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(2017 to 2020)

**Performance Audit on
Management of Safe Sanitation
Services in Urban and
Peri-Urban Areas in Zambia.**



OFFICE OF THE AUDITOR GENERAL

Performance Audit on Management of Safe Sanitation Services in Urban and Peri-Urban Areas in Zambia. (2017 to 2020)



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ABBREVIATIONS

CU	Commercial Utilities
DEWATS	Decentralised Wastewater Treatment System
DTF	Devolution Trust Fund
FS	Faecal Sludge
FSM	Faecal Sludge Management
GDP	Gross Domestic Product
MWDSEP	Ministry of Water Development Sanitation and Environmental Protection
NWASCO	National Water Supply and Sanitation Council
SDG	Sustainable Development Goals
UNICEF	United Nations Children’s Fund
UN	United Nations
WASHE	Water Sanitation and Hygiene Education
WHO	World Health Organisation
ZABS	Zambia Bureau of Standards
ZEMA	Zambia Environmental Management Agency
7NDP	Seventh National Development Plan

DEFINITION OF TERMS

Term	Definition
Adequate Sanitation	An adequate sanitation system is accessible and available (located not more than 100 meters away from home and is easy to access for children, the elderly and the handicapped at all times during the day); it is acceptable for the user and provides a safe, convenient, private, secure and dignified place and complies with the socio-cultural norms of society (e.g. smell and reuse aspects); it is affordable and can realistically be paid for by the households and provides a hand washing facility.
Decentralized Wastewater Treatment System (DEWATS)	This is an alternative cheaper and sustainable treatment of facilities that is based on the principle of decentralisation with advantages of simplicity, low-maintenance and provides state-of-the-art technology at affordable prices.
Effluent	An outflowing of water or gas to a natural body of water, from a structure such as a sewerage treatment plant, sewer pipe, industrial wastewater treatment plant or industrial outfall.
Faecal Sludge	Comes from on-site sanitation technologies and has not been transported through a sewer. It is raw or partially digested, a slurry or semi-solid and results from the collection, storage or treatment of combinations of excreta and wastewater with or without grey-water.
Faecal Sludge Management	A system for safe collection, transport, treatment, disposal and/or reuse of faecal sludge.
Improved Sanitation	This is one that “hygienically separates human excreta from human contact”.
In-situ	It can mean "locally", "on site", "on the premises", or "in place"
Latrine	A toilet facility (public or private) comprising of a superstructure around it.
Off-site Sanitation (Sewered Sanitation)	A sanitation system in which waterborne excreta (referred to as wastewater or sewerage) is collected and transported to treatment before disposal or use. This type of system relies on sewers and flush water for transport. It is often referred to as ‘off-site’ sanitation as waste is transported away from the location where it is generated for treatment ¹

¹ State of the World’s Sanitation: An urgent call to transform sanitation for better health, environments, economies and societies. New York: United Nations Children’s Fund (UNICEF) and the World Health Organization, 2020. P18

On-site sanitation (Non-Sewered Sanitation)	A sanitation technology or system in which excreta (referred to as faecal sludge) is collected and stored at the location where it is generated. It is then either treated and disposed of on-site; or emptied and transported to another location for treatment and disposal. Examples include pit toilets, septic tanks and container-based systems. ²
Peri-Urban Area	Informal or formal settlements within the area of jurisdiction of a local authority with high population density and low-cost housing having inadequate or lacking basic services such as water supply, sewerage, roads, storm-water drainage and solid waste disposal.
Sanitation	This is access to and use of facilities and services for the safe disposal of human urine and faeces. ³
Safely Managed Sanitation Services	Use of an improved sanitation facility that is not shared with other households and where excreta are either treated and disposed of in-situ; stored temporarily and then emptied and transported to treatment off-site; or transported through a sewer with wastewater and then treated off-site. ⁴
Safe Sanitation System	A system designed and used to separate human excreta from human contact at all stages of the sanitation service chain from toilet capture and containment through emptying, transport, treatment (in-situ or off-site) and final disposal or end use. ⁵
Sanitation Service Chain	This is the capture, containment, emptying, transport, treatment and safe disposal of faecal sludge. ⁶
Sanitation Services	These range from support for self-provision of simple toilets to the construction and management of complex sewerage systems with technically advanced treatment facilities which must be accessible to people where they live. ⁷
Sanitation Service Area	The area defined in the CUs operator's license approved by NWASCO. ⁸

² State of the World's Sanitation: An urgent call to transform sanitation for better health, environments, economies and societies. New York: United Nations Children's Fund (UNICEF) and the World Health Organization, 2020. P18

³ WHO Guidelines on Sanitation and Health 2018 P5

⁴ WHO Guidelines on Sanitation and Health 2018 P73

⁵ WHO Guidelines on Sanitation and Health 2018 P5

⁶ State of the World's Sanitation: An urgent call to transform sanitation for better health, environments, economies and societies. New York: United Nations Children's Fund (UNICEF) and the World Health Organization, 2020 P18

⁷ WHO Guidelines on Sanitation and Health 2018 P59

⁸ Water Supply and Sanitation Act No. 28 from 1997F

Sanitation Surcharge	Surcharge on the monthly water bill collected from each water consumer (apart from those served by public water points) to finance sanitation projects.
Sanitation Plans	These are plans on how the Local Authority intends to improve sanitation services and provides the basis for partnership with the designated Commercial Utility for implementation of the strategy.

Foreword

I am pleased to submit the Performance Audit Report on the Management of Safe Sanitation Services in Urban and Peri-Urban Areas in Zambia. My Office is mandated to carry out performance audits in Ministries, Provinces and Agencies (MPAs) and to report the results to the President and Parliament for debate. With this mandate, the Office of the Auditor General (OAG) conducted a performance audit for purposes of establishing whether government programmes and operations are conducted in accordance with the concepts of economy, efficiency and effectiveness.

The audit on the Management of Safe Sanitation Services in Urban and Peri-Urban Areas in Zambia is cardinal in reducing mortality and stunting in children resulting from poor sanitation and hygiene as well as meeting the Sustainable Development Goal (SDG) No. 6- Clean Water and Sanitation. It has been recognised as a distinct human right by the United Nations assured for all regardless of income, gender, disability status, age or ethnicity.⁹

It is expected that once recommendations provided in this report are implemented, there will be improved management of sanitation services, more awareness of the public on sanitation and improved collaboration with various stakeholders to harness integrated planning.

I wish to thank the institutions involved in this audit which include the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP) through Commercial Utilities (CU's) for according my Office with the necessary information relevant to the production of this report.



Dr Dick Chellah Sichembe

AUDITOR GENERAL

⁹ UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdf p29, UN Agenda 2030 and UN SDG 6 – Target 6.3

Executive Summary

Safe sanitation is access to and use of facilities and services for the safe disposal of human urine and faecal waste. Sanitation was recognized as a distinct human right by the United Nations General Assembly in 2015 under Sustainable Development Goal (SDG) No. 6. The universal progress towards sanitation is alarmingly off track, and uneven in its coverage, resulting in inequalities and the further marginalization of the most vulnerable.¹⁰ In Zambia, sanitation service provision remains a challenge in urban and Peri-urban areas with only 29 % of the country's projected population of 17,885,422 having access to sanitation service. The challenge has negatively affected the health of all Zambians and cost the country an estimated US\$167 million annually from premature deaths due to poor sanitation and hygiene.¹¹

The Office of the Auditor General conducted a performance audit on the Management of Safe Sanitation Services in Urban and Peri-Urban, The objective of the audit was to assess how effective the MWDSEP was in ensuring the provision of safely managed sanitation services in Zambia. The period covered by the audit was for the years 2017 to 2020.

1. Audit Findings

1.1 Provision of safely managed sanitation services

1.1.1. Network Connection on Existing and New Development Areas

It was observed that out of the 116 districts, twenty eight (28) had sewerage network connections leaving eighty eight (88) districts without sewerage network connections. Interviews with the LAs and CUs further revealed that the sewerage network to existing and newly developed areas had not been expanded or created.

1.1.2. Provision of Onsite Sanitation Services

Documentary reviews and interviews revealed that provision of onsite sanitation services were low as waste was uncollected and the pit latrines or septic tanks not being emptied by the CUs in their service areas despite the mandate to provide Faecal Sludge Management (FSM) services. It was further observed that out of the eleven (11) CUs, only Lusaka Water and Sanitation Company (LWSC) had a Faecal Sludge Treatment Facility. It was further revealed that the CUs did not have facilities for FSM treatment and the vacuum tankers were not adequate to meet the demand for emptying services.

1.2 Sustainable Development of Sanitation Infrastructure

1.2.1 Construction and Upgrading of Sanitation Infrastructure

A review of documentation and interviews conducted with officials at CUs revealed that out of a total of 116 districts, only twenty eight (28) had sanitation infrastructure leaving the balance of eighty eight (88) districts representing 75% without sanitation infrastructure such as a sewer network, treatment plant for FSM or ponds for the collection, disposal and treatment of waste water.

¹⁰ UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdfp15,17

¹¹ National Urban and Peri-Urban Sanitation Strategy (2015 - 2030) November P9

1.2.2 Partially and Non- Functional Sanitation Infrastructure

Physical inspections of thirty eight (38) sanitation infrastructure revealed that nine (9) were partially functioning representing 24%. Further, physical inspections revealed that, some of the sanitation infrastructure was non-functional as they were old and dilapidated with the oldest facility dating as far back as 1950 and that some facilities like in Chirundu were abandoned after construction.

