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A Decade of Implementing Water Services Reform in Zambia: Review of Outcomes, Challenges and Opportunities

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ABSTRACT: Zambia has been implementing water sector reforms for the past two decades. These reforms initiated major changes in the organisation and management of water supply services starting from the 1990s culminating in the full-scale commercialisation of water services in major cities and towns. This paper reviews the outcomes of implementing these reforms, focusing on the results of the commercialisation of water services in the last 10 years. Data presented in this paper show that there have been positive developments, but many serious challenges as well. Evidence from the review of the past 10 years suggests that much progress has been made in areas related to management and operation performance, while little success has been recorded in core areas such as expanding the network, service coverage, hours of service, and reducing the affordability burden, especially among lower-income households. The key challenge for the water services sector is to find a workable infrastructural development funding formula that will make it possible to sustain and build on the foundation laid over the past decade.

KEYWORDS: Zambia, commercialisation, water services reforms, water utilities, low-income areas

INTRODUCTION

The water supply and sanitation sector (WSS)¹ in Zambia has undergone substantial reforms since the early 1990s. Although water sector reforms had been on-going since the 1970s, major shifts in the organisation and management of water services began in the 1990s culminating in the full-scale commercialisation of water services in major cities and towns, from 2000 onwards. This paper examines major outcomes of implementing these reforms, focusing on how the institutional and management shifts are shaping the water services landscape. The paper focuses on the 10-year period (2000-2010), highlighting the key results of the reforms as well as the challenges that remain to be addressed and the opportunities that the reforms have created. Various performance indicators of water services for the past 10 years are presented. Evidence from this period suggests that, overall, there have been noticeable improvements with regard to operational and management indicators such as collection efficiency, billing, response to customer complaints, metering ratio, addressing overstaffing and achieving a fairly predictable service. However, there are still serious challenges regarding infrastructural development and affordability, especially in low-income and peri-urban areas. One of the key lessons from these water services reforms is that managerial restructuring unaccompanied by adequate resources only brings about superficial changes, failing to address the 'real issues'. Two central issues which stand out in the review are, first, the perpetual problem of inadequate or lack of infrastructural investment that, in turn, affects the capacity to extend coverage beyond the existing network and, second, the concern of spatial binaries that the reforms in water services have created resulting in huge disparities between rural, peri-urban, and low-income urban communities on the one

¹ This paper focuses on urban and peri-urban water supply mainly because of lack of data on sanitation, and also because the reform process has emphasised more on water supply and much less on sanitation.

hand, and high-income urban areas on the other. Implementation of reforms in the water services sector has reinforced colonial development patterns with better water services concentrated along the so-called 'line of rail' from Livingstone to the Copperbelt (see map of Zambia in figure 1). Water services in rural areas² (wherever services are available) are provided by the National Rural Water Supply and Sanitation Unit (RWSSU) under the Department of Infrastructure and Support Services (DISS) in the Ministry of Local Government and Housing.

The paper is organised as follows. Section two provides a broad overview of the reform process including the factors that are widely believed to have triggered and driven the reform process. Section three briefly outlines the core features of the reforms in the water sector, focusing on commercialisation of water services. Section four presents data on various performance indicators of water services over the last 10 years. Performance indicators for water utilities from other Sub-Saharan African (SSA) countries with similar socio-economic conditions and organisational arrangements are presented to contextualise the progress made and the challenges facing WSS in Zambia. Here the paper acknowledges lack of data as the main constraint to accessing the outcome of the reforms. Section five discusses the main outcome of the reforms, highlighting the challenges that remain to be addressed and the opportunities the reforms have created. Some concluding remarks are offered in section six.

WATER SERVICES REFORMS IN ZAMBIA

Water services sector reforms should be seen in the political and economic context of the time, not just in Zambia but globally (Chitonge, 2010). While reform processes unfold in the unique local (domestic) conditions, the underlying dynamics of these transformations have been shaped by global forces and events (Harvey, 2000; Peet, 2003; Harvey, 2005). Commercialisation of public services, in particular, is not something unique to Zambia; it has been part of the broader politico-economic restructuring embarked on by the lead countries (Britain and USA) since the 1980s. From the early 1980s to mid 1990s, this restructuring was implemented mainly through privatisation of public assets. But, starting from the late 1990s, there has been a noticeable shift from the language of privatisation of public utilities, towards either commercialisation and/or corporatisation (McDonald and Ruiters, 2005; Baietti et al., 2006). In the water services sector, the general trend in the last decade has been to commercialise state-owned utilities (corporatisation) as opposed to a complete divestiture (privatisation) of public assets (Shirley, 1999; Smith, 2003; IMF, 2004). In later years, corporatisation or commercialisation has largely been implemented in the form of public-private partnerships (PPPs) or private sector participation (PSP), with the private sector taking up less risky components of the partnerships in the form of management contracts, leases and others. According to the IMF report, by the late 1990s, privatisation had lost much of its momentum, and "PPPs began to emerge as a means of obtaining private- sector capital and management expertise... both to carry on where privatisation had left off and as an alternative where there had been obstacles to privatisation" (IMF, 2004). In many countries, especially low-income countries (LICs) such as Zambia, corporatisation or commercialisation has been promoted and often imposed by international and development agencies (Bond et al., 2002; Bayliss, 2003; McDonald and Ruiters, 2005; Bayliss and McKinley, 2007), as part of the conditionalities attached to balance of payment support as well as development-aid programmes (Simutanyi, 1996; White, 1997; Cocq, 2005).

² The rural population in Zambia was estimated at 7.98 million by the 2010 population census representing 61.2% of the total population of about 13.04 million (see CSO, 2011). Estimates put the rural population with access to clean water at 37% (ADFP, 2006) while the urban population with access to clean water is estimated at 74% (NWASCO, 2010). More recent estimates put the rural population with access to clean water at 42% and the urban population with access to clean water at 87% (AICD, 2009). This paper uses figures from NWASCO, the national water and sanitation regulator.

In the Zambian context, the reform route taken in the water services was commercialisation as opposed to corporatisation.³ The National Water Supply and Sanitation Council (NWASCO) defines commercialisation as the bringing in of private sector principles in the management of 'public' institutions (NWASCO, 2010). In practice, commercialisation in Zambia has entailed converting what used to be water departments of the various local municipalities (councils) into independent private companies registered under the Companies Act. Though the local councils have remained the sole owners of commercial utilities (CUs), public assets that used to belong to municipalities have been transformed, through a statutory instrument, into private assets managed by limited companies (*ibid*). Thus, commercialisation in Zambia has not been just a matter of financial ring-fencing of water departments with a separate management board (McDonald and Ruiters, 2005); CUs operate as private companies regulated by private company law and not public law or statutes as is the case with corporations (Bond et al., 2002). Commercialisation of water and other public services in Zambia, as in many LICs in Africa, was an option taken by the international lending institutions, and was much less of a policy choice for the Zambian Government and people. In this regard, Phiri (2003) has argued that from the 1990s, the commercialisation of water services was "inevitable if Zambia was to retain any hope of further assistance from the main donors" (cited in Cocq, 2005). In other words, this was largely a donor-chosen policy option, with no consultation of the Zambian public (customers). During the late 1990s, donors recommended commercialisation (and not privatisation) of services in many LICs in Africa, such as Ethiopia, Ghana, Kenya, Malawi, Madagascar and Uganda, supposedly to calm down the strong public perception and opposition that surfaced everywhere against privatisation.

Though it is widely believed that reforms towards market-based policies in Zambia started after the change of government in 1991, the previous government had actually grudgingly committed itself to making these changes, under pressure from the international financial institution (IFIs).⁴ Nevertheless, the pace and scope of reforms quadrupled when the Movement for Multiparty Democracy (MMD) came to power in 1991 (Fundanga and Mwaba, 1996; Simutanyi, 1996; Craig, 2000). For the water sector, reforms began in the 1990s when the government started formulating the national water sector reforms which culminated in the National Water Policy (NWP) of 1994 (NWASCO, 2002; GRZ, 2005; GRZ, 2003), with commercialisation of water services as the core of reform strategies.

