RESEARCH REPORT

Building city-wide sanitation strategies from the bottom up

A situational analysis for Kitwe, Zambia

People's Process on Housing and Poverty in Zambia

Zambia Homeless and Poor People's Federation

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Contents

Acronyms

CBO	Community-based Organisation
CLTS	Community-led total sanitation
CSO	Central Statistics Office
CU(s)	Commercial utility(ies)
DHS	Demographic Health Survey
DISS	Department of Infrastructure Support Services (under MLGH)
DTF	Devolution Trust Fund
GDP	Gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRZ	Government of the Republic of Zambia
JMTS	Joint Monitoring Team for Sanitation
KCC	Kitwe City Council
KMC	Kalulushi Municipal Council
LA(s)	Local authority(ies)
MDG	Millennium Development Goal
MLGH	Ministry of Local Government and Housing (Zambia)
MMEWD	Ministry of Mines, Energy and Water Development (Zambia)
MoH	Ministry of Health
NGO(s)	Non-government organisation(s)
NWASCO	National Water and Sanitation Council (Zambia)
NWP	National Water Policy
NWSC	Nkana Water and Sewerage Company
ODF	Open defecation free
PPHPZ	People's Process on Housing and Poverty in Zambia
SPSS	Statistical Package for Social Sciences
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US$	United States dollar
USAID	United State Agency for International Development
VIP	Ventilated improved pit
WASH	Water, Sanitation and Hygiene
WEF	World Economic Forum
WHO	World Health Organization
WSS	Water supply and sanitation
ZDC	Zone Development Committee
ZHPPF	Zambia Homeless and Poor People's Federation
ZMW	Zambian Kwacha Rebased (this is the new Zambian Kwacha)

Executive summary

According to the UN (2012), 52 per cent of the world's population now resides in urban areas, with 90 per cent of the world's population growth occurring in cities located in developing countries. The rapid urbanisation confronting developing countries is placing tremendous pressure on service delivery, in particular of water and sanitation. This has led to significant numbers of the population lacking access to both. Several factors can be attributed to this poor performance in service provision including: lack of finances to expand services to those in need; the lack of human and financial resources; unaffordable technologies and payment systems; poor community–government relations; the lack of community organisation; the lack of governments' prioritisation; and the lack of accountability on service providers and consumers.

This report seeks to give an overview of the current situation with regards to water and sanitation provision as well as assess the factors affecting service provision in Kitwe, Zambia. The report also explores and presents the type of services currently being offered there by service providers (both public and private).

Zambia has a population of 13,046,508 with a population density of 17.3 people per kilometre. The country is faced with rapidly growing cities such as Lusaka, Ndola, Livingstone and Kitwe where there is a huge influx of people from rural areas, resulting in a majority of the inhabitants living in slums (some 70 per cent in Lusaka) without access to the basic services of water, sanitation and healthcare. According to statistics (WHO and UNICEF, 2012), 52 per cent of Zambia's population do not have access to improved sanitation, while 39 per cent do not have access to improved water sources. In urban populations, 73 per cent use pit latrines, the majority having no sanitation platforms (CSO, 2011). These are unsustainable, as a new pit must be dug once the first pit is full, not only requiring more land but also being subjected to flooding during wet weather and potentially contaminating water sources such as shallow wells. The high number of pit latrines in urban areas, due to high population densities, leads to an ever increasing demand on basic infrastructure.

Water and sanitation provision in Zambia is the mandate of government through the Local Government Act 281. Water and sanitation provision is anchored by three pieces of legislation: the Water Supply and Sanitation Act 28 of 1997, the National Water Policy of 1994 and the Local Government Act 22 of 1991. The Water and Sanitation Act gave rise to the National Water and Sanitation Council of Zambia (NWASCO), who are mandated to regulate and coordinate the water and sanitation sector. Water and sanitation provision in most urban areas in Zambia is generally the responsibility of commercial utility (CU) companies and private sector schemes; Zambia has 11 CU companies that are responsible for an allocated number of towns/cities. The sector is 90 per cent funded through foreign finance sourced through donors, including government to government funding, embassies, financial institutions such as the World Bank and the African Development Bank, and other multilateral agencies such as the UN and the Millennium Challenge Account.

Kitwe is the second largest city in Zambia with a population of over 500,000. Water and sanitation provision in the city is provided by Nkana Water and Sewerage Company (NWSC). The CU was established in accordance with the 1997 Water Supply and Sanitation Act 28 and began its operations in 2000. It is wholly owned by local authorities: Kitwe City

Council (KCC) – 70 per cent ownership and Kalulushi Municipal Council (KMC) – 30 per cent ownership, and regulated by NWASCO. The CU operates in three different cities/towns on the Copperbelt, namely Kitwe, Kalulushi and Chambishi. NWSC provides services to about 65 per cent of the total population of the district. The rest of the residents, mainly in slums, use shallow wells and traditional pit latrines. Water and sanitation services are inadequate, particularly in low-income and peri-urban settlements where more than 50 per cent of the city's population lives (UN-Habitat, 2009b). According to the Kitwe City Slum Profile carried out by Kitwe Federation (2012), more than 90 per cent of slum dwellers living in Kitwe's 48 slums use traditional pit latrines. The predominant source of water in the slums is shallow wells, which are easily contaminated by over-flowing pit latrines, often leading to contaminated groundwater supplies.

Furthermore, a questionnaire survey conducted by the Kitwe Federation (2010) in Kamatipa showed that the average consumption of water by households was 100 litres (five 20 litre containers) per day. The cost of water from kiosks is ZMW 0.50 (US$ 0.10) per 20 litre container, thus a household in Kamatipa spends about ZMW 2.50 (US$ 0.46) per day, which translates to ZMW 77.50 (US$ 14.35) per month. Given that the majority of slum dwellers in the settlement earn less than ZMW 200 (US$ 40) per month, the cost of water is relatively unaffordable because households spend close to 39 per cent of their monthly income on water. From the literature reviewed and examined, the water and sanitation sector in Zambia is affected by the following factors:

- Capacity of CUs to provide services (human and financial capacity);
- Affordability for CUs (cost recovery to the slums is poor) and for consumers in slums (too expensive to engage);
- Loss of skilled staff to the competitive and expanding private sector;
- Inadequate funding for capital investments;
- Low technical and managerial capacities in sanitation among service providers;
- Inadequate and ineffective community participation and stakeholder involvement in the design, operation and management of sanitation facilities;
- A lack of appropriate low-cost, standardised sanitation technologies as alternatives to high-cost technologies;
- Proliferation of unplanned and illegal settlements that makes the provision of sanitation facilities difficult.

From the data obtained from urban poor communities on water and sanitation, numerous challenges are being faced in most of these communities. From the information derived from NWSC, KCC and through slum profile reports of all the slums in Kitwe, and a questionnaire survey in Kamatipa, drastic measures need to be taken to ensure that the majority of the residents in the city have both decent and affordable water and sanitation. It is also clear from both reports that the current strategies being used to increase access to water and sanitation urgently need a complete overhaul. A 2012 desk research study by the World Bank reveals that Zambia loses approximately ZMW 946 billion (US$ 189.2 million) annually due to poor sanitation. This loss results from attempts to contain epidemic outbreaks, the costs of clearing up water pollution, and the funerals of those who die from water- and sanitation-related diseases, including those of working age. The findings of the analysis in this report suggest that the following steps are crucial:

- Water and sanitation should be made available to each and every person. This would enable money lost because of poor service provision to be retained and ploughed back into the economy.

- There is a need to review all relevant legislation to ensure that it is well coordinated, has a holistic approach, and seeks the common goal of improving service provision to the poorest of the poor.

- There is a need to explore and pilot alternative methods of water and sanitation provision. These should seek to establish what other means of governance of the water and sanitation sector might be possible; what other methods of accessing water and sanitation there might be other than conventional methods; and alternative ways of financing the water and sanitation sector to lower the barrier to access, other than depending on government and donors.

- The government needs to explore alternative methods of financing the sector, such as prioritising the sector in national budgets, exploring other means such as the use of revolving funds as well as water trust systems, and, in particular, financing access to water and sanitation for slum dwellers and low-income earners by extending these life supporting services in their respective settlements. Additionally, service providers should seek to establish means of sustaining finances.

- There is a need to invest and promote the use of alternative methods that are affordable and sustainable for both CUs and end-users

Introduction

Background

Millennium Development Goal 7 recognises the importance of water and sanitation; it seeks to ensure environmental sustainability and calls for *the number of those living without access to basic water and sanitation to be halved by 2015*. Global figures indicating the lack of water and sanitation services among populations are alarming. More than 780 million people do not have access to improved drinking water supplies (WHO/UNICEF, 2012). According to the 2012 report by the Joint Monitoring Programme (JMP) for Water and Sanitation (WHO /UNICEF, 2012), an estimated 2.5 billion people are still without access to improved sanitation – and 15 per cent (1.1 billion) of the world's population practices open defection (in fields, bushes, forests, bodies of water and other open spaces). Statistics presented by the JMP can be attributed to the rapid urbanisation of cities, where the need for basic infrastructure and services is greater than the ability of local authorities or commercial utility companies to provide.

Many cities are affected by severe urban poverty with residents lacking access to basic necessities such as access to water and decent sanitation (WHO, 2008). The adverse health impacts are significant: nearly 60 per cent of infant mortality is linked to water-, sanitation- and hygiene-related causes (*ibid*). Globally, diarrhoea is the third biggest cause of morbidity and the sixth biggest cause of mortality (Montgomery and Elimelech, 2007). Improving access to decent water and improving sanitation has been linked to improving the health of communities as well as the health of individuals and households (Moore *et al*, 2003). Studies have shown that improving water supply and providing good sanitation is significant in reducing water-, sanitation- and hygiene-related diseases (Montgomery and Elimelech, 2007). Zambian cities are no different from those in other developing countries in terms of water and sanitation provision, and with a majority of city populations (70 per cent) living in informal settlements) the government faces a mammoth task.

In an answer to the challenges, the Federation together with its support NGO – the People's Process on Housing and Poverty in Zambia (PPHPZ) – is implementing a project aimed at building city-wide water and sanitation strategies from the bottom up. The main objective is to establish alternative means of provision to ensure that the majority of slum dwellers can be provided with decent water and sanitation, as well as giving city local authorities a long-term solution to the problems that they have. Similar projects to Kitwe's are being undertaken in the cities of three other countries: Blantyre (Malawi), Dar es Salaam (Tanzania) and Chinhoyi (Zimbabwe).

The water and sanitation project is seeking to create a sustainable city-wide water and sanitation strategy that will look at improving water and sanitation provision to slum dwellers in Kitwe. The strategy will also seek to enhance the use of a bottom-up approach to community development (slum upgrading) as well as pilot a holistic strategy to water and sanitation provision to slum areas across the entire city of Kitwe. This city-wide strategy will build sustainability through four components: resource mobilisation; assessment of socio-economic conditions; environmental conditions; and policy engagement and influence (see Box 1).

Box 1 The four components of a city-wide water and sanitation strategy

Resource mobilisation: how resources are obtained and sustained is important for the provision of water and sanitation in Kitwe, Zambia. Financial resources are required to allow for the continuation of the provision of services. Human resource is required to sustain the construction of infrastructure within slum communities. This will seek to empower slum dwellers through skills and training so that a locally based and readily available pool of artisans is created.

Socio-economic conditions: these will explore the barriers to access to water and sanitation for slum dwellers, the range of their income, and what they are likely to be able to pay for such access. Establishing this will be done through piloting various options.

Environmental considerations: current water and sanitation sources for slum dwellers are a health hazard and a risk to the environment. Alternative, safe methods of provision will also be piloted.

Policy engagement and influence: policy makers will be engaged to bring about change in water and sanitation provision to slum dwellers as well as anchor the city-wide water and sanitation strategy and persuade local authorities to participate, contribute and accept, city-wide, what is proposed.

To support the development of the strategy, the project intends to establish and assess the following:

- Socio-economic conditions affecting water and sanitation provision to slum dwellers in Kitwe.
- Supporting policy and legislation surrounding the water and sanitation sector, in particular to slum areas.
- The scale and nature of current methods of service provision – both formal (government or donor-oriented) as well as alternative (community-led, small-scale sanitation businesses, etc.), including work by the Federation to date – and to establish the scale of the lack of provision.

The Kitwe Water and Sanitation project also seeks to create sustainable partnerships with Kitwe City Council and Nkana Water and Sewerage Company. It is being spearheaded by The PPHPZ and the Zambia Homeless and Poor People's Federation (ZHPPF). The NGO–Federation alliance already has a working relationship with Kitwe City Council embodied in an MoU signed in 2008.

Box 2 About PPHPZ and ZHPPF

PPHPZ

The People's Process on Housing and Poverty in Zambia is a local non-government organisation affiliated to the international network known as Slum/Shack Dwellers International. The NGO is in alliance with the grassroots movement known as the Zambia Homeless and Poor People's Federation, provides technical support through skilled professionals, and lobbies for additional financial resources for the Federation's activities as well as capacity building to enhance the Federation's engagement with policy makers.

ZHPPF

The Zambia Homeless and Poor People's Federation is a grassroots savings movement established in 2001, which has grown to cover 43 districts with a membership of 48,000. Through health savings and loan fund savings, the Federation aims to improve the livelihoods of its saving members – slum dwellers across the country have formed 384 individual active savings schemes. Through the loan fund (Swalisano Urban Poor Fund) savings schemes have been able to obtain loans for income generation to improve livelihoods as well as loans to construct low-cost housing units.