1.3 Collaboration with Other Stakeholders to ensure Integrated Planning for Sanitation Provision

1.3.1 Coordination among Stakeholders

Interviews conducted with CU's revealed that there was poor coordination with the Local Authorities (LAs). The CU's revealed that the LA's did not engage the CUs at the early stage of urban and regional planning as a part of the sanitation planning process.

1.3.2 Sensitisation and Awareness of Sanitation Services

Interviews conducted with MWDSEP and CUs officials revealed that the public was not regularly sensitised on the importance of sanitation resulting in rampant vandalism, encroachment of sanitation facilities, unwillingness to pay for sanitation services and inappropriate disposal of faecal waste.

1.3.3 Research in Sanitation Services

Interviews with the MWDSEP, LA's and CU's visited revealed that there was no comprehensive research in sanitation conducted during the period 2017 to 2020. Documentary reviews further revealed that, proposed research in sanitation and Management Information System (MIS) to be implemented during the period 2017- 2021 was still outstanding which was aimed at coming up with, comprehensive data on the sanitation situation in the Urban and Peri-urban areas which would form a basis for decision making in terms of increasing sanitation coverage and coming up with strategies for increased investment in the sector which was not implemented.

2. Conclusion

Sanitation services are both on-site and off-site sanitation. Some of the problems relating to the provision of safely managed sanitation include contamination of ground water and also streams which may cause an increase in the immediate and long term human health risks such as diarrhoea diseases. Lack of data on on-site sanitation and failure to collaborate with LA's possess a big challenge in scaling up the provision of sanitation services in newly created areas as they are not part of the layout plans as these have not been effectively and efficiently provided for. Failure to prioritise sanitation has been identified as the major cause for poor sanitation service provision and as much as the Government is making some strides to improve sanitation provision, the rate at which implementation is taking place is not good enough to improve the current sanitation service in the country. The lack of investment in sanitation has crippled the sector for a long time and as such the country has over 70 % of districts that do not have sanitation infrastructure such as treatment facilities for both waste water and faecal sludge.

3.Recommendations

The recommendations are as follows:

- a) The MWDSEP through CUs should put in place effective measures to ensure increased sanitation coverage and improved provision of safely managed sanitation services for both onsite and offsite sanitation to facilitate the effective collection, transportation and treatment of faecal waste.
- b) The MWDSEP should prioritize sanitation in the country in terms of planning and financing as a good sanitation service offers more benefits in terms of good health for the citizenry and savings on costs that come with poor sanitation services.
- c) The MWDSEP should hasten the development of regulations on FSM to help with the management of onsite sanitation given the high population using onsite sanitation in the country.
- d) The MWDSEP through CU's should put in place measures to ensure sanitation infrastructure is constructed to the boundary of the consumer's properties maintained and upgraded to ensure the effective operation of the facility and increase their sustainability. In addition, considering the high cost of sanitation infrastructure the MWDSEP should consider implementing low cost alternatives such as DEWAT which has proven to operate well and has greater benefits.
- e) The MWDSEP should put in place measures to protect sanitation infrastructure from vandalism, encroachments by way of improved monitoring, securing of title deeds for facilities, fencing them and devising punitive measures for perpetrators involved as well as deterring scrap metal dealers from buying parts from sanitation facilities.
- f) The MWDSEP should put in place measures to ensure effective integrated planning for sanitation provision with stakeholder's and intensify community sensitisation on the importance of sanitation, their role and safeguarding the sanitation infrastructure as a public good.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The chapter describes the mandate held by the Office of the Auditor General, background, motivation of the audit and the benefit the audit will bring to society. The title of the audit is the “Management of Safe Sanitation Services in Urban and Peri-Urban Areas in Zambia, with a focus on provision of safe sanitation services.”

1.1 Mandate

In accordance with the provisions of Article 250 of the Constitution of Zambia (Amendment) Act No.2 of 2016, Public Audit Act No.13 of 1994 and Public Finance Management Act No.1 of 2018, the Office of the Auditor General is mandated to carry out performance audits in Ministries, Provinces and Agencies and to report the results to the President and Parliament for debate. With this mandate, the Office of the Auditor General carried out a performance audit for purposes of establishing the economy, efficiency and effectiveness of government programmes and operations.

1.2 Background

Sanitation is defined as access to and use of facilities and services for the safe disposal of human urine and faecal waste. Sanitation is a human right and everyone is entitled to sanitation services that provide privacy, ensure dignity and safety and that are physically accessible and affordable. Universal progress towards sanitation is alarmingly off track, and uneven in its coverage, resulting in inequalities and the further marginalization of the most vulnerable.¹² Sanitation has been recognized as a distinct human right by the United Nations General Assembly in 2015 under Sustainable Development Goal (SDG) No. 6: Clean Water and Sanitation owing to its vital importance to health, child development, social and economic progress. This right is assured for all regardless of income, gender, disability status, age or ethnicity. The human right to sanitation implies that people not only have the right to a hygienic toilet but also have the right not to be negatively affected by unmanaged faecal waste.¹³ The Government in the 7th National Development Plan strategised to improve access to sanitation through, enhancing provision of adequate sanitation, improving availability of sanitation infrastructure, enhancing research in sanitation and promoting alternative financing for sanitation.¹⁴

Over half of the world’s population, 4.2 billion people, use sanitation services that leave human waste untreated, threatening human and environmental health.¹⁵ The need for safely managed sanitation services in Zambia cannot be over emphasized, from the country’s projected population of 17,885,422 in 2020¹⁶ 5,271,059 of the population were serviced by sanitation representing 29 % of the total population. Further, out of the 116 districts only twenty eight (28) had sewerage network connections leaving eighty eight (88) districts without sewerage network connections. The country has had sanitation stress mainly in low

¹² UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdfp15,17

¹³ UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdf p29, UN Agenda 2030 and UN SDG 6 – Target 6.3

¹⁴ 7NDP p102, p103

¹⁵ UNICEF-WHO-state-of-the-worlds-sanitation-2020 p. 11

¹⁶ <https://www.zamstats.gov.zm/index.php>

income areas which have poor access to sanitation services. The sanitation stress is mainly caused by the rapidly expanding population, particularly pronounced in the Peri-Urban areas of the larger towns and cities in Zambia.

The World Health Organisation reported in the State of the World Sanitation report of 2020 that sanitation has suffered from chronic under prioritisation, lack of leadership, underinvestment and a lack of capacity. While the majority of countries including Zambia have national policies and plans to support sanitation, few have allocated adequate human and financial resources to implement them. The total investment in sanitation from Government and Donors is not enough to provide the sustainable, resilient, safely managed services that will bring about substantive benefits to health, the economy and the environment.¹⁷ A safely managed sanitation uses an improved sanitation facility that is not shared with other households, and where excreta are either treated and disposed of on-site, stored temporarily and then emptied and transported for treatment off-site, or transported through a sewer with wastewater and treated off-site.¹⁸ The Government identified poor sanitation conditions as major contributors to the burden of disease and exposed people to water-borne diseases and related ailments. An outbreak of cholera was declared in Zambia in October 2017 affecting seven (7) out of ten (10) provinces, with 5,905 suspected cases of which 5,414 occurred in Lusaka which resulted in ninety eight (98) deaths. The sources of infection transmission in this outbreak were associated with inadequate sanitation and poor hygiene practices.¹⁹

Provision of sanitation services is the responsibility of the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP), through Commercial Utilities (CU's). The Water Supply and Sanitation Act No. 28 of 1997 section 5.12 (VI) – a, requires sanitation service providers to ensure efficient, affordable and sustainable sanitation services within the service areas in the country.

The provision of sanitation services is regulated by the National Water Supply and Sanitation Council (NWASCO) and the discharge of wastewater into water bodies is controlled by the Zambia Environmental Management Agency (ZEMA) through the oversight provided by the MWDSEP.

There are eleven (11) CUs operating in Zambia, one in each of the seven (7) provinces²⁰ to cover all the districts in their jurisdiction except for Copperbelt that has three (3) while Muchinga and Northern share one (1). The total serviced population by the utility companies stood at 7,328,250 as of 2019. The urban population serviced with sanitation stood at 4,891,719 of this 42.9% were serviced through sewer networks while 58.1% used septic tanks.²¹

1.3 Motivation of the Audit

The provision of safely managed sanitation services remains a challenge in Zambia, the country's high rate of child stunting (35 per cent) is in part a result of poor sanitation.²² Inadequate sanitation service provision has negatively affected the health of all Zambians and cost Zambia approximately US\$194 million every year. Approximately 8,700 Zambians, including 6,600 children under 5 years die each year from diarrhoea and nearly 90% of incidences are directly attributed to poor sanitation and hygiene conditions which results in an estimated US\$167 million lost each year due to premature deaths.²³

¹⁷ UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdf15 p16

¹⁸ WHO Guidelines on Sanitation and Health 2018 P73

¹⁹ Centre for Disease Control and Prevention - Cholera Epidemic — Lusaka, Zambia, October 2017–May 2018 Weekly / May 18, 2018 / 67(19);

²⁰ Lusaka, Southern, Western, Eastern, North-western, Central and Luapula

²¹ Urban and Peri-Urban Water Supply and Sanitation Sector Report 2019

²² <https://www.unicef.org/zambia/water-sanitation-and-hygiene>

²³ National Urban and Peri-Urban Sanitation Strategy (2015 - 2030) November P9

In addition, sanitation service provision has not grown in tandem with population growth as it has lagged behind the development of the country²⁴. In 2017 the average sanitation coverage increased slightly from 62.5% to 62.8% in 2018 and from 66% in 2019 to 69.6% in 2020.²⁵

Infrastructure which is key to sanitation service provision has also been a major challenge in Zambia with the existing infrastructure in a deplorable state, non-functional and encroached upon. There has been low investment in sanitation infrastructure, much as there have been strides in ending open defecation. In the area of access to safely managed sanitation services little or no investment in infrastructure has been made. Sewer systems are only in the old areas that were planned by the Local Authorities. Most of the low-income communities are far away from the sewer lines and treatment plants. New development areas use septic tanks.²⁶

The Government in the budget speeches has continued to recognise how crucial adequate sanitation services are to avoiding the spread of preventable waterborne diseases such as cholera and typhoid. Commitments to continue improving sanitation systems across the country were seen with budget allocations of K391.7million and K1.98billion made in 2018 and 2019 respectively.²⁷ Government in the 2020 budget further committed to improve universal access to sanitation through continued implementation of the National Urban and Rural Water and Sanitation Programmes²⁸

In addition, access to sanitation services was particularly lower in Peri-Urban areas as sanitation provision was generally left to the residents, who mostly use unsafe pit latrines, most of which are in poor conditions. Peri-urban areas posed a big challenge to the provision of sanitation services due to the uncoordinated nature of development and unplanned settlements. It was also cited that there was a need to meet the demand for sanitation services by having investments in infrastructure corresponding with population growth.²⁹

The risk assessment carried out by the Office of the Auditor General revealed several weaknesses in the provision of safely managed sanitation services in Zambia. It was in light of the above matters that the Office embarked on a performance audit on “Management of Sanitation Services in Urban and Peri-Urban Areas in Zambia, with a focus on provision of safe sanitation services.”