New institutional set-up and reform objectives

Reforms in the water sector during the 1990s were meant to address a number of challenges including poor institutional and legal framework, deterioration of water and sanitation services, inadequate human resource capacity, low coverage of water and sanitation services, inadequate stakeholder and community participation, limited and ever-decreasing capital investments, and the need to adapt to emerging international trends in water management (GRZ, 1994). To address these inadequacies, a new institutional set-up was put in place. Prior to the 1994 water policy the institutional set-up was poorly coordinated, resulting in the duplication of duties and tension between the various ministries over roles and jurisdictions (Chola, 2003). The sector-wide reform approach was adopted to address these

³ Corporatisation refers to the commercialisation (mainly ring-fencing) of utilities that are still owned by the state, whereas commercialisation is often used to refer to a process of applying private sector or market principles to an organisation, state- or private-owned (see Thynne, 2003; Queensland Treasury, 1994; Shirely, 1999; McDonald and Ruiters, 2005). While for clarity's sake it is necessary to make this distinction, in practice, these processes refer to the same mechanism of introducing market-based practices in public institutions, a process that is often referred to as commodification (Bond et al., 2002; Smith, 2003; Bond, 2004; Harvey, 2005; McDonald and Ruiters, 2005; Swyngedouw, 2005).

⁴ For instance, during the Fifth Extraordinary Session of the National Council of the United National Independence Party (UNIP), May 1990, UNIP and State President Dr Kaunda indicated that the "state would sell its interest in state enterprises to the general public". Later in the year (November 1990), the then minister of Finance Mr Gibson Chigaga in his budget speech reported that "the party and its government have decided in principle to sell off some parastatal companies" (in Fundanga and Mwaba, 1996).

institutional, legal and organisational shortcomings. The reforms were implemented in three phases as shown in table 1 below.

Table 1. Phases of water sector reforms in Zambia.

Main reforms	Period	Key outcomes	Status
Policy development	1994-1998	National Water Policy National Water and Sanitation Act Devolution/Decentralisation Policy	Completed
Establishing the new institutional framework	1998-2000	Separation of Water and Sanitation Services (WSS) from Water Resources Management (WRM) Establishment of National Water Supply Regulator (NWASCO) Establishment of CUs	Completed
Rehabilitation and expansion of infrastructure	2000-present	Establishment of Devolution Trust Fund (DTF) Department of Infrastructure and Support Services (DISS) takes over infrastructural development	Ongoing

Source: Compiled by author from NWASCO, 2002.

By 2000, most of the key reforms in the water sector had been implemented and a new institutional and legal framework had been established. Under the current institutional set-up, the Ministry of Energy and Water Development (MEWD) is responsible for the national water policy and water resources management tasks, while the Ministry of Local Government and Housing (MLGH) is responsible for water supply and sanitation including the mobilisation of resources to maintain and expand infrastructure and service provision through the Department of Infrastructure and Support Services (DISS). NWASCO is responsible for regulating all the water service providers (CUs and private providers).⁵ Other public institutions that have direct interest in water include the Ministry of Agriculture and Cooperatives (MACO) focusing on agricultural water use, Ministry of Health (MoH) focusing on water issues related to health, Ministry of Tourism, Environment and Natural Resource (MTENR) concerned with water conservation, Environmental Council of Zambia (ECZ), academic institutions, the private sector, cooperating partners and NGOs. A summary of the current institutional set-up is provided in table 2 below.

In the water services sector, the "main objective of the (...) reform programme was (...) to reorganise the (...) sector so as to create new institutions, which would be able to provide cost-effective, equitable and sustainable water supply and sanitation services throughout Zambia" (NWASCO, 2002). The overarching objective of the water services reforms has been described as to "improve service delivery, coverage and sustainability" (ibid). In these reforms, commercialisation of water services has been the core policy, and the "main goal of commercialising water and sanitation service provision was to improve service delivery by way of creating viable limited liability utility companies (CUs) managed by professionals thereby attracting external investments" (NWASCO, 2010).

WHY COMMERCIALISATION?

Within the context of water sector reforms, there are many factors that prompted the commercialisation of water services in particular. The main triggers are briefly discussed.

⁵ At the end of 2009, there were no local authorities (LAs) providing water services in urban areas; LAs in urban areas, in all nine provinces, had converted their water departments into CUs as joint ventures (see NWASCO, 2010). Private providers are companies (such as Chilanga Cement, Zambia Sugar, etc) that provide water services to their workers as fringe benefits.

Table 2. Post-reform institutional set-up of the water sector in Zambia.

Actor	Role	Key policy documents
<i>Ministries: Policy development</i>		
MEWD	National Water Policy	National Water Policy (1994)
Water Boards	IWRM and International Water Policy Management, use, development of water resources	Water Resource Action Plan (WRAP, 2001)
MLGH	Regulating water resources use	Strategy and Institutional Framework for WSS (1995)
DISS	WSS policy and strategy elaboration	
Ministry of Agriculture Ministry of Tourism, Environment and Natural Resources Ministry of Health	Oversee service provision rural and urban	Peri-Urban WSS Strategy (2000)
	Mobilise resources for capital investment	National Rural Water Supply and Sanitation Programme
	Sub-sector water policy (agriculture, tourism, environment, and health)	National Environmental and Sanitation Strategy (200)
		National Irrigation Plan (2001)
<i>Statutory bodies: Regulation and monitoring</i>		
Statutory bodies:		
NWASCO, ECZ, Water Development Boards	Advisory and regulatory role	Regulatory Tools and Legislation (2004) WASHE (Water and sanitation hygiene education) (1996)
<i>Service providers: Service provision</i>		
Commercial utilities	Service provision	Strategic and Business Plans
Local authorities	Service provision in rural areas	
Community organisations	Participate in maintenance of WSS and service provision	Community Water and Sanitation Strategy (2000)
<i>Other institutions: Support and capacity-building</i>		
Training and research institutions	Human resource training Research	Mainstreaming Gender in WSS(2000)
Co-operating partners NGOs	Provide financial support Implement WSS programmes and projects	
Private sector	Financing and management of WSS Consultancy services Construction of WSS facilities	

Source: Compiled by author based on information from Fifth National Development Plan (GRZ, 2006).

As indicated above, prior to the 1994 water sector reforms, the provision of water and sanitation services had been a responsibility of local councils in both urban and rural areas. By the mid-1980s most of these councils had become insolvent (Chola, 2003), making it extremely difficult for most of them to meet the growing demand for water and sanitation services arising from the rapidly growing population, especially in major cities and towns. Increasing population without a corresponding expansion or upgrading of infrastructure, declining funding to the sector (NWASCO, 2002), irregular payment of municipal workers, inability to attract skilled personnel and low capacity resulted in the deterioration of water and sanitation services to the point that some of the municipalities could not even maintain basic-level services (GTZ, 2004). According to NWASCO (2002), this "rapid deterioration

in the quality of service delivery in both the urban and rural areas... forced the government to embark on a comprehensive reform of the sector in early 1990s" (NWASCO, 2002). A German Technical Aid working paper on the water sector in SSA also highlights the deterioration of services as one of the triggers of water supply services reforms (GTZ, 2004).