Kitwe Federation: the Federation in Kitwe has 1,219 members and operates 36 savings schemes in over 20 slums in the city. The housing project in the city has constructed 54 housing and five ecological sanitation units. The housing project benefits 158 members. The Federation has identified all Kitwe's slums and conducted a detailed survey of Kamatipa. The Federation has also established a relationship with Nkana Water and Sewerage Company (NWSC) that has helped the commercial utility (CU) company learn about ecological sanitation and overcome the cultural perceptions associated with it.

The NGO–Federation alliance in Zambia uses the following approaches to steer community-driven development:

- Poor people have to be at the centre of all development processes;
- What works for the very poorest will work for the majority;
- The resources of the poor are critical in all development projects in which the poor are involved.

Using these approaches, the alliance has persuaded local and central government to allocate land for six housing projects across the country through the savings contributions of the Swalisano Urban Poor Fund.[1] Through vigorous engagement with local and central authorities, the alliance has managed to bring about positive changes in the housing and service delivery sector, as well as build long-lasting relationships with three of the four major city councils in the country (Lusaka, Ndola and Kitwe) and one municipal council (Choma).

[1] The Swalisano Urban Poor Fund is a community-managed loan fund set up in 2001 which provides the financial architecture for income generating activities, housing and infrastructure projects. The urban poor make small contributions of ZMW 10 per month (US$1.85), and use this as leverage to source external funds to augment their savings for capital projects.

Where water and sanitation are concerned, the alliance has successfully piloted ecological sanitation through its revolving fund system, as well as assisted beneficiaries of the housing projects with access to water.

Data collection

The information compiled in this report was sourced by various means from different stakeholders. Communities were themselves significant contributors and gave valuable insight to the challenges they face on a daily basis as well as how they work together in some cases to address these challenges.

Desktop research/literature review

Desktop research made use of the internet and search engines like Google Scholar[2] to gather journal articles, books and publications from multilateral agencies such as UN-Habitat, WHO, USAID and UNDP. Information collected from multilateral agency websites included country reports on Zambia, city profile reports such as those done by UN-Habitat, and other reports on sub-Saharan Africa, Africa in general and Asia .

Reports were collected from local agencies and stakeholders including Kitwe City Council, Nkana Water and Sewerage Company and the Central Statistics Office and included not only Kitwe city-level reports about water and sanitation provision but also national-scale reports. At the same time a relationship was established between the alliance and the council and the commercial utility company whose collaboration on the project was enlisted.

Community profiling and questionnaires

Community profiling and questionnaire surveys made use of Federation structures in settlements to collect information about socio-economic conditions. Community profiles were largely done to assess the situation at a settlement level in relation to the greater context of the city, whereas questionnaires collected socio-economic data about particular households within a settlement. Together, the methods gave a comprehensive picture of the settlements and their residents, how they live and the challenges they face. In addition, group discussions held during the administration of the questionnaires made it possible to solicit intricate details about the settlements.

Water and sanitation mapping

Water and sanitation mapping was used to gather information about where the water and sanitation facilities were located. Mapping also helped to determine the number of households (and people) accessing a particular water or sanitation facility. To ensure accurate mapping, a settlement was divided into six zones and each was independently mapped by Federation members within the community and surrounding communities. The results were then combined.

[2] scholar.google.com

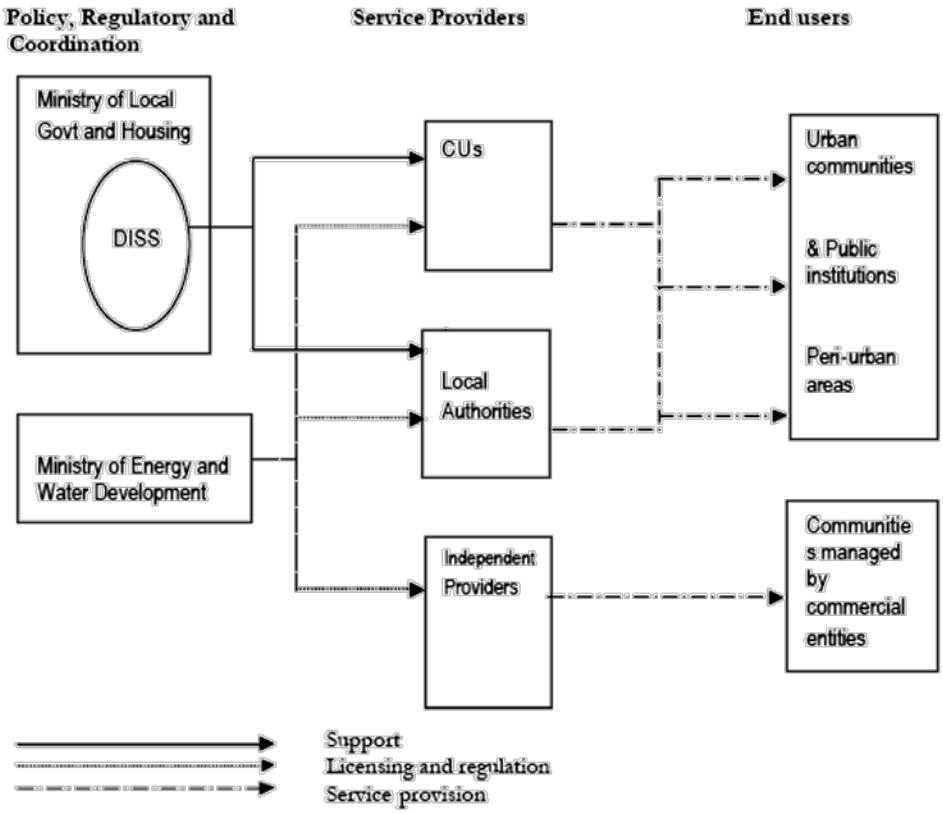
The water and sanitation sector in Zambia

Country background

Zambia has a population of 13,046,508 (CSO, 2011) with a population density of 17.3 people/kilometre. The country has four major cities: Lusaka, Livingstone, Ndola and Kitwe. Like many sub-Saharan African countries, Zambia is faced with rapidly urbanising cities with a majority of city populations residing in slums (over 50 per cent). Nationally, approximately 18 per cent of the population has no access to any form of sanitation facilities, 34 per cent of households have access to unimproved sanitation facilities and about half the population (48 per cent) has access to improved sanitation facilities (WHO/UNICEF, 2012). In the urban centres, 43 per cent of the population is without access to improved sanitation and at least 2 per cent practise open defecation.

The regulation of the water and sanitation sector, in particular for provision of water and sanitation to peri-urban areas (slums), is done through the two main ministries involved, namely the Ministry of Local Government and Housing, and the Ministry of Mines, Energy and Water Development. The Ministry of Local Government and Housing oversees the commercial utility companies and the local authorities. Figure 1 and Table 1 show in greater detail the roles of the ministries.

Figure 1. Regulatory framework for water and sanitation provision



Source: MLGH (2004)

Table 1. Ministries involved in water and sanitation

MINISTRY	ROLES AND RESPONSIBILITY
Local Government and Housing	Overall mandate to coordinate water supply and sanitation provision through local authorities. Also coordinates investments in the sector (execution of loan and grant investments to local authorities).
Mines, Energy and Water Development	Provides services to independent providers, local authorities and commercial utility companies.
Other: Ministry of Lands, Environment and Natural Resources (formerly Ministry of Environment and Natural Resources)	Establishes environmental standards including aspects of effluent discharge and erosion caused by uncontrolled storm drainage.

Various acts, institutional frameworks and policies play different roles in the management of water resources and provision of water as well as sanitation. The Local Government Act authorises local authorities to provide water and sanitation services within their administrative boundaries. The Water and Sanitation Act gives rise to the National Water and Sanitation Council (NWASCO), which has formed the Devolution Trust Fund (DTF) to finance water and sanitation services to the slums (peri-urban areas).

The National Water Policy (NWP) gives rise to the overall management of the water and sanitation sector and the provision of services. However, implementation of the policy and the acts is neither effective nor efficient. With most slums still being considered illegal – though they fall within the boundary of the LAs – formal service provision to slums is negligible. Under the Water Supply and Sanitation Act, commercial utility companies apply for finances to extend their services to slums through the use of funds under the DTF. This in itself is biased against slum communities as they are marginalised in the key decision-making processes of establishing water and sanitation projects that can be financed through the DTF. In any case, slum dwellers are largely unaware of the DTF.

The WSS Act further causes slum dwellers to be excluded from water and sanitation provision as it does not see addressing universal coverage (service provision to both formal and informal areas) ‘as a matter of urgency’, indicating that settlements that can afford to pay for services get services and those that cannot afford services do not. This significantly excludes a large number of slum settlements in cities, thus leaving them without adequate water and sanitation. Though the NWP speaks ‘to promote equitable provision of adequate quantity and quality of water for all users’ and speaks to ‘ensure secure supply of water under varying conditions’ – the policy lacks effective implementation as it does not address factors to do with access to services for different income ranges. Therefore the bias is towards formally planned settlements where costs of services can be recovered easily and thus conventional service provision of water and sanitation is sustainable. The policy speaks of providing services to all peoples equitably, but largely excludes slum dwellers when

implemented. The lack of or ineffective implementation of the major legislation related to water and sanitation in Zambia has largely resulted in over 50 per cent of the population residing in slums being without services and having to resort to alternative means, such as shallow wells and traditional pit latrines.

Table 2. Legislation supporting water and sanitation

LEGISLATION		ROLE/ MANDATE	INSTITUTION/ COUNCIL FORMED UNDER LEGISLATION
Local Government Act No 22 of 1991		Mandates local authority provision of water supply and sanitation services within the boundaries of the local authority. Empowers LA to make by-laws and set standards and guidelines for provision of services.	None
Water Supply and Sanitation Act No 28 of 1997		Specifies how LA may provide urban water supply and sanitation services. Establishes NWASCO to be regulator for the water supply and sanitation sector and implementer of policy. Defines functions and powers of NWASCO as well as NWASCO regulating LAs.	National Water And Sanitation Council (NWASCO): mandated to provide efficient and sustainable supply of water and sanitation services.
National Water Policy		Provides holistic management approach to the water sector. Promotes sustainable water resources development. Provides for an equitable provision of an adequate quantity and quality of water for all competing users at acceptable cost and ensures security of supply under varying conditions.	
Other	Water Act of 1948	States ownership of water and the procedures of authorisation and validation of water use.	
	Environmental Protection and Pollution Control Act of 1990	Deals with protection of the environment and control of pollution (including water resources).	
	Public Health Act of 1995	Stipulates the management of sanitation and prevention of pollution to water supplies by LAs.	

Financing the water and sanitation sector

The sector is financed through government and foreign agencies. Under government, the MLGH has established national rural and urban water and sanitation programmes for effective implementation of water and sanitation provision. Both rural and urban programmes are subject to obtaining funding from government and applying for funding from other sources. For the urban programme, funding can also be obtained from the Devolution Trust Fund.

Financing through foreign agencies

In general about 90 per cent of financing for the entire water and sanitation sector comes from foreign funding agency sources through embassies, international governments, financial institutions like the World Bank and African Development Bank, and other multilateral agencies such as the UN and the Millennium Challenge Account (UNDP, 2011). According to NWASCO (2012), in 2011 the sector received a total of ZMW 254 billion (US$ 50,880,000). Table 3 below shows the breakdown of the amount obtained from foreign donors. Despite this, slums still have little or no access to improved water and sanitation.

Table 3. Sources of foreign financing

SOURCE	PROJECT NAME	IMPLEMENTING AGENCY	DISBURSEMENT
Cooperating Partners-Grants			
AfDB	Central province 8 centres WSS	MLGH	US$ 0.4 mil
Denmark	Water and Sanitation	MLGH/MEWD/ DTF/NWASCO	US$ 7.61 mil
EU	Implementing of integrated water resource management in Zambia	GRZ	US$ 0.24 mil
Germany	Devolution Trust Fund, phase III, Urban Water Supply Eastern Province, phase II, GRESP Ground-water Management Lusaka(BGR)	MLGH	US$ 1.5 mil, US$ 3.07 mil, US$ 0.71 mil
	Study and expert fund VI	GRZ	US$ 0.28 mil
	Water Sector Reform Program	MEWD	US$ 2.73 mil
Japan	Improvement of Water Supply Condition in Ndola city	MLGH	US$ 0.77 mil
	Support in National Roll-out of sus-tainable Operation and mainte-nance Programme (SOMAP 3)		US$ 0.5 mil
Ireland	Rural water and Sanitation Northern Province (Province Administration and 4 Districts)	CARE International/ Chambeshi WSC	US$ 0.41 mil

Source: NWASCO (2012)

Financing through loans

Through concessional loans and private sector loans from foreign and local agencies, the water and sanitation sector also receives funding from the private sector in the form of grants and loans. The sector also receives money through loans (concessional and private sector) from foreign agencies and local agencies (see Table 4). Very little of the money obtained is from local funding agencies such as banks or other ministries (such as the Ministry of Health (MoH)). The bulk of the funds comes from outside the country. Though this shows that there are beneficial partnerships between the Government of the Republic of Zambia (GRZ) and

the international community, which have resulted in funding for the water and sanitation sector, much still needs to be done to make the sector self-sustaining and not reliant on international bodies. Where loans are concerned, these have to be repaid. Indications are that the sector is only sustainable as long as it receives project grants/loans. What happens once the duration of these loans elapse is something that the sector is probably not addressing in a holistic manner.