²⁴ Minutes from interviews with the ministry and NWASCO

²⁵ Urban and Peri-Urban Water Supply and Sanitation Sector Report, 2020

²⁶ Minutes from interviews

²⁷ 2016 Budget Address By Hon. Alexander B. Chikwanda M.P, Minister Of Finance Delivered to the National Assembly on Friday, 9th October, 2015, 2017 Budget Address by Honourable Felix C. Mutati, MP Minister of Finance Delivered to the National Assembly on Friday, 11th November, 2016, 2018 Budget Address By The Minister Of Finance Hon. Felix C. Mutati, and 2019 Budget Address by Honourable Margaret D. Mwanakatwe, MP, Minister of Finance, Delivered to the National Assembly On Friday 28th September, 2018

²⁸ 2016 Budget Address By Hon. Alexander B. Chikwanda M.P, Minister Of Finance Delivered to the National Assembly on Friday, 9th October, 2015, 2017 Budget Address by Honourable Felix C. Mutati, MP Minister of Finance Delivered to the National Assembly on Friday, 11th November, 2016, 2018 Budget Address By The Minister Of Finance Hon. Felix C. Mutati, and 2019 Budget Address by Honourable Margaret D. Mwanakatwe, MP, Minister of Finance, Delivered to the National Assembly On Friday 28th September, 2018 , 2020 Budget Address By Honourable Dr. Bwalya K.E. Ng'andu, MP, Minister Of Finance, Delivered To The National Assembly On Friday 27th September, 2019 p12

²⁹ Zambia Daily Mail 12th November, 2019 on Addressing Sanitation Challenges in Zambia

CHAPTER TWO

AUDIT OBJECTIVES AND AUDIT QUESTIONS

2. Introduction

This chapter highlights the overall audit objective, specific audit objectives, scope and questions that are intended to ensure that the audit objective was achieved.

2.1 Main Audit Objective

The main audit objective was to assess how effective and efficient the MWDSEP was in ensuring the provision of safely managed sanitation services in Zambia.

The specific audit objectives were drawn from the motivation of the audit and the main objective. These are as follows:

2.2 Specific Audit Objectives

- 2.2.1 To assess whether the MWDSEP through Commercial Utilities has increased sanitation coverage and improved the provision of safely managed sanitation services for both onsite and offsite sanitation.
- 2.2.2 To establish whether the MWDSEP through Commercial Utilities has ensured sustainable development of sanitation infrastructure.
- 2.2.3 To ascertain the extent of collaboration between MWDSEP with other stakeholders to ensure integrated planning for sanitation provision.

2.3 Audit Scope

The audit focused on the assessment of the effectiveness and efficiency of the MWDSEP through eleven (11) CUs in the Management of Safe Sanitation Services in Urban and Peri-urban Areas in Zambia. The period covered by the audit was for the years 2017 to 2020.

2.4 Audit Questions

In assessing the extent to which the MWDSEP is managing safe sanitation services in Urban and Peri-Urban areas the audit was designed to address the audit objectives through the following audit questions:

- 2.4.1 To what extent has the MWDSEP through the CUs increased sanitation coverage and provision of safely managed sanitation services?
 - 2.4.1.1 How does the MWDSEP through CUs ensure the provision of sewer network connection to existing and new development areas?
 - 2.4.1.2 To what extent has the MWDSEP through CUs provided On-site Sanitation services?
- 2.4.2 How has the MWDSEP through CUs ensured sustainable development of sanitation infrastructure?
 - 2.4.2.1 What mechanisms has the MWDSEP put in place to ensure infrastructure upgrading, maintenance and rehabilitation for enhancement of service provision?
 - 2.4.2.2 How do CUs ensure that there is effective implementation of sanitation projects?
 - 2.4.2.3 How has the MWDSEP ensured sanitation infrastructure is monitored?

2.4.3 How has the MWDSEP collaborated with other stakeholders to ensure integrated planning for sanitation provision?

2.4.3.1 To what extent does the MWDSEP ensure stakeholder participation in the design, operation and management of sanitation facilities?

CHAPTER THREE

DESCRIPTION OF THE AUDIT AREA

3. Introduction

The chapter describes the legal framework of the MWDSEP, its mandate, organisational structure, funding details and its key stakeholders as well as the systems description.

3.1 Mandate and Legal Framework

The MWDSEP is mandated by the Government Gazette Notice No. 836 of 2016 and is responsible for the development and management of water resources, provision of water supply and sanitation as well as environmental management. The MWDSEP provides policy guidance in the sanitation sector and is supported by the Water Supply and Sanitation Act No. 28 of 1997, National Urban Water Supply and Sanitation Programme 2011-2030 (NUWSSP) and the National Urban and Peri-Urban Sanitation Strategy 2015 - 2030.

3.2 Roles and Responsibilities

The MWDSEP's portfolio functions include:

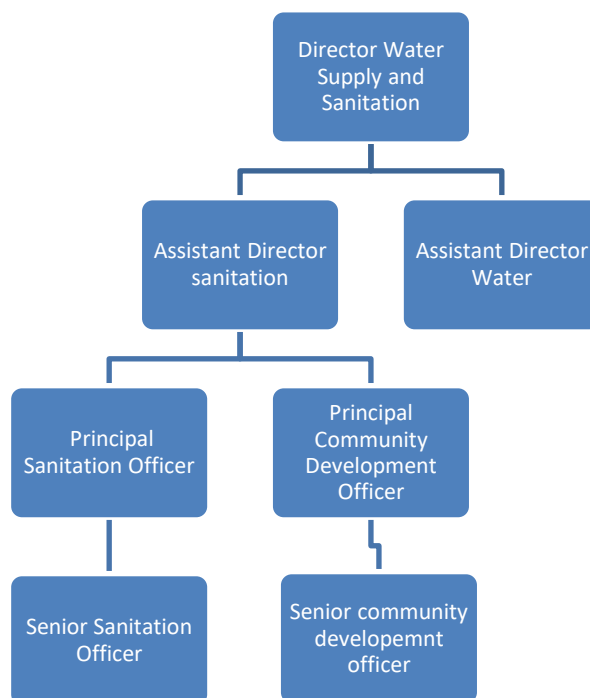
- Formulate and review policies on Sanitation and Environmental issues;
- Review and develop legislation on sanitation to provide a framework for implementing policies and programmes;
- Conduct research on sanitation to generate information for decision making;
- Formulate and review national programmes and action plans on sanitation to ensure effective and sustainable utilisation;
- Facilitate the development and rehabilitation of sanitation infrastructure to enhance service delivery;
- Monitor and evaluate the implementation of sanitation, policies and programmes to ensure attainment of set objective; and
- Collaborate with national and international stakeholders on sanitation.

3.3 Organisational Structure

The Ministry has four (4) departments namely: Water Resources Development; Planning and Research; Water Supply and Sanitation; and Environmental Management. Key to this audit is the department of Water Supply and Sanitation where matters pertaining to sanitation are implemented. The department is comprised of the Water supply section and Sanitation section.

The department is headed by a Director who reports to the Permanent Secretary. The sanitation section comprises of the Principal Sanitation Officer, Principal Community Development Officer, Senior Sanitation Officer and a Senior Community Development Officer. The Department has a presence in the ten (10) provinces and is headed by the Provincial Water and Sanitation Officer. See **figure 3.1** below.

Figure3.1 Organogram for the Sanitation Unit at MWDSEP



Source: OAG Performance Audit 2021

3.4 Funding Details

Sanitation is funded through a number of financing channels and agencies, at central and regional levels such as Grants from the Government and cooperating partners. Note that, until 2020 the GRZ funding had no separate budget allocation for sanitation as funding was a combination of water and sanitation. See **Table 3.1** below.