Commercialisation of basic services since the 1980s has also been driven by fiscal pressure on state resources (Yarrow, 1999). A leading example is the massive privatisation of public service utilities such as water, electricity, gas, bus services, coal, oil in Britain during the Thatcher administration, which was seen as a way to rid government of the burden of growing public expenditure (Harvey, 2005; Foster, 2005). In LICs like Zambia, governments were forced to introduce market reforms (structural adjustment programmes [SAPs]) as a condition for accessing aid (Simutanyi, 1996; White, 1997; Cocq, 2005). In Tanzania, for instance, "privatisation of the poorly performing Dar es Salaam Water Supply and Sewerage Authority (DAWASA) was one of the preconditions given for Tanzania to qualify for the Highly Indebted Poor Countries (HIPC) initiative of the World Bank and the IMF" (Bayliss, 2003). In the Zambian case, donors were quick to display on flyers "how much the government would lose in adjustment-related aid" if it failed to implement the adjustment reforms (White, 1997). Commercialisation of water services was seen in general as a way of bringing in efficiency and also as a means to reduce the fiscal burden on the state. But after years of experimenting with market reforms in many developing countries, it has been difficult to pinpoint the efficiency gains resulting from marketisation of public utilities such as water services (IMF, 2004).

Another key driver of commercialisation of water services in Zambia has been the decentralisation process which the government embarked upon during the 1990s. Decentralisation itself is part of the broader restructuring of the state which sought to create more financially autonomous lower spheres of government in a bid to reduce overall public spending (Smith, 2003). In Zambia, the Seven Water Sector Principles together with the National Water Supply and Sanitation Act⁶ of 1997, highlight the devolution of responsibilities to local government structures as the key guiding principle (GRZ, 1994). However, in most countries, the process of devolving functions from central government to local government has not been matched by a 'devolution' of resources to enable the local authorities carry out the devolved functions (Rees et al., 2008). This situation created more pressure on the already struggling councils such that many of them were left with little option but to commercialise their public services (Cocq, 2005). Decentralisation also provided an impetus towards commercialisation in that as the local authorities became more autonomous, it was possible for them to choose their model of operating their public services. In this way decentralisation played an important role in the implementation of commercialisation (Smith, 2003; McDonald and Ruiters, 2005).

Like in many other countries, commercialisation of water services in Zambia has been supported by the recognition of water as an economic good following the Dublin Statement (1992, see Principle No.4) and Agenda 21 (1992, see § 18.8) which declared water an economic good, whose value should be realised through correct pricing. Though the 1994 National Water Policy recognises the social and cultural values of water, it emphasises treating water as an economic good. Commercialisation via cost recovery has been the vehicle through which this objective is supposed to be realised.

Status of commercial water utilities

Commercialisation of the water services in Zambia has been under way for roughly ten years now. Altogether, there are currently 11 CUs; one in each of the nine provinces of Zambia except the Copperbelt Province which has three CUs (Nkana, Mulonga and Kafubu Water and Sewerage Companies [WSC]). Out of the 11 CUs, eight are located along the 'line of rail' from Livingstone (Southern Province) to Chingola (Copperbelt Province see figure 1). According to NWASCO (2010), the

⁶ Water Supply and Sanitation Act 28 of 1997 has provided for the local authorities to establish water and sanitation utilities as a company, public or private, or as a joint venture with an individual or private enterprise, or as a joint venture with other local authorities (see Section 9 (1)(a)-(c).

creation of at least one CU in each province marks the completion of the commercialisation process, with the 11 CUs providing water services to 99% of the total urban population. Of the 11 CUs, eight started operating before or in 2000 as table 3 shows. The oldest CU is the Lusaka Water and Sewerage Company which was established in 1989, though it started operating in 1992. The most recent CU is the Luapula Water and Sewerage Company which has only been in existence for less than 2 years.

Figure 1. Location of Water and Sewerage Companies (WSC) in Zambia.

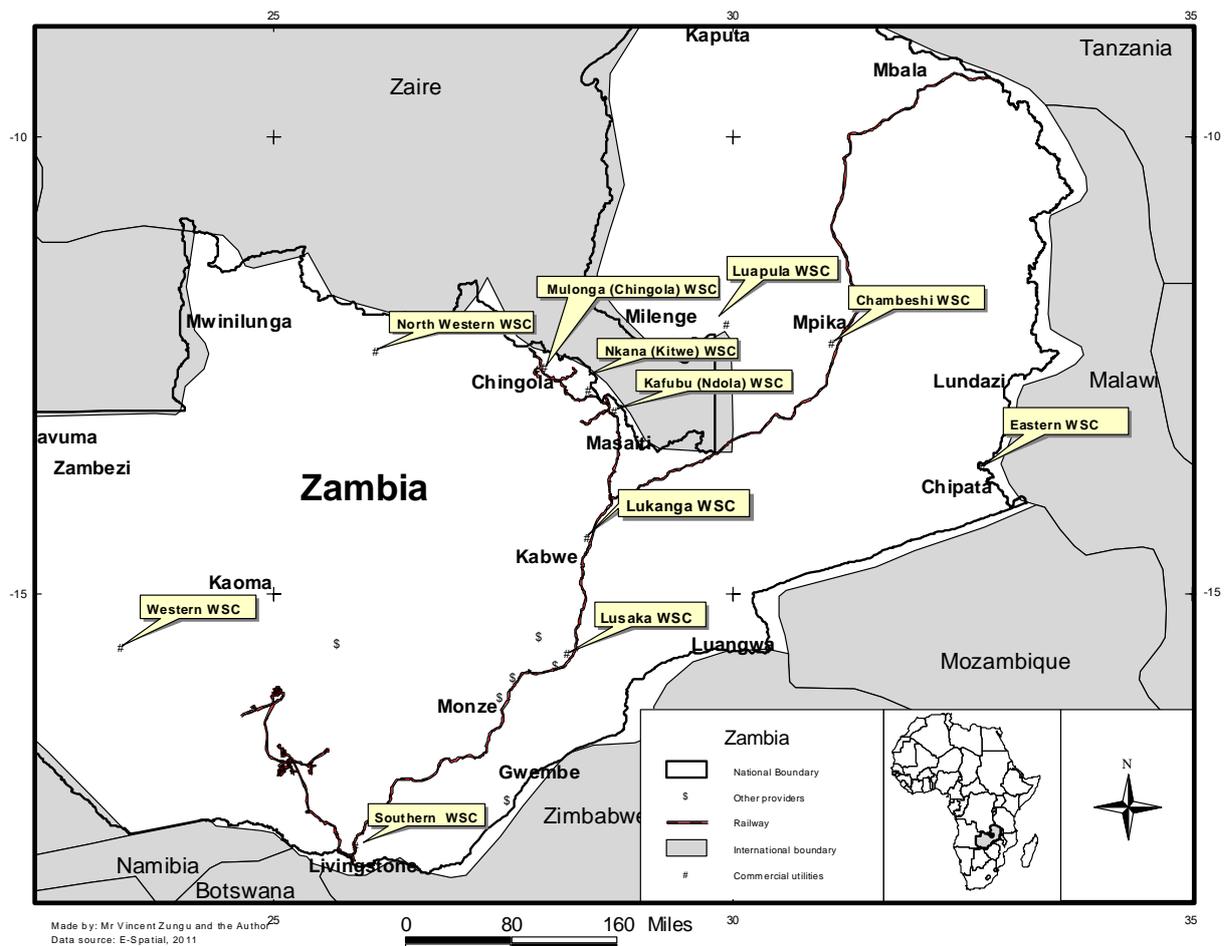


Table 3 provides an overview of the CUs when each started operating, the population in the service area, production capacity and the changes in these indicators over the past decade. In terms of water production capacity, there has been an improvement in most of the CUs since 2001, although the production capacity growth does not match the growth in population for most CUs. In two of the CUs (Southern and North-Western WSC) the production capacity declined over the same period resulting in a drop of water supply per capita per day. The change in the amount of water produced vis-à-vis the population dynamics in service areas is a crucial indicator of a CUs' capacity to extend services to the unserved population. However, given the high levels of unaccounted for water (UfW), it is difficult to confirm whether the increased water production resulted in extending services to unserved households. Overall, the decline of daily per capita water production in four out of the eight CUs with data for 2001 and 2010 is a worrying development. A balanced production capacity-to-population ratio is critical to realising the objective of expanding service coverage. Declining production capacity-to-

population ratio ultimately reflects investment deficits, making it difficult to meet demand for services in the medium to long term.

