

## WATER SUPPLY AND SANITATION

SECTOR  
REPORT | 2022



*Over*  
**25** Years  
of regulating  
Ensuring Better Services and Fair Value



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## TABLE OF ACRONYMS/ABBREVIATIONS

<b>BMGF</b>	- Bill and Melinda Gates Foundation	<b>O&amp;M</b>	- Operation and Maintenance
<b>CDF</b>	- Community Development Funds	<b>OSS</b>	- Onsite Sanitation
<b>CHWSC</b>	- Chambeshi Water and Sanitation Company	<b>PS</b>	- Private Scheme
<b>CWIS</b>	- City-wide inclusive Sanitation	<b>PTI</b>	- Part-Time Inspector
<b>CU</b>	- Commercial Utility	<b>RWSS</b>	- Rural Water Supply and Sanitation
<b>ESAWAS</b>	- Eastern and Southern Africa Water and Sanitation (Regulator Association)	<b>SDGs</b>	- Sustainable Development Goals
<b>EWSC</b>	- Eastern Water and Sanitation Company	<b>SI</b>	- Service Indicator
<b>EHT</b>	- Environmental Health Technologist	<b>SLA</b>	- Service Level Agreement
<b>FSM</b>	- Faecal Sludge Management	<b>SLG</b>	- Service Level Guarantee
<b>GIZ</b>	- Germany International Cooperation	<b>SWSC</b>	- Southern Water and Sanitation Company
<b>KFW</b>	- Development Bank of Germany	<b>WASH</b>	- Water, Sanitation and Hygiene
<b>KWSC</b>	- Kafubu Water and Sanitation Company	<b>WARMA</b>	- Water Resources Management Authority
<b>LA</b>	- Local Authority	<b>WSC</b>	- Water and Sanitation Company
<b>LuWSI</b>	- Lusaka Water Security Initiative	<b>WSS</b>	- Water Supply and Sanitation
<b>LGWSC</b>	- Lukanga Water and Sanitation Company	<b>WWG</b>	- Water Watch Group
<b>LPWSC</b>	- Luapula Water and Sanitation Company	<b>WWSC</b>	- Western Water and Sanitation Company
<b>LWSC</b>	- Lusaka Water and Sanitation Company	<b>ZABS</b>	- Zambia Bureau of Standards
<b>MLGRD</b>	- Ministry of Local Government and Rural Development	<b>ZAWAFE</b>	- Zambia Water Forum and Exhibition
<b>MWSC</b>	- Mulonga Water and Sanitation Company	<b>ZSA</b>	- Zambia Statistics Agency
<b>MWDS</b>	- Ministry of Water Development and Sanitation	<b>ZEMA</b>	- Zambia Environmental Management Agency
<b>NRW</b>	- Non-Revenue Water	<b>ZPPA</b>	- Zambia Public Procurement Authority
<b>NIS</b>	- NWASCO Information System		
<b>NUWSSP</b>	- National Urban Water Supply and Sanitation Programme		
<b>NWASCO</b>	- National Water Supply and Sanitation Council		
<b>NWSC</b>	- Nkana Water and Sanitation Company		
<b>NWWSC</b>	- North-Western Water and Sanitation Company		



## FOREWORD

We are delighted to launch the 2022 sector report under a new title 'Water Supply and Sanitation Sector Report' that covers both urban and rural areas from 'Urban and Peri-urban Water Supply and Sanitation Sector Report'. With the growing demand to extend regulation to the rural areas and also Onsite Sanitation (OSS) and Faecal Sludge Management (FSM), NWASCO dedicated effort to develop systems and tools that would guide the regulation of rural water supply and sanitation as well as OSS and FSM.

As we endeavour to regulate OSS and FSM as well as Rural Water Supply and Sanitation (RWSS), we have made efforts in collecting data on OSS & FSM and RWSS which has been reflected in Chapters 2 and 3, respectively. The title of the report has thus been changed from "Urban and Peri Urban Water Supply and Sanitation Sector Report" to "Water Supply and Sanitation Sector Report"

The year 2022 was a challenging one as reflected from the performance which generally showed a downward trend. This could be attributed to the high costs of doing business with limited revenue among others. Of great concern is the increasing level of Non-Revenue Water (NRW). There is need for all sector players to concert efforts towards implementing the national NRW Strategy to tackle NRW in a pragmatic way.

However, improvements were noted in revenue collections which were attributed mainly to payment of outstanding water supply and sanitation bills by the Ministry of Finance and National Planning on behalf of the Government Institutions. The population served with water supply and sanitation increased by 123,117 and 295,390, respectively. The number of household water and sewer connections increased by 17,999 and 21,631, respectively. Additionally, we noted increased activity by the CUs on the new mandate of providing OSS and FSM services and as well as RWSS with CUs such as Luapula and Southern WSCs taking up rural water schemes as provided for in the regulatory frameworks.

