

Evaluating the effectiveness of public finance for household sanitation in Dar es Salaam, Tanzania



WaterAid/Marco Betti

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Acronyms and abbreviations

AfDB	African Development Bank
DAWASA	Dar Es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water and Sewerage Corporation
EWURA	Energy and Water Utility Regulation Authority
GDP	Gross Domestic Product
HBS	Household Budget Survey
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation
KFW	Kreditanstalt für Wiederaufbau, German Development Bank
LGA	Local Government Authority
LGCDG	Local Government Capital Development Grant
MDGs	Millennium Development Goals
MKUKUTA	Tanzanian National Strategy for Growth and Poverty Reduction
MoFEA	Ministry of Finance and Economic Affairs
MoHSW	Ministry of Health and Social Welfare
MoU	Memorandum of Understanding
MoW	Ministry of Water
MoWI	Ministry of Water and Irrigation
NAWAPO	National Water Policy, 2002
O&M	Operation and Maintenance
PMO-RALG	Prime Minister’s Office – Regional Administration and Local Government
RWSS	Rural Water Supply and Sanitation
SWAP	Sector Wide Approach to Planning
UNICEF	United Nations Children’s Fund
UWSS	Urban Water Supply and Sewerage
VIP	Ventilated Improved Pit
WSDP	Water Sector Development Programme

For information, 1 USD = 1,465 TZS (10 June 2010)

Acknowledgements

This study was written by Sophie Trémolet and Diane Binder, based on research they carried out jointly in May 2010 and updates introduced in March 2013. We are grateful to Laura Hucks and Ferdinandes Axweso at WaterAid in Tanzania for their assistance in getting the study organised and their comments. We also thank Robert Mussa for his assistance with the research on the ground and Goufrane Mansour for finalising the case study. Finally, many thanks go to Eddy Perez and Jason Cardosi of the Water and Sanitation Programme for their comments on the final version.



This material has been funded by UK aid from the Department for International Development (DFID). However, the views expressed do not necessarily reflect the Department's official policies.

1 Introduction

1.1 Overview of the WaterAid research project

WaterAid has initiated a research project to evaluate the effectiveness of public financing for sustainable household sanitation in Dar es Salaam. This project is part of a broader research initiative that includes case studies on rural sanitation in the state of Bihar, India, and Thailand.

The objectives of the project are as follows:

- To map out the institutional framework and the financing flows of the sector.
- To identify the different sources of sanitation financing and determine the share of financing originating from households and public sources for different components of the sanitation ‘value chain’ (from collection to safe disposal).
- To make recommendations about how public finance could be better targeted to accelerate progress towards universal access to sustainable improved sanitation.

1.2 Scope of the case study

This study covers the three municipalities that fall under the Dar es Salaam City Council: Temeke, Ilala, Kinondoni. It contains a more detailed analysis for Temeke municipality, where WaterAid has been active since 1997 and where additional data could be gathered.

The case study focuses on the provision of sanitation services, as per the definition used in Tanzania, which includes, ‘the provision of appropriate facilities and services for the collection and disposal of human excreta and wastewaters’ (Water Supply and Sanitation Act, 2009). The case study examines the provision of sanitation services at household level only. This may include facilities that are shared by a small number of families (eg neighbours) but excludes community facilities (ie shared by a large number of transient population in public spaces, such as markets or bus terminals) and school facilities.

The period of analysis spans three years-worth of data: 2006-2009. Where relevant, we present forecast funding allocations for later years (based on budget allocations for 09/10 and 10/11) to identify any change in priorities.

1.3 Structure of the case study

This case study is structured as follows:

- **Section 2** gives a brief overview of the study area in terms of socio-economic status and access to sanitation, placing this in the overall country context.
- **Section 3** introduces the institutional set-up for the provision of sanitation services in Dar es Salaam, setting out the roles, responsibilities and the sources of finance that institutions have access to.
- **Section 4** assesses the sanitation services currently being provided in Dar es Salaam and estimates the expenditure allocated to each type of service, including on-site sanitation services, sewerage services and treatment and disposal.
- **Section 5** evaluates the effectiveness of public financing for sanitation in Dar es Salaam, based on a set of criteria including comprehensiveness (whether the funds are allocated to the right things along the chain) and equity (whether the funds benefit poor people).
- **Section 6** formulates recommendations about how public finance could be better targeted to accelerate progress towards universal access to sustainable improved sanitation.

In addition:

- **Annex A** contains a list of supporting documents.
- **Annex B** includes a list of people interviewed.

2 Case study context

2.1 Socio-economic context

The United Republic of Tanzania was formed out of the union of two sovereign states in the wake of independence from Great Britain in 1961. Today, it is a functioning democracy and a unitary republic composed of 26 regions, presided over by President Kikwete since 2000.

Tanzania has a fast growing population of 44.9 million, projected to reach 60 million by 2025. A quarter of Tanzania's population live in urban areas (UN, 2007). However, with the country's urban population growing at twice the pace as the rural one, UN projections estimate that 20 million Tanzanians will be living in urban areas by 2030.

The country's economic growth has averaged 7% since 2000, based on export-oriented agriculture and a dynamic mining industry which suggest that the country's growth will continue. However, although GDP has grown quickly, income poverty remains high, with 36% of the population living below the poverty line¹. The country ranks 151 on the Human Development Index and 157 based on GDP per capita. While Tanzania seems to be on-track to reduce child mortality (according to Millennium Development Goal (MDG) 4), the country is not on track to reach the water and sanitation targets (MDG 7).

Dar es Salaam is the major commercial city in Tanzania and the country's largest urban centre. It has an estimated population of four million people, growing at an average rate of 4.5% (Kingawa, 2009 as per the 2002 census). According to the most recent Poverty and Human Development Report (URT, 2009), 16.4% of those living in Dar es Salaam are poor, with an average monthly per capita income of 108,053 TZS. Between arterial roads, large areas have developed into unplanned settlements that make up to 80% of the city. In these areas, hazardous terrain and the density of the population have made it difficult to provide infrastructure. This is particularly true for sanitation. Although most people in Dar es Salaam have access to latrines, emptying services are not readily available. Consequently, there are frequent outbreaks of diseases such as cholera, malaria and diarrhoea. Close to 10,000 individuals in Dar es Salaam were affected by cholera in 2006, although this figure had dropped to 250 in 2009, according to the Ministry of Health and Social Welfare².

Administratively, Dar es Salaam is made up of three municipalities (Temeke, Ilala and Kinondoni) and is overseen by the City Council, which mainly plays a coordination role for activities across the municipal boundaries. For example, the City Council is a lead actor in the Citywide Action Plan for Upgrading Unplanned and Unserved Settlements (see below). Each municipality is separated into divisions, which in turn are divided into wards, composed of several streets. Temeke, where the bulk of the analysis for this case study has been done, is the municipality with the highest poverty (see Table 2.1) and is also the one with the lowest population density and fastest population growth rate (see Table 2.2).

¹ According to the 2007 Household Budget Survey, which measures income poverty, basic needs and food poverty.

² However, it is important to note that cholera is cyclic and trends can be seen across the region, which is affected by environmental conditions such as El Niño. Therefore, it is difficult to differentiate between the reduction in cholera outbreaks due to cyclic trends and due to a change in behaviour in the water and sanitation sector.

Table 2.1: Disaggregated levels of income in Dar es Salaam municipalities

Annual income (TZS)	Kinondoni	Ilala	Temeke	Dar es Salaam
0-100,000	0.9%	3.6%	3.8%	2.8%
100,001-365,000	5.1%	9.0%	16.6%	10.9%
365,001-500,000	2.3%	5.0%	10.6%	6.4%
500,001-1,000,000	20.2%	26.5%	24.0%	23.4%
1,000,001-5,000,000	53.7%	52.7%	34.2%	45.4%
Over 5,000,000	17.9%	3.2%	10.8%	11.2%

Source: University of Dar es Salaam for the Cities Alliance Programme, August 2007.

Table 2.2: Population and size of Dar es Salaam municipalities

Municipality	Annual growth rate	Population (2006)	Urban %	Rural %	Area km ²	Population density (people/km ²)
Kinondoni	4.3%	1,283,000	95%	5%	527	2,435
Temeke	4.6%	920,000	94%	6%	656	1,402
Ilala	3.9%	740,000	93%	7%	210	3,524
Total:	4.3%	2,943,000	94%	6%	1,393	2,113

Source: National Census, 2002

At the end of the 1990s, a Strategic Urban Development Framework was developed to improve social services across the city based on revitalised local government authorities. Under its remit, the Dar es Salaam Water Supply and Sanitation Project (DWSSP) was set up to enhance and expand sewerage services in the city (see Section 4 for more details). The Government of Tanzania, along with the City Council, municipalities and support from Cities Alliance and UN-Habitat, has recently launched a city-wide action plan, which has three components relating to land tenure, basic services (including water and sanitation) and housing³.

2.2 Sanitation coverage

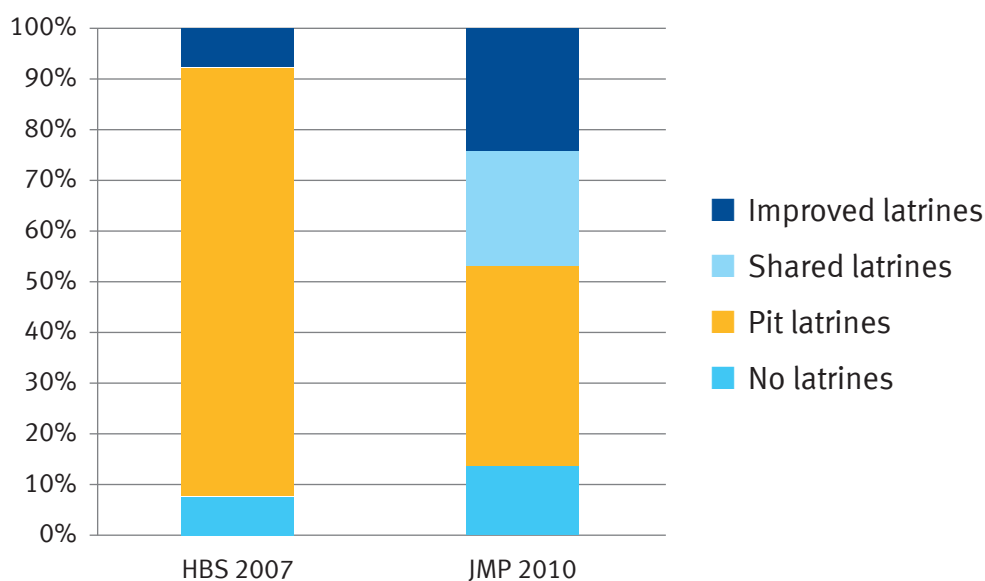
National-level coverage

The Household Baseline Survey (HBS) 2007⁴ shows that most households have access to at least basic sanitation facilities (Figure 2.1). However, the vast majority of traditional pit latrines, which are the most common type of household facility, are unimproved, according to WHO/UNICEF Joint Monitoring Programme (JMP) standards, and unhygienic. The JMP estimates that, nationally, only 24% of people in Tanzanian have access to an improved latrine (JMP, 2010), and that coverage is 21% in rural areas and 32% in urban areas.

³ The basic services component seeks to improve access to adequate sanitation from 30% to 60% by focusing on the promotion of low-cost technologies and the construction of communal latrines.

⁴ The Household Budget Survey (2007) was conducted by the National Bureau of Statistics (NBS) during 2007. The full survey report, published in December 2008, is available to download from the NBS website: www.nbs.go.tz.