Table 3. Profile of commercial water utilities in Zambia, 2000-2010.

Utility name	Year started	Population in service area			Water production (million m ³ /year)			Water per capita (l/c/d)	
		2001	2010	% change	2001	2010	% change	2001	2010
Lusaka WSC	1989	1,100,000	1,831,408	66	75	95	27	187	142
Kafubu WSC	2000	415,000	633,656	53	52	55.9	8	343	242
Nkana WSC	2000*	463,384	685,420	48	35	56.6	62	207	226
Mulonga WSC	2000	246,000	436,249	77	23	58.7	155	256	369
Southern WSC	2000	279,339	328,882	18	19.5	19.4	-0.5	191	162
Chambeshi WSC	2003	–	275,474	–	–	14.4	–	–	143
Eastern WSC	2009**	102,000	217,632	113	1.9	5.2	174	51	65
Western WSC	2000	220,900	176,477	-20	6.3	7.6	21	78	118
N. Western WSC	2000	124,900	223,817	79	4.4	3.6	-18	97	44
Lukanga WSC	2007	–	365,869	–	–	21.9	–	–	164
Luapula WSC	2009	–	173,206	–	–	2.8	–	–	44

Source: Author's calculation based on NWASCO (2002; 2010).

[WSC] = Water and Sewerage Company.

Note: The figures given above may not reflect the actual population in the areas covered by a particular CU. Figures for Chambeshi, Lukanga and Luapula WSC are not reflected because these CUs started operating after 2001.

[*] Nkana WSC took over the operations of AHC-MMS in 2006. AHC-MMS was a pilot project for private sector participation (PSP) operating under a management contract as a subsidiary of the French Water Giant, SAUR. AHC-MMS took over most of the areas serviced by the privatised Zambia Consolidated Copper Mines (ZCCM).

[**] What is now known as Eastern WSC used to be Chipata WSC from 1992 to 2008. In 2009, Chipata WSC became Eastern WSC and took over the services areas which used to be serviced by local authorities in urban areas of the Eastern Province (see NWASCO, 2010).

Table 3 also reflects the concentration of CUs' production capacities in the urban centres on the Copperbelt and Lusaka. The CUs in these two provinces represent more than 67% of the urban population served by CUs, and account for 72% of the water production capacity of all CUs. This implies that commercialisation has largely been an urban affair, concentrated along the 'line of rail' (the narrow corridor from Chingola to Livingstone), suggesting that households along the 'line of rail' have more chances of accessing clean water (Dagdeviren, 2008). The Fifth National Development Plan acknowledges this unevenness in the provision of services and states that the "rehabilitation of urban water supply systems [has] concentrated on the 'line of rail' from Chililabombwe to Livingstone" (GRZ, 2006).

THE SIZE OF THE NETWORK AND PERFORMANCE INDICATORS

Going by the number of connections for each of the 11 CUs, it is apparent that six of the CUs had a small network with less than 15,000 connections in 2010 as table 4 below shows. This is way below the minimum size for efficient operation of water utilities in other developing countries, estimated at

100,000 connections⁷ (Foster, 2005). The small network makes it difficult for CUs to realise scale economies in their operations. Only four of the 11 CUs had over 30,000 connections.

Nonetheless, table 4 suggests that there have been significant increases in the number of connections between 2001 and 2010 for most CUs, with three CUs (LWSC, MWSC and EWSC) more than doubling their number of connections. However, the number of people per connection reflects very modest results over the 10-year period, suggesting that population pressure is outstripping the rate of water infrastructural development. As a result, the mean number of people per connection in Zambia is much higher than in other developing countries (www.ib-net.org).

Table 4. Status of key water services indicators, 2001 and 2010.

Water Supply Company (WSC)	Number of connections			Number of people per connection		Metered connection (%)		Unaccounted for water (%)	
	2001	2010	% change	2001	2010	2001	2010	2001	2010
Lusaka	34,814	73,240	110	31.6	25.0	32	52	58	48
Kafubu	25,251	48,365	91	16.4	13.1	4	45	50	45
Nkana	28,601	43,805	53	16.2	15.6	59	58	59	42
Mulonga	18,080	41,600	130	13.6	10.3	17	55	57	42
Southern	18,664	29,529	58	15.0	11.1	9	76	52	39
Chambeshi	–	12,344	–	–	22.3	–	38	–	46
Lukanga	–	14,360	–	–	25.5	–	76	–	48
Eastern	4,306	9,903	130	23.7	22.0	100	67	25	51*
Western	7,040	9,775	39	31.4	18.1	18	13	67	52
North Western	3,769	6,882	83	33.1	32.5	2	100	40	34
Luapula	–	3,993	–	–	43.4	–	0	–	62
Simple mean	17,566	28,980	65	22.6	19.6	30.1	58.3		45

Source: Author's calculation based on data from NWASCO (2002, 2010).

Note: The figures on the number of people per connection were calculated by dividing the population in service areas by the number of connections. The connection figures do not distinguish between public and household connections.

[–]: no data.

[*]: the UfW for EWSC for 2010 increased from 21% in 2001 to 51% in 2010 probably because in 2009, what used to be Chipata WSC was transformed into EWSC by adding areas which were formerly serviced by LAs.

The number of persons per connection offers an indirect indication of the extent of coverage levels in the service area as well as the spread of the water network. What would be interesting is to find out if the increase in connections is a result of expanding the services to unserved areas or simply an updating exercise for the existing connections. Table 4 also shows that metering ratio improved significantly for most CUs over the past ten years. Metering is essential for monitoring and managing water services, and it contributes significantly to the reduction of unaccounted for water (Komives et al., 2005). Despite the doubling of metering ratio for most of the CUs in the reference period, the proportion of unaccounted for water remains very high, suggesting that there are other factors that contribute to UfW, such as leaking pipes, illegal connections and uncollected bills (Chitonge, 2010). In five of the 11 CUs, about half of the water produced is unaccounted for. High levels of UfW have serious

⁷ This is the figure estimated for water utilities in Latin America in a study done by Yepes (in Foster, 2005).

implications for cost recovery (Komives et al., 2005) and make it difficult to realise equity objectives (Foster, 2005), and raise sustainability concerns (NWASCO website news).

Service coverage and hours of supply

Table 5 below suggests there has been little progress with regard to the hours of service for most of the CUs in the past ten years. Although there is a marked convergence of most CUs towards the 17 hour mean, the average of 15 hours for 2007 is still low, especially when one considers that availability of service is a critical performance indicator for water utilities (Bond et al., 2002; www.ib-net.org).

For three CUs (NWSC, NWWSC and EWSC) the number of hours when water is available to the public was lower in 2010 than in 2001. There is little point in counting the number of connections if the water connections have no water for most of the day. The reflected hours of service in table 5 do not take into account the service supply interruptions which happen frequently in some areas, especially in low-income and peri-urban areas. On average, service hours have increased by close to 3 hours per day between 2001 and 2010. However, the 17.4 hour average for 2010 is way below the average for water utilities in countries at a similar level of economic development as Zambia, as table 6 shows.

Table 5. Hours of services per day, 2001-2010.

	2001/02	2002/03	200/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
LWSC	12	15	16	15	11	15	12	16	17
NWSC	16.5	16.5	18	18	19	20	9	16	16
KWSC	12	15.3	16	14	15	15	15	15	16
MWSC	15	16	17	16	15	17	17	17	17
LGWSC	–	–	–	–	–	15	16	17	19
SWSC	8	12.1	16	16	17	14	14	18	19
CHWSC	–	–	–	11	8	9	11	12	16
WWSC	19	19.3	12	19	11	8	8	8	23
NWWSC	11	12	24	17	15	20	20	22	10
EWSC	24	24	24	24	24	24	22	21	21
LPWSC	–	–	–	–	–	–	–	–	4
Mean	14.7	16.3	16	16.7	15	15.7	14.4	16.2	17.4

Source: Author, based on data from NWASCO (2002-2010).