Data is a key element of regulation, hence NWASCO has been working with the Ministry Water Development and Sanitation, GIZ, the Bill and Melinda Gates Foundation (BMGF) and other partners to develop an Integrated Management Information System (IMIS) which will enable stakeholders' easy access to data and consistency and uniform reporting across the water supply and sanitation sector. NWASCO during the year under review also revised the integrated complaints management platform (MyWatSan Quickfix) and developed a GIS national database (Geo data Base).

In order to enhance efficiency improvement in the sector, NWASCO will invest a lot of resources in the development of systems and processes using IT innovations as per NWASCO 5th Strategic Objective which is aimed at enhancing information management systems. We shall continue to work with the various stakeholders to ensure improved water supply and sanitation service delivery.



*Kelvin Chitumbo*

**Director-NWASCO**



## EXECUTIVE SUMMARY

This report provides an in depth analysis of the performance of the Water Supply and Sanitation Sector in the year 2022. The analysis has been undertaken for all 11 CUs and the four Private Schemes that provide water supply and sanitation services to their employees as a fringe benefit.

The report has a total number of 9 chapters; Chapter 1 provides a summary of the performance of the CUs whose detailed analysis is reflected in Chapter 7. The major highlight of Chapter 1 is the ranking of CUs based on their performance on 9 sector benchmarks and recognition of their performance in each of these benchmarks. Chapter 2 covers the topic 'Onsite Sanitation and Faecal Sludge Management' while chapter 3 is dedicated to rural water supply and sanitation. Chapter 4 highlights the salient activities undertaken by NWASCO during the reporting period while chapter 5 discusses sector financing. The performance of the CUs on 10 indicators of the Service Level Guarantee (SLGs) and Service Level Agreements (SLAs) is reflected in Chapter 6.

The performance of the Private Schemes is shown in Chapter 8 focusing on 3 key indicators on service coverage, water supply hours and water quality. Chapter 9 is the conclusion section of the report and highlights the progress made towards attaining national goals based on the analysed sector performance.



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## SUMMARY OF COMMERCIAL UTILITIES PERFORMANCE





This Chapter highlights the summary of the performance of Commercial Utilities (CUs) for the period 1st January to 31st December 2022. The detailed analysis is in Chapter 7.

Most of the indicators in this report are based on the Minimum Service Levels (MSLs) which are part of the licence conditions for the CUs.

## 1.1 NATIONAL URBAN WATER SUPPLY AND SANITATION COVERAGE

Commercial Utilities are the main providers of water and sanitation services in urban and peri urban areas. Currently, there are about 8.03million people living in the CUs' service areas of which less than 1% are serviced by Private Schemes. These are companies that provide water supply and sanitation services primarily to their employees as a fringe benefit.

Table 1 depicts the National Urban Water Supply and Sanitation Coverage, which is a combination of coverage for the CUs and the Private Schemes. Although the overall water supply coverage reduced from 89.2% to 88.2%, there was an additional population served with water in the year under review of 123,117. For sanitation, 295,390 more people accessed the services during the reporting period representing a coverage of 73.2%. This includes people served from newly captured septic tanks.

Of the served population, about 59% were supplied with water through household connections and the rest through public stand posts and kiosks. For sanitation 38.3% of the serviced population was served through sewer networks and 61.7% through septic tanks.

**Table 1: National Urban Water Supply and Sanitation Coverage**

	2021	2022
Total Urban Population	7,808,095	8,034,361
Total Urban Population Served with Water	6,961,959	7,085,076
Total Urban Population Served with Sanitation	5,586,170	5,881,560
National Urban Water Coverage	89.2%	88.2%
National Urban Sanitation Coverage	71.5%	73.2%

## 1.2 PROFILE OF COMMERCIAL UTILITIES

A general overview of each CU in terms of its age and size using various parameters is presented in Table 2.

**Table 2: Commercial Utility Profiles**

Commercial Utility	Abbreviation	Start of Operations	No. of Towns/ Centres Served	No. of Town/ Centres Not Served	Total Population in Service Area	No. of Connections	No. of Staff
Lusaka WSC	LWSC	1989	5	1	3,012,425	134,807	680
Nkana WSC	NWSC	2000	3	1	901,756	74,882	509
Kafubu WSC	KWSC	2000	3	1	810,273	70,915	584
Mulonga WSC	MWSC	2000	3	-	597,318	61,197	463
Lukanga WSC	LGWSC	2006	8	4	481,163	32,126	242
Southern WSC	SWSC	2000	22	1	549,062	65,482	433
Chambeshi WSC	CHWSC	2003	12	7	505,917	32,721	260
North Western WSC	NWWSC	2000	8	3	306,540	19,220	182
Eastern WSC	EWSC	2009	10	6	350,574	27,616	165
Western WSC	WWSC	2000	10	7	253,289	16,982	187
Luapula WSC	LPWSC	2009	7	7	266,044	11,836	83

*Note: Chirundu was handed over to Southern WSC in the last part of the year hence for this report it is covered under Lusaka WSC*

### 1.3 OVERVIEW OF SECTOR PERFORMANCE

Table 3 summarises the performance of the CUs in nine key performance indicators. It should be noted that the performance of a CU is compared to the previous year, against the benchmark and against the sector average.