Figure 2.1: Sanitation coverage in Tanzania

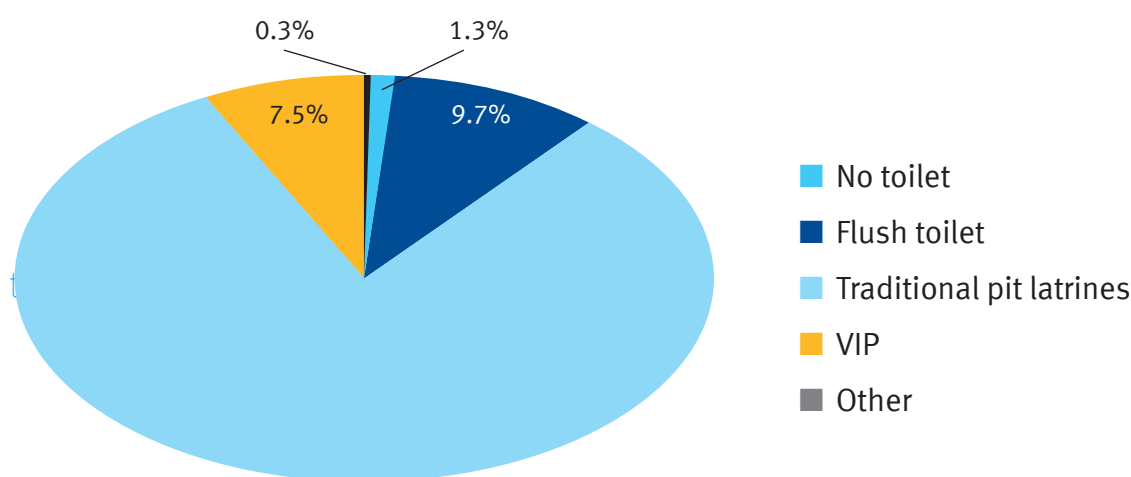


Note: JMP statistics refer to 'unimproved pit latrines' rather than 'pit latrines'. However, it is difficult to obtain the equivalent from HBS data, as both unimproved and improved latrines are captured as 'pit latrines'.

However, DHS data, which has a strict interpretation of improved sanitation and came out after the study was carried out, reduced the JMP access estimate of 24% to 13%. To put this in perspective, this means that around 35 million Tanzanians do not have access to the kind of sanitation facilities that provide an effective barrier to disease.

In Dar es Salaam there has been little change in the proportion of households accessing sanitation and sewerage services since the 1990s. Figure 2.3 shows that close to 99% of the population in Dar es Salaam report using a toilet of some sort, with over 80% of the population using a simple pit latrine, while 10% use flush toilets and 8% use VIP latrines (HBS, 2007)⁵.

Figure 2.2: Sanitation coverage in Dar es Salaam



Source: HBS (2007)

Yet, most pit latrines are neither improved nor properly functioning. Figures from Temeke municipal council (Table 2.3) show that only about 38% of the population have access to 'functioning' latrines, although how this is defined and whether these are hygienic is not clear.

⁵ These figures are different than other sources, notably DAWASA, 2009 that shows that 70% of the population is connected to pit latrines, 13% to septic tanks and 10% to sewers.

Table 2.3: Coverage and estimated number of latrines in Temeke, 2008/09

Number of households	254,000
Number of flush toilets	14,711
Clean	13,793
Broken/in poor condition	918
Number of latrines	114,834
Clean	77,151
Full	2,264
Broken/in poor condition	35,419
% of coverage with latrines	51%
% of coverage with 'clean' latrines	37.8%
Average number of households per functioning latrine	2.8

Source: Temeke municipality

Sewerage services in Dar es Salaam are provided to a small percentage of the population: while 10% of the population is connected to sewerage networks, only 3% of the wastewater collected through the networks is treated through stabilisation ponds, while 7% is discharged directly into the sea outlet⁶. Figure 2.3 shows that the sewerage network is concentrated in the city centre and pockets of poverty are far from the network system.

Figure 2.3: Poverty map, sewerage network and cholera outbreaks



Legend:
in red: poor areas of informal settlements;
in white: sewerage networks;
in yellow: cholera outbreaks.

Source: WaterAid, 2010

⁶ These figures come from interviews with DAWASA officials.

2.3 Policy and legislative framework

Sanitation is treated as a cross-sectoral issue in Tanzania and, and there has been a history of low levels of leadership and direction, and chronic underfunding. The critical role played by sanitation and hygiene in preventing disease means that the Ministry of Health and Social Welfare (MoHSW) is the lead Ministry, though the issue has a low profile within the health sector. The Ministry of Water and Irrigation (MoWI) has also played a role, due to the links between water supply and sewerage in urban utilities. However, sanitation has tended to be an add-on to water policy development until recently. As of 2010, a Memorandum of Understanding (MoU) between key line ministries had been developed and signed but not yet applied⁷.

There is no single piece of legislation that guides the provision of environmental health services. The Public Health Act (2009) has provisions for sanitation and hygiene, while the Water Supply and Sanitation Act (2009) extends responsibility to utilities for the management and the monitoring of sewerage, wastewater disposal (including wastewater stabilisation ponds and disposal of sludge from pit latrines), on-site sanitation, and strengthening of the private sector, including in unplanned settlements. However, municipalities (including the Municipal Councils in Dar es Salaam) have overlapping responsibilities for waste (solid and liquid) management.

There have been significant efforts to develop a National Sanitation and Hygiene Policy (NSHP)⁸. The policy introduces common definitions and sets out roles and responsibilities for institutional and household sanitation with a particular focus on safe excreta disposal. Both the Public Health Act (2009) and the NSHP consider the provision of facilities at household level to be first and foremost a private matter that should not be subsidised by the government. However, the Government of Tanzania commits to reviewing, developing and enforcing laws and regulations for on-site sanitation; facilitating the participation of the private sector; investigating and providing guidance on hygiene promotion and social marketing strategies and supporting the development of appropriate technologies.

Under the MKUKUTA I (Tanzania's national poverty reduction strategy, 2005-2010), the Government of Tanzania committed to increasing access to basic sanitation from a 90% baseline to 95% in 2010. As discussed in the previous section, this target is likely to be met according to the HBS 2007 but not according to JMP indicators. The new MKUKUTA 2010-2015 (which had not been released at the time of writing) included targets to increase access to improved sanitation from 23% in rural areas and 27% in urban areas in 2010 to 35% and 35% respectively by 2015.

⁷ Since the study was conducted, the MoU has helped to guide sector dialogue especially related to the National Sanitation Campaign which was launched in August 2012 with USD 20 million funding from the African Development Bank. For actual implementation of the campaign, the four ministries involved have gone on to sign a Participation Agreement.

⁸ Although the policy has been prepared, its approval by the Cabinet was still pending as of March 2013.

3 Institutional set-up and financial flows for sanitation in Dar es Salaam

This section introduces the institutional set-up for the provision of sanitation services in Dar es Salaam, setting out the roles, responsibilities and the sources of finance that each entity has at their disposal to carry out their functions. Figure 3.1 shows the institutional mapping and financial flows for household sanitation in Dar es Salaam.

3.1 Institutional framework

3.1.1 Government entities at national level

At the national level, four ministries are involved in policy development, sector planning and monitoring related to household sanitation.

The Ministry of Finance and Economic Affairs (MoFEA) manages the overall revenues, expenditures and financing of the Government of Tanzania and plays a supportive role to other ministries towards economic and social objectives. MoFEA allocates donor funding and the Government's resources to the different ministries for sanitation.

The Ministry of Health and Social Welfare (MoHSW) is the lead ministry for the sanitation sector. Sanitation is dealt with by the Environmental Health Unit, which deals with personal hygiene and occupational health and safety. Promoting environmental health is just one of 13 policy objectives MoHSW is responsible for. The MoHSW coordinated the drafting of the National Sanitation and Hygiene Policy and prepares acts and regulations, sets standards for sanitation and hygiene and coordinates the provision of technical assistance to Local Government Authorities (LGAs). Funding for LGAs is from the Health Basket Funds and the Health Block Grants (intended to support personal and other costs)⁹. The MoHSW contributed TZS 73 million to the Medium-term Expenditure Framework (MTEF) to coordinate sanitation policy meetings and information, etc¹⁰. These funds were provided directly or through in-kind support by UNICEF, German Technical Cooperation (GTZ), Water and Sanitation Programme of the World Bank (WSP) and the MOHSW. In addition, the MoHSW sends inspectors to the LGAs once or twice a year in a 'supportive supervision' capacity to organise training sessions and enhance sanitation promotion¹¹.

The Ministry of Water¹² coordinates water sector activities, including sanitation and hygiene, gives overall policy guidance based on National Water Policy (NAWAPO, 2002) and the Water Supply and Sanitation Act (2009), and is involved in setting standards for sewerage. Through its Department of Commercial Water Supply and Sewerage, the Ministry of Water and Irrigation (MOWI) has responsibility for overseeing and supporting DAWASA, the water authority in Dar es Salaam which holds the assets under a concession contract with the Government of Tanzania. The Ministry also monitors the performance of DAWASCO, the operating company, which provides water and sanitation services under a lease agreement with DAWASA.

Prime Minister's Office, Regional Administration and Local Government (PMO-RALG) is the Ministry in charge of local government, and as such oversees planning of sanitation and hygiene promotion activities of LGAs. It also makes funding allocation decisions among LGAs alongside sector ministries such as the MoWI and the MoHSW, coordinates institutional strengthening and capacity building and monitors the performance of the LGAs.

In addition, **Energy and Water Utility Regulation Authority (EWURA)** is the sector regulatory agency in charge of monitoring the performance of commercial water and sewerage service providers and carrying

⁹ According to the guidelines, a maximum of 55-65% of the Health Basket and Health Block Grants can be spent on allowances for supervision, maintenance and repairs and transport. The rest is to be used for priority activities.

¹⁰ The MTEF has been developed by the Tanzanian government to promote a result-oriented expenditure management following recommendation of the World Bank.

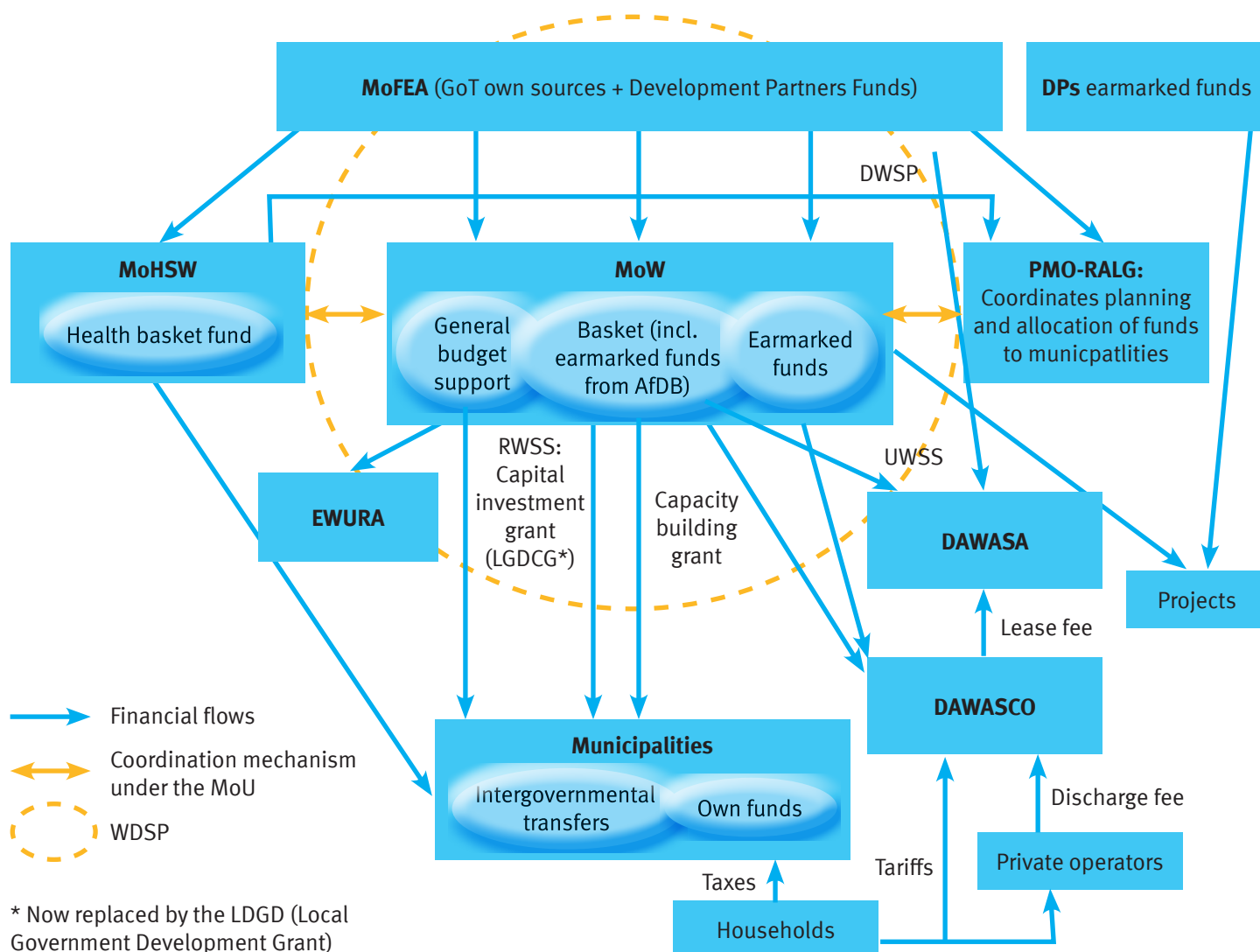
¹¹ The MoHSW is also the lead agency in coordinating the National Sanitation Campaign.