Table 3.1: Funding of the Sanitation Activities

Period	2017	2018	2019	2020	Total Funding
Kwacha (K)	K	K	K	K	K
ICB - China	199,579,996.02				199,579,996.02
AfDB				1,001,770,000.00	1,001,770,000.00
KWF			173,105,600.00		173,105,600.00
Funding from GRZ	6,205,207.03	391,700,000.00	2,098,625,668.00	2,875,716,606.00	5,372,247,481.03
Total Funding available	205,785,203.05	391,700,000.00	2,271,731,268.00	3,877,486,606.00	6,746,703,077.05

Source: Ministry of Water Development Sanitation and Environmental Protection 2020

3.5 Key Stakeholders

In ensuring the provision of safely managed sanitation services, the Ministry of Water Development, Sanitation and Environmental Protection collaborates with different stakeholders as shown in table 3.2 below:

Table 3.2: List and Roles of Stakeholders

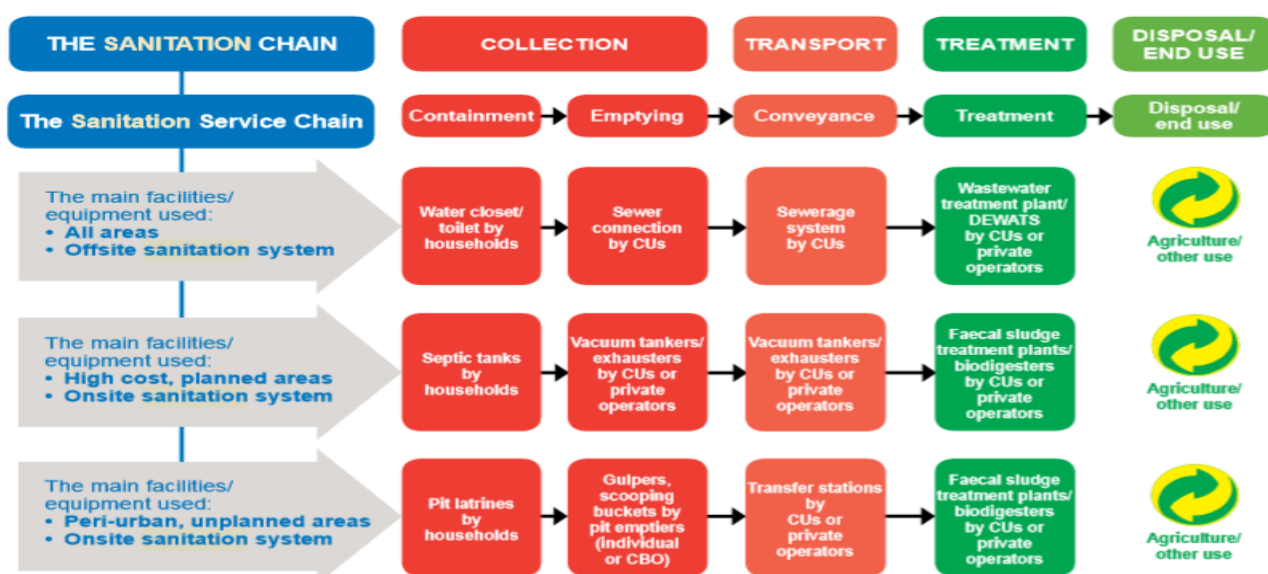
Institution	Role
Ministry of Local Government (MLG)	Provides oversight to the CUs who are the main actors in the provision of sanitation services.
NWASCO	Regulates the provision of sanitation services for efficiency and sustainability. It is responsible for the: <ul style="list-style-type: none"> ▪ Issuance, administration and management of licenses to commercial utilities and service providers, ▪ establishing and enforcing sector standards and guidelines; ▪ advice of sanitation service providers on procedures for handling complaints from consumers; ▪ dissemination of information to consumers on sanitation; ▪ provision of advice to the Government on sanitation matters consideration; ▪ approval of water and sewerage tariff applications from CUs; ▪ monitoring and performance reporting; ▪ development of guidelines for aspects of sanitation services; ▪ monitors performance of service providers against service level guarantees; and ▪ regulation and administration of the Devolution Trust Fund (DTF).
CU's	Provide adequate, safe, and cost effective sanitation services with due regard to environmental protection, prepare investment planning and designs for sanitation infrastructure development, provide effective, efficient and affordable sewerage / wastewater services and propose appropriate tariffs to the regulator and development of service provision in non-sewered areas.
ZEMA	Regulate discharges into the environment and promotes water pollution monitoring and prevention programmes.
Zambia Bureau of Standards (ZABS)	Defines the technical standards that must be utilised by the various actors in the sanitation sector to enable the installation of sanitation systems that provide affordable but good quality services.
Private Operators	Provides pit emptying or sewer cleaning particularly for Peri-urban Areas where there is no immediate plan for sewerage expansion.

Source: OAG Performance Audit 2020

3.6 Systems Description

The MWDSEP has delegated the responsibility of providing sanitation services in the country to the CU's. This section will describe the processes that are followed by the CU's. The CUs provide two types of sanitation systems namely Off-site and On-site. Off-site involves the transportation of faecal waste via a network line to the treatment facility while onsite starts from the collection of faecal sludge which is either done manually using a scooper or mechanically using the vacuum tanker and is transported to the treatment facility. An illustration of the process is shown in the sanitation service chain. See **figure 3.2** below.

Figure 3.2: On-site and Off-site Sanitation Service Chain.



Source: NWASCO -Urban Onsite sanitation and Faecal sludge Management Framework for Provision and regulation in Zambia 2018

As can be seen in Figure 3.2 above, the offsite sanitation process is indicated in row 2 of the sanitation service chain showing the process from containment until disposal/ end use. Onsite sanitation is the process that has been highlighted in rows four (4) and five (5) showing the process from containment until disposal/ end use.

CHAPTER FOUR

AUDIT METHODOLOGY

4. Introduction

This chapter describes the design of the audit method, the target population of the audit, sample size, sampling techniques, data collection methods and data analysis techniques employed.

The audit was conducted in accordance with the International Organisation for Supreme Audit Institutions (INTOSAI) audit standards and guidelines in the OAG Performance Audit Manual. The Standards require that the audit is planned in a manner which ensures that an audit of high quality is carried out in an economic, efficient and effective manner.

4.1 Audit Research Design

The audit utilised a case study approach adopting a mixed method that was inclusive of quantitative and qualitative approaches. The two approaches were used because of their relevance to the audit as they provided a basis for data analysis by comparing interpretations in the audit. Whilst the audit was designed to be quantitative and qualitative in nature, it also adopted a descriptive approach to simplify data interpretation.

4.2 Sampling Technique

Purposive sampling was used in this audit. The selection was based on the NWASCO sector report which showed CUs statistics on high and low performance, as well as those with high and low sanitation coverage. This was used to derive the desired audit sample size.

4.2.1 Audit Target and Sample Population

The target population was the MWDSEP through CU's who are responsible for the promotion of safely managed sanitation in the ten (10) provinces and 116 districts of Zambia. NWASCO, ZEMA, ZABS and MLG were also engaged to understand their role and how they are collaborating being stakeholders involved in the provision of sanitation services.

4.2.2 Audit Sample Size

The sample size of the audit constituted nine (9) out of the eleven (11) CUs from which thirty (30) districts were selected as detailed in **Table 4.1** below.

Table 4.1: The Sampled CU's and Selected Districts

	Name of Commercial Utility	District
1	Lusaka Water and Sanitation Company	Lusaka, Chirundu, Chongwe and Luangwa
2	Lukanga Water and Sanitation Company	Kabwe, Kapiri Mposhi and Serenje
3	Eastern Water and Sanitation Company	Chipata, Lundazi and Katete
4	Southern Water and Sanitation Company	Choma, Namwala and Livingstone
5	Kafubu Water and Sanitation Company	Ndola, Luanshya and Masaiti
6	Nkana Water and Sanitation Company	Kitwe, Kalulushi and Chambeshi
7	Mulonga Water and Sanitation Company	Chingola, Mufulira and Chililabombwe
8	North Western Water and Sanitation Company	Solwezi, Kalumbila and Lumwana
9	Luapula Water and Sanitation Company	Mansa, Samfya, Mwense, Nchelenge and Kawambwa

Source: OAG Performance Audit- 2020

4.3 Methods for Data Collection

Three (3) methods for data collection were used to collect primary and secondary data, which included document review, interviews and physical inspection of sanitation facilities such as stabilisation ponds and treatment plants to derive the conclusion of the audit. During physical inspections, a checklist was used to collect evidence and pictures were taken to support observations.

4.3.1 Primary Data

The audit obtained the Primary Data from interviews, questionnaires and physical inspections. The questionnaires sought responses on the availability, status of sanitation infrastructure and presence of CUs in the districts. Physical inspections confirmed the existence and state of the sanitation infrastructure. Interviews were used to assess the coordination that existed with other stakeholders.

4.3.2 Secondary Data

Secondary data was obtained through document review generated by the MWDSEP. In addition, the team requested for strategic plans for all CU's in order to confirm the strategies that were in place for sanitation service provision. Bi-annual Returns were also reviewed to determine the level of compliance with environmental guidelines and standards.

4.4 Data Analysis

Different techniques were used to analyse qualitative and quantitative data obtained during the audit as explained below.

4.4.1 Analysis of Qualitative Data

Content analysis techniques were used to analyse qualitative data by identifying different perceptions and facts originating from interviews or document reviews and categorized them based on assertions, tabulated to respond to audit questions and grouped depending on commonalities in excel spread sheets and exported and analysed using the SPSS package. This was to enable us quantify the extent of the observations.

4.4.2 Analysis of Quantitative Data

Quantitative information with multiple occurrences were tabulated in spread-sheets to develop point data and relevant facts extracted from the figures obtained. The tabulated data were summed-up, averaged or proportionate to extract relevant information and relationships from the figures.

CHAPTER FIVE

AUDIT CRITERIA

5. Introduction

The chapter introduces the criteria that was used to assess the performance of the Ministry with respect to its set targets and objectives.

