
Accounts receiveable	46,203,298	91,633,465	17,689,858	41,562,412	75,867,363	17,788,362	25,923	43313.379	8361.656151	0	0	0	0	0	0
Trade and other receiveables	0	0	0	0	0	0	0	0	0	44,949	68,713	13,265	50,512	69,377	13,393
Funds at call	15,473,662	30,688,400	5,924,401	28,087,790	51,271,003	12,021,337	26,779	44743.624	8637.765308	58,367	89,225	17,225	28,575	39,247	7,577
Bank balances and cash	2,469,371	4,897,421	945,448	6,075,719	11,090,520	2,600,356	7,768	12979.143	2505.626084	4,955	7,575	1,462	20,172	27,706	5,349
Total current assets	**0**	**0**	**0**	**0**	**0**	**0**	**60,720**	**101453.86**	**19,585.69**	**108,480**	**165,832**	**32,014**	**99,472**	**136,622**	**26,375**
Reworked total current assets	**64,389,772**	**127,702,095**	**24,652,914**	**75,935,290**	**138,611,065**	**32,499,664**	**60,720**	**101453.86**	**19585.6869**	**108,480**	**165,832**	**32,014**	**99,472**	**136,622**	**26,375**
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Total Assets	**1,019,121,335**	**2,021,189,472**	**390,191,018**	**1,036,144,003**	**1,891,360,708**	**443,460,893**	**1,072,864**	**1792592.1**	**346060.2502**	**1,162,970**	**1,777,823**	**343,209**	**1,248,476**	**1,714,741**	**331,031**
Reworked total assets	**1,019,121,335**	**2,021,189,472**	**390,191,018**	**1,996,352,716**	**3,644,110,351**	**854,422,122**	**1,072,864**	**1792592.1**	**346060.2502**	**1,162,970**	**1,777,823**	**343,209**	**1,248,476**	**1,714,741**	**331,031**
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
EQUITY AND LIABILITIES	0	**0**	**0**		**0**	**0**		**0**	**0**		0	0		0	0
0	0	**0**	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Capital and reserves	**959,054,444**	**1,902,060,804**	**367,193,205**	**951,119,350**	**1,736,158,065**	**407,071,059**		**0**	**0**		0	0		0	0
Share capital	959,054,444	1,902,060,804	367,193,205	959,054,444	1,750,642,659	410,467,212	959,054	1602432.9	309349.9895	959,054	1,466,098	283,031	959,054	1,317,229	254,291
Development reserve	0	0	0	0	0	0	0	0	0	10,000	15,287	2,951	10,000	13,735	2,651
Accumulated loss	0	0	0	-7,935,094	-14,484,594	-3,396,153	-3,118	-5209.7024	-1005.734054	-6,627	-10,131	-1,956	-31,076	-42,682	-8,240
Ordinary shareholders interest	**0**	**0**	**0**	**0**	**0**	**0**	**955,936**	**1597223.2**	**308344.2555**	**962,427**	**1,471,254**	**284,026**	**937,978**	**1,288,282**	**248,703**
Reworked capital and reserves/ordinary shareholders interest	**959,054,444**	**1,902,060,804**	**367,193,205**	**951,119,350**	**1,736,158,065**	**407,071,059**	**955,936**	**1597223.2**	**308344.2555**	**962,427**	**1,471,254**	**284,026**	**937,978**	**1,288,282**	**248,703**
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Non-current liabilities	**0**	**0**	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Deferred tax liability	0	0	0		0	0	25,451	42524.739	8,209.41	3,362	5,139	992	0	0	0
Deferred revenue	0	0	0		0	0	0	0	0	34,400	52,587	10,152	101,731	139,724	26,974
Long term liabilities	36,588,220	72,564,201	14,008,533	61,524,584	112,305,993	26,332,003	56,737	94798.873	18,301	110,435	168,821	32,591	139,850	192,079	37,081
Post retirement medical provision	0	0	0		0	0	0	0	0	0	0	0		0	0
Total non-current liabilities	**0**	**0**	**0**		**0**	**0**	**82,188**	**137323.61**	**26,510**	**148,197**	**226,548**	**43,735**	**241,581**	**331,804**	**64,055**
		0	0		0	0		0	0		0	0		0	0
Reworked total non-current liabilities	**36,588,220**	**72,564,201**	**14,008,533**	**61,524,584**	**112,305,993**	**26,332,003**	**82,188**	**137323.61**	**26510.34972**	**148,197**	226,548	43,735	**241,581**	331,804	64,055
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Current liabilities	**23,478,671**	**46,564,468**	**8,989,280**	**23,500,069**	**42,896,650**	**10,057,831**		**0**	**0**		0	0		0	0
Account payable	21,381,855	42,405,922	8,186,472	20,338,256	37,125,128	8,704,602	30,935	51687.666	9978.31397		0	0		0	0
Trade and other payables	0	0	0	0	0	0	0	0	0	46,364	70,876	13,683	65,227	89,587	17,295
Current portion of long term liabilities	958,325	1,900,614	366,914	2,507,450	4,577,059	1,073,167	2,850	4761.9153	919.2886638	3,242	4,956	957	3,690	5,068	978
Bank overdraft	1,138,491	2,257,931	435,894	654,363	1,194,464	280,062	955	1595.6593	308.0423417	2,740	4,189	809	0	0	0
Total current liabilities	**0**	**0**	**0**	**0**	**0**	**0**	**34,740**	**58045.241**	**11205.64498**	**52,346**	**80,021**	**15,448**	**68,917**	**94,655**	**18,273**
Reworked current liabilities	**23,478,671**	**46,564,468**	**8,989,280**	**23,500,069**	**42,896,650**	**10,057,831**	**34,740**	**58045.241**	**11205.64498**	**52,346**	**80,021**	**15,448**	**68,917**	**94,655**	**18,273**
		0	**0**		**0**	**0**		**0**	**0**		0	0		0	0
Total Liabilities	**60,066,891**	**119,128,669**	**22,997,812**	**85,024,653**	**155,202,643**	**36,389,834**	**116,928**	**195368.85**	**37715.99469**	**200,543**	**306,568**	**59,183**	**310,498**	**426,459**	**82,328**
Total equity and liabilities	**1,019,121,335**	**2,021,189,472**	**390,191,018**	**1,036,144,003**	**1,891,360,708**	**443,460,893**	**1,072,864**	**1792592.1**	**346060.2502**	**1,162,970**	**1,777,823**	**343,209**	**1,248,476**	**1,714,741**	**331,031**
Reworked total equity and liabilities	**1,019,121,335**	**2,021,189,472**	**390,191,018**	**1,036,144,003**	**1,891,360,708**	**443,460,893**	**1,072,864**	**1792592.1**	**346060.2502**	**1,162,970**	**1,777,823**	**343,209**	**1,248,476**	**1,714,741**	**331,031**