¹² Up until 2010, this Ministry also covered irrigation hence the reference to MOWI in the present document.

out technical and financial regulation. Its activities are financed primarily through fees and annual levies not exceeding 1% of the gross operating revenue of regulated water and sewerage service suppliers¹³.

The National Environmental Management Council (NEMC) is responsible for overseeing the integrity of Tanzania’s environment for sustainable development. NEMC is responsible for assessing and monitoring the quality of the environment, as well as providing technical arbitration and enforcing the environmental legislation.

Figure 3.1: Institutional mapping and financial flows for household sanitation in Dar es Salaam



3.1.2 Delegated management: DAWASA and DAWASCO

Historical background

The Dar es Salaam Water and Sewerage Authority (DAWASA) was created in 1997 and became responsible for water and sewerage services in the city, while on-site sanitation services were transferred to the three municipalities in Dar es Salaam. DAWASA’s service area includes the city of Dar es Salaam as well as Kibaha and Bagamoyo towns in the coastal regions and settlements along the two transmission mains of Upper and Lower Ruvu, where the main water resources originate from. In 2003, a lease was signed with a private operator, City Water, who then became responsible for operations and management, leaving DAWASA as an asset-holding entity. The contract with City Water was terminated prematurely in 2005 and a new lease was then signed with the publicly owned company DAWASCO (Dar es Salaam Water and Sewerage Corporation).

13 The Energy and Water Utilities Regulatory Authority Act.

Roles and responsibilities

DAWASA is in charge of capital investment and rehabilitation, debt management, and monitoring of DAWASCO's performance¹⁴. DAWASCO is the sole provider of water supply and sewerage services in Dar es Salaam and parts of the coastal region. It is responsible for the management, operation and maintenance of water supply and wastewater disposal services. One key difference between the two lease contracts (ie City Water and DAWASCO's) is that the delegated capital investment works, which had previously been delegated to City Water, went back to DAWASA under the new lease. DAWASCO is purely in charge of operations and maintenance of the installations.

3.1.3 The municipalities

Responsibilities

Municipalities retain overall legal responsibility for environmental health and provide sanitation services as part of this¹⁵. This includes ensuring that households have latrines and that night soil is removed and disposed of. Only sewerage and treatment plant operations are delegated to DAWASCO through DAWASA.

In theory, municipalities are involved with the following activities:

- Promotion of hygiene and sanitation promotion.
- Training of masons.
- Inspection of households, commercial properties and public spaces (monitoring and enforcement). Household inspections are meant to check the quality of latrines, as well as systems for disposal of brown water (waste water from bathrooms and from cloth/utensil washing), though it seems that enforcement does not happen in practice.
- Licensing of private sector pit latrine emptiers.
- Some residual role in emptying pit latrines (although this is extremely limited).

In practice, however, municipalities are struggling to perform these functions adequately. For example, following the creation of DAWASA, municipalities were supposed to be in charge of collecting sludge from latrines (and had trucks to do so). Temeke municipality still has one truck but it is not operational and the activity of sludge collection has *de facto* been transferred to private entrepreneurs. The situation is similar in the other municipalities.

3.2 Financing sources

3.2.1 At the national level

Coordinated financing mechanisms for the water and sanitation sector in the form of a sector-wide approach were put in place in 2006. The MoFEA is the recipient for the bulk of donor funding (except earmarked funds going directly to projects) and government resources. As such, available funds are allocated to the various ministries. 85% of funding for the water sector (including some funding for sanitation) comes from development partners, while the remaining 15% comes from government resources¹⁶. These funds are mainly provided to cover for new investment rather than operating and maintenance or rehabilitation costs.

¹⁴ Its responsibilities were set out in the Dar es Salaam Water and Sewerage Act in 2001.

¹⁵ The Local Government (Urban Authorities) Act (1982) states that it is the duty of every urban authority to:

- Section 55 (g) To maintain in good order and repair all public latrines, urinals, cesspools, rubbish bins ... and provide for the removal of night soil and the disposal of sewerage from all premises and houses in its area, so as to prevent injury to health.
- Specification – item (49) – Establish, maintain and carry out services for the removal and destruction of and otherwise dealing with night soil and all other kinds of refuse.

¹⁶ *Public Expenditure Review of the Water Sector*, World Bank, September 2009

Development partners

Development partners (DPs) have been heavily involved in financing the sector over the years, although sanitation has been under-prioritised compared to water. The World Bank has been one of the main donors in Dar es Salaam and led the preparation of the Dar es Salaam Water Supply and Sanitation Project (DWSSP), a major project to upgrade water and sewerage services in Dar es Salaam (see Box 3.1).

Box 3.1: The Dar es Salaam Water Supply and Sanitation Project (DSWSSP)

The DWSSP was designed to support the Government of Tanzania's strategy to rehabilitate the existing water supply and sanitation infrastructure and extend piped water services to poorly served areas. The DWSSP became effective in 2002 and although it was originally due to close in 2006, it was extended to June 2010. This is partly due to the fact that the early termination of the lease arrangements with City Water (and the difficulties that led to termination) meant that investments took place at a slower pace than originally planned.

The total approved cost of the project was USD 165 million, out of which 70% was to be spent on water supply, 20% on sewerage and 10% on on-site sanitation. The sources of funds were: the International Development Association (IDA), African Development Bank (ADB), the European Investment Bank (EIB), the borrower (DAWASA), and the operator. The DWSSP had five project components, with the second to be implemented by DAWASA, focusing on the rehabilitation of existing sewers and the construction of new ones, rehabilitation of waste water pumping stations, stabilisation plants, and an existing ocean outfall. Component two represented 13.6% of the total project costs¹⁷ and the funds were provided by the European Investment Bank (EIB).

The project included a community water supply and sanitation component, which was intended to provide a minimum service level to communities who were far from the network and to support on-site sanitation facilities. The baseline assessment for the project showed that 80% of household latrines in the service area were in a state of poor repair. However, in the project itself, little attention was given to promotional activities and communities prioritised water supply over sanitation. As a result, only nine facilities (two sanitation blocks in markets and seven promotional facilities) were built¹⁸. DAWASA implemented this component with the assistance of NGOs (including WaterAid) who supported communities to formulate grant requests, implement water supply and sanitation projects and built capacity for post construction management.

The World Bank later shifted away from project financing towards providing support via the Water Sector Development Plan (WSDP)¹⁹ basket fund. In the future, World Bank funding for urban water services is likely to be delivered mainly through WSDP basket funding for component three: scaling up urban water supply and sanitation.

The Water Sector Development Programme (WSDP) became effective in 2007. It has been designed as a coordinated funding framework that integrates funds allocated to water and sanitation by the Government of Tanzania with DPs' commitments. The funds under the WSDP do not go through MOW but directly from the Exchequer to the Local Government Capital Grant (LGCG) and Local Government Capital Development Grant (LGCDG). The MOWI gives the instruction for the money to be paid. In terms of volume of funds, the main donors contributing to WSDP are the World Bank, KfW Bankengruppe (KfW) and the

¹⁷ Economic and Social Research Foundation (2010) *Strengthening inclusion in investments in urban water and sanitation services: A case study of the Dar Es Salaam Water Supply and Sanitation Project (DWSSP)*

¹⁸ Richard Kimawaga (2009) *Consultancy Service for the Documentation of the Community Water Supply and Sanitation Programme (CWSSP)*. Dar es Salaam, Tanzania (Draft report)

¹⁹ The Water Sector Development Programme (WSDP) is a sector wide approach (SWAp) which serves to channel funds from DPs and the Government of Tanzania for water and sanitation.

African Development Bank²⁰. WSDP has four components focusing on water resource management, rural water supply and sanitation, urban water supply and sanitation and capacity building and institutional strengthening. WSDP had a budget of US\$951 million for the first five-year phase, with the majority of funds passing through a basket funding mechanism, and considerable financing earmarked for particular donor projects aligned with the overall WSDP. As shown in Figure 3.1, as of January 2010, funds under the WSDP came from three funding sources:

- The Government of Tanzania – from General Budget Support and own revenues. The Government was intended to be the largest contributor to the WSDP but has not fulfilled its initial commitments.
- A sector-based basket funding system, with a holding account at the Bank of Tanzania, where funds from the WB, AFDB, KfW and the Royal Netherlands Embassy (RNE)²¹ are released and allocated to sector programme activities. Sanitation and sewerage activities fall under Components two and three, Rural Water Supply and Sanitation (RWSS) and Urban Water Supply and Sewerage (UWSS) respectively, coordination of MoHSW. Basket funding is therefore one of several financing channels for funds under the WSDP.
- Earmarked funds, channelled from development partners through MoFEA or directly to implementing agencies in support of specific components (such as JICA, EU, MCC).

Table 3.1: shows the total expenditures under the WSDP until January 2010.²²

Component	Original Budget Share (%)	Original Budget	Expenditure between July 2007 and December 2009	Progress Rate (%)	Total Balance as of January 2010
Component 1: Water Resources Management	7.9%	75.2	14.0	18.7%	61.1
Component 2: Rural Water and Sanitation	30.6%	291.3	138.0	47.5%	153.1
Component 3: Urban Water and Sanitation	53.7%	510.8	250.0	48.9%	260.8
Component 4: Institutional and Capacity Building	6.1%	58.7	13.0	22.7%	44.4
Unallocated	1.7%	16.0	0.0	0.0%	16.0
Total	100.0%	951.0	415,400	43.7%	535,600

Source: MoWI Mid-Term Review Report²³

²⁰ The budget of the entire SWAp programme increased from the original USD 951 million to USD 1,240 million by May 2011. AfDB joined the common basket fund, under the Rural Water Supply and Sanitation Programme II with approximately USD97 million. In March 2012, DFID also joined the basket fund providing UK £ 27.5 million (approximately US\$42 million). The Royal Netherlands Embassy (RNE) is no longer providing support for the programme.

²¹ DFID is now a major contributor of WSDP, although this was not the case in 2010, and RNE is no longer providing support to the programme.

²² As of June 2012, actual disbursements had reached 61% of the revised commitment of USD 1.2 billion, with disbursements reaching 52% for WRM and for RWSS, 60% for UWSS and 59% for ICB.

²³ The actual release out of the revised commitment as of June 2012 stands at 737,620,555.12 USD with high release in the urban (57%) as compared to the rural (33%).

The progress rate is the percentage of the original budget spent up to December 2009 out of the original budget. For the rural water supply and sanitation component of WSDP, the original allocation for sanitation and hygiene under Component two was approximately USD 20,000 per district per year, although disbursement has been delayed and erratic. At the time of the research (Spring 2010), the possibility that MoHSW would take a stronger role in sanitation under the WSDP was being discussed²⁴.