5.1 Sources of Criteria

The criteria for the audit questions were extracted from:

- Water Supply and Sanitation Act No. 28 of 1997;
- Sustainable Development Goals (SDGs) 2016-2030;
- Zambia Vision 2030;
- Seventh National Development Plan (7NDP) -2017-2021;
- 7NDP Implementation Plan- 2017-2021;
- National Urban and Peri-Urban Sanitation Strategy -2015 – 2030;
- MWDSEP Strategic Plan -2018-2021; and
- WHO Guidance on Sanitation and Hygiene 2018.

5.2 Detailed Audit Criteria

Below are the detailed criteria that was used during the main study.

5.2.1 MWDSEP provision of safely managed sanitation services through the CUs

- ❖ According to the Water Supply and Sanitation Act No. 28 of 1997 Section 10 (1) the MWDSEP is mandated to extend sewerage services into existing and newly developed Urban and Peri-Urban areas through the CUs that provide sanitation services.
- ❖ According to the National Urban and Peri Urban Sanitation Strategy 2015 to 2030, the MWDSEP aims to improve CUs operational performance by strengthening sanitation service chains and increase the proportion of wastewater and faecal sludge treatment.³⁰
- ❖ Sanitation service delivery by CUs needs to be strengthened considerably to extend sanitation services, promoting improved access equitably by ensuring that services are affordable. Increasing the capacity of treatment facilities and ensuring the sustainable operations of these facilities – for both wastewater and faecal sludge is a key priority in urban areas. Provide faecal sludge management by having a system for safe collection, transport, treatment, disposal and/or reuse of faecal sludge.³¹

5.2.2 Sustainable development of sanitation infrastructure

- ❖ The CU's shall within its service area construct and maintain sanitation facilities to the boundary of the consumer's property.³²
- ❖ The 7NDP highlights that the focus will be on addressing water-related hazards, promotion of resilience of sanitation, infrastructure development including construction, rehabilitation and retrofitting among others.
- ❖ The Government recognised the need to accelerate access to sanitation services for people in urban and Peri-urban areas through five strategies to facilitate provision and prioritization of sanitation

³⁰ National Urban and Peri Urban Sanitation Strategy 2015 to 2030 Component (4) P20, p46

³¹ National Urban and Peri-Urban Sanitation Strategy -2015-2030

³² Water Supply and Sanitation Act of 1997

services among households which include among others, improving availability of sanitation infrastructure and promoting alternative financing for sanitation.³³

- ❖ Section 31 of the Water Supply and Sanitation Act No. 28 of 1997 prohibits certain activities relating to sanitation facilities such as not allowing any persons without authority to enter upon property vested in the utility or service provider, not interfering in any way with its facilities or make any unauthorized connection to any sanitary sewer or without authority, discharge liquid or solid matter into any sewer system.³⁴
- ❖ The MWDSEP desired to upgrade sanitation infrastructure in Urban and Peri-Urban areas through enhancement of household sanitation facilities and faecal sludge management system by having at least three (3) Commercial Utilities applying FSM practices for onsite sanitation facilities and operational performance of infrastructure assessed and improved in 5 systems by 20% by the fourth quarter of 2018³⁵.

5.2.2.1 Collaboration with stakeholders to ensure integrated planning for sanitation provision

- ❖ The MWDSEP desired that there be the establishment of Multi-Stakeholder Urban Sanitation Task Forces which are aimed at providing the means to mainstream cross-cutting issues into Commercial Utilities plans and is the mechanism through which the relevant stakeholders are involved in the planning process. The task force also provides the means to define the roles and responsibilities of the respective stakeholders for the implementation of the plans.³⁶
- ❖ The Government in the 7NDP emphasizes the need for an integrated approach which calls for interventions to be tackled simultaneously through a coordinated approach of ensuring the provision of safely managed sanitation services. The Urban and Regional Planning Act No.3 of 2015 also aims to ensure coordination with the relevant Ministries, Stakeholders and appropriate Regulatory Authorities in the planning of development areas

³³ Seventh National Development Plan (7NDP) 2017 -2021

³⁴ The Water Supply and Sanitation Act of 1997

³⁵ National Urban Sanitation Strategy (2015 to 2030)

³⁶ Urban and Peri-Urban Strategy 2015 to 2030 objective 2.1 p 46

6. Introduction

This chapter highlights the findings of the audit by comparing appropriate and sufficient audit evidence to criteria, verifying the problem(s) and analysing causes to the problem based on audit criteria.

The audit findings were addressed through questions that addressed the objectives of the audit as follows:

6.1 To what extent has the MWDSEP through the commercial utilities increased sanitation coverage and provision of safely managed sanitation services?

There is a need to accelerate access to sanitation services for people in Urban and Peri- Urban areas.³⁷ MWDSEP has the ultimate responsibility for a safe sanitation service chain which entails conveyance or deliberate movement of wastewater or faecal sludge from a containment technology to off-site treatment, and end use/ disposal. Conveyance systems can be sewer-based (Offsite) or based on manual or motorized emptying and transport (onsite).³⁸

Despite the country adopting both modes of conveyance, the following was observed:

6.1.1 Network Connection on Existing and New Development Areas

The MWDSEP should extend sewerage services into existing and newly developed Urban and Peri- Urban areas through the CUs that provide sanitation services.³⁹ Sewer networks are an efficient means of transporting wastewater from the point of generation to the treatment facility.⁴⁰

It was observed that out of the 116 districts, twenty eight (28) had sewerage network connections leaving eighty eight (88) districts without sewerage network connections. See **Appendix 1**

Furthermore, interviews with the LAs and CUs revealed that the sewerage network to existing and newly developed areas had not been expanded or created due to lack of resource prioritisation and unplanned settlements. The lack of sewerage networks had reportedly led to an increase in the number of households needing to install septic tanks thereby further increasing the risk of ground water contamination as in most cases septic tanks were in close proximity to boreholes. In this regard, a case study on the Assessment of Groundwater Vulnerability and Water Quality in Ngwerere Township of 2015 showed that most boreholes in the study area were polluted with faecal waste. This was exacerbated by the fact that most of the aquifers in the study area had very low protective effectiveness of the soil and rock cover, which are supposed to act as barriers against pollution.⁴¹

The non-provision of sewerage network services poses a risk as people resort to the use of alternative unsafe sanitation containments such as pit latrines and septic tanks resulting in possible ground water contamination as alternative containments are uncontrolled, wrongly placed, poorly constructed and are unsustainable.

³⁷ National Urban and Peri-Urban Sanitation Strategy -2015-2030

³⁸ Who Guidelines On Sanitation And Health p11

³⁹ Water Supply and Sanitation Act No. 28 of 1997 10. (1)

⁴⁰ WHO Guidelines On Sanitation And Health P40

⁴¹ Assessment of groundwater vulnerability and water quality of Ngwerere sub-catchment urban aquifers in Lusaka, Zambia 2019

6.1.2 Provision of Onsite Sanitation Services

Onsite sanitation services involve the safe collection, transport, treatment, disposal and/or reuse of faecal sludge.⁴² The MWDSEP aims to improve CUs operational performance by strengthening sanitation service chains and increase the proportion of wastewater and faecal sludge treatment.⁴³

Documentary reviews and interviews with officials from CUs⁴⁴ revealed that provision of onsite sanitation services were low as waste was uncollected and the pit latrines or septic tanks were not being emptied by the CUs in their service areas despite the mandate to provide FSM services.

The low provision was due to the failure by CU's to strengthen FSM and manage onsite sanitation services in terms of conveyance and treatment. It was also established that there were inadequate vacuum tankers for collection and few sites for the treatment of faecal sludge.

In addition, it was observed that out of the eleven (11) CUs only Lusaka Water and Sanitation Company (LWSC) had a Faecal Sludge Treatment Facility. The CUs that did not have facilities for FSM treatment, had households resort to burying or abandoning their old septic tanks/ pit latrines and erect new ones when the need for desludging arose which increased the risk of surface and ground water contamination. Districts such as Luangwa and Chongwe relied on the treatment facilities in Lusaka district for the disposal of their faecal sludge waste which made desludging services expensive for the household.

It was further noted that while some CUs like Kafubu Water and Sanitation Company (KWSC), Mulonga Water and Sanitation Company (MWSC) and LWSC were able to meet the demand for emptying services, the other CUs had limitations as they owned on average one vacuum tanker which serviced the entire province. See **Table 6.1** below.

Table 6.1 Number of Vacuum Tankers Servicing Districts

No	CU's	Province	Districts	No of Districts	No of Vacuum Tankers for the CU	No of Private Vacuum Tankers	Total
1	Mulonga	Copperbelt	Chingola , Chililabombwe and Mufulira	3	1	0	1
2	Southern	Southern	Choma, Livingstone, Kalomo, Monze, Zimba, Kazungula, Pembe, Mazabuka, Batoka, Gwembe, Namwala, Maamba, Munyumbwe, Sinazongwe, Sinazeze, Neganega, Siavonga, Mbabala, Magoye, Chikakanta and Chisekese	13	2	3	5
3	North West	North West	Solvezi, Kasempa, Mwinilunga, Zambezi, Manyinga, Kabompo, Chavuma, Mufumbwe,	10	1	2	3
4	Luapula	Luapula	Mansa, Samfya, Nchelenge, Kawambwa, Mwense.	5	0	0	0
5	Kafubu	Copperbelt	Luanshya, Ndola and Masaiti	3	0	3	3
6	Eastern	Eastern	Nyimba, Chipata, Petauke, Katete, Chadiza, Mambwe, Lundazi, Sinda, Chama.	9	1	0	1
	Total			43	5	8	13

Source: Performance Audit Analysis 2021

⁴² National Urban and Peri-Urban Sanitation Strategy -2015-2030

⁴³ National Urban and Peri Urban Sanitation Strategy 2015 to 2030 Component (4) P20, p46

⁴⁴ Lusaka Water and Sanitation Company, Lukanga Water and Sanitation Company, Eastern Water and Sanitation Company, Southern Water and Sanitation Company, Kafubu Water and Sanitation Company, Nkana Water and Sanitation Company, Mulonga Water and Sanitation Company, North Western Water and Sanitation Company, Luapula Water and Sanitation Company

As can be seen in Table 6.1 above, there were only 13 vacuum tankers to service 43 districts. However in an instance, where customers had their septic tanks filled they had to wait a while before a vacuum tanker could empty their septic tanks. This was because it was not cost effective for the CU to cover long distances to another district to empty one household. For example Chongwe district and Luangwa district had to transport waste water to Lusaka covering over 45 and 250 kilometres respectively. As a result due to the cost attached to the provision of these emptying services residents were unable to afford the use of these facilities.