Balance Sheet for period 2003-2006:

Convertion rates	Nominal	Real 1.28	PPP 5.18	Nominal	Real 1.23	PPP 5.18	Nominal	Real 1.20	PPP 5.18	Nominal	Real 1.14	PPP 5.18
Items	**2003**	**2003**	**2003**	**2004**	**2004**	**2004**	**2005**	**2005**	**2005**	**2006**	**2006**	**2006**
	N$'000			N$'000			N$'000			N$'000		
ASSETS												
			-8,620			-34,925			739			6,246
Non-current Assets			**-15,345**			**-26,188**			**-17,327**			**-24,950**
Property, plant and equipment	1,165,513.00	1,492,233.84	288,076.03	1,104,979.00	1,358,032.86	262,168.51	1,056,339.00	1,269,582.30	245,093.11	996,319.00	1,139,791.59	220,036.99
Intangible Assets	2,121	2,716	524	1,149	1,412	273	155	186	36	791	904.9061093	174.692299
Deferred tax assets	2,878	3,685	711	2,878	3,537	683	2,878	3,459	668	2,878	3292.439675	635.606115
Total non-current assets	**1,170,512**	**1,498,634**	**289,312**	**1,109,006**	**1,362,982**	**263,124**	**1,059,372**	**1,273,228**	**245,797**	**999,988**	**1143988.939**	**220,847**
Reworked total non-current assets	**1,170,512**	**1,498,634**	**289,312**	**1,109,006**	**1,362,982**	**263,124**	**1,059,372**	**1,273,228**	**245,797**	**999,988**	**1143988.939**	**220847.285**
		0	0		0	0		0	0		0	0
Current Assets		0	0		0	0		0	0		0	0
Inventories	344	440	85	263	323	62	214	257	50	259	296.2966907	57.2001333
Accounts receiveable	0	0	0	0	0	0	0	0	0	0	0	0
Trade and other receiveables	53,126	68,018	13,131	44,764	55,016	10,621	49,551	59,554	11,497	47,858	54749.67962	10569.4362
Funds at call	50,337	64,448	12,442	39,705	48,798	9,420	85,359	102,590	19,805	206,649	236407.0071	45638.4184
Bank balances and cash	30,110	38,551	7,442	17,952	22,063	4,259	47,743	57,381	11,077	78,603	89922.04161	17359.4675
Total current assets	**133,917**	**171,457**	**33,100**	**102,684**	**126,200**	**24,363**	**182,867**	**219,782**	**42,429**	**333,369**	**381375.025**	**73,624.52**
Reworked total current assets	**133,917**	**171,457**	**33,100**	**102,684**	**126,200**	**24,363**	**182,867**	**219,782**	**42,429**	**333,369**	**381375.025**	**73624.5222**
		0	0		0	0		0	0		0	0
Total Assets	**1,304,429**	**1,670,091**	**322,411**	**1,211,690**	**1,489,182**	**287,487**	**1,242,239**	**1,493,010**	**288,226**	**1,333,357**	**1525363.964**	**294471.808**
Reworked total assets	**1,304,429**	**1,670,091**	**322,411**	**1,211,690**	**1,489,182**	**287,487**	**1,242,239**	**1,493,010**	**288,226**	**1,333,357**	**1525363.964**	**294471.808**
		0	0		0	0		0	0		0	0
EQUITY AND LIABILITIES		0	0		0	0		0	0		0	0
0		0	0		0	0		0	0		0	0
Capital and reserves		0	0		0	0		0	0		0	0
Share capital	959,054	1,227,900	237,046	959,054	1,178,689	227,546	959,054	1,152,658	222,521	959,054	1097160.333	211807.014
Development reserve	10,000	12,803	2,472	0	0	0	0	0	0	0	0	0