The average disbursement per LGA in the 2007-08 fiscal year was approximately USD 2,400. In 2008-2009 it was USD 16,400, while in 2009-2010 it was only USD 2,100.²⁵ Some LGAs have leveraged WSDP funds by combining them with allocations from other sources, however the earmarking of funds for LGAs from the MoHSW and MoWI often precludes this flexibility. Municipalities in Dar es Salaam are also treated as LGAs and are eligible for funding under component 2 of the WSDP.²⁶

The urban water supply and sewerage component of WSDP seeks to improve water and sanitation services in Dar es Salaam, regional centres and district centres. It also includes gazetted small towns and national schemes. As of December 2009, 21% of expenditure under this component was for Dar es Salaam, but almost exclusively for water supply. The MoWI has proposed that all sewerage and wastewater projects be re-scheduled for the second phase of WSDP.

The April 2010 mid-term review of the WSDP found that the sanitation and hygiene programme had made very little progress over the first two and half years. A proposal has been made to review the entire programme, including a review of the institutional arrangements, budget allocations, and arrangements for programme evaluation at the conclusion of the first phase of the WSDP. There is consensus that going forward, sanitation and hygiene activities will focus on promoting household installation of sanplats and hand washing facilities in rural areas.²⁷

The Health Basket Fund. In addition, funds to the sector are allocated via MOHSW through the Health Basket Fund. Funds are then allocated to districts in each of the 21 regions (according to the Health Basket Fund allocation formula) as well as to PMO RALG for supervision and the balance in the MTEF for central MoHSW. Contributions made to the districts from the Health Basket Fund have increased over the past three years, from 0.75 USD per capita in 2007/08, to 1 USD per capita in 2008/09 and 1.25USD per capita in 2009/10. The Environmental Health staff can request money from the Health Basket but the districts do not always prioritise this area when putting forward their requests to the central Ministry.

3.2.2 In Dar es Salaam

Financing sources for sewerage services. For sewerage services, financing from tariff revenues and other resources is allocated via the two publicly-owned entities in charge of overseeing and delivering the services, DAWASA and DAWASCO.

Under the lease arrangements, tariff revenues are collected by DAWASCO, which then pays a fixed lease fee to DAWASA (for use of the assets and financing DAWASA's activities, including investments and debt servicing) and keeps the difference between the tariff revenues and the lease fee to cover its operating costs.

Financing sources for DAWASCO. DAWASCO gets the majority of its revenues from tariff revenues.²⁸ For sewerage, it only charges customers that are connected to the sewerage system. There are two systems of

24 The restructuring of the WSDP actually led to the MoHSW taking the lead over rural sanitation and hygiene and to the launch of the National Sanitation Campaign, with USD 20 million start-up funding from the AfDB. Of those funds, 65% were to be transferred directly to LGAs through the exchequer as part of the annual budget cycle.

25 Disbursement resumed in 2012 on a formula basis based on national campaign targets.

26 According to the Participation Agreement signed in August 2012, LGAs will receive 65% of the total funding envelope for the National Steering Committee (NSC). These funds are to be transferred directly to LGAs through the exchequer as part of the annual budget cycle. Each LGA receives its funding based on a formula using NSC targets.

27 Aide memoire, Mid-term review of the Water Sector Development Programme (April 2010).

28 DAWASCO has been facing difficulties to cover its operating costs. They apply on a regular basis for operating subsidies to the Government (although whether or not these subsidies are granted is relatively erratic).

charging, depending on whether the customer is metered or not. If the customer is metered, a sewerage volumetric charge is applied to 80% of the volume of water consumed. If the customer is not metered, a flat sewerage charge is applied. This charge varies according to the customer's location. Revenues for DAWASCO are shown in Table 3.2.

Table 3.2: DAWASCO's sources of revenues (in million TZS)

	2006/07	2007/08	2008/09
Total revenues from water	16,487	16,746	15,930
From water tariffs billed	15,643	15,972	15,054
From water connection charges	789	764	867
From meter deposits	55	10	9
Total revenues from sewerage	1,459	1,341	1,180
From sewerage tariffs billed	1,178	1,113	887
From sewerage connection charges	35	43	122
From tankers discharge fees	245	185	170
Total revenues	17,945	18,087	17,110

Source: DAWASCO's accounting system

Over the three year study period, revenues from sewerage accounted on average for 7.5% of total revenues. Over the same period, both water and sewerage have remained constant: sewerage tariffs remained at TZS 174 per cubic meter and water tariffs at TZS 488 per cubic meter up to 5m³ and TZS 654 above²⁹.

Charges for water and sewerage are set by EWURA, the regulator of water, sewerage and electricity services at national level. DAWASCO is in charge of preparing the tariff application, which is then submitted by DAWASA.

Financing sources for DAWASA

The lease fee is intended to cover DAWASA's operating costs and service the debt. The monthly lease fee is 100m TZS per month. This amount has not been paid consistently by DAWASCO in the past but this has been rectified since March 2009.

In addition, capital investments are funded by donor partners and matched by the Government of Tanzania under the WSDP. They are also funded through external projects, such as the DWSSP (see Section 3.2.1). After the DWSSP came to an end in November 2010, it was intended that all subsequent capital investment funds for DAWASA will be channelled through the WSDP, component three, focusing on urban water supply and sanitation. Expenditure for Dar es Salaam has focused on secondary and tertiary distribution and source development³⁰.

DAWASA therefore implicitly gets a subsidy from the Government. Over the three years of the study period, the Government has funded 10% of the main distribution systems and of the sewers, pumping mains and sea outfall, the rest being funded by donor partners (90%).

²⁹ The information comes from DAWASA and collected by Thelma Triche, 2009.

³⁰ The MoWI has proposed that sewerage development be postponed to phase 2 of the WSDP. DPs have recommended that, given financial constraints, the GoT consider lower cost sanitation options.

Financing sources for on-site sanitation

For on-site sanitation, households are the main investors as latrines are seen as a private responsibility (their role and financial commitments is discussed in more details in Section 4.1). Municipalities have limited funding available, mostly to finance software activities, including demand promotion and inspections.

Municipalities receive funds from a variety of sources. Funding for sanitation is extremely fragmented and management of these resources is complicated by the fact that several of the financing sources have precise restrictions on the way in which the funds can be used, although there may be a time lag between the disbursement of funds and the diffusion of guidelines. The different types of financing sources for sanitation in municipalities can be summarised as follows:

Own sources

In contrast to other local governments, urban municipalities in Dar es Salaam mobilise greater levels of own-source revenues. These constituted 30% of their local financial resources in 2006/07 – close to three times higher than the national average³¹. Own resources come mostly from fees, charges and service levies.

Inter-governmental transfers

Inter-governmental transfers to municipalities in Dar es Salaam fund roughly 70% of all local government spending. They include recurrent sectoral block grants (eg the Health Block Grant), sectoral basket funds and ministerial subsidies (earmarked such as the Health Basket Fund or not such as the General Purpose Grant from the MoWI), as well as development grants (LGCDG and Capacity Building Grants, as part of the WSDP)³². Recurrent block grants account for about two-thirds of all inter-governmental transfers. Both the recurrent block grants and development grants are disbursed to LGAs using a formula-based approach by the MOFEA.

Local Government Capital Development Grant (renamed Local Government Development Grant)

Currently, all key sectors (health, education, agriculture, rural roads, rural water and sanitation) channel most of their development funds through the LGCDG system. The LGCDG is financed through sector basket funding arrangements, such as the Water Sector Development Programme. The transfers cover the costs of capital investments to qualifying municipalities. The three municipalities in Dar es Salaam have fulfilled the eligibility criteria (based on performance in key areas, principally financial management) for the past three years and have benefited from these grants.

Funds for sanitation are thus channelled via the health basket funds, Health Block Grants and through the LGCDG rural water window³³). Levels of spending under the health funds are determined by the Comprehensive Council Health Plan, which identifies six priority areas³⁴. Sanitation falls under priority area number six, relating to health promotion and environmental health, with specific targets relating to latrine coverage, the provision of liquid waste management systems (although little happens in this area) and the facilitation of the private sector and community organisations in environmental health activities³⁵.

31 Venkatachalam, P (2009) *Overview of municipal finance systems in Dar es Salaam, Tanzania*, Crisis States Occasional Papers, Development Studies Institute, LSE, London, UK

32 *Assessment of the effectiveness of formula-based budgetary allocation to Local Government Authorities (LGAs)*, Draft report, Muzumbe University for the MoFEA, 2010

33 Oddly, Dar es Salaam municipalities are eligible to benefit, along with other LGAs, under the rural water supply and sanitation component of WSDP.

34 MoHSW (2007) *Comprehensive Council Health Plan Guidelines*

35 Interventions under priority area six include: health communication for behaviour change (IEC, monitoring of hazardous waste); water, hygiene and sanitation; school health promotion; food control and hygiene; improved housing; occupational health and safety; enforcement of by-laws and regulation related to health; improved solid and liquid waste management and control of vector borne diseases.

Funds under the LGCDG (channelled from the WSDP) are intended for sanitation marketing, capacity building and hygiene promotion³⁶. Under the WSDP, municipalities in Dar es Salaam have each been assigned up to 20 million TZS to conduct software promotion activities. In practice, only two million TZS in 2007/08 and 13 million TZS the following year have been effectively disbursed to each of the three municipalities. Although the allocation is said to be related to performance in sanitation marketing and hygiene, the disbursements seem, in reality, to be erratic and unpredictable.

In addition, off-budget resources for sanitation and hygiene promotion, although limited, are relatively significant compared to government allocations. Although sanitation was a low priority within the community component of DWSSP (communities themselves, with support from NGOs chose to finance improved water supply rather than upgrading latrines), NGO-led projects, both prior to and under the WSDP, have done some substantial work in sanitation, including demonstration budget for latrines and training artisans. This suggests that local and international NGOs and the UN have placed a comparatively greater value on sanitation and hygiene promotion activities than the government has. For example, WaterAid provided TZS 44 million to support sanitation activities in Temeke municipality in 2006/07, compared to funds transferred by the government through the Health Basket Fund, equivalent to TZS 18.5 million for the health sector as a whole, or via the RWSS programme: TZS 12.5 million every year.

Municipalities in Dar es Salaam had a cumulated TZS 84,556 million in revenues in 2006/07 (LSE, 2009). The budget of Temeke municipality in 2007/08 was TZS 25,663 million and this has increased at a rate of over 3% since then. The budget of the Health Department represented respectively 17% and 12% of the total municipal budget for Temeke in 2007/08 and 2008/09.

³⁶ This was revised following the WSDP mid-term review in April 2010, with the MoHSW becoming an implementing agency in the WSDP, taking over sanitation and hygiene promotion.

4 Sanitation services in Dar es Salaam: coverage and expenditure

This section assesses the sanitation services currently being provided in Dar es Salaam and estimates the average levels of expenditure on such services over the study period (2006/07 to 2009/10)³⁷.

To enhance clarity and compare financial levels across segments, we look at each main segment of the value chain separately, ie on-site sanitation, sewerage services and sewage treatment and disposal. Expenditure data is often difficult to obtain, especially when individual activities are grouped together (such as sewerage with water distribution or latrine inspection with solid waste activities). To derive expenditure assigned to liquid waste, it was necessary to define a series of cost allocation criteria and assumptions. The methodology is set out in more detail below. Table 4.1 summarises the list of sanitation activities for Dar es Salaam and the sources of funds.

Table 4.1: Sanitation activities for Dar es Salaam and sources of funds

Sanitation activity	Responsible entity	Sources of funds
Overall sector level		
Sector policy definition and coordination	MoWI; MoHSW; PMO-RALG	Government of Tanzania; DPs
Sector monitoring	MoWI; MoHSW; PMO-RALG	Government of Tanzania; DPs
Monitoring of DAWASA/ DAWASCO	EWURA	Licence fee
Environmental monitoring	NEMC	Government of Tanzania
Collection		
On-site sanitation		
Software: demand promotion, hygiene promotion, sanitation marketing	LGAs	<ul style="list-style-type: none"> Earmarked funds from WSDP (UNICEF, NGOs and CSOs) WSDP basket funding Project funds from the MoWI (up to TZS 20million per LGA)
Build household latrines	<ul style="list-style-type: none"> Households Independent NGOs 	<ul style="list-style-type: none"> Households' funds Isolated pilot projects with limited subsidies
Empty household latrines	Households	Households' funds
Inspection of existing latrines	LGAs (EHOs)	LGAs: allocated budget from the Health Department (recurrent transfers)

³⁷ Note that we are estimating actual levels of expenditure rather than how much it would cost to deliver a sustainable service.