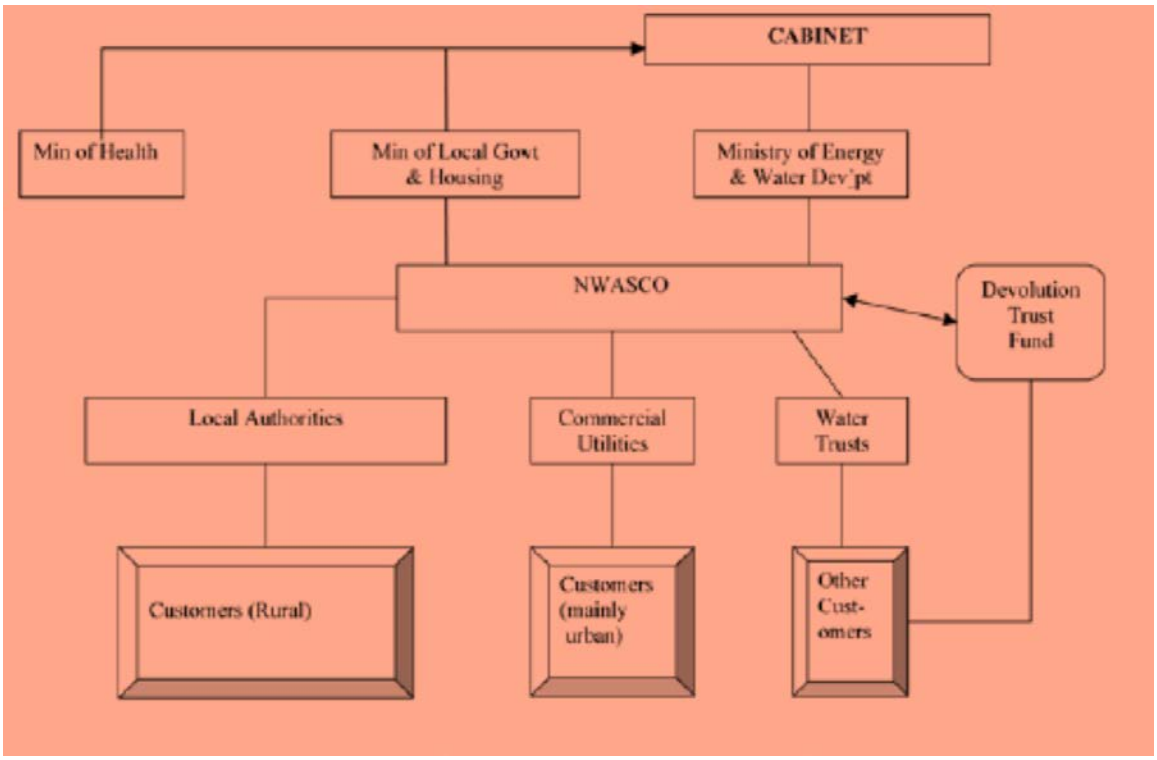
Table 4. Loan finance

SOURCE	PROJECT NAME	IMPLEMENTING AGENCY	DISBURSEMENT
Concessional Loans			
WB Group	ZM-Water Sector Performance Improvement	MLGH	US$ 2.33 mil
ADB Group	WSS Project	Nkana WSS	US$ 1.09 mil
	Central province 8 centres Water Supply Projects	MLGH	US$ 0.15 mil
	Water Program	MLGH	US$ 1.56 mil
Other-Private Sector (Loans and Grants)			
ZANACO Loan	Water supply-Farm 1917 and 1080 and Hillview in Lusaka	LWSC	ZMK 14 bil
Mopani Grant	Wusakile Sanitation Project in Kitwe	NWSC	ZMK 21.7 bil
MOH Grant	Mupambe Sanitation Project in Mufulira	MWSC	ZMK 5.6 bil

Financing through the government of the Republic of Zambia

The Zambian government also gives finance to the sector. Money is channelled through the relevant ministries to NWASCO, which in turn distributes it to local authorities, commercial utility companies and the Devolution Trust Fund (DTF). Financing the water and sanitation sector through the government seems to be a mammoth task due to the elaborate and multiple-step mechanism involved (Figure 2). The process is subject to bureaucratic delays, delays in decision making and approval, and delays in disbursing funds.

Figure 2. Government financing structure



The Devolution Trust Fund

The Devolution Trust Fund (DTF) was established in 2006 by central government through NWASCO as a multi-donor basket fund to help resource the commercial utilities to provide services to peri-urban areas (slums). Thus it has a close relationship with the national urban water and sanitation programme. In turn the DTF receives funds from its partners, which it then distributes to CUs in the country, the CUs submitting proposals for funding (see table below).

Table 5. Disbursement of the DTF

Partners	Funds Committed	Disbursed
Government (GRZ)	ZMW 500 million	ZMW 499 million
DANIDA	DKK 26 million	Euro 2.5 million
KfW	Euro 5 million	Nil
AusAID	Euro 2.09 million	Euro 1.045 million

Source: DTF (2011) DDK1~ZMW850 EURO1~ZMW6,500

The weakness of the way the DTF works is that commercial utilities are mandated with first identifying slums that need intervention (priority areas) and then having to apply for finance. The communities lack direct access to this fund, which leaves them at the mercy of the CUs. For a community to access DTF funds, it has to have a partnership with a CU or an implementing NGO within the community.

Table 6. DTF projects

Implementing Agency	Project Area	Project Description	Project Budget in ZMW	Potential Beneficiaries
Lusaka Water and Sewerage Company	John Laing	Construction of 20 water kiosks	1,707,457,571	35,631
Kafubu Water and Sewerage Company	Masaiti Boma	6 water kiosks, extension of network and installation of water tank and pressure filter	870,462,900	14,837
Kafubu Water and Sewerage Company	Chifubu	5,100 household meters and 3 bulk meters, rehabilitation of water reservoir	2,716,052,105	N/A
Nkana Water and Sewerage Company	Ndeke	4,900 household meters	2,079,934,250	N/A
Southern Water and Sewerage Company	Libuyu	Construction of 390 toilets, new sewer network with 12 biodigesters and a pump station	5,205,212, 216	2,730

Source: DTF (2011)

This largely excludes most settlements as funding received is dependent on the amount of time CUs spend on drafting proposals, and the quality of those proposals, as well as disbursement of funds once approved. Nonetheless, the DTF has seen a number of projects implemented through associated CUs.

Funding for the water and sanitation sector has largely been through a top-down approach with institutions like the GRZ, CUs, and local authorities receiving the money and then channelling this to the communities. Despite 80 per cent of the urban population in dire need of water and sanitation, the CUs are underspent on the funding they have already received and subsequently have had budget constraints imposed on them.

There is clearly a need for community involvement in the way funds received are used. This can be achieved through forging partnerships between communities and CUs (which receive the funds) so as to give impetus to participatory budgeting with the input from the grassroots communities which can go a long way in efficient resource expenditure. According to the UNDP (2011), the principal constraint to budget execution appears to be the lack of capacity to plan and implement activities, both in the public and private sectors, due to inadequate staffing in the relevant agencies – the public service sector has faced intense competition from the expanding private sector in the nation and the sub-region and has lost water engineers, hydro-geologists and other skilled personnel. In addition to loss of skilled staff and a lack of sustainable financial resource mobilisation, there is a clear lack of investment at the national level. This leaves a gap between maintaining infrastructure that is currently in place and what more is needed. An assessment of how the sector can scale up and supply the very poorest at minimal and sustainable costs is urgently needed.

Provision of water and sanitation

Water and sanitation provision in Zambia's urban areas is mostly in the hands of commercial utility (CU) companies and private sector schemes (provided to employees) (NWASCO, 2012). Zambia has 11 regional CUs, each responsible for an allocated number of towns/cities. But water supply and sanitation in Zambia is predominantly characterised by wide discrepancies in access to an improved water source. The end of the 1990s brought about many institutional reforms in the sector with a focus on urban areas. These reforms gave rise to the formation of the CUs, established to replace fragmented service provision by local governments. The reform process has been slow and has only partially achieved its objectives. Investment levels remain at only a fraction of what would be needed to achieve the Millennium Development Goals (Ministry of Mines, Energy and Water Development, 2009). In rural areas access to an improved water source is about 40 per cent compared with 90 per cent in urban ones – though not all of the 90 per cent is piped water to every household but includes access via water kiosks or standpipes in informal settlements. The supply is not reliable in all cases.

As Table 6 below shows, 77 towns/cities across the country are served by the CUs, indicating that the remaining areas (mostly rural) are outside the boundaries of the CUs and rely on alternative means of obtaining water and sanitation such as investment from NGOs or the use of shallow wells.

Table 6. CUs operating in Zambia

Commercial Utility	Abbreviation	Start of operations	No. of connections	No. of towns serviced	No. of Staff	External Support *
Lusaka WSC	LWSC	1989	78,394	4	826	World Bank
Nkana WSC	NWSC	2000	47,203	3	353	AfDB
Kafubu WSC	KWSC	2000	52,251	3	311	JICA
Mulonga WSC	MWSC	2000	44,612	3	333	-
Lukanga WSC	LGWSC	2006	17,050	6	203	AfDB/DBSA
Southern WSC	SWSC	2000	32,945	17	283	-
Chambeshi WSC	CHWSC	2003	15,269	12	180	-
North Western WSC	NWWSC	2000	8,313	7	95	-
Eastern WSC	EWSC	2009	12,240	8	122	Germany
Western WSC	WWSC	2000	10,335	6	105	Denmark
Luapula WSC	LPWSC	2009	3,583	7	51	Denmark

Source: NWASCO (2012)

Water provision

Municipal water

In urban areas, only 36 per cent of households have access to water connections in their house or yard through conventional pipes. This leaves a significant number of the urban population (64 per cent, usually residing in slums) without such access. Table 7 below is an extract from the 2012 WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation with regards to water provision and access in urban and rural areas.

Table 7. Sources of drinking water

Country, Area or Territory	Year	USE OF DRINKING WATER SOURCES (percentage of population)														
		Urban					Rural					National				
		Improved			Unimproved		Improved			Unimproved		Improved			Unimproved	
		Total Improved	Piped on Premises	Other Improved	Unimproved	Surface Water	Total Improved	Piped on Premises	Other Improved	Unimproved	Surface Water	Total Improved	Piped on Premises	Other Improved	Unimproved	Surface Water
Zambia	1990	89	49	40	10	1	23	1	22	45	32	49	20	29	31	20
	2000	88	42	46	11	1	36	1	35	37	27	54	15	39	28	18
	2010	87	36	51	11	2	46	1	45	32	22	61	13	48	24	15

Source: WHO/UNICEF (2012)

Piped water provided by CUs is mostly rendered to formally planned areas (piped water into dwelling/yard/plot), whilst in slums it is provided through public taps/standpipes. Having access to an improved water source does not necessarily mean that the water source is owned by the household where it is located. In most cases, water sources are shared in communities – particularly in low-income areas and slums.

Water kiosks

A water kiosk is an outlet through which formal water providers deliver safe and reliable water at affordable prices to residents of low-income areas (GIZ, 2009). Water kiosks were first introduced in Zambia in 2006. They are operated by private individuals who have signed an agreement with water utilities and municipalities. The kiosk operators buy piped water in bulk and sell it at a slightly higher regulated price of about ZMW 500 (US$ 0.01) per 20 litres – the same as the lowest price charged for water supplied through a house connection – to users who carry it to their homes in buckets or containers. The price of water at kiosks is usually cross-subsidised from the sale of water to individual households and from commercial connections. To ensure that the price of the water matches the rate set by the NWASCO the kiosk is obliged to display the water tariff (GIZ, 2009). The kiosk operators supplement their income by selling various other items of daily life (GIZ, 2009). In 2009, according to GIZ, there were about 300 water kiosks in the country each serving an average of about 1,500 people.

Water kiosks provide a viable solution in providing safe drinking water to urban populations residing in slums who are more often than not subjected to unreliable and unsafe water (such as shallow wells susceptible to contamination) which have detrimental impacts on public and environmental health, and also limit economic development in densely populated slums.

Shallow wells and boreholes

The use of shallow wells to access water is common in urban slums, predominantly because there is no service provision by the CUs and few water kiosks. Boreholes are also common in rural areas, with NGOs like World Vision investing in a lot of facilities in remote

communities (UNDP, 2011). Information obtained from the CSO Demographic Health Survey Report (2007) states that only 5.6 per cent of the urban population accesses water from a protected well source.

The proportion of urban slum dwellers accessing water from unprotected sources is 13.7 per cent, indicating that people use and drink contaminated water, and of the 13.7 per cent, 12.6 per cent draw water from unprotected shallow wells. Water from unprotected sources is subject to contamination by garbage and by overflowing pit latrines during wet weather.

Sanitation provision

Sewerage lines and septic tanks

Table 8 below shows that 43 per cent of urban households in Zambia do not have access to adequate/improved sanitation facilities. Notably, the percentage of households with improved access to sanitation has been decreasing during the period from 1990 to 2010, and equally the number of households without adequate access has increased .