Accumulated loss	-53,810	-68,894	-13,300	-112,954	-138,822	-26,800	-99,054	-119,050	-22,983	-56,856	-65043.41562	-12556.6439
Ordinary shareholders interest	**915,244**	**1,171,809**	**226,218**	**846,100**	**1,039,867**	**200,747**	**860,000**	**1,033,608**	**199,538**	**902,198**	**1032116.918**	**199250.37**
Reworked capital and reserves/ordinary shareholders interest	**915,244**	**1,171,809**	**226,218**	**846,100**	**1,039,867**	**200,747**	**860,000**	**1,033,608**	**199,538**	**902,198**	**1032116.918**	**199250.37**
		0	0		0	0		0	0		0	0
Non-current liabilities		0	0		0	0		0	0		0	0
Deferred tax liability		0	0		0	0		0	0		0	0
Deferred revenue	114,690	146,840	28,348	111,336	136,833	26,416	119,312	143,398	27,683	166,677	190678.9325	36810.6047
Long term liabilities	199,196	255,035	49,235	206,391	253,657	48,969	197,120	236,913	45,736	177,970	203598.1546	39304.663
Post retirement medical provision	0	0	0	13,989	17,193	3,319	16,250	19,530	3,770	16,250	18590.04333	3588.81145
Total non-current liabilities	**313,886**	**401,876**	**77,582**	**317,727**	**390,490**	**75,384**	**332,682**	**399,841**	**77,189**	**360,897**	**412867.1304**	**79,704**
		0	0	**331,716**	407,683	78,703		0	0		0	0
Reworked total non-current liabilities	**313,886**	401,876	77,582	**331,716**	407,683	78,703	**332,682**	399,841	77,189	**360,897**	412867.1304	79704.0792
		0	0		0	0		0	0		0	0
Current liabilities		0	0		0	0		0	0		0	0
Account payable		0	0		0	0		0	0		0	0
Trade and other payables	62,580	80,123	15,468	31,794	39,075	7,543	26,496	31,845	6,148	39,949	45701.76253	8822.73408
Current portion of long term liabilities	12,719	16,284	3,144	16,069	19,749	3,813	23,061	27,716	5,351	30,313	34678.15283	6694.6241
Bank overdraft	0	0	0	0	0	0	0	0	0		0	0
Total current liabilities	**75,299**	**96,407**	**18,611**	**47,863**	**58,824**	**11,356**	**49,557**	**59,561**	**11,498**	**70,262**	**80379.91537**	**15517.3582**
Reworked current liabilities	**75,299**	**96,407**	**18,611**	**47,863**	**58,824**	**11,356**	**49,557**	**59,561**	**11,498**	**70,262**	**80379.91537**	**15517.3582**
		0	0		0	0		0	0		0	0
Total Liabilities	**389,185**	**498,283**	**96,194**	**365,590**	**449,315**	**86,740**	**382,239**	**459,402**	**88,688**	**431,159**	**493247.0458**	**95221.4374**
Total equity and liabilities	**1,304,429**	**1,670,091**	**322,411**	**1,211,690**	**1,489,182**	**287,487**	**1,242,239**	**1,493,010**	**288,226**	**1,333,357**	**1525363.964**	**294471.808**
Reworked total equity and liabilities	**1,304,429**	**1,670,091**	**322,411**	**1,211,690**	**1,489,182**	**287,487**	**1,242,239**	**1,493,010**	**288,226**	**1,333,357**	**1525363.964**	**294471.808**

Notes to Balance sheet

Notes

2005 Annual Report-added figure that was not in 2004 Annual Report

Bank overdraft stopped from 2002??