Sewerage services		
Build and rehabilitate sewer networks	DAWASA	<ul style="list-style-type: none"> • Lease fee from DAWASCO • Funds from the Government of Tanzania and DPs under WSDP
Operate and maintain sewer networks	DAWASCO	<ul style="list-style-type: none"> • Water and sewerage tariff revenues • Operating subsidies
Build sewer connections	DAWASCO	Sewer connection charge
Treatment and disposal		
Build and rehabilitate wastewater treatment facilities	DAWASA	Lease fee from DAWASCO Funds from the Government of Tanzania and DPs under WSDP
Operate and maintain waste water treatment facilities	DAWASCO	Water and sewerage tariff revenues Operating subsidies
Operate and maintain sea outlet	DAWASCO	Water and sewerage tariff revenues Operating subsidies

4.1 On-site sanitation

On-site sanitation services can be broken down into two main components: software services (including hygiene promotion, demand promotion, sanitation marketing, project management and monitoring) and hardware (including building latrines, septic tank systems and keeping them in working order, which requires regular emptying). In line with legislative and policy frameworks, public financing is limited to software support activities.

4.1.1 Software support

Publicly funded ‘software support’ includes demand promotion and hygiene promotion (to the extent that those activities are linked to sanitation interventions), monitoring and management costs³⁸.

Such activities are conducted by municipalities but are often funded through the municipality budget by NGOs or organisations, such as WaterAid, CARE (Kinondoni), Plan International (Ilala) and UNICEF, or carried out by local organisations such as Water and Environmental Projects Maintenance Organisation (WEPMO) or Environmental Engineering & Pollution Control Organisation (EPCO). For instance, UNICEF has spent USD 250,000 on hygiene promotion and training of artisans from 2007 to 2009. Total funds allocated by Temeke municipality to various sanitation services are shown in Table 4.2.

³⁸ In sanitation promotion, there is an emerging distinction between general (category) sanitation promotion which is largely publicly funded, and promotion of specific goods and services which can be carried out with public and/or private support.

Table 4.2: Expenditures of Temeke’s municipality on sanitation (in million TZS)

	2006/07	2007/08	2008/09
Administrative expenses for sanitation	94.6	85.1	65.4
Environmental Health Officers	50.4	40.7	30.5
Inspectors	44.2	44.4	34.9
Health promotion activities	2.3	0.7	7.4
Public meetings	2.3	0.7	1.4
Training of community leaders	0.0	0.0	0.0
Training of masons	0.0	0.0	6
Total expenditures on sanitation	96.8	85.8	72.7
As a % of total budget of municipality		0.3%	0.3%
As a % of Health Department budget		1.9%	2.1%

Source: Temeke’s budget and interviews with municipal experts

Evaluating the share of the total municipal budget allocated to sanitation has required formulating a number of assumptions, as set out below:

Estimating administrative costs, including administrative overheads, monitoring and reporting costs

Amongst many other duties in various sectors (including preventative health and solid waste management), Environmental Health Officers (EHOs) are responsible for health promotion: based on interviews, we estimated that they spent approximately 40% of their time on sanitation issues. EHOs organise public addresses and educate communities about health hazards of poor hygiene and sanitation. Besides, inspectors are in charge of inspecting latrines and verifying that illegal discharge of pit content does not take place. In theory, they can apply fines to households that do not maintain latrines in adequate condition or do not have a latrine. In practice, however, it appears that inspectors spend limited amount of their time inspecting latrines, except in the case of cholera outbreaks³⁹. Inspectors have limited ability to affect change in sanitation practices. If a fine is applied to a household as a result of one such inspection, those households (which are generally poor) usually cannot afford to build a latrine in order to conform with the regulations.

Estimating software expenditure on sanitation

To estimate expenditure on software by Temeke municipality, we obtained the annual sanitation promotion budgets, to which a portion of the costs of the EHOs and inspectors was added, based on the estimated proportion of their time spent on sanitation monitoring and inspection. It was estimated that 13% of health promotion activities are related to sanitation, including for public meetings, training community leaders and masons.

Overall, it was estimated that Temeke municipality allocated TZS 96.8 million to sanitation in 2006/07, TZS 85.8 million in 2007/08 and TZS 72.7 million in 2008/09. Administrative expenses, including monitoring and reporting, varied from 90-99% of the total expenses, leaving very little for sanitation promotion activities. On average, total expenditure on sanitation amounted to 0.3% of Temeke municipality’s total budget and to 2% of the Health Department budget, which is very little compared to the size of the sanitation challenge.

³⁹ Interview with Nyanzobe Malimi, TAWASNET.

4.1.2 On-site sanitation facilities

Building and improving latrines

Households are in charge of investing in on-site sanitation facilities, as they are primarily seen as a private responsibility. For rented houses, the property owner is responsible for initial investments and the tenants are responsible for operation and maintenance. This allocation of responsibilities is codified in municipal by-laws.

The only type of latrine built by local masons is the pit latrine, which is comprised of a three metre deep cement block lined pit with a reinforced rough cast concrete squatting slab and short cement block superstructure⁴⁰. Latrines without doors are a major concern to women who require a greater degree of privacy than men and complain that they can only use the latrine under the cover of darkness.

The cost of building latrines varies depending on the choice of materials used, whether the pits are lined or not, and the design of the slab. For instance, toilets in unstable soil must be lined and those in areas of high water table raised. Lining of pits can be done with trapezoidal blocks (a cheaper option), cement rings or stones. Superstructures vary from temporary structures in nylon or wood to more permanent ones with iron sheets. Superstructures can also be made of a rough assembly of rice sacks and usually have no roof and a poor quality door. Locks on toilet doors are rare and if the toilet is situated in a passage way, any passer-by can (and does) use the latrine. There are also several options for slabs, which can also be added as an improvement to existing toilets. These options and their costs are shown in Table 4.3.

Table 4.3: Material costs for building latrines

	Option one		Option two		Option three	
	Description	Cost range	Description	Cost range	Description	Cost range
Pit	Unlined single; 3m depth by 1.3 diameter	20,000-30,000	Lined with cement blocks	250,000-300,000	Raised pit lined with sand/cement	150,000-200,000
Slab	Wood	90,000-150,000	Iron sheet	95,000-110,000	Cement block	150,000-170,000
Superstructure	Single san plat	5,000-12,000	Integrated (san plat and slab)	55,000-62,000	Dome slab with ceramic pour flush	70,000-80,000

Source: Interviews with local experts

The average material cost for a basic latrine is approximately TZS 300,000 and TZS 500,000 for an improved latrine. To these costs of material should be added the cost of labour for another TZS 200,000-300,000⁴¹, which brings the total average cost of a basic latrine to TZS 550,000 (USD 390⁴²) and TZS 750,000 (USD 530) for an improved latrine.

The cost of improving latrines varies according to the situation. Possible improvements include moving from a temporary superstructure (wood) to a permanent one (painted cement block with vent pipe) or simply adding a cement block and a vent pipe. It could also mean adding a slab to existing basic latrines,

40 However, some organisations implement pilot projects to construct other types of latrines: for instance, WEPMO is piloting composting latrines to address the problem of high water tables.

41 This data comes from interviews with local experts from WaterAid and WEPMO.

42 Exchange rate as of 12/05/2010

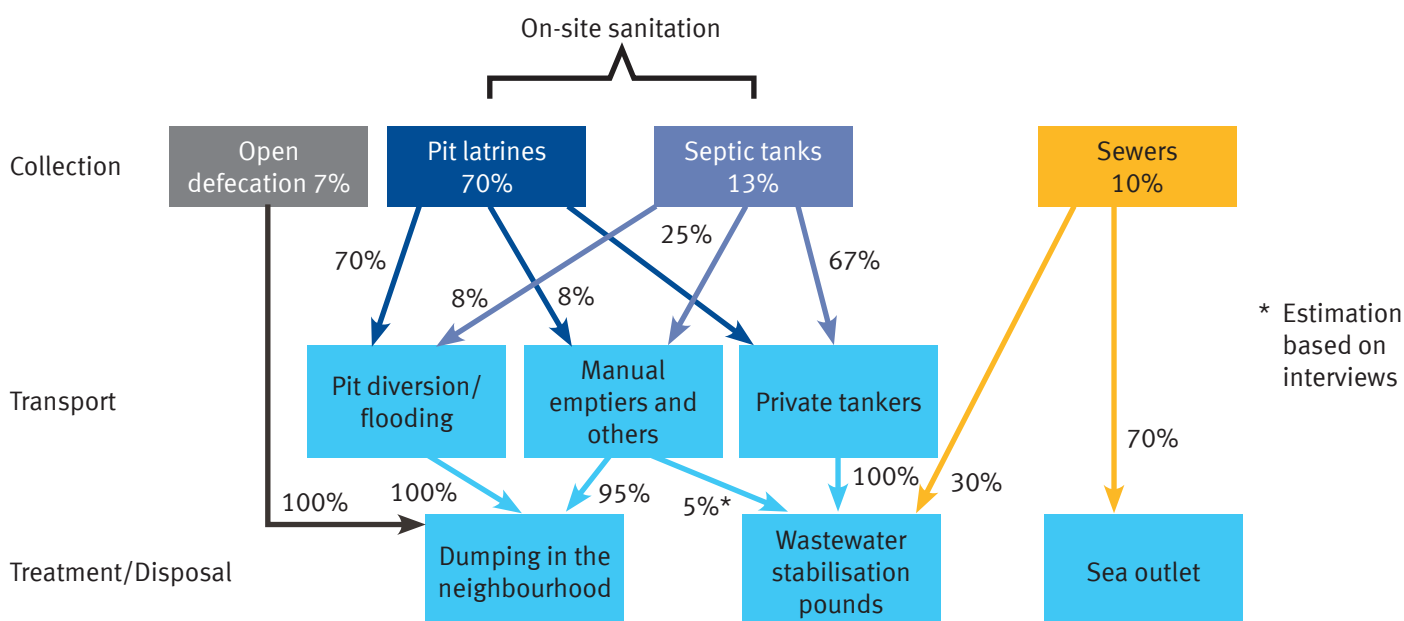
or building a second pit. In later sections, we assume that the average cost for latrine improvement ranged from TZS 50,000-150,000.

Emptying sanitation facilities

Households are responsible for emptying or moving their sanitation facilities when it becomes full. Although each of Dar es Salaam’s three municipalities has nominal responsibility for waste management, they have limited equipment for this. At the time of the studies, only two vacuum trucks were deemed to be operational, one in Kinondoni and one in Ilala.

As a result, households have been left to find alternative options to empty their latrines. Those limited options are set out below and summarised in Figure 4.1, which also shows other modes of eliminating human waste, including via sewers.

Figure 4.1: Emptying services in Dar es Salaam



Source: Bereziat (2009), DAWASA (2008)

As can be seen on Figure 4.1, the most frequent approach consists of ‘dealing’ with the problem at least cost, ie flushing out the latrine onto the street during the rainy season. This has no direct financial cost for the households concerned but can have a substantial impact in public health terms, as the recurrent epidemics of cholera indicate.

Households can also use manual pit latrine emptiers, or ‘frog men’, at an estimated cost of TZS 27,000 (USD 18) to 100,000 (USD 67) per visit. The frequency of pit latrine emptying depends primarily on the size of the pit and on the type of facilities. Basic latrines usually need to be emptied twice a year, while septic tanks need to be emptied once a year but require two trips to do so. Manual pit latrine emptying poses a health risk to the individuals involved and is rarely associated with safe disposal. Manual pit latrine emptiers often dump the waste out in the street and only a few actually go and discharge the sludge to a wastewater stabilisation pond managed by DAWASCO for a fee of TZS 3,000 (USD 2) per trip⁴³.

Wealthier households in planned areas can call on the services of privatised vacuum tankers. Several service providers exist throughout the city (eg Klean Kleaners). The costs of such services would usually depend on the distance between the household served and the discharge point (reflecting differences in transport costs). The cost of emptying a latrine with a vacutug ranges between TZS 60,000 (USD 40) and 90,000 (USD 61)⁴⁴.