Table 8. Access to sanitation

Country, Area or Territory	Year	Population (x 1,000)	Percentage Urban Population	USE OF SANITATION FACILITIES (percentage of population)											
				Urban				Rural				National			
				Improved	Unimproved			Improved	Unimproved			Improved	Unimproved		
					Shared	Other Unimproved	Open Defecation		Shared	Other Unimproved	Open Defecation		Shared	Other Unimproved	Open Defecation
Zambia	1990	7,860	39	61	25	12	2	37	7	16	40	46	14	15	25
	2000	10,202	35	59	24	15	2	40	8	19	33	47	14	17	22
	2010	13,089	36	57	24	17	2	43	8	22	27	48	14	20	18

Source: WHO /UNICEF(2012)

Traditional pit latrines

A household is classified as having an improved toilet if the toilet is used only by members of one household (i.e. it is not shared) and the waste is separated from human contact (WHO/UNICEF, 2004). The table below shows that almost four in ten households in Zambia (39 per cent) use pit latrines that are open or have no slab; 27 per cent in urban areas and 45 per cent in rural areas. Overall, 25 per cent of households in Zambia have no toilet facilities (CSO *et al.,* 2009).

Table 9. Type of sanitation

Type of toilet/latrine facility	Households			Population		
	Urban	Rural	Total	Urban	Rural	Total
Non-improved facility	**63.2**	**88.6**	**79.8**	**56.2**	**87.1**	**76.1**
Any facility shared with other households	32.8	5.8	15.1	27.8	5.5	13.4
Flush/pour flush not to sewer/septic tank/pit latrine	0.4	0.0	0.1	0.3	0.0	0.1
Pit latrine without slab/open pit	27.0	44.5	38.5	25.9	45.4	38.5
Hanging toilet/hanging latrine	0.0	0.1	0.1	0.0	0.1	0.0
No facility/bush/field	2.4	37.3	25.2	1.8	35.4	23.5
Other	0.5	0.8	0.7	0.3	0.7	0.5
Missing	0.1	0.1	0.1	0.1	0.0	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number	2,479	4,685	7,164	12,457	22,523	34,980

Source: Zambia DHS Report (2007)

It is evident that the majority of urban and rural households use traditional pit latrines. As discussed in previous sections, traditional pit latrines are unsustainable due to the need for a new pit to be dug on new land once the initial one is full. In addition, traditional pit latrines are a public health hazard in wet weather because of potential flooding and consequent contamination of ground water supplies and shallow wells. In cities like Lusaka, pit emptying is becoming an increasingly popular business due to the limited space in the city slums for new pits to be dug. In Kitwe, there are no reported enterprises that provide pit-emptying services.

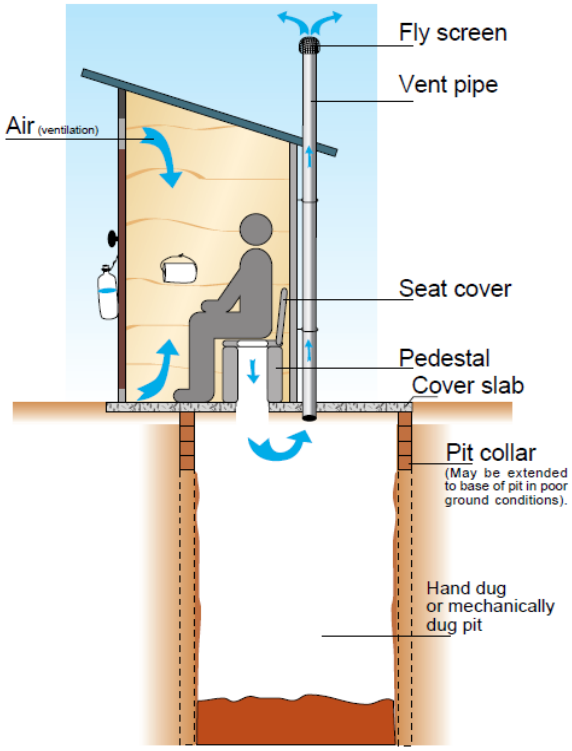
Dry sanitation

Due to the limited access to water In Zambia, especially in peri-urban and slum areas, dry sanitation options are increasingly becoming an alternative, mostly for poor people residing in urban slums and rural areas. In addition to not requiring water, they are cheaper than conventional flushing to sewers. Dry sanitation facilities have minimal start-up costs and are sustainable. There are two types that are considered to be improved facilities currently being used by poor Zambians in rural and urban slums: ventilated improved pit latrines (VIP) and composting toilets (ecological sanitation).

Ventilated improved pit latrines

The ventilated improved pit latrine (VIP) is designed like a traditional pit latrine but with improved air circulation and ventilation. Waste drops into the pit where organic material decomposes and liquids percolate into the surrounding soil. Continuous airflow through the top-structure and above the vent pipe removes smells and vents gases to the atmosphere. VIPs are an adequate improved form of the traditional pit latrine for high-density areas such as slums. Though not as common as traditional pit latrines, VIPs have gained popularity due to their relative cheapness and are simple to construct.

Figure 3. VIP



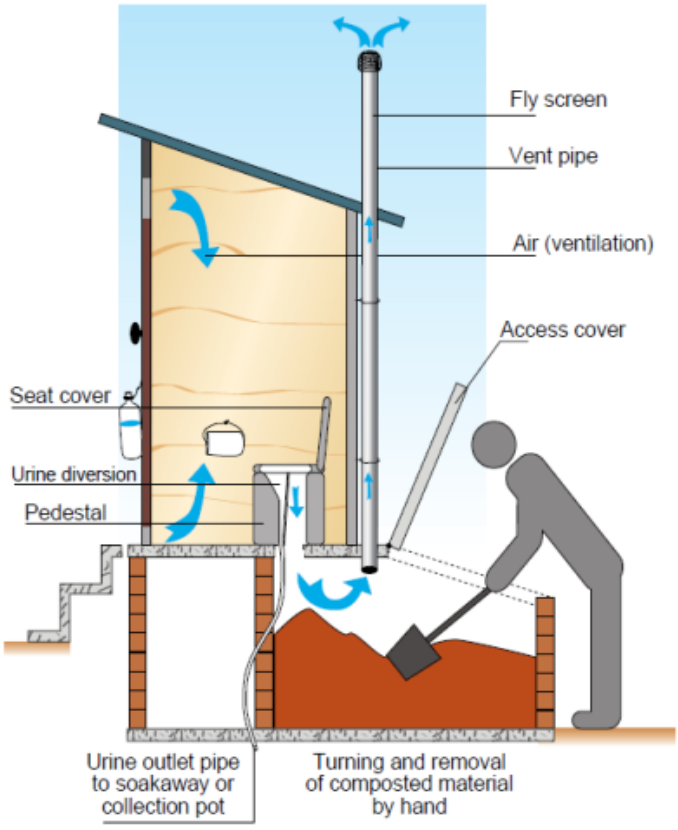
Source: Department of Water Affairs and Forestry (2002)

Composting toilets

Compositing toilets (also known as ecological sanitation) are a type of sanitation technology that separates solid and liquid waste into two different components. Waste is deposited in the chamber and dry absorbent organic material, such as wood ash, straw or vegetable matter is added after each use to deodorise decomposing faeces and/or control moisture and facilitate biological breakdown (composting).

Urine is separated/diverted through use of specially adapted pedestals. This may be collected and used as a fertiliser after dilution with water. In desiccation systems, ventilation encourages the evaporation of moisture.

Figure 4. Composting toilet



Source: Department of Water Affairs and Forestry (2002)

The cost of an ecological sanitation unit constructed using the Federation approach is ZMW 3,356 (US$ 670 – see Appendix). This is very expensive for the majority of slum dweller householders, who earn an average of USD$ 40 per month, to pay at one time, but a loan system makes it easier to obtain a toilet – loan repayments are on a monthly basis.

Furthermore, if more than one household will be using the ecosan facility, all households doing so have to contribute towards the loan – which, of course, makes the repayments easier. Loan repayments are at a monthly interest of 1 per cent for a period of eight years making monthly payments around ZMW 33.56 (US$6). The benefit of ecological sanitation is that it also produces compost that can be used in backyard gardens as a fertiliser. Federation members say that in some cities like Livingstone a 50 kg sack of compost from ecosan units sells for as much as ZMW 50 (US$ 10). Acceptability of the technology has been an issue as it is not a cultural norm to compost faecal waste and there are questions about its safety and usage. Such issues are overcome through vigorous discussion between

the Federation and buyers of the sanitation unit or of the compost in cases where buyers are not familiar with ecosan technology.

Cost of accessing services and impact on slum dwellers

Zambia has high levels of poverty, a crumbling water network in the urban centres, and the poor have limited access to water (Dagdeviren, 2008). The water sector in Zambia has largely been commercialised through its 11 commercial utilities, which generate good revenues and get good cost recovery in formal areas (middle- to high-income areas), but in low-income areas the returns are negligible. The impact of commercialisation of water services has had a negative impact on slum dwellers. Tariffs have increased two- to seven-fold since 1990, with CUs aiming to recover a significant proportion of the costs involved in service provision. And CUs are reluctant to supply services to slum areas because of the negligible returns. To compound the problems for slum dwellers, supply through NGOs and donors suffers serious capacity and management problems (Dagdeviren, 2008). This has made water and sanitation provision for slum dwellers almost non-existent.

Table 10. Water tariffs

	Fixed tariffs for unmetered connections by housing category			Tariffs for metered connections for:		
	Low cost	Medium cost	High cost	6 m^3 water	15 m^3 water	30 m^3 water
1990	22.0	65.9	65.9	–	–	–
1992	83.7	125.5	167.4	8.4	8.4	12.6
1994	95.5	167.1	300.9	–	–	–
Tariffs of selected commercial Utilities in 2002						
Lusaka	114.3	183.0	643.7	16.2	45.3	93.8
AHC-MMS[a]	140.8	226.4	303.1	18.6	59.8	142.7
Nkana	80.9	134.8	242.6	20.2	50.5	121.3
Southern	53.9	80.9	141.5	18.2	60.6	158.4
Western	138.1	239.2	239.2	57.3	57.3	113.9
Tariffs of selected commercial Utilities in 2006						
Lusaka	123.6	256.7	613.6	21.3	59.7	123.6
Nkana[a]	69.2	115.4	248.6	21.3	56.5	122.2
Southern	71.0	106.5	170.5	21.3	53.3	110.1
Western	177.6	–	230.8	21.3	58.1	127.3

Note:
a: The management contract of AHC-MMS was terminated in 2005 and the utility was taken over by Nkana WSC.
Sources: Tariff data for the 1990s from Ministry of Energy and Water Development; data for 2002 and 2006 from NWASCO. Figures are deflated by CPI index.

Source: Dagdeviren, 2008

Commercialisation has also led to changes in the costing of services for different CUs in the country. The table above shows the different tariff rates for different CUs.

Affordability of water and sanitation services provided by CUs is an issue of concern for slum dwellers. With little income to spread across rent (which usually amounts to half monthly income), food, transport, education fees for children and looking after dependants – slum dwellers usually do not have water and sanitation services at household level and rely on water kiosks or shallow wells for water and traditional pit latrines (theirs or their neighbours') for sanitation services. According to Dagdeviren (2008), 40 per cent of urban households on average spend no more than 5 per cent of income on water and 60 per cent spend as little as 3 per cent. But among the poorest in Lusaka that percentage is 29.8 per cent and in Kitwe, 21.1 per cent (see Table 11 below). Conventional water supply is expensive for the very poor highlighting the need for cheaper, more affordable alternative means of water and sanitation provision.

Table 11. Ratio of monthly water charges for low cost housing to mean monthly household income in urban areas

	Ratio of monthly water charges for low-cost housing to mean monthly household income in the urban areas						
Urban households (HH) by income decile	**Lusaka**	**Mulonga, Copperbelt**	**Western**	**AHC-MMS, Copperbelt**	**Southern**	**Nkana, Copperbelt**	**Chipata**
1st (lowest income)	29.8	31.6	36	36.7	14.1	21.1	56.2
2nd	13.6	14.4	16.4	16.7	6.4	9.6	25.6
3rd	9	9.5	10.8	11.1	4.2	6.4	16.9
4th	6.7	7.1	8.1	8.3	3.2	4.8	12.7
5th	5.2	5.5	6.3	6.4	2.4	3.7	9.8
6th	4	4.3	4.9	5	1.9	2.8	7.6
7th	3	3.2	3.6	3.7	1.4	2.1	5.6
8th	2.2	2.3	2.7	2.7	1	1.6	4.2
9th	1.4	1.5	1.7	1.8	0.7	1	2.7
10th (highest income)	0.4	0.4	0.5	0.5	0.2	0.3	0.8
	Approximate proportion of the urban population for whom water is unaffordable[a]						
Using 5% benchmark	40	50	50	50	20	30	60
Using 3% benchmark	60	60	60	60	30	40	70
	Ratio of monthly water charges for low-cost housing to monthly mean household income for:						
Extreme poor	7.4	7.9	9	9.2	3.5	5.3	14
Moderate poor	5.2	5.6	6.3	6.5	2.5	3.7	9.9

Note:
a: These are rough estimates (approximations).
Source: Based on income distribution data from Central Statistical Office (2004). Fixed monthly low-cost water charges were obtained from NWASCO for 2002–03.