Share capital always the same since 1998?

Difference between capital and reserves and ordinary shareholders interest??

Find out more about it

Reworked calculations

Additional calculations

Recorded and reworked not matching!

Financial Ratios calculated based on financial statement figures above.

NamWater Financial Ratios											
	Equations	**Target range:**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Profitability ratios [%]											
Return on Fixed Assets (ROFA):	Profit before interest and tax (PBIT)/(average) Net Fixed Assets x 100			0.000	0.017	2.000	-1.133	-0.633	-4.349	3.537	4.961
Return on Capital Employed (ROCE):	Profit before interest and tax x 100/Capital Employed (total assets less current liabilities)	6 to 8		0.000	0.016	1.899	-1.104	-0.603	-4.144	3.142	3.928
Net Profit Margin:	Profit before interest and tax x 100/Sales or Turnover			-0.003	0.101	10.023	-5.619	-3.128	-18.307	11.912	14.175
Net Asset Margin:	Sales or Turnover/Capital Employed			0.158	0.162	0.189	0.189	0.193	0.226	0.264	0.277
Gross Profit Margin:	Gross profit x 100/ Sales or Turnover			12.371	10.552	17.378	7.482	14.224			
Efficiency ratios											
Debtor days or Debtors' ratio:	Debtors x 365/ Credit Sales (or Turnover)	90		95	56	78	80	82	62	57	50
Creditor days or Creditors' ratio:	Trade creditors x 365 / Cost of Sales	60		53	75	97	111	112			
Fixed Assets turnover:	Sales or Turnover/Fixed Assets			0.167	0.166	0.200	0.202	0.202	0.238	0.297	0.350
Operating ratio:	(Operating expenses-Depreciation)/Operating income	0.6					0.79	0.76	0.91	0.64	0.86
Liquidity Ratios											
Current ratio:	Current Assets/Current Liabilities	1 to 2	1.968	3.231	1.748	2.072	1.443	1.778	2.145	3.690	4.745
Quick ratio:	Current Assets less Stock/Current Liabilities		2.732	3.222	1.741	2.068	1.440	1.774	2.140	3.686	4.741
Financial Gearing ratios											
Gearing:	Long-term debt x 100/Capital Employed		0.037	0.061	0.055	0.099	0.119	0.162	0.177	0.165	0.141
Debt equity ratio:	Long-term debt x 100/ Share capital and reserves	>100	0.038	0.065	0.059	0.115	0.149	0.218	0.244	0.229	0.197
Interest cover and interst gearing:	Profit before interest and tax/interest charges						0.91	0.28	1.72	2.01	-2.15
Investors ratios											
Return on Equity:	Earnings after tax and preference dividends/Shareholders' funds			-0.834	0.504	1.084	-2.607	-2.484	-8.172	3.243	4.677

Sources:

For Equations: Watson, D and Head, A, 2007. Corporate Finance. Principles and Practice. 4th Edition. Pearson Education Limited, England

For Target Ranges: Franceys, R, 2006. Lecture Notes. Cranfield University

Appendix I: National Bulk Tariff increases (and Windhoek)-1998-2006

Recorded Bulk Water Tariffs and % increases												
	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
National tariffs (annual averages) (N$)			2.00	2.40	2.59	3.11	3.25	3.67	4.11	4.60	5.16	5.75
Real tariffs (incl inflation)			4.21	4.76	4.73	5.20	4.97	5.04	5.26	5.65	6.20	6.58
Real tariffs converted to US$ [2007:7.1]			0.60	0.67	0.67	0.74	0.70	0.71	0.75	0.80	0.88	0.93
Real tariffs converted to PPP [2008:5.18]			0.81	0.92	0.91	1.00	0.96	0.97	1.02	1.09	1.20	1.27
National tariff % increases	30	35	20	20	12	12	17	18	13	12	12	11.5
Windhoek (Von Bach Scheme Tariff increase %)		?		20	8	20	5	13	12	12	12	11.5

Sources:

DWA (2007). Terms of reference for tender to review and evaluate current tariff system.