**Table 3: Overview of Sector Performance**

	NRW [%]	Trend	Water Quality compliance		Metering Ratio [%]	Trend	Water Service Coverage [%]	Trend	Sanitation Coverage [%]	Trend	Hours of Supply	Trend	Staff Efficiency	Trend	Collection Efficiency [%]	Trend	O+M Cost Coverage by Collection capped at 100%	Trend	<div></div>	<div></div>	<div></div>	<div></div>	
LWSC	54	↓	C	→	64.9	↓	92.5	↓	79.9	↑	17.8	↑	0.33	↑	100	→	107	↑	3	4	1	1	
NWSC	60	↓	A	→	81	↓	98.2	↑	78.7	↓	15	↓	0.49	↓	82.2	↑	84	↓	2	4	3	0	
KWSC	72	→	A	→	67	↓	83.3	↓	72.2	↓	17	↓	0.68	↓	82.7	↑	66	↓	1	1	7	0	
MWSC	45	→	B	→	85	↑	94.15	↑	89.4	↑	16	↑	0.62	↓	75.7	↓	61	↓	1	4	4	0	
LGWSC	57	↓	D	→	85	↑	85.1	↑	59.6	↑	16	→	0.68	↓	82	↓	83	↓	0	3	6	0	
SWSC	48	↓	B	↓	71	↓	95	↓	87.2	↑	18	↓	0.59	↓	100.0	↑	85	↓	4	3	2	0	
CHWSC	35	↓	C	↑	71	↓	81.7	↑	79.6	↑	15	↓	0.69	↑	93.0	↓	67	↓	1	2	5	1	
NWWSC	44	↓	A	→	99.5	↓	70.8	↓	20.5	↓	15	→	1.00	↑	100	↑	57	↓	2	2	5	0	
WWSC	68	↓	D	↓	76	↓	41.6	↑	36.1	↑	10.0	↓	1.05	↑	93.3	↓	57	↓	1	1	7	0	
EWSC	46	→	A	→	100	→	94	↑	52.3	↑	20.5	↑	0.89	↓	100	→	64	↑	5	1	3	0	
LPWSC	72	↑	D	↓	98	↓	50.0	↓	34.6	↓	16.6	↓	1.14	↑	90.3	↑	33	↓	2	1	6	0	
Average	58.1	↓	N/A		75.5	↓	87.6	↓	72.6		16.9	↓	0.54	↓	92.0	↑	81.60	↓					
Benchmark	25	W	95		100	W	95	W	85	W	18	W	0.4	W	90	W	100	W					
											16												

Worse than the relevant average and benchmark not achieved (1 point)

Better than the relevant average but benchmark not achieved (2 points)

At least "acceptable" benchmark achieved (3 points)

The water quality compliance indicator is based on a new three-step assessment criteria (section 7.2.2. Water Quality) Orange in the water quality column is part of the colour coding for the compliance and carries a weight of 2

## 1.4 COMMERCIAL UTILITY PERFORMANCE RANKING

Commercial Utilities are ranked according to indicators and respective weightings shown in Table 4. A higher weighting reflects how critical the indicator is to the quality of service and financial viability of the CU.

**Table 4: Performance Indicators and their Weighting Factors**

	Indicator	Weighting
1	Water Quality	20 points
2	Collection Efficiency*	20 points
3	Metering Ratio	15 points
4	Hours of Supply	15 points
5	O+M Cost Coverage by Collection	15 points
6	Water Coverage	15 points
7	NRW	15 points
8	Staff Efficiency	10 points
9	Sanitation Coverage	10 points

To arrive at the ranking, the total score is derived by aggregating the result of;.....

[The indicator weighting in Table 4] x [the score against the average and benchmark (i.e 1, 2, and 3 in Table 3)] x [the CU performance]

The performance ranking of the CUs is shown in Table 5. In order to provide readers with the performance trends, the rankings for the previous four years have also been reflected. It must be noted that a CU moving down in the ranking does not necessarily mean that it performed worse than the previous period but it could also mean it was outperformed (see Table 3).

**Table 5: Ranking of Commercial Utilities**

Commercial Utility	Ranking 2022	Ranking 2021	Ranking 2020	Ranking 2019	Ranking 2018
EWSC	1	2	2	4	4
SWSC	2	1	4	1	2
LWSC	3	3	6	3	5
NWSC	4	4	1	8	7
NWWSC	5	5	7	5	3
CHWSC	6	6	9	7	9
MWSC	7	9	8	2	1
LPWSC	8	8	10	10	11
KWSC	9	10	5	6	6
LGWSC	10	7	3	9	8
WWSC	11	11	11	11	10

## 1.5 RECOGNITION OF COMMERCIAL UTILITIES FOR EXEMPLARY PERFORMANCE

Commercial Utilities are recognised for exemplary performance in specific areas and indicators. The recognition is made in two categories namely; the best performer in an indicator, (category 1) and the most improved towards or above the benchmark, (category 2), provided the performance is above the average sector performance.

In this regard, the highest performing CU may not be recognised as the best performer if the performance has dropped from the previous period. In the same vain, the most improved from the previous period may not be recognised if the performance is below the sector average. The best performer is excluded from Category 2, unless in very exceptional circumstances where the magnitude of improvement, far exceeds the rest.