Source: Dagdeviren (2008)

Based on research by the Federation on monthly incomes (through questionnaires and profiles), a significant proportion of slum dweller households (around 40 per cent) earn ZMW 200 (US$ 40) or less per month, implying that households falling within this income range spend more than ZMW 10 (US$ 2) per month at a 5 per cent calculation and more than ZMW 6 (US$ 1.20) per month at a 3 per cent calculation – indicating that service provision

(in particular for water) is all but prohibitively expensive for close to 80 per cent of the urban population residing in slums.

Strategies for water and sanitation provision

Water trust systems

Water trusts emerged as a response to unreliable and unsafe water that has negative impacts on public health and limits economic development in densely population and low-income areas (slums). One such trust in Zambia is the elaborate system of water kiosks operated by formal providers. This is an effective approach to providing safe water at affordable prices to large numbers of residents in low-income areas, within reasonable walking distances, thus eliminating the time and effort spent by residents (usually women and children) in getting water (Kayaga and Kadimba-Mwanamwambwa, 2006).

The water trust project by CARE International in Kanyama, Lusaka, supplied water through pumping it from two boreholes, stored the water in overhead reservoirs, and distributed it by gravity. An objective of the CARE project was to get communities in the forefront of being responsible for the supply and usage of water (Kayaga, 2006). The water trust has a two-tier structure with a board of trustees and a management team. Communities are represented on the board by the Residents Development Committee (RDC) and individual members of the community – an equal number men and women – ensuring that the voice of the community is taken into account. The local authority and the CUs are also represented on the board (Kayaga, 2006).

Water trusts were first piloted in Chipata town and later in a slum called Kanyama in Lusaka city through the interventions of CARE International. The CARE International PROSPECT project (1998) constructed the necessary infrastructure and empowered communities to manage all aspects of water service delivery to a section of the settlement, covering a population of approximately 85,000 people. To promote effective participation at grassroot level, the settlement was divided into four sectors, sub-divided into 30 zones, further organised into units In each unit, community members elected ten leaders, (five men and five women) known as the Zone Development Committee (ZDC). Each ZDC chose a delegate to the RDC.

Learning from the Chipata pilot experience, a substantial fraction of the project period was used to mobilise people from the zones to participate physically in the project and to appreciate the importance of cost recovery. The project provided the necessary materials and conducted elementary artisan training for community members, offering basic skills to enable both women and men in efficiently carrying out such tasks as excavating/backfilling trenches, laying pipes and constructing water points to a minimum standard. However, more technically complex tasks such as borehole siting/drilling, pump installation and electrical wiring were contracted to specialist firms (Kayaga and Kadimba-Mwanamwambwa, 2006). The water trust set two types of cheap payment: a pre-paid tariff of ZMW 5,000 (US$ 1) for accessing about seven 20 litres of water per day per month, and a daily fee of ZMW 33 (US$ 0.0066) per 20-litre container. Other costs such as investment, and individual connections for both domestic and commercial usage, were set at standard fees. The vigorous recruitment and involvement of community members was used as a means of educating community members about the importance of cost recovery as well as maintaining the water trust so that all the residents could benefit from the service.

The project was a success because community members were not viewed as simply end-recipients to a project but as a catalyst to the project's sustainability. The project was not without problems. It encountered a lack of participation despite vigorous community mobilisation; many community members did not understand their in-kind contribution was their labour and expected wages for being involved; and the transient nature of slum dwellers - who tend to moving frequently – led to a high turnover of community members recruited for skills and training. Such factors have to be taken into consideration when implementing a community-driven water and sanitation project. There is a need to get the community involved from the start to finish of the project and beyond if community ownership is to be instilled as well as if participation is to be expected.

Community-led total sanitation

In Zambia, community-led total sanitation (CLTS) is opening the door to the rapid spread of improved sanitation to rural communities. Directed by government and traditional leaders working side by side, CLTS is increasing awareness of sanitation's importance, from the household to district level, and motivating a desire to improve living conditions. Through the promotion of self-reliance, CLTS is empowering local stakeholders and serving as a catalyst to sustainable development that extends beyond the sanitation sector. First piloted in Choma District in 2007, CLTS has met with considerable success: between October 2007 and October 2008, sanitation coverage increased from 38 per cent to 93 per cent across 517 villages, 402 of which have been declared open defecation free (ODF). More than 14,500 toilets have been constructed by households, without any hardware subsidy, and about 90,000 people have gained access to sanitation (Harvey and Mukosha, 2008).

In 2007, UNICEF and the Government of Zambia commenced the CLTS pilot in Southern Province, where sanitation coverage hovered at 40 per cent. Launched as the 'One Family, One Toilet Campaign', the pilot aimed to determine whether CLTS could be an effective sanitation strategy for the country. It represented a strategic effort to make sanitation programming more holistic and to bring dedicated attention to the sector vis-à-vis water (Harvey and Mukosha, 2008).

The strategy of including a wide range of stakeholders, and in particular the immediate appreciation of the benefits of CLTS by the mayor of Choma and local leader Chief Macha, led to rapid buy-in from other partners and leaders, including the district's four other traditional chiefs as well as the elected councillors. CLTS spread rapidly throughout the district. CLTS in Zambia has depended almost entirely on local leadership, with traditional and civic leaders working side by side – there is no NGO involved in the process. Tight collaboration between elected and traditional leaders has helped to plant deep roots for the programme at community and district levels. The Joint Monitoring Team for Sanitation (JMTS) in Choma includes not only all five of the district's traditional chiefs and the mayor, but the district commissioner and the district director of health, as well as staff from the district council and various line ministries. Districts take the lead in motivating local engagement and adapting CLTS to match local needs (Harvey and Mukosha, 2008).

CLTS is an approach that facilitates a process of empowering local communities to stop open defecation and to build and use latrines, without the support of any subsidy. To achieve this, the negative effects and consequences of open defecation in participating communities are vigorously promoted to get community members to understand that open defecation

affects the community's water sources and health. Mapping exercises are carried out to identify areas where open defecation is usually practised, and frank group discussions are held. Overall, the exercise creates collective community participation and leads to a universal change in the mindset of the community, which starts to build and use sanitation facilities, breaking traditional and cultural norms about sanitation and the use of sanitation facilities. Furthermore, in instances where the population density of a village is significantly high or residents do not have individual land for the construction of a latrine, households have shared sanitation facilities, reducing the amount of land needed to construct new latrines.

Though CLTS is a rural-oriented strategy for sanitation provision, lessons can be drawn and adapted for urban communities. The success of the CLTS strategy has been largely due to collaboration between the communities, NGOs and local/municipal authorities, and the strategy of getting communities to participate and sustain projects after available funding ends. Such an approach can be adopted to fit the urban context.

Community-managed revolving funds for sanitation provision

The alliance of ZHPPF and PPHPZ provides water and sanitation for its members through the use of a revolving fund loan system. A beneficiary receives a loan in the form of materials to construct a sanitation facility (ZHPPF and PPHPZ have been piloting and constructing ecological sanitation) and is expected to pay it back over a period of two years.

Through this model the PPHPZ–ZHPPF alliance has managed to construct the following alternative sanitation facilities through the revolving fund concept:

- *Ecological sanitation*: four in Livingstone, three in Choma, one in Ndola and five in Kitwe
- *VIP*: one in Choma, twelve in Chawama (Lusaka), eight in Livingstone
- *Modified pit latrines (with slab):* fifteen in Livingstone

Candidates for sanitation facilities have been selected on the urgency of need, the tenure of the applicant, and the affordability in relation to the household income. Costs of sanitation facilities have varied, depending on the material used; across the cities where sanitation facilities have been built, concrete blocks, burnt bricks and inter-locking bricks have been used. In Kitwe and Ndola hydraform and burnt bricks have largely been employed with concrete and burnt bricks mostly used in Choma, Livingstone and Lusaka.

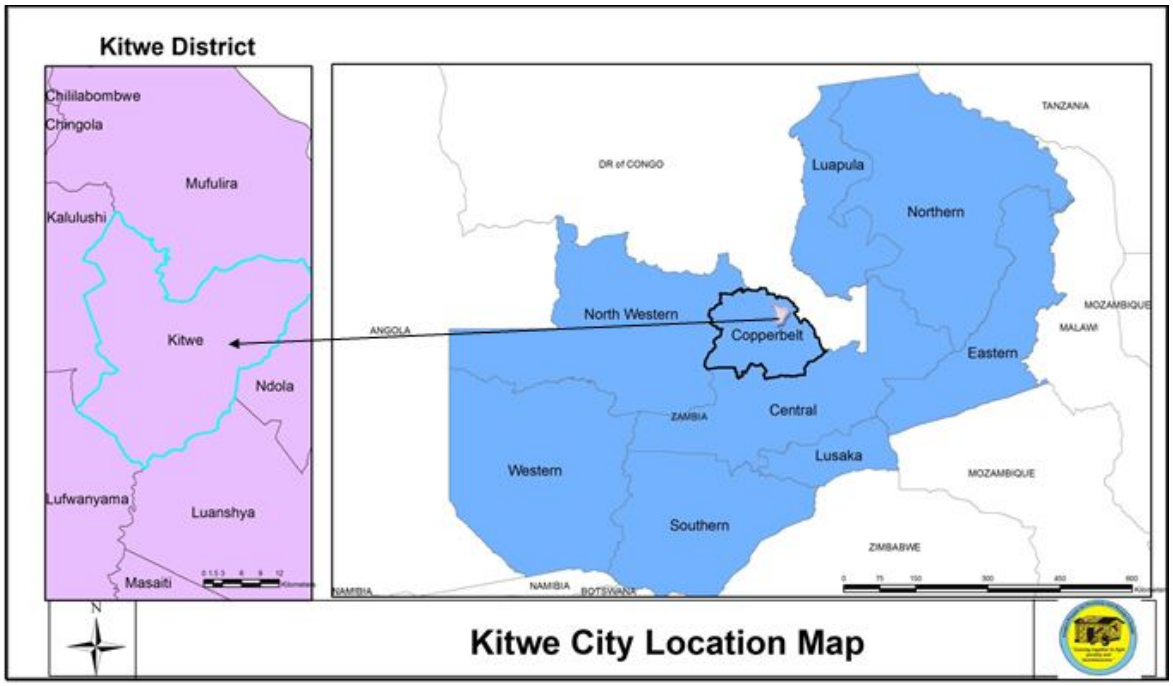
Repayment of loans has been largely disappointing across the areas where Federation-led sanitation has been installed. Beneficiaries of loans, who are also servicing their housing loans, have been overwhelmed by the additional burden. On the positive side, Federation beneficiaries have warmly embraced the ecosan installations, appreciating the health and hygiene benefits, which include not having to walk great distance to find a private and secluded space, which could be dangerous at night.

Kitwe city in context

The city of Kitwe is located in the Copperbelt Province, one of the smallest provinces in Zambia. Despite its size, it is the backbone of the Zambian economy and the major producer of copper. The province is largely composed of mining towns with Kitwe being the largest. All the towns and cities on the Copperbelt lie within a radius of 65 kilometres and are interconnected by good road networks. Kitwe, founded in 1936 in north-east Zambia during the construction of a railway line, is centrally located in the province, and is one of the fastest growing and the second largest cities in Zambia, with a population of 522,092 (2010 census). With its central location, the city offers many economic advantages and is considered the 'Hub of the Copperbelt'.[3]

The city has 48 slums that are extraordinarily challenged in terms of access to decent basic services as well as adequate shelter provision, of which over 50% of the urban population resides. Of these settlements, 14 have been granted legal status by the city council, while 34 are illegal. The council has earmarked only 9 of the 48 slums, almost all of which are on council land, for upgrading.

Map 1. Kitwe city location map



Source: UNDP (2009)

[3] Baseline Survey Report (2008)

Water and sanitation in Kitwe

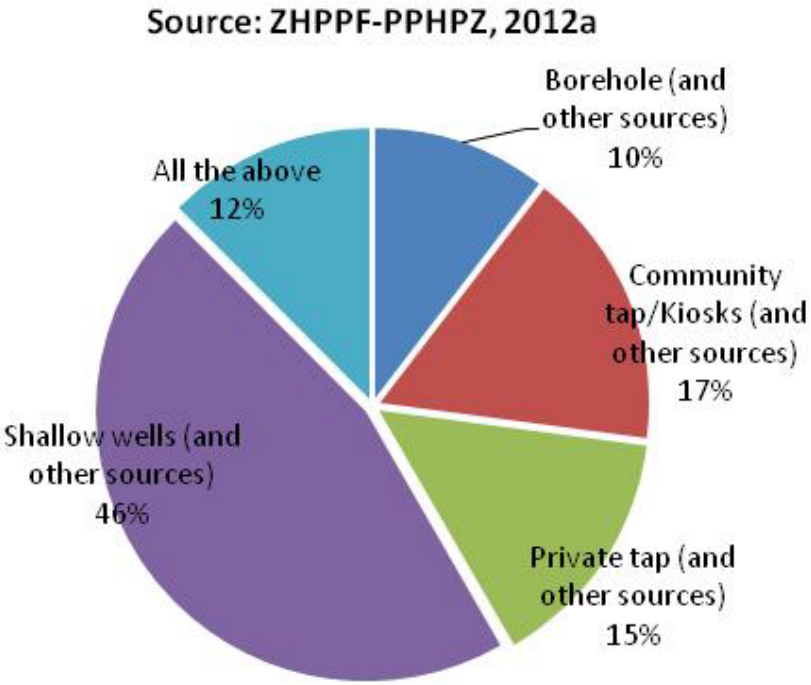
Water and sanitation delivery in Kitwe is provided by NWSC. The commercial utility was established as a result of the Water Supply and Sanitation Act 28 of 1997 and began operation in 2000. It is wholly owned by two local authorities, Kitwe City Council (KCC, 70 per cent ownership) and Kalulushi Municipal Council (KMC, 30 per cent ownership) and regulated by NWASCO. The commercial utility operates in three different cities/towns on the Copperbelt, namely Kitwe, Kalulushi and Chambishi. NWSC provides water and sanitation services to about 65 per cent of the total population of the district residing in urban areas.