Government Gazette July 2001; Government Gazette June 1998; Government Gazette June 1999; Government Gazette June 2003; Government Gazette June 2006; Government Gazette March 2000; Government Gazette March 2005; Government Gazette October 2002

Self calculated- not provided in June 2006 Gazette

Appendix J: Cost implications for sanitation systems for low-income areas in Windhoek

Area Name	*# of Houses*	*No. of Toilets*	*#Toilet/ House ratio*	*Comments*	*#Toilets needed @ 5 HH/Toilet*	*#Toilets needed @ 10 HH/Toilet*	*Shortfall of Toilets @ 5 & 10 HH/Toilet*	Cost Implications @ 5 HH/ @ 10 HH @ cost of N$ 8200.00 / Unit
Epandulo	**205**	**0**		**No toilets**	**40**	**20**	**40/20**	**328 000.00/ 164 000.00**
Freedom Land A	*88*	*4*	*46*		*18*	*9*	*14/5*	*114 800.00/ 41 000.00*
Freedom Land B	*90*	*4*	*57*	*Only 2 toilets are working*	*18*	*9*	*14/5*	*114 800.00/ 41 000.00*
Greenwell Matongo C	*482*	*16*	*30*		*96*	*48*	*80/32*	*656 000.00/ 262 400.00*
Greenwell Matongo D	380	16	24	4 toilets not working	76	38	60/22	492 000.00/ 180 400.00
Jonas Haiduwa	**339**	**0**		**No toilets**	**66**	**33**	**66/33**	**541 200.00/ 270 600.00**
Kahumba ka Ndola A	179	12	15		70	35	58/23	475 600.00/ 188 600.00
Kahumba ka Ndola B	120	12	10		48	24	36/12	295 200.00/ 98 400.00
Kapuka Nauyala	50	2	25		10	5	8/3	65 600.00/ 24 600.00
Okandundu	355	4	89	Not yet open	70	35	66/31	541 200.00/ 254 200.00
Okatunda	**384**	**0**		**No toilets**	**76**	**38**	**76/38**	**623 200.00/ 311 600.00**
Omuramba	**160**	**0**		**No toilets**	**32**	**16**	**32/16**	**262 000.00/131 200.00**
Omuthiya	250	6	42		50	25	44/19	360 800.00/ 155 800.00
Ondelitotela A	**328**	**0**		**No toilets**	**65**	**32**	**65/32**	**533 000.00/ 262 400.00**
Ondelitotela B	**517**	**0**		**No toilets**	**100**	**50**	**100/50**	**820 000.00/ 410 000.00**
One Nation 1,2 and 3	**1081**	**0**		**No toilets**	**216**	**108**	**216/108**	**1 771 200.00/ 885 600.00**
Onguo Ye Pongo 2	356	6	59		71	35	65/29	533 000.00/ 237 800.00
Onyika 2	420	10	42		84	42	74/32	606 800.00/ 262 400.00
Okahandja Park D	**78**	**0**		**No toilets**	**15**	**7**	**15/7**	**123 000.00/ 57 400.00**
Oohambo dha Nehale	**480**	**0**		**No toilets**	**96**	**48**	**96/48**	**787 200.00/ 393 600.00**
Havana level 1	940	146	6		188	94	42/+52	344 400.00
Havana level 2	416	155	3		83	41	-/-	
Samuel Maharero	425	4	106		85	42	81/38	664 200.00/ 311 600.00
TOTAL								

Source: Water and Sanitation Committee. 2007. Draft Preliminary Report on current situation on sanitation facilities in informal settlements, with particular reference to dry sanitation units in Hanavana and Okahandja Park areas. City of Windhoek. Namibia