Further, it is important to note that CU recognitions are looked at separately from the ranking. Table 6 shows the CU recognitions.

**Table 6: Recognition of Commercial Utilities**

Area of Recognition	CU	
<b>Most improved</b> Significance of improvement in all indicators collectively with minimum downward trend	Eastern WSC	
<b>Best Submitted Data</b> Completeness and accuracy of data submitted in the NWASCO Information System and least queries raised for verification	Nkana WSC	
Area of Recognition	Best CU	Most Improved
<b>Non-Revenue Water</b>	N/A	N/A
Water Quality	Eastern WSC	N/A
Metering Ratio	Eastern WSC	Lukanga WSC
Water Service Coverage	Nkana WSC	Eastern WSC
Sanitation Service Coverage	Mulonga WSC	Chambeshi WSC
Hours of Supply	Eastern WSC	Lusaka WSC
Staff Efficiency	Lusaka WSC	N/A
Collection Efficiency	North Western WSC	Luapula WSC
O&M Cost Coverage by Collection	Lusaka WSC	N/A
Progress in OSS and FSM	Lusaka WSC	Lukanga WSC
Rural WSS interventions	Southern WSC	Luapula WSC

**Note:** The CEO Award was not considered in the year under review as most CEOs were fairly new. This will be considered in the 2023 report.

## 1.6 WATER STEWARDSHIP RECOGNITION

The performance of CUs on water stewardship/ water safety planning for 2022 was conducted based on the selection criteria that was developed by NWASCO under the ambits of the Lusaka Water Security Initiative (LuWSI), with input from stakeholders such as the CUs, the World Wide Fund for Nature

(WWF) and GIZ. The criteria was based on the six aspects as follows:

**1.6.1 Commercial Utility Commitment** - documentation incorporating principles and demonstrating the CU's commitment to Water Stewardship;

- The CEO officially committing to water stewardship and the company having a budget towards water stewardship/ WSP and compliance

**1.6.2 Ecosystem protection**

- Identification of ecosystems, flora and fauna, hydrogeological,
- Identification of all catchment stakeholders,
- Having knowledge of catchment management plans available e.g. from WARMA, water resource areas from WWF,
- Identification the challenges, threats, risks (physiological, social-economical),
- Documented control measures with M&E plan

**1.6.3 Pollution prevention** - Demonstratable participation in catchment governance

- Participatory stakeholder engagement for upstream and downstream stakeholders,
- Proof of compliance with ZEMA regulations (including effluents – discharge permits),
- Showcasing activities that the company has initiated or significantly supported
- Documented control measures with M&E plan

**1.6.4 Energy Efficiency**

- Energy reduction strategies and implementation

**1.6.5 Catchment Governance and visibility**

- Proactive in setting up participatory stakeholder platforms and engagement on Water stewardship, e.g. the Commercial Utility having the Water Safety Plan Team in place

- Documented and shared water security best practices/stories to the public through different platforms including social media, digital and print media.

#### 1.6.6 Demand management

- Water demand assessment
- NRW reduction strategies and implementation

Water Stewardship Award	Winner
	<b>Eastern WSC</b>

### 1.7 SECTOR ACHIEVEMENTS AND CHALLENGES

#### 1.7.1 Achievements

- Increased population served with water supply and sanitation by 123,117 and 295,390, respectively;
- Increased number of household connections by 17,999;
- Increased total sewer connections by 2205;
- Increased collections from billing; and
- Increased activity by the CUs on providing OSS systems and FSM services

#### 1.7.2 Challenges/ Concerns

The major challenges included:

- Non-Revenue Water continued to be high;
- High cost of service provision arising from increase in the cost of inputs which was not matched with increase in tariffs;
- Increased equipment failures due to inadequate maintenance;
- Delays in making connections for paid up applicants; and
- Vandalism and theft of water installations that included water meters.

### 1.8 COMMERCIAL UTILITIES OPERATING ENVIRONMENT AND COMMENTS ON PERFORMANCE

The CUs operate under varying conditions which may impact their performance. Therefore, the operating environment and comments highlighted hereunder were taken into consideration when analysing the performance of CUs and making comparisons.

#### 1.8.1 Lusaka WSC

##### Operating Environment

- Services the Capital City, Lusaka and five other Districts (Luangwa, Chongwe, Chirundu, Kafue and Chilanga) in Lusaka Province;
- The province includes Rufunsa District that is not yet serviced;
- High economic activity;
- Good complement of highly qualified staff.

##### Comments

- Reduced water supply in Chongwe District as a result of dilapidated water treatment plant, poor water quality from the surface raw source and limited ground water resource;
- Increased domestic water connections by over 4,500;
- Increased total sewer connections by about 3,500;
- Needs to improve water supply in a number of areas i.e. parts of Roma Township, upper parts of Ibex Hill in Lusaka City, Longridge Area of Chilanga District and the entire Chongwe District; and
- Needs to concert efforts to improve metering for both consumption and production points and reduce NRW.