[–]: data not available

Similarly, the metering ratio average of 58.3% (table 4) is below the average for the region which was 96% in 2007. The UfW average of 45% (table 4) and 11.8 workers per 1000 connections are all below the regional average (see table 6 below). For the hours of service, even the 17.4 average for 2010 (though not the lowest) falls within the lower band for utilities in SSA countries at the similar level of development as Zambia. Table 6 gives an indication of the performance of several water utilities in SSA countries, and the figures suggest that the average Zambian water utility is below an average utility in the region on a number of performance indicators.⁸

The other area where there has been little progress for most CUs is around service coverage (proportion of the population in service area with access to services). For the past ten years, though there has been stabilisation towards the 70% mean, there has been mixed progress in this regard.

⁸ Comparisons between utilities even in the same country is a tricky business given that utilities operate in different conditions which affect their performance, including distance from the water source, availability of water, length of the network, density of population in service area, the age of infrastructure and the mean income levels of the customer base (Estache and Rossi, 2002; www.ib-net.org). However, a comparison provides a rough idea of a utility's relative performance (Banerjee et al., 2008).

Seven CUs recorded increases in coverage levels with LWSC, WWSC and NWWSC doubling their coverage ratio between 2001 and 2010. Two CUs (EWSC and MWSC) recorded a decline in coverage in the same period. Figure 2 shows that coverage for some CUs has been fluctuating while in some CUs, coverage ratios have remained fairly steady, with most CUs recording an upward trend over the last 5 years. Despite the progress, only three CUs (KWSC, NWSC and SWSC) have sustained their service coverage ratio within the acceptable range of between 80-90% (NWASCO, 2010). The slow progress recorded for service coverage could be an indication of both the growing population pressure and low investments for infrastructural development (Marin et al., 2010).

Table 6. Regional water utilities in Zambia.

Water utility	Country	UfW (%)	Metering ratio	Hours of service/day	Employees/1000 connections
ONEA	Burkina Faso	18	98	23	6
ADAMA	Ethiopia	19	90	24	–
KWASCO	Kenya	71	58	12	21
JIRAMA	Madagascar	34	97	8	1
EDM	Mali	26	96	24	5
Adem Beira	Mozambique	61	96	15	17
Adem Maputo	Mozambique	57	98	13	6
BWB	Malawi	51	23	17	14
LWB	Malawi	22	–	24	18
SPEEN/SEEN	Niger	19	97	24	7
ELECTROGAZ	Rwanda	38	99	–	39
SDE	Senegal	20	117	24	3
DUWSA	Tanzania	30	28	24	4
NWSC	Uganda	34	95	23	9
SNEC	Congo	28	17	14	7
FCT	Nigeria	80	24	24	31
KATSINA	Nigeria	14	7	8	14
KWC	Sudan	40	–	24	11
Mean	LIC	34	96	21	8

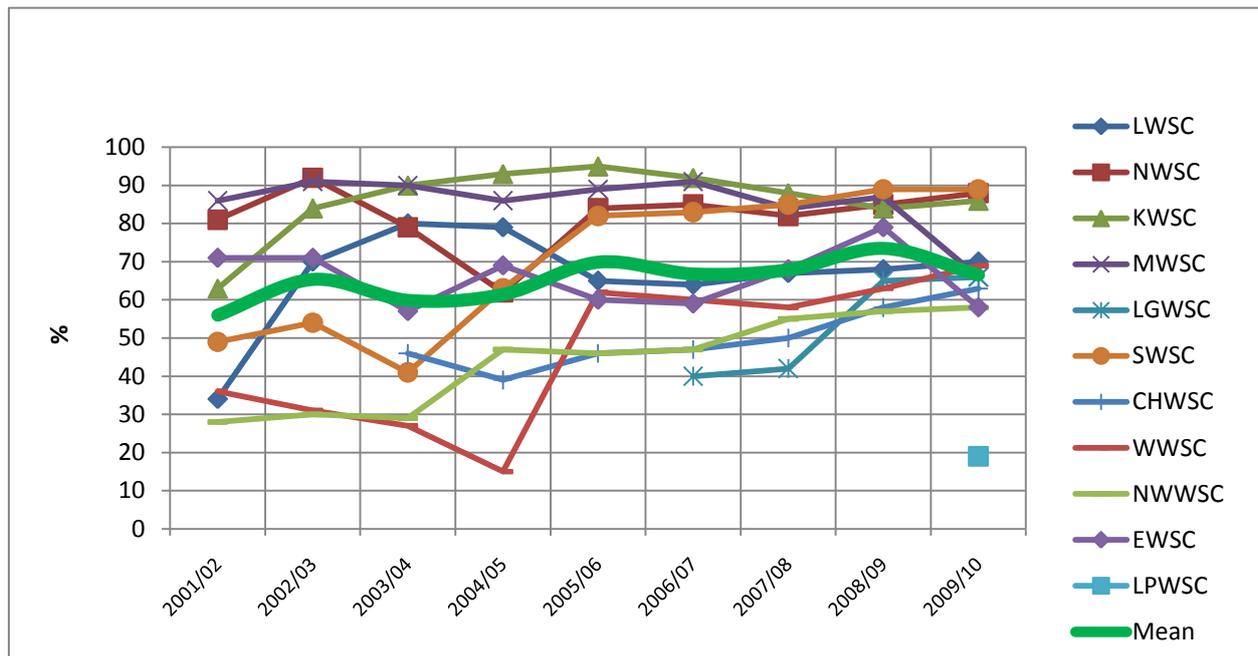
Source: Compiled from the AICD database available at www.infrastructureafrica.org

Note: The survey for this data was conducted between 2006 and 2007. The means reported here are only for the 20 LICs that participated in the survey.

[–]: no data available.

Coverage ratio and hours of service are crucial performance indicators for any water utility (IBNET, www.ib-net.org). When it comes to hours of service and service coverage, most of the CUs have consistently failed to meet the minimum service level guarantees (MSLG) set by the regulator. For example, in the 2009/10 reporting year, only one CU met the MSLG for service coverage, and only three met the hours of service MSLG. Although most CUs met most other performance indicators such as billing ratio, collection efficiency, water quality, pressure in the network, unjustified disconnections, response to customer complaints, cost coverage, personnel and other production parameters (NWASCO, 2010) these indicators on their own do not tell us much about the services. It is in service coverage and hours of service where the real test for a utility's performance lies. A 100% collection efficiency for a service that is only available to 20% of the population for 5 hours in a day does not mean much in terms of service delivery performance.

Figure 2. Service coverage, 2001-2010.



Source: Author based on data from NWASCO (2002-2010).

Note: the mean figures are weighted averages reported by NWASCO.