43 Interview with Tedegro.

44 Interview with experts from WaterAid, Tedegro, Tawasanet and WEPMO.

An intermediate solution that has been developed with WaterAid support consists of using a ‘gulper’, ie a motorbike with a tank attached that can be used to safely remove latrine waste and dispose of it in the stabilisation ponds for a yearly cost of TZS 40,000 (USD 27) (emptying twice a year). However, the approach has not been scaled-up so far, and demand for their services remains limited.

Based on these observations, we estimated that households who do not empty their latrines themselves (hence at no external cost) spend TZS 54,000 (USD 36) to TZS 200,000 (USD 136) a year on having their latrines emptied manually by ‘frogmen’ and TZS 60,000 (USD 40) to 90,000 (USD 61) when having improved latrines emptied by tankers. Therefore, alternative options such as the Gulper should have a high potential for development since this solution would only cost TZS 40,000 (USD 27).

From this figure, we can deduct that total households’ investment for emptying latrines in Dar es Salaam ranges from TZS 76,980 (USD 51 million) to 157,596 million (USD 107 million) (see table 4.4. below).

Table 4.4: Estimation of annual expenditures by households on emptying services in Dar es Salaam

Total population in Dar es Salaam	4,000,000
Estimated population using manual emptying services	354,000
Estimated investment on manual emptying services (million TZS)	19,116-70,800
Estimated population using tankers’ services	964,400
Estimated investment on tankers’ services (million TZS)	57,864-86,796
Total average investment on emptying services in Dar es Salaam	150,210

4.2 Sewerage services, sewage treatment and disposal

Building and upgrading sewerage systems

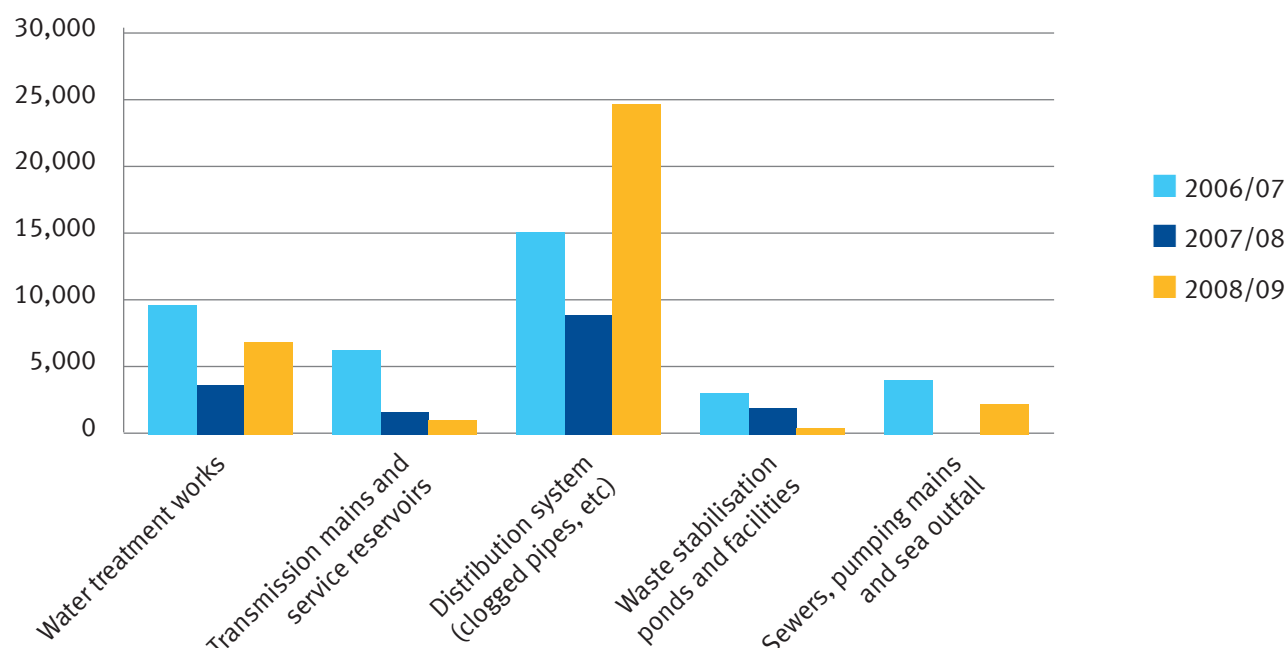
The sewerage network consists of 140 kilometres and 14 pumping stations, covering only 10% of the population. It is mostly concentrated in the planned (and wealthier) areas of the city (see figure 2.3). There is an integrated network in the city centre, which is mostly gravity-fed and therefore relatively cheap to operate. A series of decentralised networks also exist, which require pumping and are therefore expensive to operate.

The existing sewerage system was originally built in the 1950s and serves the city centre and discharges into the Indian Ocean through an ocean outfall. There are also nine small sewerage networks outside the city centre that serve residential, institutional and industrial areas and discharge into oxidation ponds (or waste stabilisation ponds). Those systems are managed by DAWASCO and cover about 3% of the households. Four of them have the necessary facilities to receive faecal sludge from the trucks (ie for those who are not connected to sewerage systems). As of July 2009, there were 17,254 sewerage connections in Dar es Salaam, up from 13,599 connections in 2006⁴⁵.

DAWASA is responsible for investing in building and upgrading the sewerage systems whilst DAWASCO is in charge of installing sewerage connections. Major rehabilitation of the old and poorly maintained water supply and sewerage infrastructure was carried out or is ongoing under the DWSSP (see Box 3.3 on DWSSP). Estimated investments for the 2006-2009 period are shown in Figure 4.2.

45 DAWASCO’s EDAMS – Billing and customer information

Figure 4.2: Estimated investments in rehabilitating and expanding sewerage and wastewater treatment services (million TZS)



Source: DAWASA accounting system

The costs of sewerage connections are paid for by the households themselves. They vary according to the distance to the network and are based on the costs of materials used for that connection. The minimum price is TZS 180,000 (USD 122) for six metres of pipe and could go up to TZS 320,000 (USD 218) for 20 metres (with two manholes in between). In addition, the connection charge for each domestic connection is TZS 26,000 (USD 17).

Operating the sewerage system

DAWASCO is in charge of operating both the wastewater stabilisation ponds and the sewerage system. Most of the sewerage-related operating costs consist of pumping costs, particularly for boosters on the decentralised systems. These are kept reasonably low, however, as a large portion of the system is gravity-fed.

Building and upgrading sewage treatment facilities

There are nine wastewater stabilisation ponds (WSP) connected to decentralised sewerage systems and 15 pumping stations, although some of them are currently not operational.

The ponds have been undergoing extensive renovation as part of the DWSSP, although several of them remain in poor condition and are at risk of being surrounded by illegal settlements. They rely on anaerobic treatment, which is comparatively cheap (it does not require electricity, as other methods of conventional treatment do, and is mostly reliant on sunshine so is well suited to the tropical climate in Tanzania) but demanding in terms of time required to complete treatment and land use. Given the high demand for land throughout the city, it is unlikely that more ponds can be constructed in the future⁴⁶.

Operating sewage treatment and disposal

DAWASCO is in charge of operating the sewage treatment ponds. The stabilisation ponds are connected to the decentralised network systems. Those ponds also receive sludge from private tankers and manual emptiers (see previous section). Only two of these ponds (Vingunguti and Kurasini) are currently able to receive the content of on-site sanitation facilities (given that on-site facilities have a high load content, which requires anaerobic treatment), as the Mikocheni pond which is more central and therefore usually more in demand, was being refurbished in early 2010 (DAWASA).

46 For more details, see: www.irc.nl/page/8237

DAWASCO has contracted out the process of accepting tankers at the facilities and keeping a register of allowed tankers. They apply a charge to tankers and other vehicles bringing sludge from on-site sanitation facilities for disposal in the ponds. The disposal charges are set by EWURA. For Mikocheni, they were originally set at TZS 500 (USD 0.34) per trip (ie per discharge) whilst the charges for the other ponds were TZS 3,000 (USD 2) per trip. Mikocheni charges had to be increased to protect the pond from overflowing and ensure effective treatment (if the pond is full, its ability to treat effectively is severely affected).

From an operational point of view, DAWASCO faces difficulties controlling the quality of the sewage brought into the ponds: some tankers in the past have brought industrial waste (which can be damaging to the treatment process, due to high chemical content). Waste from traditional latrines is also more difficult (and hence more costly) to treat. DAWASCO has no means to verify the quality of the waste being dumped, except through random odour checks.

5 Evaluating public finance for sanitation in Dar es Salaam

This section seeks to evaluate the effectiveness of public financing for sanitation in Dar es Salaam based on a set of criteria, including **comprehensiveness** (whether public funds are allocated in a way that allows all segments of the sanitation value chain to function in a sustainable manner) and **equity** (whether public funds are adequately targeted on the poor and other disadvantaged groups).

5.1 Criterion one: Comprehensiveness

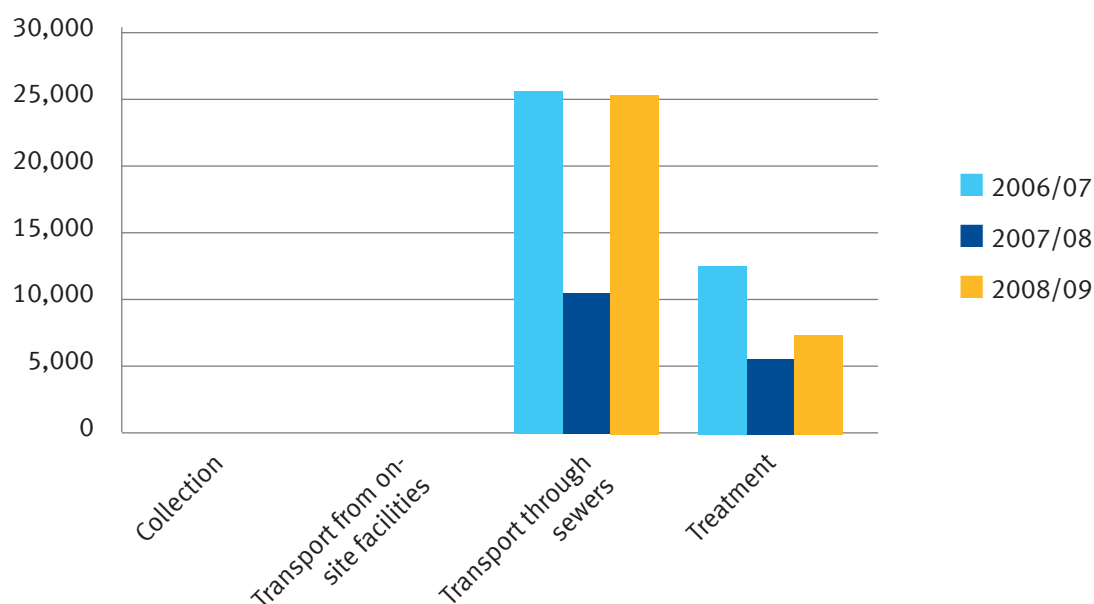
The key question here is whether public financing flows to the right segments of the sanitation value chain so that sanitation services can function effectively.

Public financing has been poorly allocated across the value chain

Figure 4.1 in the previous section showed that the current percentage of faecal sludge produced by the population and being treated before release in the environment was 3% from sewers, 9% from septic tanks and 16% from pit latrines. The average volume of wastewater treated by DAWASCO over the three years of the study period was 10.5 million cubic meters. This accounts for 28% of the total faecal sludge produced, which means that more than two thirds of the faecal sludge remains in the environment untreated.

By contrast, public financing is largely concentrated on sewerage and wastewater treatment, as opposed to on-site sanitation. There is little public finance for software activities for on-site sanitation and no public financing allocated to hardware for on-site sanitation solutions, as shown on Figure 5.1 below. This shows that the bulk of public funding is allocated to sewers (whereas only 10% of the population is connected to the sewer network) and to wastewater treatment (which benefits just 3% of the population).