#### 1.8.2 Nkana WSC

##### Operating Environment

- Operates in three predominantly mining towns on the Copperbelt



- Province, namely; Kitwe, Kalulushi and Chambishi;
- Major raw water sources susceptible to industrial pollution;
- Fairly high economic activity; and
- The bulk of infrastructure is under major rehabilitation and expansion.

**Comments**

- Increased number of sewer connections by over 9,000;
- Only CU with water coverage of over 95%;
- Generally good data management systems;
- Needs to address the sewage flooding challenges in most low cost areas;
- Needs to improve supply in low income areas such as Luangwa, Chamboli, Wusakile T and E sections in Kitwe City and parts of Chibuluma in Kalulushi District; and
- Needs to address the high NRW.

**1.8.3 Kafubu WSC****Operating Environment**

- Operates in three towns (Ndola, Masaiti and Luanshya) on the Copperbelt Province
- The CU's area of jurisdiction includes Mpongwe, which was yet to be serviced;
- Medium economic activity; and
- The bulk of infrastructure has undergone major rehabilitation and expansion.

**Comments**

- Needs to urgently address NRW which continued to be amongst the highest;
- Need to address the sewage flooding challenges in most low cost areas;

- Needs to attend to the high staff efficiency;
- Needs to improve metering ratio; and
- Needs to concert efforts to improve hours of supply in Parts of Mushili Kasengu and parts of Twapia in Ndola City and parts of Kamirenda in Luanshya District.

**1.8.4 Mulonga WSC****Operating Environment**

- Operates in three predominantly mining towns on the Copperbelt Province (Chingola, Chililabombwe and Mufulira);
- Major raw water sources susceptible to industrial pollution;
- Fairly high economic activity; and
- The majority of infrastructure needs rehabilitation and expansion.



**Comments**

- Increased the number of sewer connections by over 4,000.
- Improved metering ratio slightly;
- Needs to attend to high staff efficiency;
- Needs to address NRW; and
- Needs to improve service delivery in all areas particularly low income areas.




**1.8.5 Lukanga WSC****Operating Environment**

- Operates in eight towns in the Central Province namely Kabwe, Mumbwa, Serenje, Mkushi, Kapiri Mposhi, Chibombo, Chisamba and Itezhi-tezhi;
- The Province includes four new districts of Luano, Ngabwe, Chitambo

and Shibuyungi that were not yet serviced although incorporated on the operating licence;




-  Medium economic activity; and
-  Infrastructure in need of expansion in most of its towns.

#### Comments






-  Slightly increased metering ratio;
-  Needs to address NRW; and
-  Needs to improve in the general management of the CU and in nearly all the indicators.

### 1.8.6 Southern WSC

#### Operating Environment




-  Has the highest number of service towns/centres (21) – Choma, Livingstone, Kalomo, Monze,imba, Kazungula, Pemba, Mazabuka, Batoka, Gwembe, Namwala, Maamba, Munyumbwe, Sinazongwe, Sinazeze, Nega-Nega, Siavonga, Mbabala, Chikankata, Magoye, Chikankata and Chisekesi;
-  Medium to low economic activity; and
-  Fairly good but inadequate infrastructure.

#### Comments







-  Needs to improve metering ratio;
-  Needs to concert effort to reducing NRW;
-  Made efforts in Rural WSS interventions;
-  Needs to improve water quality in terms of turbidity particularly in Choma, Livingstone, Kalomo and Monze; and
-  Needs to improve service hours in some parts of Livingstone such as Kazungula,

### 1.8.7 Chambeshi WSC

#### Operating Environment



-  Operates in 12 towns (Kasama, Mpika, Chinsali, Nakonde, Isoka, Mbala, Mpulungu, Luwingu, Mporokoso, Kaputa, Mungwi and Chilubi) in the Northern and Muchinga Provinces that are spread over a wide geographical area;
-  Northern and Muchinga Provinces include new districts of Mafinga, Shiwan'gandu, Nsama Kanchibiya, Lupososhi, Senga Hill and Lunte that were not yet serviced; and
-  Low economic activity.

#### Comments

-  Increased number of water connections by over 2,700;
-  Needs to enhance cost containment;
-  Needs to improve hours of supply generally;
-  Needs to improve metering ratio for the production points;
-  Needs to minimise down times and improve plant availability; and
-  Needs to concert efforts towards improving billing efficiency.

### 1.8.8 North Western WSC

#### Operating Environment

-  Operates in eight towns in North-Western Province namely Solwezi, Kasempa, Mwinilunga, Zambezi, Manyinga, Kabompo, Chavuma and Mufumbwe including two mining areas of Kalumbila and Lumwana with the largest town being predominantly a mining area;
-  The province includes three new districts of Ikelengi, Kalumbila and Mushindamo that were not yet serviced, apart from Kalumbila mining area; and

- Medium to low economic activity with potential for growth.

#### Comments

- Improved collection efficiency;
- Dropped metering ratio from the benchmark of 100%;
- Need to arrest the increasing NRW;
- Needs to increase sanitation coverage; and
- Needs to improve hours of supply particularly in Solwezi District.
- and
- Needs to focus on increasing metering ratio.