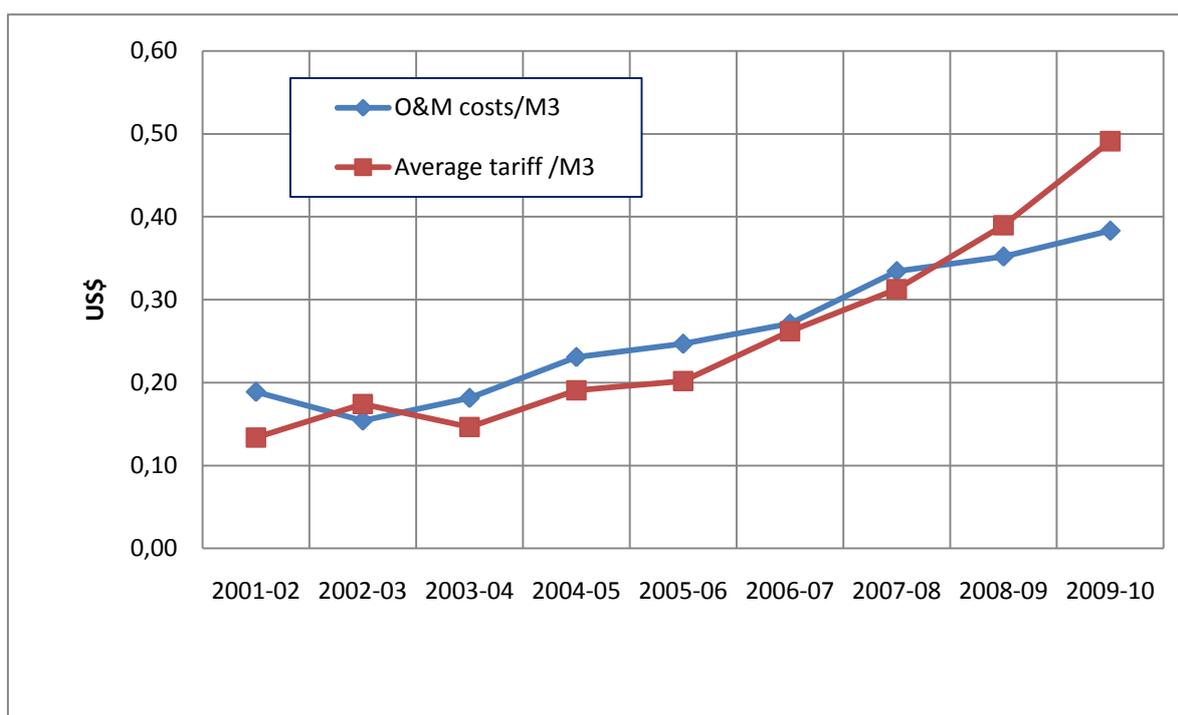
Affordability and the cost burden

The other vital indicator to look at when examining the outcome of the reforms in the water sector is the affordability levels of the services at a given quality of service. Affordability has many faces to it. At one level, it reflects the level of efficiency in the use of resources during service provision, which affects production costs, service levels and tariffs. On another level, affordability is a function of the mean household income in the service area. Ultimately, any efficiency gains in the operations should lead to reduction in the cost of production and/or improvements in the quality of services (Estache and Rossi, 2002). In theory, gains from efficient operations of services should be, at least, shared between the operator and the customers in the form of lower tariffs or higher quality of services (Komives et al., 2005). Unfortunately, efficiency gains are difficult to measure because of their composite nature, but one of the key indicators is the change in production costs and average tariff per unit over time (Estache and Rossi, 2002). Figure 3 shows the trend in production costs represented by operation and maintenance (O&M) cost per cubic metre as well as the average tariff.

From 2001 to 2008, the average tariff for CUs was below the O&M cost, suggesting that an average CU was been unable to cover O&M costs over this period. For the last 2 years, however, an average CU has been able to cover its O&M costs. From the scenario in figure 3, the ability to cover O&M costs for an average CU seems to have been gained at the expense of increasing tariff and much less as a result of operation efficiency. If there had been any operation efficiency gains, these have not been passed on to the customer, given that the tariff, on average, has been rising faster than the production cost, especially in the last 5 years. In situations where there had been noticeable efficiency gains, the gains have been translated into reduction in the O&M costs which, in turn, result in a gradual decrease of the average tariff. For example, it has been reported that efficiency gains from improved billing and labour productivity in ONEA led to "a gradual decrease in average tariffs in real terms of about 8 percent" (Marin et al., 2010). What we are seeing in the above case is the steady increase in both O&M and

average tariff. It is, however, possible that the reported improvements in the quality of services (except service hours and coverage) among most CUs (NWASCO, 2010) account for the increase in the average tariff over the years, though this cannot be confirmed due to lack of data. Given the high levels of UfW, it is highly likely that any operation efficiency gains are offset by technical losses. What is amazing in all this is that despite the almost yearly increase of water tariff, there has been no public protest against the increments by CUs. On the one hand, this could mean that the public is content with what they are getting for the price they pay and, on the other, this could also mean that the public is made to understand that these increases are 'minor' and can be ignored.

Figure 2. O&M costs and average tariff per cubic metre.



Source: Author, based on data from NWASCO (2002-2010).

Whatever might account for the increasing tariffs, affordability concerns for low-income households need to be addressed. Although a study commissioned by NWASCO to assess the impact of tariffs on households concluded that "water is indeed affordable for every Zambian" on the basis that 80% of those surveyed spend on average 8% of their monthly household income on water and sanitation services (NWASCO, 2007b), there has been no clarity as to what constitutes an affordable tariff. One of the widely accepted measures of affordability is the share of a monthly water bill in total household expenditure/income, which is set at 5% (3% in the UK). While the 5% or 3% threshold is an arbitrary point, the argument behind it is that water is an essential, non-discretionary good, and therefore "households should be able to pay for a subsistence level of consumption without jeopardising the ability to pay for other goods and services, no matter how much the household is willing to pay" (Komives, et al., 2005). According to this affordability standard, any expenditure on water services above 5% of household income creates affordability hardships on a household (Komives et al., 2005; HDR, 2006). Using the 5% threshold, estimates show that up to 40% of urban population experience affordability problems, with this figure rising to 60% of households at the 3% threshold (Dagdeviren, 2008).

Table 7. Share of 10 m³ of water in mean monthly household income and poverty levels

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cost of 1 m ³ (US\$)	0.14	0.18	0.15	0.2	0.21	0.28	0.33	0.41	0.50
Mean monthly household income (US\$) ⁹	25.8	25.8	30.0	33.3	41.7	50.0	60.8	80.0	80.8
10 m ³ as % of household income	5.4	6.9	5.0	6.0	5.1	5.6	5.5	5.1	6.2
Daily per capita	0.80	0.80	1.00	1.10	1.40	1.60	2.00	2.60	2.70
Poverty ratio @ US\$1.25	–	64.6	65	64.3	64.29		64.3		
Poverty ratio @ US\$2	81.5	–	–	–	–	–	81.5	–	–
Poverty ratio @ national poverty line	–	67	–	68	–	56	–	–	–

Source: Author's calculations based on data from DataBank Website and NWASCO, 2002-2010.

Note: The mean year kwacha-dollar exchange rates for 2001-2010 from the Bank of Zambia website was used to convert kwacha into dollars. [–] = no data available.

Table 7 shows the cost of 10 m³ of water¹⁰ as a percentage of mean monthly household income (using per capita income from 2001 to 2009 as the proxy for household income). For an average household, the cost of 10 m³ of water took up to 5.4% of the household income in 2001, rising to 6.2% in 2010. On average, the share of a 10 m³ water bill in monthly household income is higher for households in the lower income brackets since income share decreases for poorer households. Further, the fact that poor households that are not connected to the network pay more per unit of water (Foster, 2005; HDR, 2006; Dagdeviren, 2008; Chitonge, 2010) suggests that a higher proportion of their income than what is reflected in table 7 goes to water services. Despite the increase in the per capita income between 2001 and 2010, the higher increase in the average water tariff creates an affordability challenge even for an average household.

From another angle, given that the income of over 64% of the population in Zambia is below the US\$1.25/day (table 7), for many households at or below this income, the water bill of 10 m³ is certainly more than 5% of their monthly household income. To put it another way, for a household to have its monthly water bill at 6.2% of household income, it should have a monthly income of US\$81 or US\$2.7 per day. Using the US\$2/day measure we know that 81.5% of the population have an income below this line, which means that more than 80% of the population would have a 10 m³ water bills taking up more than 6% of their household income. In terms of the affordability benchmarks, it is apparent that the

⁹ Monthly Income per capita is used here instead of monthly household income due to the absence of updated and reliable household income data series. In estimating the monthly household income, the mean monthly household incomes from the Living Conditions Monitoring Survey Reports (LCMS) 2004, 2006) were considered, but could not be used because in a context of high inequality income distribution (Gini coefficient of 0.57 in 2004 and 0.60 in 2006), using average household income would give an exaggerated weight to poor households that are the majority. Instead, GDP per capita figures are used as a proxy for mean monthly household income. Annual per capita income is equivalent to half of the mean monthly household income reported in the 2004 and 2006 LCM, and constitute a much higher proportion of mean monthly household income for later years. Using a single GDP per capita as a proxy for the mean monthly household income is appropriate here given that more than 50% of households in 2004 and 2006 had monthly household income of less than 2 GDP per capita while only one in four households had monthly household income of more than 2 GDP per capita in both 2004 and 2006 (see CSO, 2005, 2010).