Figure 5.1: Allocation of public funding across the sanitation value chain (in million TZS)



Note: expenditure on software support and collection is negligible and does not appear on the chart. These figures were calculated based on annual investments from the Government of Tanzania and development partners on capital expenditures, as provided by DAWASA.

Table 5.1 shows similar figures distinguishing between what the annual capital expenditures allocated to on-site sanitation and networked sewerage.

Table 5.1: Public funding to on-site sanitation and sewerage (2006-2010)

	Average capital expenditures over the study period (million TZS)	% of total public funding on capital expenditures
Public funding to on-site sanitation (portion of capital expenditure on waste stabilisation ponds)	276	0.9%
Public funding to sewerage	29,154	99.1%
Wastewater treatment plants	6,492	22.1%
Transmission mains and service reservoirs	2,860	9.7%
Distribution system	16,288	55.3%
WSP for sludge from sewers	1,481	5.0%
Sewers, pumping mains and sea outfall	2,033	6.9%

Note: The investment costs in the waste stabilisation ponds were apportioned between on-site sanitation and network sewerage based on the volume of waste coming from both sources into the waste stabilisation ponds. Average expenditures are the average amount of yearly investments over the study period, based on DAWASA information. DAWASA has also received operational subsidies to run the sewerage system when the lease fee was not paid. However, we do not have detailed information on the amounts disbursed by the government.

This table shows that, overall, only 0.9% of public funding on capital investments goes to on-site sanitation services, while these are the sanitation solution for 83% of the population. Wealthier households, who have access to sewerage and treatment services, effectively benefit from 99.1% of public funds invested in sanitation infrastructure (see figure 5.1).

In addition, the Government of Tanzania and development partners have allocated some funding within WSDP to municipalities to finance software activities for on-site sanitation. However, this funding remains limited and did not come with prescriptive guidelines on how to spend the money until April 2010, when the MoWI released and distributed guidelines. In many cases finance has been directed to provide better access to water. Temeke, Ilala and Kinondoni each received TZS 2 million in 2007/08 and TZS 13 million in 2008/09 to finance sanitation marketing, but it is not clear how these funds have actually been spent. There have also been operational subsidies of TZS 255 million for software support to on-site sanitation from the municipalities themselves, but this funding is very low compared to the amounts spent on capital expenditure for sewerage. This amount has been calculated based on average public expenditures of Temeke municipality scaled up to the scale of the entire city.

On-site sanitation services are not functioning adequately at present, which results in substantial costs in terms of public health and the environment. Even though the emptying of sanitation facilities is considered to be a private matter, the implications of poor sanitation are important on a number of public issues, such as health (through pollution of water sources or general lack of cleanliness of the environment), road safety and other environmental hazards.

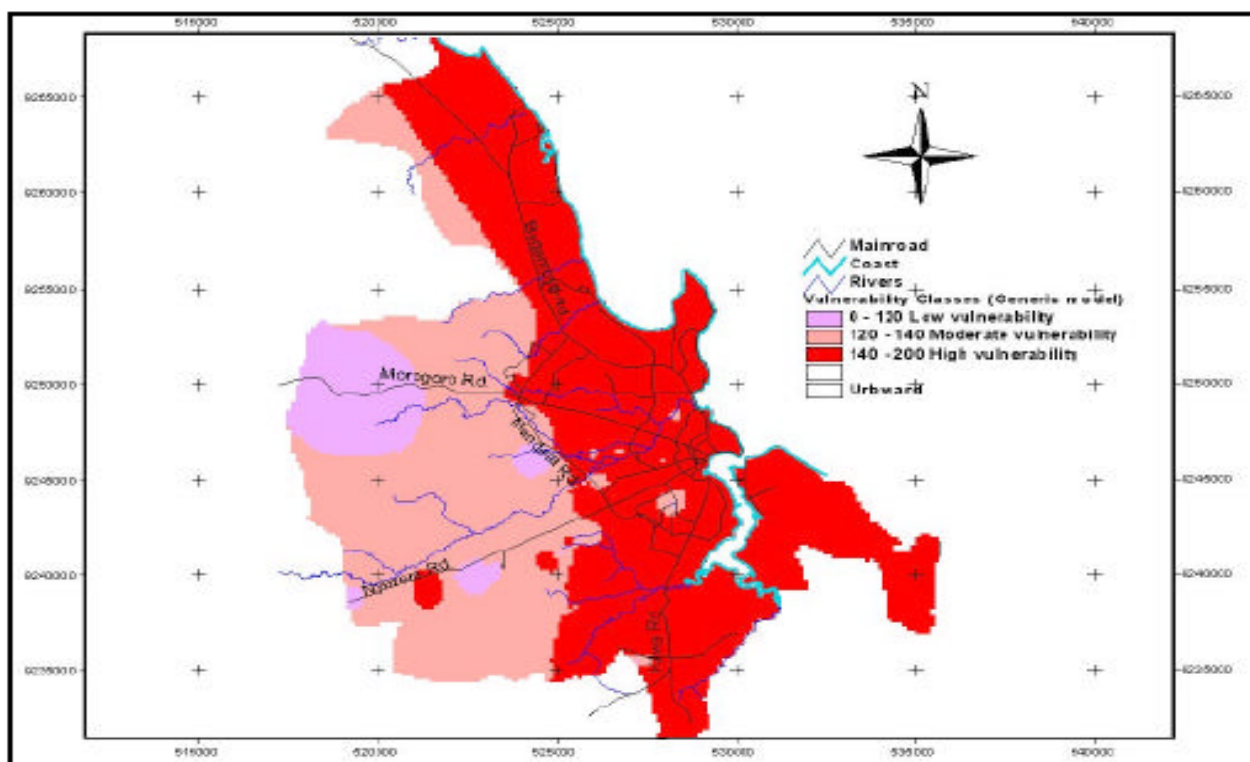
Most households lack appropriate financial resources to improve their basic latrines and empty them on a regular basis so that they can deliver ongoing services. This creates a number of problems. A large proportion of the basic latrines are of poor construction. Given the sandy nature of the soil, they are prone to collapsing, which makes them unusable. Given the inadequacy of emptying services, many households either need to move the latrine once it becomes full (something that requires space, which is at a high premium in dense urban settlements), or resort to other means for emptying them. It is estimated that 50% of the population use pit diversion and flooding to empty their latrines (Sugden, unpublished). Due to high water tables in many parts of the city, the latrines are often built above the ground. When the pit is full, a current practice is to wait for the rain and make a hole in the latrine so that the sludge can flood out of it,

known as ‘vomiting’. Indeed, it appears that one of the greatest problems related to household sanitation is the lack of emptying services (Household Budget Survey, 2007).

Most importantly, unlined latrines can leak and contaminate groundwater resources (especially when water tables are high), which is a particular problem as 17% of the population use water from unprotected sources (HBS, 2007).

Figure 5.2 shows that most of Dar es Salaam is highly vulnerable from polluted effluent from on-site sanitation. As a result, many of these areas are affected by regular cholera outbreaks, although the number of people affected by cholera outbreaks in the city has decreased over the years (see Table 5.2), something that can probably be attributed to better government awareness and to the allocation of significant resources for curative actions by the municipalities.

Figure 5.2: Groundwater vulnerability map for Dar es Salaam



Source: DAWASA – Preparation of Sanitation Improvement Plan

Table 5.2: Impact of cholera outbreaks in Dar es Salaam

	2006/07	2007/08	2008/09
Number of individuals affected			
Ilala	5077	88	77
Temeke	2398	133	82
Kinondoni	2051	227	102
Total individuals affected in Dar es Salaam	9,526	448	261
Cost of curative actions (in million TZS)			
Ilala	340	88	70
Temeke	N/A	N/A	N/A
Kinondoni	14.7	17.4	50
Total cost for Dar es Salaam* (in million TZS)	354.7	105.4	120

Source: Robert Mussa

* This is largely an underestimate as it does not take into account the costs for Temeke.

These added costs from inadequate sanitation services have not been evaluated in a comprehensive manner by existing studies, which means that they remain comparatively “hidden” to public policy-makers and public opinion at large. For example, the indirect costs of curative actions related to cholera outbreaks, diarrhoeal diseases and other vector diseases like malaria could be measured, given that such diseases are strongly impacted by poor sanitation. Similarly, the impact on tourism or on fisheries could be estimated, given that Dar es Salaam is bordered by beaches which have largely been rendered unusable for tourism and local residents due to poor sanitation.

5.2 Criterion two: Equity

We assessed whether the costs of accessing sanitation services weigh disproportionately on poor customers.

In Tanzania, individuals are considered poor when their consumption is less than the ‘basic needs poverty line’⁴⁷ (MoFEA, 2009). This indicator is based on the cost of a basket of food and non-food items, but excludes housing, health and education expenses. According to this definition, 16.4% of people in Dar es Salaam live with less than TZS 14,000 a month per person⁴⁸, which corresponds to TZS 672,000 for a household of four per year. The mean monthly per capita income is TZS 108,053 (MoFEA, 2007), or TZS 5.2 million per household per year. Table 5.2 gives the average cost of different sanitation options, and shows them in terms of percentage of both the average yearly income per household and the average yearly income per poor household.

⁴⁷ Poverty lines are calculated on consumption per adult equivalent per 28 days.

⁴⁸ Brief 4: *An Analysis of Household Income and Expenditure in Tanzania*, Poverty and Human Development Report, MoFEA (2009)

Table 5.2: Comparative costs for households of sanitation options

	Initial costs (construction)	Running costs
On-site sanitation		(Emptying)
Improved latrines with temporary superstructure	550,000	54,000-100,000
As a % of average yearly income	11%	1-2%
As a % of below poverty line yearly income	82%	8-15%
Improved latrines with permanent superstructure	750,000	75,000
As a % of average yearly income	14%	1-1.7%
As a % of below poverty line yearly income	112%	9-13.4%
Networked sanitation		= monthly tariffs (2008/09)
Pipes extension	250,000	51,422
Connection charges	26,000	
As a % of average yearly income	5%	1%
As a % of below poverty line yearly income	41%	8%

Source: DAWASCO Accounting System, interviews.

Note: The capital and running costs for on-site sanitation solutions have been estimated based on interviews with local experts (see section 4.1.2). Capital costs for networked sanitation comprises of pipe extensions costs and connection charges from DAWASCO and running costs, ie sewerage tariffs, were derived from the total revenues billed from sewerage tariffs divided by the number of active sewerage connections.

This table shows that accessing on-site sanitation solutions is actually more expensive from a household's point of view than being connected to the network. While households who earn an average income spend about 5% on getting a sewer connection, below-poverty line households spend an average of 82% of their yearly income on building a basic latrine and 112% on building an improved latrine, which explains why there are comparatively few improved latrines. Running costs of on-site sanitation facilities are also much higher in terms of proportion of income and can represent up to 15% of a below-poverty line household's yearly income, which is why many households have no other option than flushing the latrine onto the street when the rains come.

6 Conclusions

To conclude, we examine whether public financing for sanitation in Dar es Salaam can be considered effective and formulate recommendations for improvement. Such recommendations are focused on how to improve financing rather than on other aspects of public policy. However, where other bottlenecks have been identified, such as those relating to the structure of the market, these have also been noted.

Overall, limited public funding was allocated to sanitation during the study period and the limited funding that was available was mostly focused on sewerage and sewage treatment. Given that 90% of the population does not have access to piped sewerage, funding allocated to sewerage and wastewater treatment (an estimated 99.1% of public funding) appears disproportionate when compared to the percentage of the population reached.

Given that on-site sanitation is a decentralised responsibility, there are multiple financing channels resulting in extremely fragmented sources of funding. As a result, it was difficult to ‘piece’ the pieces of the puzzle together (we were able to do so only and partially for Temeke). The fact that there are multiple channels to transfer sanitation financing to LGAs makes it particularly difficult for them to handle these limited funds in a strategic and effective manner.

The lack of municipal buy-in at both the political and technical levels is emerging as a key issue for explaining the failure to scale up urban sanitation services. This lack of municipal ownership is probably the result of the lack of clear institutional accountability, with targets and indicators agreed upon. It is only within such a accountability framework that capacity building could be more demand driven, merit based and effective and sanitation services deficiency better targeted.