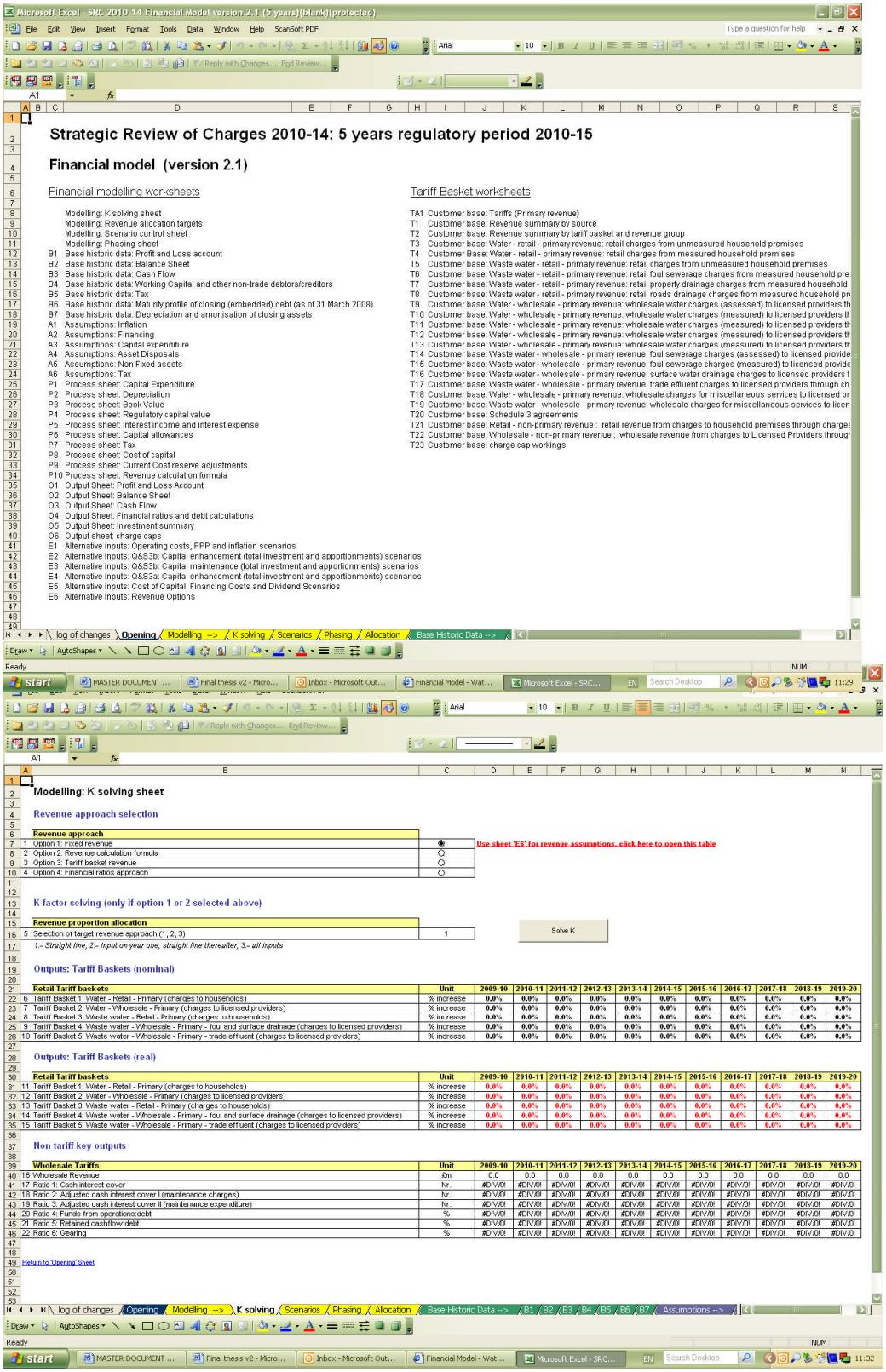
Appendix K: Experiences from Electricity Control Board as described by ECB interviewees (2007,2008)