¹⁰ 10 m³ of water is obviously above the World Health Organisation (WHO) recommended basic consumption of water which is 6 m³ per month for a family of six or 20 litres per capita per day (l/capita/day) (Howard and Bartram, 2003). However, the 10 m³ per month is used here because we are using the average household monthly income, and 10 m³ is often regarded as a reasonable average consumption level for an average household with six members in developing countries (Howard and Bartram, 2003; Komives et al., 2005; Barnerjee et al., 2008). The most recent average household size estimates in Zambia is 5.1 (CSO, 2010). The 10 m³ per month translates into about 55 l/capita/day or equivalent to two toilet flushes and a 20 l bath per day. For an average household of six, the 10 m³ per month is barely sufficient, while 6 m³ is too low to meet the basic needs, especially for poorer households that tend to have families larger than the average of five or six (Dahan and Nisan, 2008).

majority of households in Zambia are likely to have affordability hardships, especially because there is no direct state subsidy on water for poor households. In a country with such high levels of poverty, rising cost of water is a worrying concern for the majority of the people, though they may not express it in a public protest.

Concerns over the price of water have been raised by many including government officials. The Minister of Energy and Water Development observes that the "issue of tariffs is one area of great concern and as government we would like to see that our people pay a fair price for the services (...)" (NWASCO website news). In this case, the objectives of improving service delivery, sustainability and coverage need to be balanced against the ability of people to afford the services, especially in the context where services are provided by commercial entities. Water affordability burden is evident from low-income households' practices of alternating between safe sources of water when they have money to buy water and unsafe sources, such as wells and rivers, when they do not have the money.

A SCORE-BOARD FOR A DECADE OF COMMERCIALISATION OF WATER SUPPLY SERVICES

In addition to the data presented above, there are a number of factors that need to go into constructing a score-board on the outcomes of implementing water services reforms. As indicated above, an analysis of the 10 years of water services reform reveals both positive developments as well as enduring challenges. Key positive developments and challenges are briefly discussed below.

Reorganisation of the water supply services

One key positive development resulting from implementation of water services reforms in Zambia is the reorganisation of the sector. Prior to the reforms, provision of water services was in disorder, clouded in uncertainty and lack of direction. The establishment of commercial utilities has facilitated the clarification of roles and functions among the many actors in the water services sector. For instance, at the moment it is clear that commercial utilities are responsible for the provision of water services, NWASCO is responsible for ensuring that the service providers meet the stipulated standards and regulations, while the Ministry of Local Government is responsible for the policy issues and resource mobilisation for the sector (see table 2). Whether these roles are fulfilled or monitored effectively is a different question altogether.

Improved capacity and management skills

As the data presented above show, most CUs are making noticeable progress with regard to improving the capacity to provide quality services including response to customer complaints, billing, customer relations, water quality, and pressure and flow in the network. As would be expected in a commercialised environment, the area where most CUs have made considerable progress is in revenue collection. Even if most of the CUs have not yet reached the set benchmark of 85% of water bills, there has been noticeable progress. For instance, in the 2009/10 reporting year, five of the 11 CUs recorded a collection efficiency ratio of over 90%, and another three had a collection ratio of 80% and above, with an overall average of 81% (NWASCO, 2010). Though there has been no case of subcontracting of services for all the CUs, commercialisation has induced the drive towards professionalisation of service operations and management style. A professional approach is slowly developing by attracting suitably qualified personnel at market-related wages, coupled with frequent performance assessment of workers. This has resulted in improved productivity and operational performance for most of the CUs, though there is a growing risk of stressing efficiency and professional competence at the expense of other goals such as affordability, providing services to poor communities and social justice.

Predictable service

Related to improved management and capacity among most CUs, is the increased degree of certainty in the services. Although there are still many cases of supply interruptions and relatively low service hours, often there is some consistency in the interruptions of services such that customers know when not to expect services. In most cases, major interruptions are announced in various media including the radio, television, newspapers and sometimes mobile communication vehicles. This has enabled the customer to prepare for the interruption, unlike in the past when they were often caught unawares.

Reduced political interference

To a certain degree, commercialisation of water services has reduced the level of political interference. Before the water services reforms, interference in the decision-making process from politicians and other stakeholder was the order of the day. Although political interference is not completely eliminated, most CUs, by virtue of being independent companies, have a certain level of autonomy in making decisions such as whom to employ, what wages to pay, where to supply services and how to run the companies. In a sense, commercialisation has strengthened the autonomy of the water service providers, especially in cases where the providers are becoming financially self-sufficient. This minimum level of autonomy is essential in ensuring that the utility is not pulled in all sorts of direction by the various interest groups. Reduced interference in water services has largely been influenced by the autonomy of the regulator. In the Zambian case where all CUs are regulated by a single regulator, the autonomy of CUs depends largely on the regulator's level of autonomy (GTZ, 2004). How independent the regulator is depends on many factors, but the important one is whether it gets funds for its operation from government or not. Experience has shown that if operational finances for a regulator are sourced from government, the likelihood of political interference is higher than if the funds are sourced outside government circles¹¹ (Chola, 2003; Foster, 2005). Since NWASCO covers most of its operating costs from licence fees and donor aid (NWASCO, 2008), it has largely managed to achieve plausible levels of autonomy.

Although these positive results have been recorded in general, the situation varies substantially across areas, especially peri-urban and low-income urban areas. To a large extent, the positive developments noted above apply to customers in high-income suburbs

Reluctance to extend services to poor communities

Interviews conducted in peri-urban and low-income areas revealed that CUs throughout the country focus on the high income neighbourhoods, neglecting services in low-income areas which have largely remained 'cities beyond the network'. This is not a phenomenon unique to Zambia; cases of private or commercial water utilities shunning away from poor areas have been documented all over the world (HDR, 2006; Hall and Lobina, 2006; Kauffmann and Perard, 2007; Marin et al., 2010). In the Zambian case, the real measure of success for a service provider lies in improving water services and coverage for the poor urban and rural communities. In this regard, water services reforms implemented so far have actually worsened the situation because most CUs are reluctant to provide services to peri-urban areas arguing that the profit prospects are low (Dagdeviren, 2008) and that the risks of vandalism and default are high while consumption volumes are too low (Chitonge, 2007). Even after CUs have been provided with incentives to extend services to these areas through the Devolution Trust Fund (DTF), water services in low-income communities have been scarce and irregular. As a result, the difference in

¹¹ In the Zambian case, NWASCO gets its operation funding from license fees collected from all service providers. All service providers are required to remit 2% of their total annual tariff charges to the regulator (NWASCO, 2004). In this way NWASCO manages to cover 75% of its annual operation cost and it only receive "small grant from government" and cooperating partners (ibid). According to some observers, this has enabled NWASCO to maintain high levels of autonomy which was evident in 2001, when NWASCO approved tariff increase a few months before general election (GTZ, 2004).

level and quality of service between the low- and high-income areas has become more acute. For example, residents from low-income areas noted that while CUs' workers respond promptly to complaints from high-income areas, the response to complaints from low-income areas is very slow, if any. Residents from low-income areas further reported that CUs' workers are less lenient with them when it comes to disconnection, compared to customers in high-income areas.