### 1.8.9 Western WSC

#### Operating Environment

- Operates in 10 towns in the Western Province (Kaoma, Mongu, Kalabo, Senanga, Lukulu, Sesheke, Sichili, Mwandu, Shang'ombo, Limulunga and Nalolo);
- The province includes seven new districts of Mulobezi, Sikongo, Nalolo, Sioma, Mitete, Nkeyema and Luampa;
- Constructing and rehabilitating major infrastructure in 4 main districts and putting up 10 water schemes in the rural parts of the CU; and
- Generally low economic activity.

#### Comments

- Experienced intermittent water supply in Mongu, Senanga, Kaoma and Sesheke;
- Operated under statutory management for the 3rd quarters of the year following the suspension of the operating licence;
- Needs to improve general financial and commercial management;
- Needs to improve water quality monitoring;
- Needs to improve both water and sanitation coverage;

- Needs to urgently address the increasing NRW; and
- Needs to improve water supply in most Townships of Mongu District.

### 1.8.10 Eastern WSC

#### Operating Environment

- Operates in ten towns Nyimba, Chipata, Petauke, Katete, Chadiza, Mambwe, Lundazi, Vubwi Chama and Sinda in the Eastern Province although in Vubwi service was not yet provided;
- The province includes new districts namely Chasefu, Chimpangali, Kasenengwa, Lumezi and Lusangazi which were not part of the Utility's operating licence and were yet to be serviced;
- Relatively new infrastructure in almost all towns; and
- Seasonal, medium to low economic activity dependent on farming periods.

#### Comments

- Maintained collection efficiency of above 100%
- Increased number of water connections by over 2,400;
- Needs to address the sewage flooding challenges in Chipata City.
- Needs to address high staff efficiency;
- Needs to address numerous numbers of stuck meters particularly in Chipata City; and
- Needs to find a lasting solution to the high level of water hardness in Petauke District.

### 1.8.11 Luapula WSC

#### Operating Environment

- Operates in seven towns in Luapula Province (Mansa, Samfya, Nchelenge, Kawambwa, Mwense, Chiengi and Milengi), although in







Portable water testing kit





## ONSITE SANITATION AND FAECAL SLUDGE MANAGEMENT



## 2.1 INTRODUCTION

The Government of the Republic of Zambia is committed to ensuring that universal access to safely managed sanitation is attained. This aspiration is enshrined in the country's 8th National Development Plan (8NDP), Vision 2030 and the United Nations Sustainable Development Goal (SDG) 6.2.

The Water Supply and Sanitation (WSS) Act No. 28 of 1997 mandates both NWASCO and the Water Supply and Sanitation (WSS) utilities (CUs) to regulate and provide WSS services to all parts of the country, respectively. The WSS Act No 28 of 1997 defines sanitation as the disposal of on-site or offsite of human excreta that includes collection, treatment and end use. Due to lack of clarity of roles and responsibilities and lack of systems and tools, provision and regulation of Onsite Sanitation (OSS) and Faecal Sludge Management (FSM) could not take off until 2018. Service provision and regulation for sanitation was skewed towards sewerage services which only catered for minute well-planned urban areas. The roles and responsibilities for various stakeholders are as reflected in the NWASCO 2021 Urban and Peri Urban Water Supply and Sanitation Sector Report.

In December 2018, NWASCO amended the operating licences for all CUs to include OSS and FSM following the development of the provision and regulation framework for Urban OSS and FSM. As such, the CUs were directed to change their names from 'water and sewerage' to 'water and sanitation' which was effected in July 2019.

Key to achieving implementation of the framework is the availability of baseline data on OSS and FSM. Therefore, one of the activities that the NWASCO undertook in its quest to regulate OSS and FSM was to support selected CUs to undertake sanitation mapping surveys as well as conducting desk reviews to establish baseline data on OSS. To this effect, the Ministry of Local Government and Rural Development (MLGRD) working with NWASCO formed Joint Implementation Teams (JITs) to among other activities spearhead data collection for OSS. A JIT is a multi-disciplinary team organized around and dedicated to utilizing mutual gain principles to resolve issues.

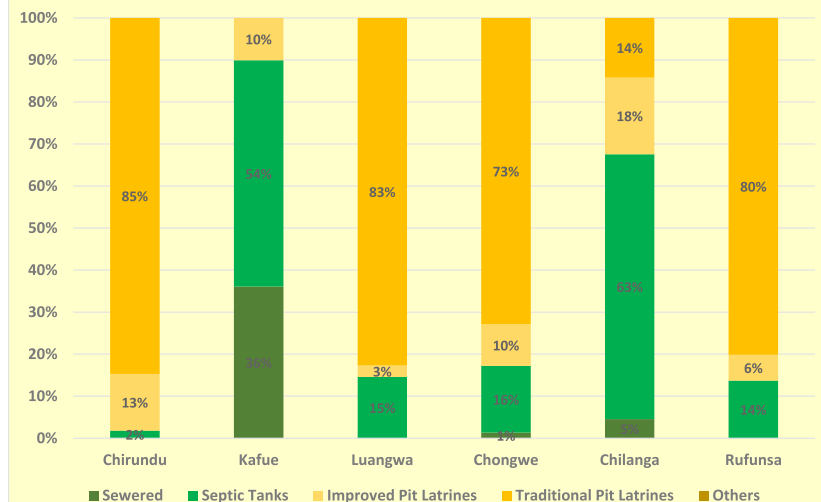
Data for OSS was collected in four provinces namely Lusaka, Luapula, Copperbelt and Eastern using sanitation surveys, Geographic Information System (GIS) mapping of OSS facilities and desk reviews for secondary data.