It was also observed that LWSC had made strides in introducing FSM services for low-income consumers, with those offering On-site FSM services using vacuum tankers (the majority of which are run by private businesses). The pilot project expanded service access to around 52,400 people in Chazanga and Kanyama residents who can access a safely managed FSM chain of which 3,500m³ tonnes of faecal sludge had been safely collected from latrines, transported and treated.

There is a risk of illegal dumping, overflows and slippage of faecal coliform in the ground which poses a hazard to the environment, ecosystem and disease burden where emptying services are not effectively conducted.

6.2 How has the MWDSEP through CUs ensured the Sustainable Development of Sanitation Infrastructure?

6.2.1 Construction of Sanitation Infrastructure

The CU's are required within its service area to construct and maintain sanitation facilities to the boundary of the consumer's property⁴⁵ in Peri-Urban areas through enhancement of household sanitation facilities and faecal sludge management system.⁴⁶

A review of documentation and interviews conducted with officials at CUs revealed that out of a total of 116 districts, only twenty eight (28) had sanitation infrastructure leaving the balance of eighty eight (88) districts representing 75% without sanitation infrastructure such as a sewer network, treatment plant for FSM or ponds for the collection, disposal and treatment of waste water. It was also noted that there were no plans in place for constructing sanitation infrastructure in the districts. In addition, it was established that the lack of sanitation infrastructure was a result of low investment by the MWDSEP and CUs.

Furthermore, interviews with officials from the CUs revealed that sanitation projects were expensive and that the surcharges for sanitation were too low for them to implement sanitation projects. Through interviews and physical inspections, it was also established that as opposed to costly sanitation projects, there was an alternative cheaper and sustainable treatment facility named Decentralized Wastewater Treatment System (DEWATS) which was based on the principle of decentralization. The DEWATS has the advantages of simplicity with low-maintenance and provides state-of-the-art technology at affordable prices. This technology provides benefits of generating biogas which is useful for cooking, light and heating. The audit established that the system was implemented by two (2) CUs, SWSC in Livingstone and NWSC in Solwezi while the others failed to fully explore the possibility of using this cheaper technology to upgrade existing old and obsolete infrastructure. See **Appendix 1**

The lack of sanitation infrastructure poses a threat to the environment and increase diarrhoea diseases, as households resort to unsafe means of disposal and if wastewater is disposed of without treatment it leads to surface and ground water contamination.

⁴⁵ Water Supply and Sanitation Act of 1997

⁴⁶ National Urban Sanitation Strategy (2015 to 2030)

6.2.2 Upgrading of Sanitation Infrastructure

The CU's are required to upgrade sanitation infrastructure within its service area.⁴⁷ Upgrading of sanitation infrastructure is key to ensuring the effective operation of the facility and increase its sustainability.

The audit established through physical inspection of selected sanitation infrastructure and interviews with officials from the MWDSEP, NWASCO and ZEMA that existing sanitation infrastructure was not upgraded as it was either partially functioning, non-functional or abandoned. The following was observed:

6.2.2.1 Partially Functional Sanitation Infrastructure

Physical inspections of thirty eight (38) sanitation infrastructure revealed that nine (9) were partially functioning representing 24%. The infrastructure had components that were not functioning either at receiving bay, pump station or treatment plant. *See Appendix 2.* It was further observed that sanitation infrastructure was in a deplorable state and the air in the area has a strong stench. For example the Kapiri-Mposhi Tazara facility had a functional receiving point and pump station while the treatment plant was non-functional. As a result, the treatment plant was overflowing with untreated sewer. Interviews conducted with officials from Lukanga Water and Sanitation Company also confirmed their inability to upgrade the facility as it was built using outdated technology. The poor condition of sanitation facilities was attributed mainly to failure by the CUs to undertake rehabilitation and upgrading of facilities. The partially functional sanitation facilities posed a risk of pollution to the surrounding areas.

In addition, officials from the MWDSEP, CU's, and NWASCO revealed that they were low levels of plant utilisation as can be seen in Table 6.2 below.

Table: 6.2 Operation Efficiency % for Sanitation Plants for all CU's				
No.	Name of Commercial Utility Company	2017	2018	2019
1	Lusaka Water and Sanitation Company	42	43	41
2	Nkana Water and Sanitation Company	150	90	90
3	Kafubu Water and Sanitation Company	10	60	60
4	Mulonga Water and Sanitation Company	82	90	87
5	Lukanga Water and Sanitation Company	5	22	27
6	Southern Water and Sanitation Company	9	91	89
7	Chambeshi Water and Sanitation Company	11	39	38
8	North Western Water and Sanitation Company	10	8	0.4
9	Western Water and Sanitation Company	0	0	0
10	Eastern Water and Sanitation Company	26	98	68
11	Luapula Water and Sanitation Company	34	0	0
	Average Total	34	49	45

Source: NWASCO Sector Report 2019

⁴⁷ National Urban Sanitation Strategy (2015 to 2030)

As can be seen in table 6.2 above, only three (3) out of the eleven (11) CU's (Nkana, Mulonga and Southern) were operating above the 80% minimum required standard by NWASCO. Collectively the annual operation efficiency for the CUs stood at 34% in 2017, 49% in 2018 and 45% in 2019. Further, the three (3) CUs (NWSC, MWSC and SWASCO) were operating between 82% and 90% during the period 2017 to 2019 and Southern at 91% and 89% in 2018 and 2019 respectively. Three (3) CUs (LWSC, LGWSC, and CHWSC) were operating below 50% and the other three (NWWSC, WWSC and LPWSC) were between 0% and 0.4% of their design. Consequently, there was a risk of waste water not being fully treated which may result in air and ground water pollution both of which have hazardous effects on the environment and the lives of the people.

6.2.2.2 Non-Functional Infrastructure

Physical inspections revealed that some of the sanitation infrastructure were non-functional as they were old and dilapidated with the oldest facility dating as far back as 1950. See **Appendix 3**. The infrastructure was neither maintained nor upgraded. For example, the infrastructure at Nkana East treatment plant in Kitwe had sunk in due to wear and tear of sewer pipes while the Eastern Ponds in Chingola was old, dilapidated and abandoned. See **figure 6.1** below.

Figure: 6.1 Old and Dilapidated Sanitation Infrastructure at Eastern Ponds in Chingola



Source: Performance Audit – Office of the Auditor General 2020.

The non-functioning of these facilities was mainly attributed to failure to invest in sanitation facilities, lack of periodical rehabilitation and upgrade as well as vandalism of sanitation infrastructure. It was also revealed that the technology and machinery used was old hence making it challenging to acquire new parts as the old parts had phased out. Non-functioning sanitation facilities pose a risk of continued environmental pollution and health risk as effluent meant to be treated by these facilities goes into the

environment untreated. For example, the waste which was supposed to be going to the eastern ponds for treatment was seen flowing in the trench.

6.2.2.3 Abandoned Sanitation Infrastructure

Physical inspections revealed that the sanitation infrastructure in Chirundu was abandoned. Interviews with officials from the CU in Chirundu confirmed that the infrastructure had been fully constructed though non-operational. As of September, 2021 the plant had three (3) pump stations and stabilization ponds which were vandalized with electrical fittings stolen and fencing removed. Contract details and reason for abandonment were not provided as at September, 2021. **Figure 6.2** below shows abandoned sanitation infrastructure in Chirundu.

Figure 6.2: Abandoned Sanitation Infrastructure in Chirundu



Source: Performance Audit – Office of the Auditor General 2020.

6.2.2.4 Maintenance of Sanitation Infrastructure

A physical inspection revealed that thirty six (36) sanitation infrastructure out of thirty eight (38) visited were not maintained as of September 2021. It was however noted that Kabitaka sewerage ponds in Solwezi and Kalumbila mine ponds were maintained at the time of inspection in September 2021. The audit observed that ponds were heavily silted and choked with uncontrolled and overgrown vegetation on the embankment due to lack of maintenance. In addition, solid waste such as plastics, bottles and rags were seen floating in the ponds. See **figure 6.3** below.

Figure 6.3: Kawama West Ponds in Mufulira with Overgrown Vegetation on Embankment



Source: OAG Performance Audit 2020

Overgrown vegetation may crack or break the embankment which may lead to infiltration of waste water thereby contaminating the soil and groundwater. Further, settled solids affect the flow pattern of waste water in the ponds which in turn affects the treatment process.

6.2.2.5 Security of Sanitation Infrastructure

Section 31 of the Water Supply and Sanitation Act No. 28 of 1997 prohibits certain activities relating to sanitation facilities such as not allowing any persons without authority to enter upon property vested in the utility or service provider, interfering in any way with its facilities or make unauthorised connection to sanitary sewer without authority, discharge liquid or solid matter into any sewer system.