According to a District Situation Analysis by Kitwe City Council (2011) water and sanitation services are inadequate, particularly in low-income and peri-urban settlements where more than 70 per cent of the city's population lives. The poor service delivery, usage of pit latrines and open defecation often lead to water, air and soil pollution.

Water

Informal settlements in Kitwe are typically characterised by a lack of piped water, several kiosks invested in by NWSC and a large number of shallow wells. Information gathered by the Federation through the profiling and questionnaire exercises in Kitwe between 2010 and 2013, indicate that of the 48 informal settlements, 46 per cent rely on shallow wells as the major source of water (see Figure 5 below), in addition to other sources such as boreholes, communal taps and water kiosks. Each household has a shallow well or uses a neighbour's shallow well. Shallow wells are an unreliable source as they tend to dry out in the hot seasons, leaving households predominantly dependent on them without a source of water. Furthermore, the combined usage of traditional pit latrines (see sanitation section) and shallow wells leads to high incidences of water pollution to water sources in wet seasons as pit latrines tend to overflow.

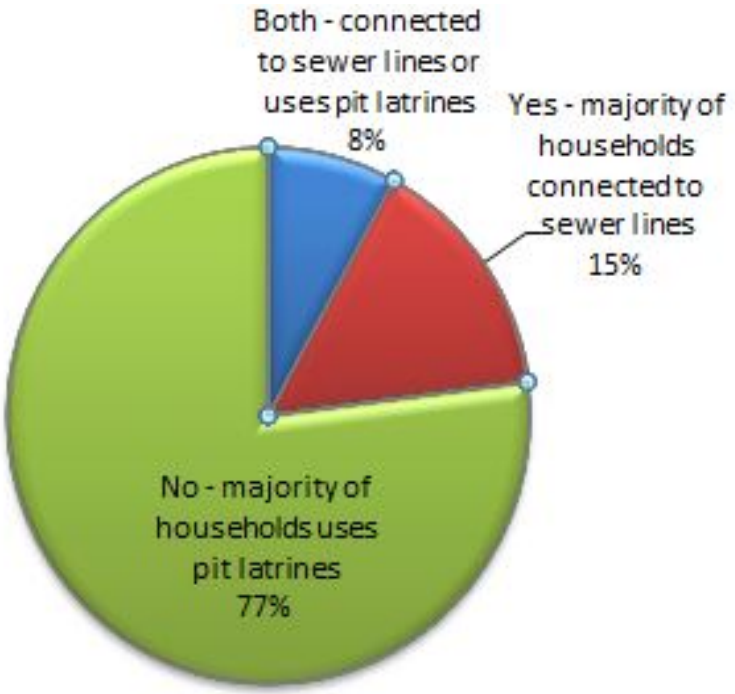
Figure 5. Sources of water in Kitwe



Sanitation

NWSC's formal sanitation networks only extend to formally planned settlements (low, medium and high cost). However, in low-cost settlements such as Wusakile, Kawama and Chamboli, sanitation infrastructure is old and in most cases not functional due to blocked pipes or water unavailability. Only a limited number of households have flush toilets. Of the 48 informal settlements profiled by the Federation, 77 per cent use traditional pit latrines as a means of sanitation (see Figure 6 below).

Figure 6: Sanitation access in Kitwe



Source: ZHPPf-PPHPZ, 2012a

At settlement level approximately 77 per cent of all households use pit latrines (which are either owned by the household or shared with two or more households in the vicinity). Pit latrines are usually cheap, makeshift structures with only the digging of the 'pit' being the cost and labour-intensive part of construction (usually costing around ZMW 50, US$ 10). Once the pit is dug, the household creates privacy, usually using sacks, waste timber or leftover iron sheets.

With regards to sanitation, the Federation in Kitwe has sought to provide decent and affordable facilities to its members through the revolving fund mechanism. Having acquired land for the greenfield housing project from Kitwe City Council, the Federation has to date completed 54 housing units. Water at the housing site has largely been through a stand-alone communal tap and sanitation has largely been through ecological sanitation – the Federation has constructed five units (see photo to right) via the loan system. The units are owned by the landlords (Federation members residing on the housing project site) who service the loans; one of the units is a single household-use unit. The units at the site, which is in the Kawama district, has attracted growing interest from residents in Kawama who are

not Federation-members as well as from others in surrounding settlements such as Kamatipa, Raceourse, Twatasha and KCC village, and from NWSCO – which is interested in piloting a unit in another slum called Ipusukilo (Kapoto) through a collaboration with the Federation groups in that settlement.

Though interest has been shown in the units, no household inside or outside the Federation groups has constructed a unit using its own funds. Households do not have the financial resources to buy the materials and engage an artisan skilled in ecological sanitation construction. In Kawama, the work was largely carried out by the Federation members themselves, having been trained to do it, which is evidently the cheapest option. There is urgent need for a strategy using a community-led approach to service provision that will bring wider help.

As has been found in Kawama, repaying loans is problematic. The five ecosan toilets piloted here were built by members who already had housing loans and it has been hard for them to service both loans. The Federation is now attempting to start a revolving fund that will pull resources together to start providing decent and affordable sanitation for its members. The aim is to invest in communal facilities that can result in households sharing the loan repayments. Though still in its infancy, this strategy (adopted from the housing projects) should eventually contribute to the formation of a city-wide water and sanitation strategy for the slums in Kitwe.

Water and sanitation coverage in slums

Establishing the extent to which informal settlements are provided with water and sanitation facilities is critical to creating a city-wide strategy. What coverage now exists is important to establish as a basis for how many more facilities are needed within an individual settlement and within all the slums in the city. To gather this information water and sanitation mapping was employed (as described in section one). The mapping process sought to highlight the spatial distribution of water and sanitation facilities at household level – the number of households (and people) accessing a particular water or sanitation facility and the condition of it.

Findings from the Federation information-gathering processes indicate that informal settlements rely on shallow wells for water and traditional pit latrines for sanitation, mainly due to a lack of conventional sources. Water and sanitation mapping carried out in Kitwe seems to point to each house having a pit latrine and a shallow well. The conventional source of water in any informal settlement provided for by NWSC are water kiosks, largely scattered across settlements but not adequately enough for the entire settlement to reduce queues spent in water lines, as well as rationing from 5 am to 10 am and from 4 pm to 6 pm in some instances. In Kamatipa, there are only eight water kiosks servicing a population of about 19,050 and in Mulenga Compound, only 18 water kiosks servicing a population of about 36,000; other settlements are in a similar position. The distribution of water points (kiosks) is largely concentrated in areas were the ground water table is relatively high (as in the case of the settlement of Kamatipa – see Figure 7 below) and the water is easier to extract. Such a distribution largely leaves the rest of the settlement without water and having to rely on alternative sources such as shallow wells.

Figure 7: Distribution of water kiosks in Kamatipa

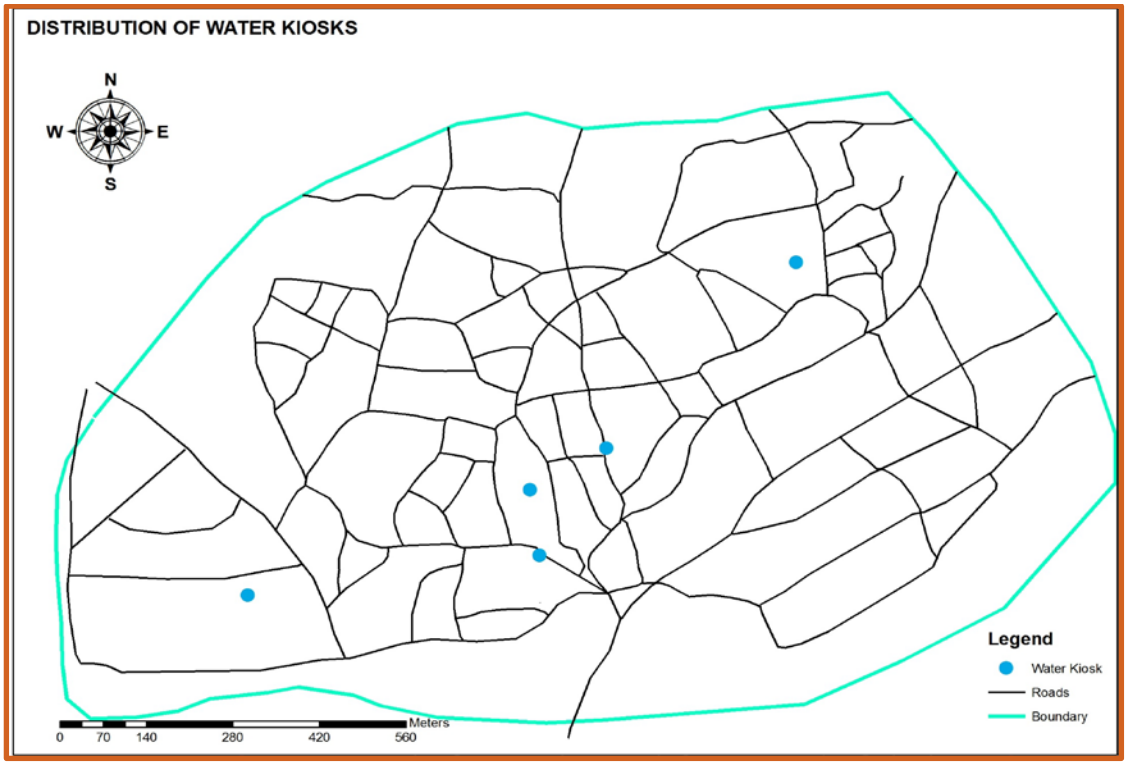
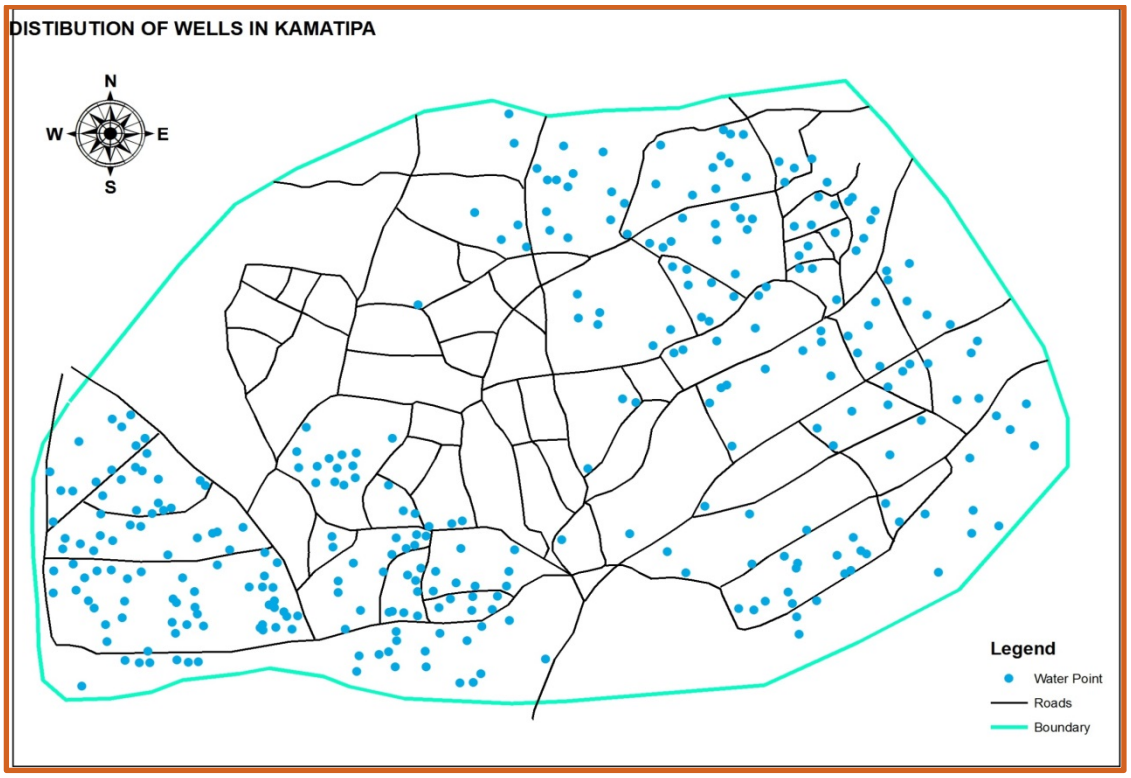