Difficulties faced by municipalities in allocating funding to sanitation are compounded by the fact that there is no accompanying training or guidance from the central government on how to carry out software activities⁴⁹. As a result, the great majority of budgets made available for water and sanitation tends to be used for water interventions, which appear more straightforward to put in place and have clearer results. In addition, the budget spent on ‘software activities’ at municipal level is not clearly accounted for. When used for sanitation, public spending is not allocated in a results-oriented manner. There are no specified behaviour change targets, there is no monitoring of results (municipalities were not able to provide information on the number of latrines built each year in their municipal territory), and there is a very little effort to coordinate between demand and supply activities.

The impact on public health and the environment resulting from such limited attention to sanitation issues is substantial, yet not fully known. Repeated cholera epidemics and endemic diarrhoeal diseases can be partly attributed to underground infiltrates from pit latrines and sewerage overflow that contaminates underground water, as well as the widespread habit of discharging pit content into storm drains, streams and the street. Little public funding is dedicated to tackling the transport and treatment issues for on-site sanitation, with only limited spending for wastewater stabilisation ponds (which can be used for treating the content of pit latrines). There is no public spending on the actual service of emptying latrines, although this is supposed to be a municipal responsibility according to the Local Government Act. Such services are currently provided privately but with no public financing or technical support, resulting in low service levels and high (unaffordable) charges for households.

Additional research would be needed to strengthen the case for investing in sanitation and improve the effectiveness of public financing. Although the profile of the sanitation sector has risen in recent years, policy makers still need to be convinced to allocate additional funds to the sector and this can in part be achieved through studies that seek to estimate the impact of a lack of sanitation. Since the study was carried out in 2010, the Water and Sanitation Programme (WSP) extended the studies undertaken

⁴⁹ However, in rural areas, sanitation promotion is gaining momentum through various approaches, such as Total Sanitation and Sanitation Marketing (TSSM), Participatory Hygiene and Sanitation Transformation (PHAST) and PRA (Participatory Rural Appraisal).

under the ‘Economics of Sanitation Initiative’ to a number of African countries, including Tanzania⁵⁰. According to the report released in 2011, poor sanitation results in approximately TZS 301 billion losses each year for the country (equivalent to USD 206 million or 1% of national GDP). These findings may have helped achieve buy-in and presidential participation in the Sanitation Campaign launch and recognition of the need to address sanitation. However, further research is needed, to estimate the magnitude of such ‘hidden’ costs, and to identify priorities such as whether to invest in on-site sanitation rather than sewerage or sewage treatment).

Although development partners and the Government of Tanzania have recently committed to increase their focus on sanitation activities, it appears paramount to make more strategic use of limited public funds going forward and to increase implementation capacity.

Activities that appear necessary include:

- Investment in capacity-building and training activities, in particular to ensure that staff at local government levels (those who are supposed to support on-site sanitation) are well-equipped in order to organise and supervise the delivery of software support.
- To provide support and supervision from the centre to develop sanitation activities (at present, many local governments are left to their own devices with the almost impossible task of having to ‘reinvent the wheel’ when deciding how to use funding allocated to sanitation).

In order to address the sanitation service deficiency, public funding could be better targeted to address the entire spectrum of the value chain so that services alongside the whole chain can be provided effectively, with potential interventions as below.

Support for the construction of improved sanitation facilities or upgrading of existing latrines.

Although sanitation coverage in Dar es Salaam is relatively high, with 70% having access to on-site sanitation, 13% to improved facilities (septic tanks) and 10% to sewers, access to improved sanitation, in terms of international standards, is effectively very low. This is partly explained by the discrepancy between JMP definitions and national standards (for instance, shared latrines are not considered as ‘improved’ according to the JMP definition). It can also largely be explained by the financial constraints faced by households to build improved latrines, which represent 112% of the yearly income of a poor household in the city. The costs of upgrading existing latrines would be substantial but should not prove insurmountable, however.

For Temeke, if we estimate that latrine improvement would require an average of 100,000 TZS per latrine rehabilitated, the total cost of improving existing latrines would amount to TZS 1,969 million, which can be compared to the TZS 67.7 million spent by the municipality of Temeke for sanitation in 2008/09 and 6,723 million invested by DAWASA in wastewater treatment facilities. In addition, the improved latrines would be more easily emptied, which in turn could lead to increased revenues for DAWASCO when the waste is transferred to waste stabilisation ponds. Clearly, a shift in priorities and a reallocation of a portion of the funds allocated to sewerage and wastewater treatment could go a long way towards improving the condition of existing pit latrines.

Some form of hardware subsidy or facilitated access to finance may be needed in order to encourage the upgrading of existing pit latrines or construction of new latrines. So far, the policy stance has been to provide no hardware subsidies at all, as latrine construction is assumed to be purely a household responsibility. This has been considered good practice by some in the sector based on findings that subsidisation of household latrines does not lead to use or on-going maintenance or replacement. However, such a policy has its limits, largely because the costs of building latrines fall disproportionately on poor households, whereas comparatively wealthier households can connect to the sewerage network more cheaply.

⁵⁰ www.wsp.org/content/africa-economic-impacts-sanitation#Tanzania.

At present, the main policy tool used to encourage latrine upgrading and construction consists of latrine inspections, which in fact tend to happen in the event of a cholera epidemic rather than on a routine basis. In practice, however, inspectors have no motivation to enforce existing regulations. As one of them said, ‘what can be the point of fining people if they are too poor to do anything about it?’ As a result, inspections and monitoring become partly meaningless as there are no means of enforcement – or no respect for enforcement measures.

To overcome these constraints, a series of financing instruments could be used to provide public funding in the most efficient way possible and leverage private investment:

- Support the development of revolving funds to leverage limited public funding and encourage community participation and ownership. Revolving funds (or other types of microfinance institutions) could provide loans to households willing to upgrade or construct new latrines. Savings and loan groups at the community level could improve the potential for repayment of such loans through solidarity and social awareness mechanisms.
- Provide output-based subsidies to entrepreneurs who build and maintain latrines (and potentially enter into a contract with the households to empty the latrines as well). Methods of delivery could include vouchers for households to reduce the costs of building a latrine (service providers would need to redeem such vouchers in order to obtain the subsidy).
- Provide conditional cash transfers (CCTs) to households based on latrine upgrading (if households do not upgrade their latrines and keep them clean, the CCT stop and people can be fined)⁵¹.

Support pit emptying services and regulation of services

Emptying services are ineffective and unaffordable. Although they should be the responsibility of municipalities, the service is delegated to private entrepreneurs or tanker companies due to a lack of financial resources and materials within municipalities. However, tanker companies have limited capacity in 70% of the city, which is unplanned, and as such require more flexible solutions. Alternative technical options, such as the Gulper (implemented by Tedegro in Temeke municipality with WaterAid’s support), have, so far, not been scaled up for lack of business sustainability. At present, the Gulper project is managed by a community-based organisation which has not expanded the market. Current grant financing models have, in some cases, distorted CBOs’ incentives, as they are focused on obtaining the next grant rather than on achieving profitability. However, if used adequately, public funds could therefore be used to scale up and strengthen sanitation entrepreneurs. This could take the form of seed capital to develop entrepreneurial projects such as the Gulper. Alternatively, this could take the form of output-based subsidies to lower the costs of discharging pit latrine content at designated points (such as the waste stabilisation ponds) and thereby improve the profitability of emptying latrines or reduce the charges for the end users of these services (ie households).

Facilities for treatment of on-site sanitation sludge are grossly under-financed, resulting in malfunctioning of waste treatment plants. Whilst 93% of Dar es Salaam’s population have on-site sanitation, DAWASA’s investments for waste stabilisation ponds, funded by donor partners, amounted to only 15% in average of total investments over the study period (see Figure 4.2). Public funds could also be allocated to this segment in a more significant manner, so as to relieve pressure on existing ponds, and reduce the distance that pit latrine emptiers need to travel to discharge the waste (and hence, reduce their costs, potentially improve their financial sustainability and reduce costs for households).

⁵¹ Conditional cash transfers (CCTs) have increasingly been used to transfer cash to poor families who commit to meet specific objectives, such as immunising their children or sending them to school, thereby helping to cover the associated costs of these activities (such as transport costs or the cost of school supplies) whilst bringing about an outcome which is beneficial to society. Substantial experience with CCTs for health and education has been accumulated, particularly in Latin America, where these programmes first originated.

Difficulties with channelling financing to the sector in a comprehensive and equitable manner appear to be partly due to the fact that the sanitation service market is highly fragmented. The decision to separate sewerage from on-site sanitation facilities when DAWASA was created in 1997 appears to have been taken without due consideration for the implications in terms of financing flows and the ability of the local governments to deliver their functions with respect to on-site sanitation. As a result, a de facto privatisation of such services has taken place, as small-scale private entrepreneurs have filled the gap where municipal services were no longer operating. However, this privatisation has taken place with no adequate regulation, no supervision and no coordination. Regulation of these emptiers could include licensing, and some basic price and quality controls.

The role that DAWASA and DAWASCO could play in relation to on-site sanitation services may need to be revisited. At present, there is a purely commercial relationship between latrine emptiers and DAWASCO when the former bring pit latrine waste to the stabilisation ponds. It appears that this commercial relationship has not always been an easy one, with some argument about rates. Involvement of local actors at all levels may be needed in order to improve the structure of the market for on-site sanitation. DAWASA and DAWASCO may need to play a more active role in terms of planning the overall sanitation services for the city and allowing local governments and other private actors to deliver that vision (part of this planning exercise took place for the preparation of the Dar es Salaam Water Supply and Sanitation project but on-site sanitation was all but left out of the project as communities tended to focus on water rather than sanitation investments). The adoption of laws and regulation to clarify the roles of the different actors in the sector is required, as a result.

The sector regulator, EWURA, should play a more active role than it has done so far and look beyond the performance of DAWASA and DAWASCO in order to protect the interests of all households, including those who are not currently connected to sewerage services. For example, EWURA is responsible for regulating access prices to DAWASCO's treatment services. This responsibility could be extended so that EWURA would regulate all aspects of the relationships between DAWASCO and pit emptiers, either directly or via institutional relays on the ground (which could be the municipalities, NGOs or CBOs). This could also involve the definition of service areas for pit latrine emptiers, should the market need to be better defined, and they would also need some form of exclusivity over a given service area.

Finally, many other aspects of the effectiveness of public financing could be examined in more detail, including whether funds are adequately disbursed once allocated (an issue that has proven to be significant in India in the framework of the Total Sanitation Campaign for example) or whether the financing approach is sustainable and scalable. This analysis could be carried out to deepen our understanding of financing for sanitation in Dar es Salaam. Overall, we would like to recommend that the type of analysis carried out in the context of Dar es Salaam could be conducted in other cities so as to be in a position to recommend how existing financing for sanitation could be used more efficiently and how additional financing could be mobilised.

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Annex B: List of people interviewed

Name	Organization and function
Mr Chinamo	Director of Environmental Health and Sanitation, Ministry of Health and Social Welfare (MoHSW)
Khalid Massa	Principal Health Officer, MoHSW
Eng William Uronu	Assistant Director Construction, Commercial Water Supply and Sewerage, Ministry of Water and Irrigation (MoWI)
Gabriel Soelie	Senior Economist, MoWI
Dorisia Mulashani	Hygiene and sanitation specialist, MoWI
Sarah House	WASH Manager, UNICEF
Praygod Mawalla	Belgian Technical Cooperation, Water and Sanitation Project
Simon Chale	Asset manager, DAWASA
Grace Kasongwa	Budget manager, DAWASA
Jackson Midala	Chief Operating Officer, DAWASCO
Victoria Masele	Assistant to COO, DAWASCO
Wolfgang Weth	Director, KfW
Nangula Heita-Mwampamba	GTZ
Nyanzobe Malimi	Director, TAWASANET
Mhando	Director, TEDEGRO
Ernest Mamuya	Principal Health Officer, Temeke Municipality
Ali Hatim	Solid Waste Manager, Temeke Municipality
Jennifer Omoro	Municipal planner, Temeke Municipality
Edward Simon	Economist and planning, Temeke Municipality



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