A total of 375,680 sanitation facilities were captured in 16 towns namely Chirundu, Kafue, Chilanga, Chongwe, Rufunsa and Luangwa of Lusaka Province; Samfya, Mwanabombwe and Chiengi of Luapula Province; Ndola, Luanshya, Masaiti, Kitwe and Kalulushi of Copperbelt Province; and Petauke and Chipata towns of Eastern Province. Results of the sanitation surveys are presented as follows:

### 2.1.1 Lusaka Province

Secondary data and desk reviews were used to determine access levels to sanitation facilities in 6 districts of Lusaka Province namely Chirundu, Kafue, Chilanga, Chongwe, Rufunsa and Luangwa. Chart 1 shows proportions of access to sanitation facilities in the six districts. There were a total of 145,621 facilities that were enrolled in the survey. It can be observed among the six districts that Kafue Town had the highest proportion of population using off-site or centralized sanitation systems. This is because Kafue Town has a mechanised waste water treatment plant. Further, Chilanga and Kafue Towns had the highest proportion of septic tanks which are Onsite Sanitation (OSS) systems, and if constructed to standard and emptied when full are regarded as 'safely managed'. *Chirundu, Luangwa, Rufunsa and Chongwe had a considerable proportion of population accessing sanitation using improved pit latrines. However, all towns also had populations that accessed sanitation using traditional pit latrines which are considered as 'unimproved' sanitation systems.*

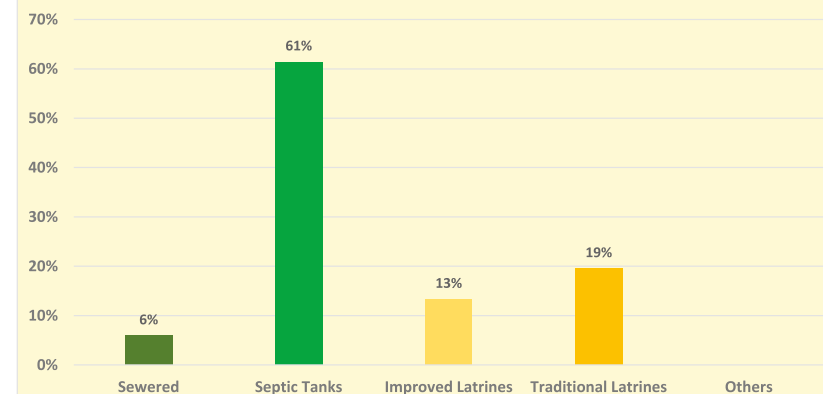
**Chart 1: Proportions of Access to Sanitation Facilities in Six Districts of Lusaka Province**



### 2.1.1.1 Overall Access to Sanitation Facilities in Six Towns of Lusaka Province

It can be observed from Chart 2 below that 61% of the facilities used to access sanitation by population living in Chirundu, Chilanga, Kafue, Chongwe, Luangwa and Rufunsa Towns were septic tanks, followed by 19% that used traditional latrines. This is because the majority of households in Lusaka Province rely on OSS facilities while only 15% are on the sewer network. 13% of the facilities used were improved toilets such as the Ventilated Improved Pit (VIPs) latrines which can be safely managed if constructed to standard while 19% of facilities were traditional and considered as *'unimproved'* sanitation facilities.

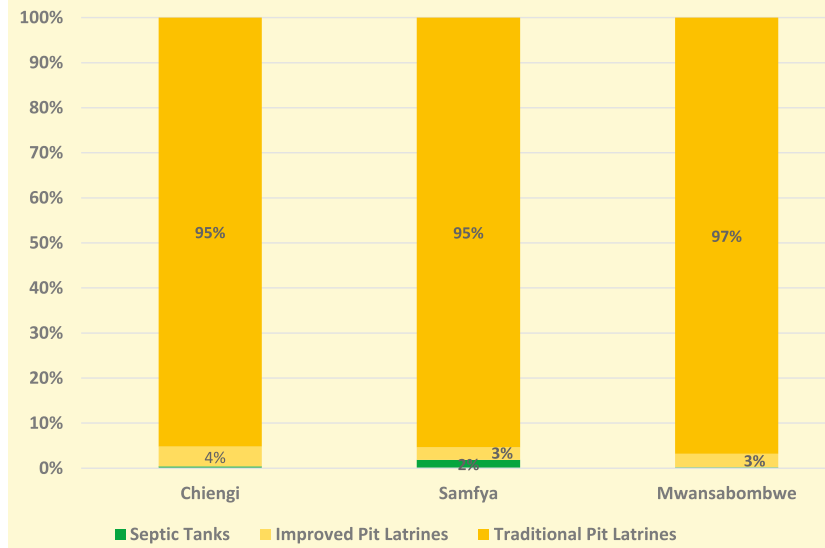
**Chart 2: Overall Access to Sanitation Facilities in Chirundu, Chilanga, Kafue, Chongwe, Luangwa and Rufunsa Districts of Lusaka Province**