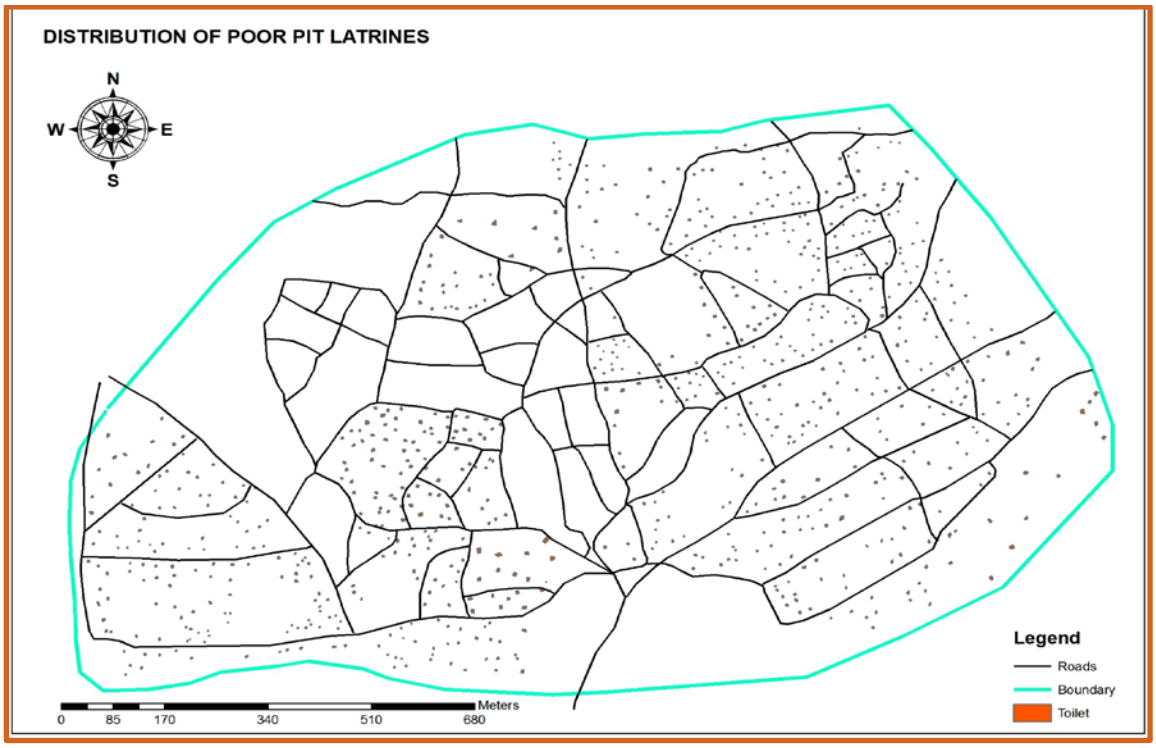
Figure 8: Distribution of wells in Kamatipa



The distribution of shallow wells in any informal settlement largely corresponds to household distribution as almost every house has a shallow well. From the water and sanitation mapping conducted in Kamatipa, the majority of the shallow wells are in poor condition.

The distribution of traditional pit latrines is the same as that of shallow wells (see map of Kamatipa below at Figure 9). As the majority of houses in informal settlements use traditional pit latrines it is easy for each house to have one (costing ZMW 50 or US$ 10) – thus compounding the problem of ground water pollution. For reasons already stated, the practice of digging latrine pits is unsustainable.

Figure 9: Distribution of pit latrines in Kamatipa



Settlement profile: Kamatipa (Kitwe)

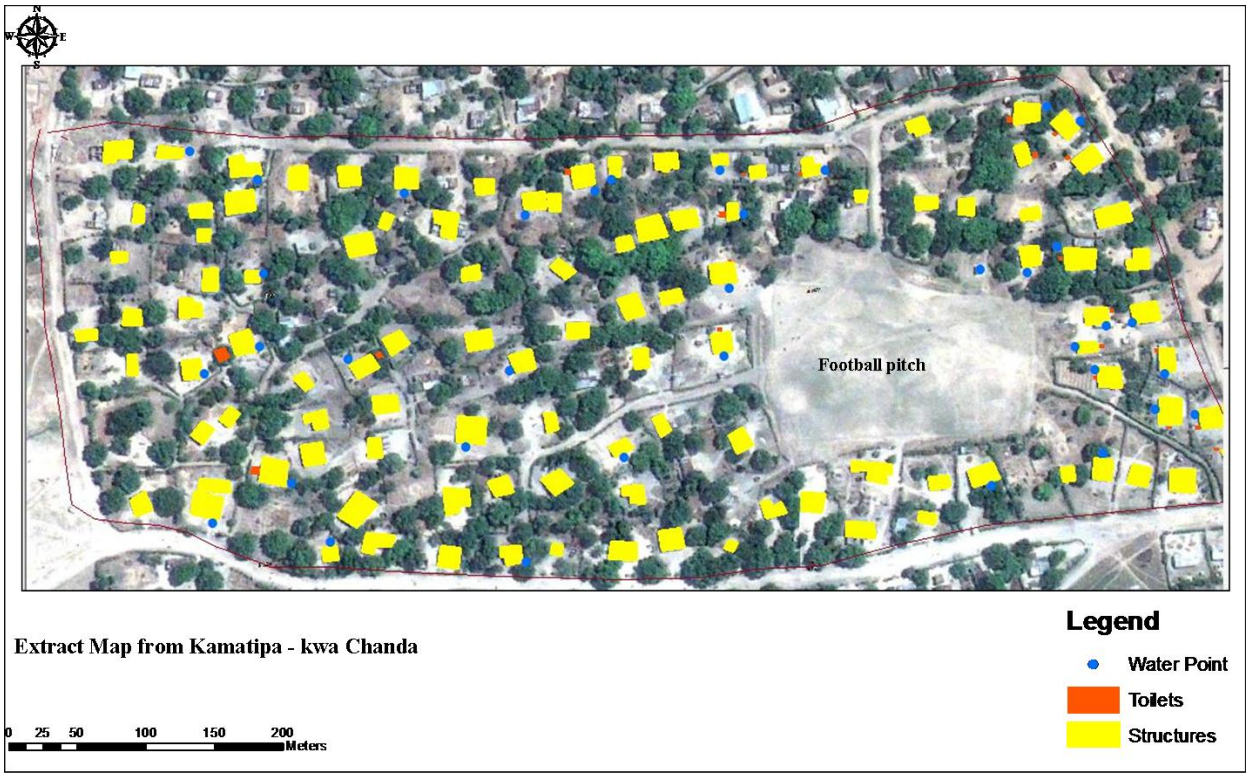
Table 12 below gives the basic statistics of the Kamatipa settlement in addition to the types and numbers of water and sanitation facilities.

Table 12. Kamatipa profile

Name of Compound:	Kamatipa
Legality	Earmarked for slum upgrading by KCC
Location	Kitwe, Zambia
Population	19,050 (CSO, 2011)
Number of households	3,175 (CSO, 2011)
Number of water kiosks	8 
Number of pit latrines	8,73 l 
Number of shallow wells	520
Ratio of households to pit latrines)	4 to 1
Ratio of households to shallow wells	5 to 1
Ratio of households to water kiosks	397 to 1
Percentage of households with income below ZMW 200,000/month (USD$ 40./month)	49.1%
Economic activities	brewing beer, metal fabrication, bricklaying, carpentry, marketing crops, vegetables growing, fish farming, upland farming

Like any other informal settlement, Kamatipa suffers from an uneven spatial distribution of water and sanitation facilities compared to the number of households within the community (see Figure 10 below). Common facilities are traditional pit latrines and shallow wells.

Figure 10: Extract map from Kamatipa – Kwa Chanda area



Affordability of services

A questionnaire survey conducted by the Kitwe Federation (2010) in Kamatipa showed that the average water consumption of water by households was 100 liters (five 20 litre containers) per day. The cost of water from kiosks is ZMW 0.50 (US$0.10) per 20 litre container, thus a household in Kamatipa spends about ZMW 2.50 (US$0.46) per day, which translates to ZMW77.50 (US$ 14.35) per month. Given that the majority of slum dwellers in Kitwe earn less than ZMW 200 (US$ 40) per month, the cost of water is relatively unaffordable because households expend close to 39% of their monthly income for water.

Piped water supplied by CU's is relatively cheaper than obtaining water from kiosks. However, due to the unplanned nature of slums, CU's are reluctant to commit the capital investment in water and sewerage infrastructure in slums. Table 13 highlights the 2013 water tariffs offered by NWSC.

Table 13. NWSC domestic tariff chart

Consumption block (in m3)	Amount (ZMW per m3)	Amount (US$ per m3)
0 - 6	1.70	0.31
6 - 20	2.20	0.41
20 - 50	2.55	0.47
>50	3.10	0.57
Sewerage	20% of water bill	
Sanitation levy	3% of water bill	
Meter rental fee	5.00	0.93
Connection fee for low cost households (once off)	200.00	37.04

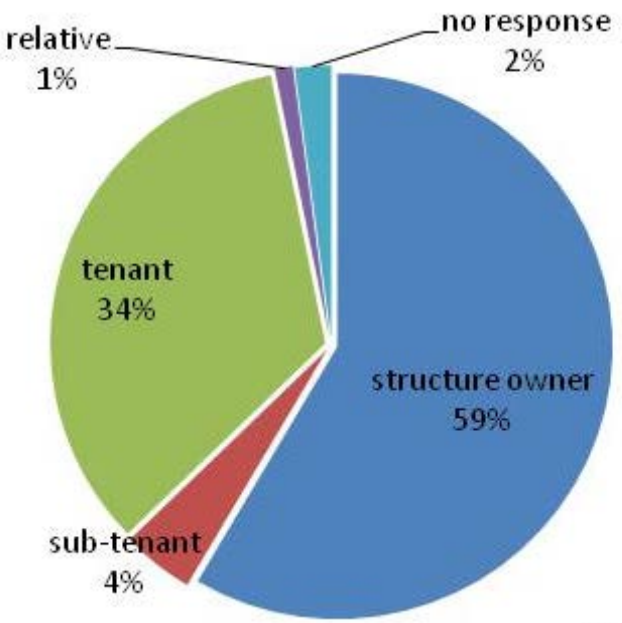
From Table 13 above, it is apparent that the initial cost for piped water to an individual household for domestic use is relatively high amounting to ZMW 200 (US$37.04). Nonetheless, the cost of water per m3 is cheaper for piped water as compared to that from kiosks. 1m3 of water from a kiosk costs K25 (US$0.10), while piped water costs ZMW 1.70 (US$0.31). Even when factoring sewerage, sanitation levy, and meter rental fee, piped water remains relatively cheaper, amounting to ZMW 7.09 (US$1.31) per month.

Income and secure tenure

The income and security of tenure of a household play a vital role in the type of water and sanitation services it will receive. Lower incomes and insecure tenures indicate that a household will access cheaper services than those provided by NWSC, which might not be safe for consumption or usage. On average slum dwellers earn around ZMW 200 (US$ 40) per month. With such a low income households are unlikely to be able to invest much or anything in water and sanitation after all other costs are met. Typically, it is only viable for a household to spend no more than 5 per cent of its monthly income. In some cases households have invested as much as their monthly rent to have a pit dug (roughly US$ 10). Even digging a pit is fairly expensive.

In the settlement of Kamatipa the majority of homes are owned by the residents; 34 per cent of people rent at around ZMW 50 (US$ 10.00) per month (see Figure 11) – about 25 per cent of monthly income. Landlords who provide sanitation facilities agree with tenants the payment for their installation and give assurances that rents will not increase once the facilities are installed.

Figure 11: Tenure of structures



Source: ZHPPF-PPHFZ (2010a)

Implications of service delivery

It is clear that for the majority of residents in Kitwe's slums to have decent and affordable access to water and sanitation (as stated in MDG 7), there is a need for a major rethink of strategy. The links between incomes, security of tenure and affordability of water and sanitation services are evident: current methods of water and sanitation provision are not sustainable and do not meet quality. And methods to ensure that a single household does not have to spend more than 5 per cent of its monthly income in constructing a facility or paying for a facility have to be established. One way of doing this would be to use sanitation loans that are shared between households. Questionnaires and profiling data gathered by the Federation already point to households in informal settlements sharing sanitation facilities (three or more households). Problems with sharing arise when maintenance (cleanliness) is not discussed between the sharing households. Furthermore, the findings presented in this section imply that service provision in slums has largely been driven by the slum dwellers themselves. In specific instances organised slum dweller groups, such as Federation groups in Kawama, have spearheaded innovative means of sanitation provision. Though still a long way from being ideal as an alternative, ecological sanitation is promising to be most effective in water-depraved settlements as well as low-income settlements. But other alternative means of sanitation provision should be considered. Factors to take into consideration in piloting to a city-wide scale would be affordability and the impact on the environment. For sanitation options to be sustainable the following have to be explored.