Subtle disappearance of the state and the funding gap

The other major effect of commercialisation is the subtle disappearance of the state from water services, which has been justified on the grounds that commercial service providers are now responsible for providing these services. The state's role has been reduced to that of an occasional benefactor to CUs and the regulator. This has created serious problems manifested in low investments and deteriorating infrastructure. As data presented above show, lack of or inadequate investment has resulted in most CUs failing to increase their production capacity to match the growing demand. This becomes a huge problem in this case where most CUs are barely meeting O&M costs from user charges. Lack of capital investment has been singled out as one of the major challenges that the water services sector in Zambia has been facing since the reforms started in the early 1990s (NWASCO, 2010). The overall government contribution to the sector has been very low, often below 10%, with more than 90% of capital investments coming from donors (Water Aid Zambia, 2009).

Table 8. Zambian Government (GRZ) and donor funding to water supply and sanitation, 2003-2004 (million US\$).

Year	GRZ- budgeted	Donor- budgeted	GRZ- spent	Donor- spent	Total spent	GRZ spending as % of total	Donor spending as % of total
2003	1.46	93.09	1.48	75.98	77.46	1.91	98.09
2004	1.88	153.24	1.42	0.04	1.46	97.26	2.74
Total	3.34	246.33	2.9	76.02	78.92	3.67	96.33

Source: Author's calculation based on data from Second PRSP Implementation Progress Report (GRZ, 2004).

Note. All the figures are in US\$ (current prices). The exchange rates used to convert the amounts from Kwacha to US\$ are K4700 = US\$1 for 2003 and K4500 = US\$1 for 2004. The major donors in the water sector include the GTZ (Germany), Irish Aid, DANIDA (Denmark) and loans from Africa Development Bank and World Bank (NWASCO, 2010)

Table 8 shows that the proportion of funding coming from the state in 2003 was less than 2% of the total expenditure. In years when donors do not release funding, the amount allocated to the water sector is insignificant as figures for 2004 indicate. Even in cases where money has been allocated by government to the sector, it is not always the case that money is released, and if it is released, it is often delayed. This is illustrated in table 8 by the difference between the budgeted and spent amount. One of the main reasons the state has not increased funding to the sector is the view that since CUs have taken over provision of services, the state can only 'help'. This attitude has been consolidated by the fact that the state does not any longer receive direct public anger in cases where the services are not provided. The other reason is that there has been over-reliance on tariffs as the answer to infrastructural investment. Yet, evidence shows that most CUs (even in developed countries) are unable to generate capital investment entirely from user fees (Brinceno-Garmendia et al., 2008). Experience from other parts of the world has shown that the state often steps in to provide support for capital investments even to the most efficiently run water utilities (Komives et al., 2005). So it is not that the CUs in Zambia are not being 'bankable' or breaking even due to inefficient management; even if the management systems are improved to the highest level, resources for infrastructural development will not be fully met by internal revenues. As noted earlier, one of the key gains of the commercialisation is

the improved management by the CUs, but these improvements without sufficient resources to replace and expand the infrastructure would amount to minor gains as the case has been.

Increased vulnerability of the poor

The introduction of commercial utilities has also led to many poor households becoming more vulnerable to exploitation and they often find it hard to afford water services. CU's reluctance to extend services to low-income areas has resulted in many poor households buying water from neighbours or vendors at higher prices per unit than those connected to the network (Chitonge, 2010). In all the peri-urban areas where interviews were conducted, most participants complained of the exploitation by neighbours who have individual house connections. Those who have taps in their homes charge higher prices arguing that they take the money to the water company. This, together with the fact that the average cost of water has been increasing has meant that the cost burden borne by poor households is disproportionately high. Further, the creation of CUs in the water supply sector has resulted in the disappearance of programmes that took care of the needs of vulnerable groups in communities. Both commercial utilities that were included in this study have no programme for catering to vulnerable groups such as the elderly, the physically challenged, orphans, widows, child-headed families who may not have money always to buy water even at K50 (US\$0.025) per 20 litre container. Previously, such cases were taken care of by the social welfare programmes under the Ministry of Community Development and Social Services. But since the beginning of commercialisation such vulnerable groups receive no direct state subsidy for water or any concessions from CUs.

Coping with increasing demand

One of the enduring challenges for most CUs is the growing demand due to growing urban population on the one hand and the inability to secure infrastructural investment at the pace commensurate with growth of population in the service area, on the other. If the challenge of inadequate capital investment is not addressed, the services in most CUs are not likely to be sustained as the infrastructure becomes old and requires replacement or constant maintenance. According to the MLGH official, "the infrastructure is old – on average 40 years old, and we haven't made much progress in investing in infrastructure – we are mainly concentrating on renovating the old infrastructure" (Chitonge, 2007). A senior services provider official also aired similar concerns:

the biggest challenge that we face is that of the ageing infrastructure – most of the installations were done before independence and we are still using the same pipes, machines and pumps. Now, these facilities were meant to serve a small population at that time, but we have not expanded on the facilities to cope with ever-growing population. So we find it very hard to operate in such conditions, and we don't have enough money to expand these facilities so that they can match the current demands for water services. We don't even have enough to cover the operation and maintenance cost. Our O&M coverage from our collection is only 72%! (Chitonge, 2007).

In view of this, a more aggressive funding model is urgently needed if the modest successes recorded over the past 10 years are to be sustained and improved on. Clearly, the state needs to play a more active role not only in mobilising resources, but also in ensuring that CUs work towards achieving the set objectives for the reforms, especially extending coverage to unserved poor communities.

CONCLUDING REMARKS

Evidently the water supply sector in Zambia has undergone major reforms and the creation of commercial water utilities is one of the major reforms. A review of the past 10 years of water services reforms in Zambia suggests that there have been both positive outcomes and as challenges. Some of the positive effects of the reforms include the reorganisation of the sector, reduction of political

interference, stability of services, and improved capacity and management. These improvements have manifested themselves in terms of improved performance indicators such as regular and credible billing, improved response to customer complaints, predictable supply, accessible pay points, increased connection and metering ratios. However, most of these positive outcomes apply to high-income customers, and little improvements have been recorded in most low-income areas. Further, little progress has been recorded on core performance indicators particularly service coverage, hours of service and UfW. Thus, the outcome of the 10 years of reforms in the water services sector highlights the fact that progress has been recorded in the softer areas related to O&M, while little progress has been made with regard to the core service areas, especially expanding the network and improving the availability of the services.

In terms of the challenges occasioned by implementing the reforms over the past 10 years, declining infrastructural investment, reluctance to provide services to low-income communities, growing affordability burden for poor household, increasing vulnerability of many households, inability to cope with the growing demand due to increased population and the ageing infrastructure, stand out. Some of these challenges are manifested in the CUs' inability to expand the network to unserved areas, especially in low-income communities. In most peri-urban areas, services coverage is estimated at 35% (DTF, 2006), compared to 74% for urban areas (NWASCO, 2010). Issues such as abrupt service interruption, non-response to customer complaints, wrong billing, faulty house connections and negative attitude of workers to residents of peri-urban areas are some of the challenges that need to be addressed. Added to these concerns is the lack of commitment from the state manifested in the low state funding to the water services sector. The main concern is not that the state should actually provide the services to the people, but that the state should play a more active role to ensure people's access to water, in addition to sitting on the CUs boards. And one way of ensuring this is to provide sufficient infrastructural investment to maintain and expand the existing network.

Much work is also needed to provide more incentives¹² to service providers so that they can begin to provide adequate and quality water service to peri-urban areas. If the current levels of services are to be maintained and improved, there is an urgent need to adopt a more aggressive funding mechanism for the water services sector. What the review of the past 10 years seems to highlight is that reforms that are not backed by resources lead to superficial changes which result in a situation where services are concentrated on a small section of the population. The review also highlights that the objectives set in the water services reforms, especially expanding services delivery and affordable services to all, have not been seriously pursued by both the state and CUs.

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¹² Currently, incentives are provided through the DTF's programme for peri-urban water. The programme provides funding to CUs to expand network and operate water services projects in low-income communities. Funds for such projects have however entirely come from donors and very little from the state (DTF, 2004).

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