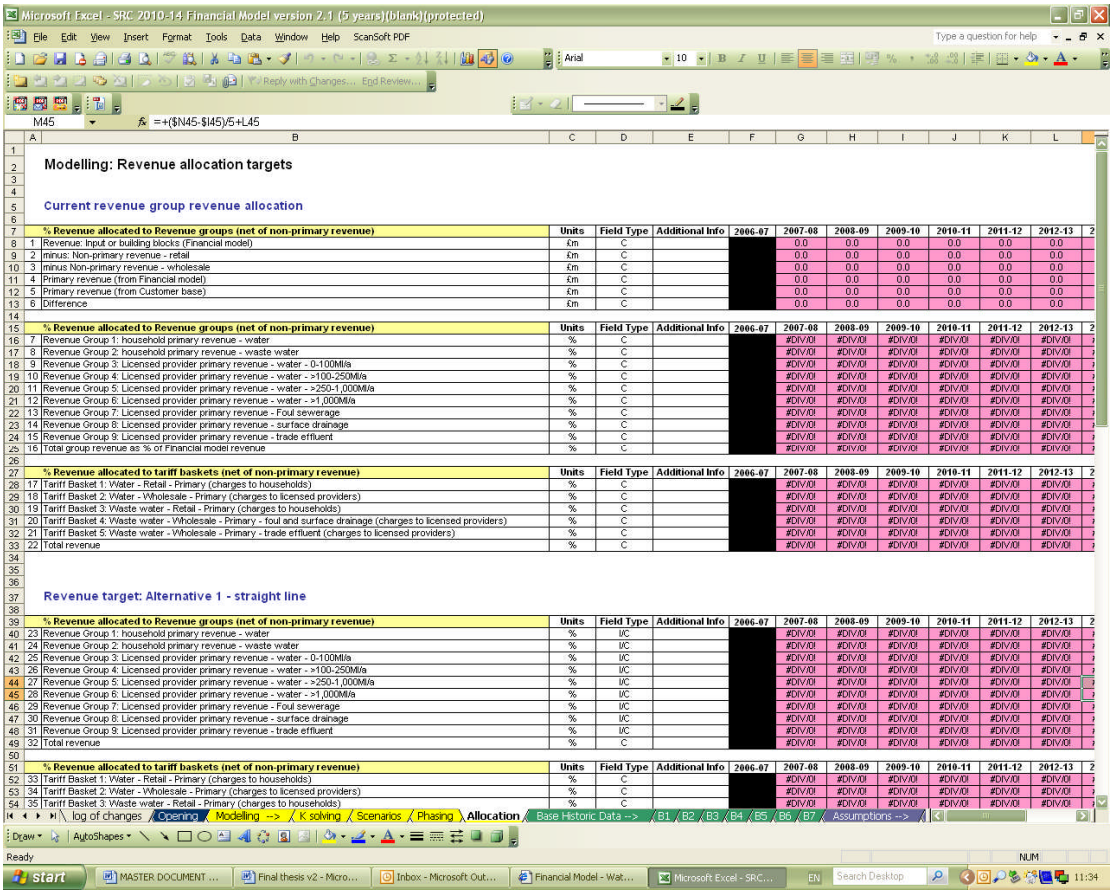
Official records show that the Electricity Act of 2000 established the Electricity Control Board (ECB) as an independent electricity industry regulator reporting to the Ministry of Mines and Energy, based on recommendations from a feasibility study that stated that electricity tariffs were not cost reflective and hence steady increases in the tariff are needed until 2010 to get tariffs up to date (ECB, 2006b: 1-3). The ECB started implementing its tariff determination methodology in 2003 and is primarily responsible for ensuring that fair tariffs are charged at all three operational levels (generations, transmission and distribution) to end users as well to ensure financial and environmental sustainability. It generates its income primarily from the levies (0.006 c/KWH in 2007/08) from utilities that are paid by their clients. The electricity distribution function of Local Authorities (receiving royalty surcharges as a result) and private distributors within regions have been transformed into 5 Regional Electricity Distributors (REDs) which are licence holders and receives bulk supply from NamPower (para-statal) following the single buyer market structure model (ECB, 2006a: 13). Tariff calculations are reviewed based on "rate of return minus the weighted average cost of capital", using an Asset Register (Namibia Electricity Network Assets (NENA)) database. The ECB facilitates the tariff determination process through supporting local authorities to ring fence their electricity undertakings (ECB, 2006b: 5). Various quality of supply and service standards are established and are also used for benchmarking purposes through the SADC Regional Electricity Regulator Association (RERA) (ECB, 2006a: 27). Except for the pre-paid electricity (includes paying unit charge and levy) system that is targeted for the urban poor, there are no pro-poor tariffs established yet (this is being investigated). The ECB makes use of multi- and single-part tariff system which includes basic fix charges, unit charges and levies while the latter includes only unit charges and levies. In this regard, the general public perception towards ECB is negative due to association to electricity price increases.