Physical inspections of sanitation facilities revealed that there were unauthorised entries into the facilities. Out of thirty eight (38) sanitation infrastructure visited, twenty three (23) were not fenced representing 61% while twenty (20) had been encroached upon representing 53% of the sanitation facilities. Documentary review and interviews with officials from the MWDSEP and CUs cited encroachment as one of the major challenges faced at the sanitation facilities as some people had constructed houses on top of their service pipes as well as within the facility property.

It was further observed that illegal activities such as gardening, illegal dumping, digging on the embankments, bricklaying activities as well as the construction of houses was happening within the facilities. Interviews with officials from CUs revealed that efforts to stop encroachers through dialogue and demolition proved futile, as even after demolishing the constructed structures perpetrators still went ahead to rebuild. A follow-up with LA's over encroachments on sanitation facilities confirmed that it was a challenge and that they too had no control over the perpetrators. Illegal activities such as gardening, dumping, bricklaying as well as the construction of houses were happening within the facilities. Interviews with officials from CUs revealed that efforts to stop encroachers through dialogue and demolition proved futile, as even after demolishing the constructed structures perpetrators still went ahead to reconstruct. A follow-up with LAs over encroachments on sanitation facilities confirmed that it was a challenge and that they too had no control over the perpetrators. Encroachments were a result of the weak enforcement of regulations. The lack of security measures resulted in encroachment and vandalism of sanitation facilities.

See Appendix 4.

In addition, the facilities were not secured by way of title deeds as four (4) out of the thirty eight (38) facilities visited were titled leaving thirty four (34) representing 82% not titled. This meant that it was

difficult for most of the CUs to protect their infrastructure as they were unable to identify their boundaries. It was also revealed through document review and interviews with CUs that out of thirty eight (38) sanitation facilities visited, twenty one (21) had been vandalized representing 55%. These acts of vandalism were widespread in both Urban and Peri-urban areas in form of theft of valuable metal pipes, fittings and manhole covers. It was revealed that CUs experienced recurring vandalism on replaced items due to the high demand for scrap metal by the public. For example, physical inspections at the Eastern ponds in Chingola and Kawama ponds in Mufulira showed that the sewer water for treatment was not reaching the treatment ponds as the pipes were blocked and waste water diverted for gardening activities due to non-securing of the sanitation facilities. This poses a risk to the sustainability of sanitation infrastructure and compromises public safety in that it increases the risk of disease to both human and animal life and environmental contamination. See **Figure 6.4**.

Figure 6.4: Kawama Sewer Ponds in Mufulira showing raw sewer effluent being diverted for gardening



Source: OAG Performance Audit 2020

The failure to effectively receive sewer water by the facilities entails there is no treatment taking place thereby risking the health of the public. Further, it was revealed that even for the sanitation facilities that received effluent, the treatment process was affected as infrastructure components such as manhole covers, plates/valves (regulate the level and retention of effluent) and screens/bio filters (filters solid waste) had been stolen. For instance, stolen screens resulted in the first stage of screening being bypassed thus exposing the system to solid waste which delayed the treatment process and ultimately affected the quality of the output. The ineffective treatment was confirmed with the quarterly returns submitted to ZEMA which showed that, the emitted effluent to the environment did not meet the stipulated standards of ZEMA.

6.3 How has the MWDSEP Collaborated with Other Stakeholders to ensure Integrated Planning for Sanitation Provision?

The MWDSEP desired that there be the establishment of Multi-stakeholder urban sanitation task forces which were aimed at providing the means to mainstream cross-cutting issues into CU's plans which is also the mechanism through which the relevant stakeholders are involved in the planning process. The

task force also provides the means to define the roles and responsibilities of the respective stakeholders for the implementation of the plans.⁴⁸ The following were observed:

6.3.1 Coordination among Stakeholders

The Government in the 7NDP emphasizes the need for an integrated approach which calls for interventions to be tackled simultaneously through a coordinated approach of ensuring the provision of safely managed sanitation services. The Urban and Regional Planning Act of 2015 also aims to ensure coordination with the relevant Ministries, stakeholders and appropriate regulatory authorities in the planning of development areas.

Interviews conducted with CU's revealed that there was poor coordination with the LAs. The CU's revealed that the LA's did not engage the CUs at the early stage of urban and regional planning as a part of the sanitation planning process. This lack of co-ordination between service providers and planning authorities regarding sanitation services for residential and commercial land developments resulted in sanitation not being factored in the plans and hence the failure to expand the network to new development areas. It was observed that the LA in Chingola was the only one engaged from the CUs from planning through to plot allocation.⁴⁹ Further, officials from LAs interviewed also confirmed that there was a need to strengthen collaboration with the CUs.

Furthermore, it was observed that no meetings were held among stakeholders to enhance coordination as there were neither minutes of meetings held nor Memorandum of Understanding to show proof of establishment of multi-stakeholder urban sanitation task forces. As a result of the failure of the stakeholders to engage with the community, these ecological toilets were built in Lundazi in 2010 and remained unutilized as at September 2021. See **Figure 6.5** below.

This was attributed to a failure to communicate and coordinate with the community on their sanitation needs before the construction of the facilities. The community held strong tradition and cultural norms that hindered them from using the modern toilets.

Figure 6.5: Unutilised Eco-Sun Toilets at Lundazi Secondary School



Source: OAG Performance Audit 2020

⁴⁸ Urban and Peri-Urban Strategy 2015 to 2030 objective 2.1 p 46

⁴⁹ Minutes from interviews with councils

6.3.2 Sensitisation and Awareness of Sanitation Services

Government desires to raise awareness for increased sanitation coverage and service levels in Urban and Peri-Urban areas.⁵⁰

Interviews conducted with MWDSEP and CUs officials revealed that the public was not regularly sensitised on the importance of sanitation. The inability of the CUs to regularly sensitise the public resulted in unwillingness to pay for sanitation services and also in the rampant vandalism and encroachment of sanitation facilities. Lack of sensitisation on the importance of sanitation services may result in inappropriate disposal of faecal waste and vandalism of sanitation infrastructure.

6.3.3 Research in Sanitation Services

The Government recognizes the need to accelerate access to sanitation services for people in Urban and Peri- Urban areas and enhance research in sanitation services among others.⁵¹

Documentary review revealed that the enhanced research in sanitation and Management Information System (MIS) to come up with comprehensive data on the sanitation situation in the Urban and Peri-urban areas to form a basis on the decision making in terms of increasing sanitation coverage and coming up with certain strategies for increased investment in the sector which was proposed to be implemented during the period 2017- 2021 was still outstanding. Furthermore, interviews with the MWDSEP, LA's and CU's visited revealed that there was no comprehensive research in sanitation conducted during the period 2017 to 2020 resulting in a lack of reliable data for both off site and onsite sanitation on which to base decisions for improved sanitation provision. Therefore, MWDSEP did not take into account technological improvements for different parts of the sanitation chain to support improved sanitation service delivery.

⁵⁰ National Urban and Peri-Urban Sanitation Strategy (2015-2030)

⁵¹ SDGs; 7NDP – 10.5 Development Outcome 3 – Improved access to water supply and sanitation

CHAPTER SEVEN

CONCLUSION

This chapter presents the audit conclusions derived from the audit findings on the Management of Safe Sanitation Services. The overall objective of the audit was to assess how effective and efficient the MWDSEP was in ensuring the management of safe sanitation services in Zambia.

The Government has put in place measures to manage sanitation services through the MWDSEP working with the CUs to ensure efficient, affordable and sustainable sanitation services within the service areas in the country. However, the audit concludes that the safe sanitation services in place have not been provided in urban and Peri-urban areas in the most efficient and effective manner. The implications of these findings and the resultant recommendations will also be highlighted.

Sanitation is a human right and everyone is entitled to sanitation services that provide privacy, ensure dignity and safety and that are physically accessible and affordable. This right is assured for all regardless of income, gender, disability status, age or ethnicity. The human right to sanitation implies that people not only have the right to a hygienic toilet but also have the right not to be negatively affected by unmanaged faecal waste.⁵²

The Government's efforts to increase sanitation coverage and improve the provision of safely managed sanitation services for both onsite and offsite sanitation has not been achieved, in as much as the MWDSEP is trying to make strides through the development of various mechanisms, as it has not made considerable improvement in connection of existing and new development areas as evidenced by the low connectivity to sewer networks and failure to provide of FSM services. The uncollected waste water and faecal sludge contaminate both surface and ground water which has caused an increase in human health risks such as diarrhoea diseases. Lack of data on on-site sanitation and failure to collaborate with LA's poses a big challenge in scaling up the provision of sanitation services in newly created areas as they are not part of the layout plans as these have not been effectively and efficiently provided for.

Mechanisms put in place by the MWDSEP through CUs to ensure sustainable development of sanitation infrastructure have not been effective as existing sanitation infrastructure was in a deplorable state and there was a low investment in new sanitation infrastructure to cater for a growing population. Little effort was made by CUs to monitor and maintain sanitation infrastructure which resulted in the ineffective treatment of faecal waste as evidenced by failure to meet the minimum standard of environmental emissions set by ZEMA.

The sanitation sector in Zambia has been negatively affected due to poor collaboration between MWDSEP with other stakeholders to ensure integrated planning for sanitation management. There is also low sensitization of the public on the importance of safeguarding sanitation infrastructure as a public good as seen from rampant encroachments and vandalism of sanitation infrastructure. The vices have cost the CUs in terms of loss of land for putting up sanitation facilities, cost of replacing already installed infrastructure and have contributed highly to the poor operational efficiency of the utilities.