1. The role of the community in service provision. Currently, this is largely a matter of communities waiting on the KCC or NWSC to act and provide services. There is a need for a move away from that prescribed role: the councils and the commercial utilities must assume a new leading and collaborative role. This requires a bottom-up approach that places communities at the forefront of their own service provision, implementation and management. Furthermore, the use of a bottom-up approach would instil in communities a

sense of ownership of changes initiated in service delivery. Community members need to understand that they should be lobbying for increased participation and engagement in service delivery. An example of a strategy that works (though it needs fine tuning) is the use of the Swalisano Urban Poor Fund of the ZHPPF. Sanitation facilities have been built in Livingstone using this fund with a total of 36 loans being given out. Repayments have been average with some beneficiaries paying and others not doing so due because of a 'lack of income'. All these factors have to be explored, assessed and shown that they can work in a city-wide water and sanitation strategy. Lessons to learn from the Federation are that the health and environmental benefits and cultural changes involved in the sanitary option need to be thoroughly explained to people – as well as what loan amounts and repayment rates/amounts per month actually mean – so that the system put in place is functional, robust, and does not disintegrate later on.

2. Affordability. Excluding costs of labour, the costs of any proposed solution should be feasible and cater for the very poorest, factoring in the costs of operation and maintenance. The role of the CU and KCC should be defined, including their financial capacity and contribution to the proposed solution. The more households in the settlements that can afford the solution, the better the solution, and the more the chance of reaching scale. Costs incurred by households should not be higher than a maximum of 5 per cent income.

3. Politically supported. There are some sanitation options such as ecological sanitation that are not common with local authorities or water and sewerage companies. In some cases, companies like Lusaka Water and Sewerage have piloted ecological sanitation and have not achieved the expected results – and have not continued with it. For options to be sustainable there is need to involve water and sewerage companies during the pilot and community induction phases. With ecological sanitation in Kitwe, NWSC has embraced the idea and would like to promote it further.

4. Environmentally sustainable. Pit latrines, currently the most common type of sanitation, are not sustainable as each new pit dug takes more scarce land – and once a pit is full it presents a health hazard in the event of it flooding. Pit latrines can also cause groundwater contamination, particularly in places such as Kamapita where at least 60 per cent of the residents depend on shallow wells for their water supply.

Recommended interventions

The city of Kitwe faces many challenges regarding water and sanitation. The biggest challenge is with the number of informal settlements. With some 70 per cent of the total population of the city residing in its 48 slums, the city authority and water and sewerage company Nkana Water have a mammoth task in providing decent and affordable water and sanitation to all of them. This problem of the number of settlements is further compounded by the following:

- a lack collaboration between the CU and KCC working together with slum dwellers to establish solutions to the challenges of water and sanitation;
- a lack of understanding in the CU and the local authority as to the difficulties slum dwellers face. Both need to start listening to slum dwellers as a vital source of information;
- too much investment in contractors (especially in sanitation provision) leaving too little money to construct decent sanitation facilities;
- a lack of adequate funds to solve problems faced by slum dwellers;
- a lack of viable and functioning public facilities in both informal settlements and other public places such as markets and bus stations.

The challenges highlighted above provide a perfect opportunity for collaborative effort in water and sanitation interventions involving the CU, KCC and organised community groups such as the Federation of the urban poor.

Water

In all settlements profiled and surveyed in detail, shallow wells are the common form of alternative sources of water. Water kiosks are limited in number and location – in some settlements like Kamatipa not all areas have water kiosks, leaving a large proportion of the residents unserviced. Nonetheless, as information presented in this report shows, water kiosks do provide many with water that is relatively cheap. Furthermore, water kiosks seem to be a preferred source of investment for NWSC and other CUs in Zambia largely because they are easier to deliver and reach more people as opposed to sanitation which is more complex.

As water is inherently linked to sanitation provision and its viability, KCC and NWSC should look to collaboratively pilot alternative means of water provision. One alternative that has proved feasible and sustainable is community water trusts, which are wholly managed by the communities themselves through a management committee, with representation from the council and CU. Providing water through this initiative would increase coverage in settlements that are already water deprived by decreasing the ratio of households to water sources. Water trusts also empower community members to take ownership of their water provision and become responsible for it rather than waiting for the commercial utilities to provide them with services.

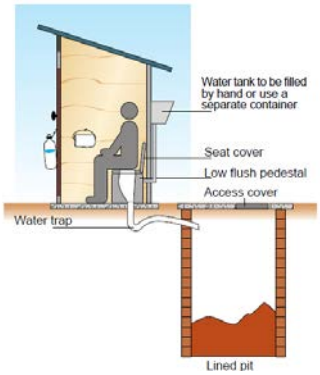
Piloting community-driven and managed water trusts should seek to demonstrate how communities can be at the forefront of addressing their own water challenges through working with NWSC. The water trusts would also seek to engage both Federation and non-Federation members on their management committees so that an inclusive environment is produced for all community members.

Sanitation

The provision of sanitation facilities to all slums is a mammoth task that needs stakeholder collaboration. Sanitation in Kitwe has largely been through traditional pit latrines that have proved to be unsustainable as well as a health hazard as they tend to flood during wet seasons and contaminate groundwater. The problem of poor sanitation is not limited to informal settlements in Kitwe but extends to low-income settlements that have sewer lines – but which have blockages or damage as well as the lack of water for them to function properly. The challenges of sanitation in Kitwe present a perfect opportunity for dialogue about alternative means of sanitation within the city. The Federation, KCC and NWSC are involved in sanitation provision – with the Federation being at the forefront of providing alternative means of sanitation – and thus should seek to pool their efforts on providing decent and affordable sanitation.

This report has explored two types of alternative sanitation options and strategies: the ventilated improved pit (VIP) and ecological sanitation for sanitation options, and community-led total sanitation (CLTS) and sanitation loans by Federation groups for sanitation strategies. These options and strategies have been piloted with successes, albeit with well-documented challenges. As a way of increasing sanitation coverage, a combination of alternative options and strategies that have been shown to work should be employed.

Table 14. Recommended options

Option	Description	Photos
Shared pour flush	The idea is to share a single facility between 3 or 4 households Multiple pour flush systems can then be linked to a shared septic tank or biodigester	
DEWATS (Decentralised waste water treatment system)	This is a low maintenance waste treatment system designed to serve 1 or more households. The waste water can be treated and recycled	
Shared ecosan	Composting toilet that can be shared between 3 or 4 households	
Shared septic tanks	To minimise the cost of septic tanks, this report recommends sharing septic tanks	
Communal ablution blocks	These will be flush systems connected into the NWSC sewer lines	

City-wide water and sanitation strategy

For the water and sanitation options suggested above to be sustainable and lasting, interventions need to be made across the city of Kitwe in different settlements with different socio-economic conditions. The various components of water and sanitation options and the strategies employed in showcasing them and ensuring that ordinary community members

access the recommended options would lead to the creation of a strategy for water and sanitation provision in Kitwe.

For any strategy to have an impact there is need for acceptance from both local authority and community members. Furthermore, community members must be at the forefront of the process as it seeks to answer the challenges they face in their settlements. This report recommends that the strategy has the following approach:

- Pilot options and strategies to influence changes in policy and practices. This would involve demonstrating how various sanitation options work, as well as involving the council, NWSC and community members.
- Conduct water and sanitation awareness campaigns to make communities fully aware about the various options that are being piloted and how they can be accessed.
- Produce a working document about the provision of water and sanitation to slum areas.

This report also recommends that formulation of a city-wide strategy employs a bottom-up approach, with slum dwellers being at the forefront of driving and sustaining the process.

Conclusion

Water and sanitation provision remains a huge challenge, not just in Zambia but globally. The information presented in this report provides an understanding of the situation in Kitwe, Zambia. The desktop review of relevant information pertaining to water and sanitation, in addition to community-led action oriented research carried out by the Federation in Kitwe (slum profiling and community questionnaires), reveals that in the 48 slums identified by the Federation, the majority have no access to decent sanitation and water; in 77.1 per cent of the slums, pit latrines are the common form of sanitation and in 45.8 per cent, shallow wells are the common form of water access. The majority of the respondents reported that the current conventional methods of services such as municipal water and flush sanitation systems (provided by NWSC) were not affordable, and the current alternative methods such as water kiosks managed by communities, and ecosan toilets (provision by donor/NGO-led) were not sustainable as they are usually project dependent and confined to a limited timeframe. The proposal is that current water and service practices be ended and a more practical, community-driven method be employed. The proposed method seeks to employ a bottom-up collective approach to development, with communities being central in the process. Involving the communities from the beginning will decrease costs incurred through contracting labour to build sanitation and water facilities. Training community members to do the job themselves not only improves their skills and know-how but also instils a sense of ownership in the project.

While this report has identified key strategic actors in the water and sanitation sector (government, NGOs/CBOs and the private sector), it has also identified a lack of coordination and cohesion between them. Key players in the sector have different approaches to attaining the same objectives, rarely collaborate, and each is financed individually, meaning that the overarching challenges facing the sector, such as lack of human and financial capacity, are not being addressed. This report has also established that the water and sanitation sector in Zambia is poorly financed with 90 per cent of funding coming from external aid/donors, yet government funds earmarked for sanitation each year go unspent. Furthermore, poor sanitation and water result in economically viable population groups falling ill which costs the country money – as, too often, do funerals.

The commercial utility (NWSC) is mandated to provide water and sanitation but currently only provides formally planned areas and a few of the 48 slums identified by the Federation slum profiling. The lack of NWSC services has left a significant number of the settlements with no alternative but to use traditional pit latrines that overflow in heavy rains, leading to outbreaks of disease and considerable sums of money going towards healthcare. In some cases slum communities have started using alternative sanitation options such as ecological sanitation. The emergence of ecological sanitation within the Federation has been as a result of the need for decent sanitation as well as being the basis for piloting the sanitation revolving fund in Kitwe. Currently there are five units at the Federation housing site that have attracted interest from non-Federation residents of Kawama and Kamatipa as well as the interest of NWSC. Federation members who benefit from the installation of the units indicate that the ecological sanitation option is an affordable investment for low-income households like theirs and lasts longer than conventional flush systems – which also require a big investment by households before they reap the benefits. Repayments of loans are problematic and regarded as average: some members do make their repayments; a lack of

income make it a struggle for others. Self-evidently the use of a community-managed revolving fund for self-builds eliminates the cost of employing contractors.

For Zambia, this report has established the following as reasons why the sector is not providing services to slum areas where a majority of cities' populations live:

- Capacity of commercial utilities to provide services (human and financial capacity)
- Affordability for CUs (cost recovery from slums is poor) and for consumers in slums (too expensive to engage)
- Loss of skilled staff to competitive and expanding private sector
- Inadequate funding for capital investments
- Low technical and managerial capacities in sanitation among service providers
- Inadequate and ineffective community participation and stakeholder involvement in the design, operation and management of sanitation facilities
- Lack of appropriate low-cost, standardised sanitation technologies as alternatives to high-cost technologies
- Proliferation of unplanned and illegal settlements that make the provision of water and sanitation facilities difficult.

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Appendix

COST OF ECOLOGICAL SANITATION

Description	Unit price – ZMW	Qty	Total price – ZMW
Substructure			
Used burnt bricks	3.00	200	community made their own burnt bricks
Footing			-
Cement (bags)	60.00	4	240.00
Anti-poison (litres)	30.00	1	30.00
Foundation box			-
Shuttering/Brandering timber 25x200	45.00	2	90.00
4-inch Brick force wire (rolls)	13.00	2	26.00
Slab			-
Cement casting slab	60.00	2	120.00
Polythene plastic (4m)	125.00	0.3	37.00
Con force wire (rolls)	65.00	2	130.00
Anti-poison (litres)	30.00	1	30.00
Superstructure			-
Brick force wire	13.00	3	39.00
Cement setting(bags)	60.00	0	-
Cement for brickwork	60.00	2	120.00
Doorframe	300.00	1	300.00

Door	120.00	1	120.00
Deformed bars (6m)	65.00	2	130.00
Cement plastering and floor	60.00	1	60.00
Air vents (pairs)	7.50	1	7.50
Fittings			-
Mortice lock(Union)	55.00	1	55.00
Roofing			-
Timber (150 x 50)	45.00	1	45.00
Wood preservatives (litres)	25.00	1	25.00
Tying wire (kg)	13.00	1	13.00
Wood Screw	5,000	2	10.00
4-inch wire nails (kg)	12.00	2	24.00
3-inch wire nails (kg)	12.00	2	24.00
Roofing sheets (3m)	65.00	2	130.00
Others			-
Transport	450.00	1	450.00
Building Sand	500.00	1	500.00
Stones	500.00	1	500.00
Vent pipe	100.00	1	100.00
Grand total			**3,356.00**

Sanitation and Hygiene Applied Research for Equity (SHARE) is a consortium of five organisations that have come together to generate rigorous and relevant research for use in the field of sanitation and hygiene. SHARE is a five-year initiative (2010-2015) funded by the UK Department for International Development.

The SHARE consortium is led by the London School of Hygiene and Tropical Medicine and includes the following partners: the International Centre for Diarrhoeal Disease Control, Bangladesh; the International Institute for Environment and Development; Slum/Shack Dwellers International; and WaterAid.

The purpose of SHARE is to join together the energy and resources of the five partners in order to make a real difference to the lives of people all over the world who struggle with the realities of poor sanitation and hygiene.

SHARE seeks to empower the individuals, agencies and organisations that are tasked with transforming the living conditions of these people

share
Sanitation and Hygiene Applied Research for Equity

London School of Hygiene and Tropical Medicine
Keppel Street, London, WC1E 7HT
Tel: +44 (0)20 7927 2301
www.shareresearch.org