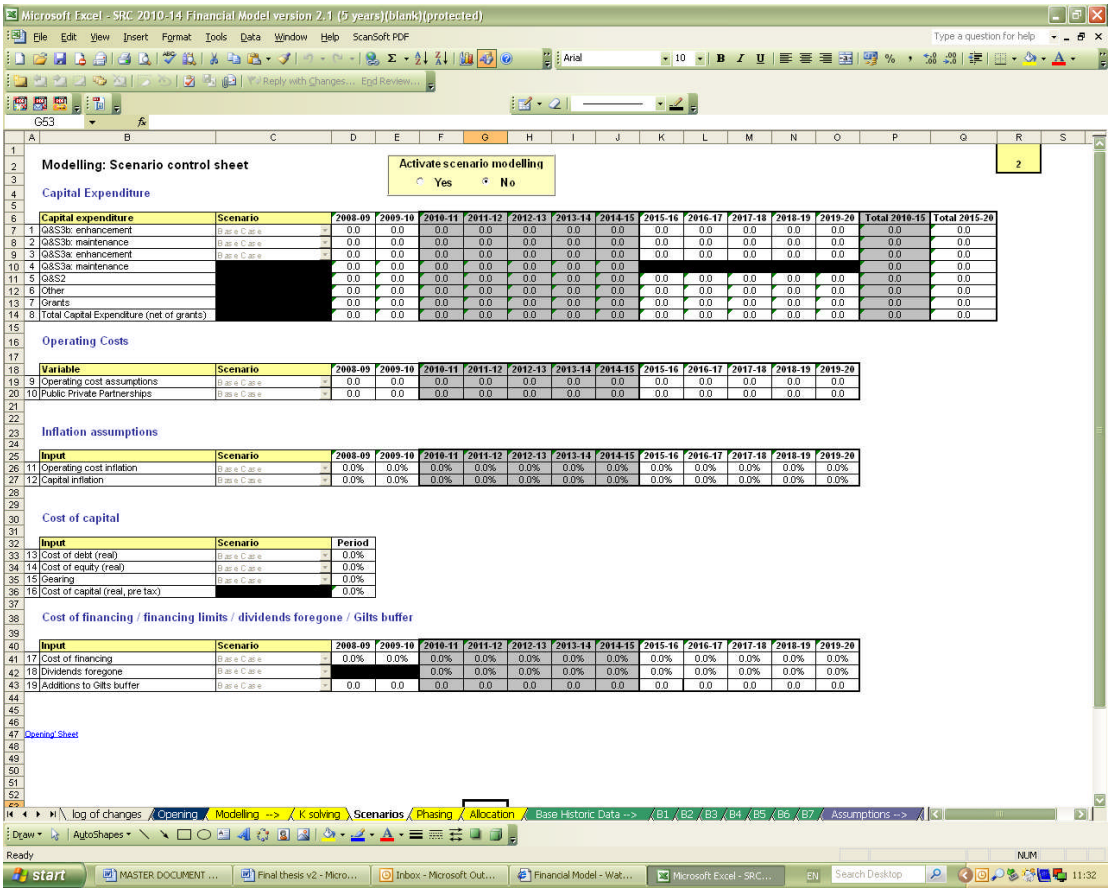
In the light of discussing the establishment of a potential water regulator, two interviewees explained the establishment process (late 1990s) of the ECB as an intensive process of stakeholder consultations and staff training (with support from external consultants), with special focus on local authorities and decision makers (politicians). The entire process (tariff study) was donor driven (Norwegian) and the initial financial support to establish the ECB was government funded. The interviewees emphasised that the Electricity Act (2000) forms the backbone of the process with clear guidelines on operations (including enforcement mechanisms, quality and supply service standards), hence there is very minimal political interference such that "when it comes to tariff determination, the regulator has the final say". The interviewees further mention that the process is very slow in the beginning, especially in terms of developing guidelines and procedures, however once the stakeholders have a clear understanding on the basics (and principles) as to why and how things are done it becomes easier and the benefits are clearly visible. One interviewee indicated that the strength of the reform process was the "politician targeted approach". There were various ministers' workshops where the tariff methodology (included calculating price paths and forecasts) were explained and refined. Furthermore, the training with external consultants had an element of 'local shadow', which ensured that locals (Namibians from MME and other research institutions) were trained during the studies for continuity and sustainability purposes. The tariff determination process of the ECB also includes strengthening the debt collection process of the utilities, through outsourcing of ECB tariff technicians and analysts to facilitate the process. However, the interviewees shared sentiments that it is "easier" to deal with electricity compared to water sector, since the latter is also a social responsibility which makes it highly politically motivated and hence the process is very sensitive.

Appendix L: Water Industry Commission of Scotland financial model examples.

Source: http://www.watercommission.co.uk/view_Financial_Model.aspx




Microsoft Excel - SRC 2010-14 Financial Model version 2.1 (5 years)(blank)(protected)
Modelling: Revenue allocation targets
Current revenue group revenue allocation
Revenue target: Alternative 1 - straight line
log of changes
Opening
Modelling -->
K solving
Scenarios
Phasing
Allocation
Base Historic Data -->
Assumptions -->


Microsoft Excel - SRC 2010-14 Financial Model version 2.1 (5 years)(blank)(protected)
Modelling: Scenario control sheet
Activate scenario modelling
Yes
No
Capital Expenditure
Operating Costs
Inflation assumptions
Cost of capital
Cost of financing / financing limits / dividends foregone / Gilts buffer
'Opening' Sheet
log of changes
Opening
Modelling -->
K solving
Scenarios
Phasing
Allocation
Base Historic Data -->
Assumptions -->