Enhanced research on sanitation services has not been conducted to provide the required information for the improvement of sanitation service management which has failed to come up with comprehensive data on the sanitation situation in the Urban and Peri-urban areas to form a basis on which decision making in terms of increasing sanitation coverage and coming up with certain strategies for increased investment in the sector.

⁵² UNICEF-WHO-state-of-the-worlds-sanitation-2020%20(1).pdf p29, UN Agenda 2030 and UN SDG 6 – Target 6.3

It can therefore be concluded that the sanitation services have not been safely provided in some urban and Peri urban areas of Zambia as the infrastructure and service delivery have not been visible.

Therefore, if the country has to benefit from the safe sanitation services, this area should be given the attention it requires to meet the improved access to sanitation services that have been made through government pronouncements and plans as well as meeting the SDG No. 6 of providing clean water and sanitation services.

CHAPTER EIGHT

RECOMMENDATIONS

This chapter presents the audit recommendations based on the audit. The recommendations, if implemented, may result in positive impacts with regard to the management of safe sanitation services and ultimately improved service delivery.

- a. The MWDSEP through CUs should put in place effective measures to ensure increased sanitation coverage and improved provision of safely managed sanitation services for both onsite and offsite sanitation to facilitate the effective collection, transportation and treatment of faecal waste.
- b. The MWDSEP should prioritize sanitation in the country in terms of planning and financing as a good sanitation service offers more benefits in terms of good health for the citizenry and savings on costs that come with poor sanitation services.
- c. The MWDSEP should hasten the development of regulations on FSM to help with the management of onsite sanitation given the high population using onsite sanitation in the country.
- d. The MWDSEP through CU's should put in place measures to ensure sanitation infrastructure is constructed to the boundary of the consumer's properties maintained and upgraded to ensure the effective operation of the facility and increase their sustainability. In addition, considering the high cost of sanitation infrastructure the MWDSEP should consider implementing low cost alternatives such as DEWAT which has proven to operate well and has greater benefits.
- e. The MWDSEP should put in place measures to protect sanitation infrastructure from vandalism, encroachments by way of improved monitoring, securing of title deeds for facilities, fencing them and devising punitive measures for perpetrators involved as well as deterring scrap metal dealers from buying parts from sanitation facilities.
- f. The MWDSEP should put in place measures to ensure effective integrated planning for sanitation provision with stakeholder's and intensify community sensitisation on the importance of sanitation, their role and safeguarding the sanitation infrastructure as a public good.

Appendices

Appendix 1. Total Districts in the Province and those Connected to Sewer Networks

No.	Utility Company	List and No. of Districts under CU		List and No. of Districts with Sanitation Facilities	
1	Kafubu	Ndola, Masaiti, Luanshya and Mpongwe	4	Ndola, Luanshya	2
2	Nkana	Kitwe, Kalulushi and Chambeshi, Lufwanyama	4	Kitwe, Kalulushi, Chambeshi	3
3	Mulonga	Chingola, Chililabombwe and Mufulira	3	Chingola, Chililabombwe and Mufulira	3
4	Lukanga	Kabwe, Mumbwa, Serenje Mkushi, Kapiri Mposhi, Chibombo, Chisamba, Itezhi-Tezhi, Ngabwe, Chitambo, Luano, Shibuyunji.	12	Itezhi-Tezhi, Ngabwe, Mumbwa, Mkushi, Chitambo, Luano, Shibuyunji	8
5	Southern	Choma, Livingstone, Kalomo, Monze, Zimba, Kazungula, Pemba, Mazabuka, Batoka, Gwembe, Namwala, Maamba, Munyumbwe, Sinazongwe, Sinazeze, Neganega, Siavonga, Mbabala, Magoye, Chikakanta and Chisekese	22	Choma, Livingstone, Kalomo, Monze, Mazabuka, Namwala, Maamba, Siavonga,	8
6	North Western	Solwezi, Kasempa, Mwinilunga, Zambezi, Manyinga, Kabompo, Chavuma, Mufumbwe, Kalumbila, Lumwana, Mushindamo, Manyinga, Ikelengi	13	Solwezi, Kabompo, Zambezi	3
7	Luapula	Mansa, Samfya, Nchelenge, Kawambwa, Mwense, Mwansabombwe, Chembe, Chiengi, Chipili, Chifunabuli, Milenge, Lunga	12	Mansa	1
8	Eastern	Nyimba, Chipata, Petauke, Katete, Chadiza, Mambwe, Lundazi, Sinda, Chama, Chasefu, Chipangali, Vubwi, Kasenengwa	14	Chipata	1
9	Lusaka	Lusaka, Luangwa, Chongwe, Chirundu, Kafue.	5	Lusaka, Kafue	2
10	Chambeshi	Chilubi, Kaputa, Mporokoso, Luwingu, Kasama, Mungwi, Mbala, Mpulungu, Nakonde, Isoka, Chinsali, Mpika	12	Kaputa, Mporokoso, Kasama, Mbala, Isoka, Chinsali, Mpika	7
11	Western	Kalabo, Kaoma, Limulunga, Lukulu, Mongu, Mwandi, Senanga, Sesheke, Shang'ombo,	17		

		Sichili, Luampa, Mitete, Mulobezi, Nalolo, Nkeyema, Sikongo, Sioma			
	Total		116		28

Source: OAG Performance Audit 2020

Appendix 2. Facilities that were Partial /Non- Functional

Name of Commercial Utility	Name of Facility	Comments
Kafubu Water and Sanitation company	Lubuto Sewerage Treatment plant	Pipe taking effluent to primary pond burst, 4 mechanical screens not functional.
	Roan Ponds	3 ponds are non-functional, 3 ponds not rehabilitated due to resource constraint
	Mikomfwa Ponds	The facility has 2 streams but only one is rehabilitated, 3 are non-functional.
Nkana Water and sanitation company	Nkana East Plant	The primary qualifier is non-functional, Leakage of pipes, screening not functional,
Mulonga Water and sanitation Company	Lulamba Ponds	Water treatment plant non-functional
	Chiwempala Ponds	Filled up and was non-functional at the time of inspection and the functional one was filled with sludge, treatment not complete.
	Eastern Ponds	Infrastructure old and dilapidated, Maintenance of infrastructure not done ,10 filters not functional
Lukanga Water and Sanitation Company	Tazara Sewerage Pump Station	Non-functional as filters are closed. An inappropriate technology that is very old and obsolete
	Serenje sewer ponds	Tertiary Ponds non-functional due to leakages from 2019 to September 2021.

Appendix 3: Age of Infrastructure

No.	Name	Implementing Agency	Year Constructed	Age at 2020
1	Roan Ponds	KWSC	1950	70
2	Old Kanini STP	KWSC	1958	62
3	Mikomfwa Ponds	KWSC	1960	60
4	Eastern Ponds	MWSC	1964	56
5	Namwala Ponds	SWASCO	1969	51
6	Old Lubuto STP	KWSC	1978	42
7	Livingstone main ponds	SWASCO	1985	35
8	New Kanini STP	KWSC	1993	27
9	New Lubuto STP	KWSC	1993	27
10	Linda pump station	SWASCO	2005	15
11	Shampande Ponds	SWASCO	2007	13
12	Kalumbila town sewerage	NWWSC	2010	10
13	Kandu C, Sanitation (DI)	NWW SC	2012	8
14	Libuyu pump station	SWASCO	2012	8
15	Kabikata Sewerage pond	NWWSC	2015	5
16	Barrick Lumwana Treat	NWWSC	2015	5
11	Kalumbila Mine Ponds	NWWSC	2020	0

Appendix 4. Security of Sanitation Infrastructure

Sanitation Facility	Fenced/Not	Encroached/Not	Vandalised/Not
Old Kanini STP	Not	Yes	Yes
New Kanini STP	Not	Not	Not
Old Lubuto STP	Yes	Yes	Yes
New Lubuto STP	Yes	Not	Not
Roan Ponds	Not	Not	Yes
Mikomfwa Ponds	Not	Yes	Not
Nkana East Plant	Yes	Not	Not
Chambishi ponds	Not	Not	Not
Lulamba Ponds	Not	Yes	Yes
Chiwempala Ponds	Not	Yes	Yes
Eastern Ponds	Not	Yes	Yes
Kantanshi ponds	Not	Yes	Yes
Kabikata Sewerage ponds	Yes	Not	Not
Kandu C, Sanitation (DEWAT)	N/A	N/A	N/A
Kalumbila town sewerage ponds	Yes	Not	Not
Kalumbila Mine Ponds	Not	Not	Not
Barrick Lumwana Treatment Plant	Yes	Not	Not
Mwami Climate Change resilient project	N/A	N/A	N/A
Chipata Sewerage Pump Site	Not	Yes	Not
Chipata Sewerage Ponds	Not	Yes	Yes
Natuseko Sewerage Ponds	Not	yes	Yes
Lukanga Sewerage Network	Not	Yes	Yes
ECL Police Camp	N/A	N/A	N/A

Bwacha ponds	Not	Yes	Yes
Tazara Sewerage Pump Station	Not	Yes	Yes
Serenje Sewer Ponds	Not	Yes	Not
Chongwe	Not	Yes	Yes
Chirundu Sewerage Ponds	Yes	Not	Yes
Mtendere Mission Pump Station	Yes	Not	Yes
Mtendere Mission Ponds	Yes	Not	Yes
Manchinchu Treatment Plant	Yes	Yes	Not
Gardens Ponds	Not	Yes	Yes
Namwala Ponds	Yes	Not	Yes
Shampande Ponds	Not	Yes	Not
Linda pump station	Not	Not	Yes
Libuyu pump station	Yes	Not	Yes
Livingstone main ponds	Not	Yes	Yes
Airport Ponds	Not	Yes	Not