### 2.1.2 Luapula Province

A total of 51, 666 sanitation facilities were captured in the three towns of Luapula Province namely Chiengi, Samfya and Mwansabombwe. Chart 3 below shows that majority population relied on OSS, i.e, traditional pit latrines. It can therefore be observed that because of the latter facilities being used in the three towns, sanitation coverage was very low as NWASCO only considers reticulated sewers and septic tanks to inform sanitation coverage. Only 2% of the facilities in Samfya Town were septic tanks while the other 4% in Chiengi and 3% for both Samfya and Mwansabombwe accounted for improved pit latrines. Mansa Town is the only town that has a reticulated sewer network but was not part of the study.

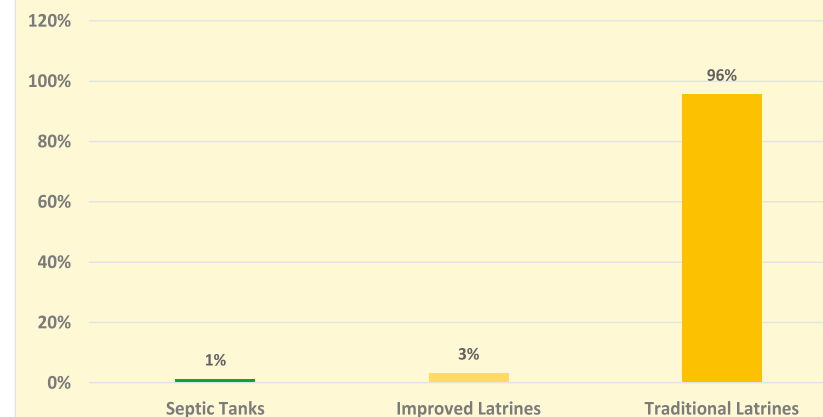
**Chart 3: Access to Sanitation Facilities in Three Towns of Luapula Province**



### 2.1.2.1 Overall Access to Sanitation in the three Districts of Luapula Province

It can be observed from Chart 4 below that 96% of the sanitation facilities in the three towns of Luapula Province were traditional pit latrines which are considered to be *'unimproved'* sanitation facilities. Only 1% of the facilities accounted for septic tanks while 3% were improved facilities. The situation in the three towns requires householders to invest in sanitation facilities that guarantee the hygienic separation of human excreta from users, offers the safety, security and dignity to users for them to have the full benefit of sanitation services.

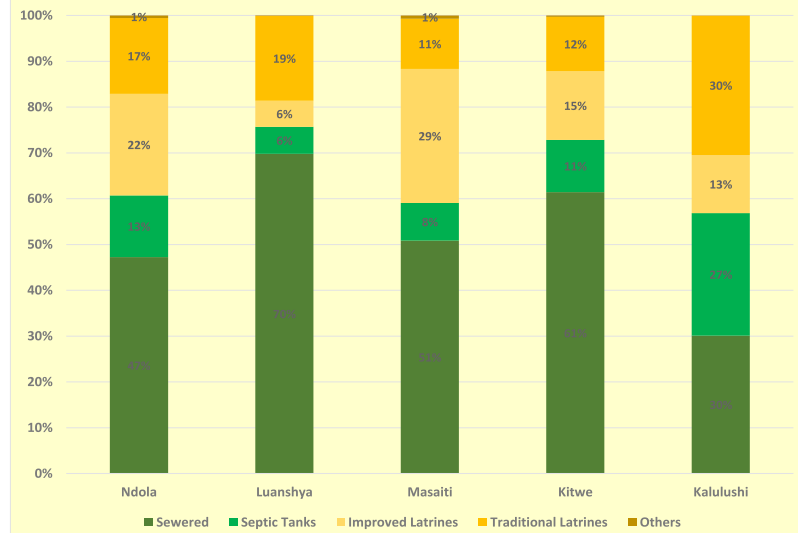
**Chart 4: Overall Access to Sanitation Facilities in Chiengi, Samfya and Mwansabombwe Towns of Luapula Province**



### 2.1.3 Copperbelt Province

There were a total of 141,593 sanitation facilities captured in the five towns of Copperbelt Province namely Ndola, Luanshya, Masaiti, Kitwe and Kalulushi. Chart 5 below shows that the majority population relied on centralized or offsite treatment of human faecal waste via conventional sewers to wastewater treatment facilities. This is because the majority of the Copperbelt Province has the highest proportion of population using offsite sanitation systems. It can further be observed that Kalulushi Town had the highest proportion of population that used OSS systems.

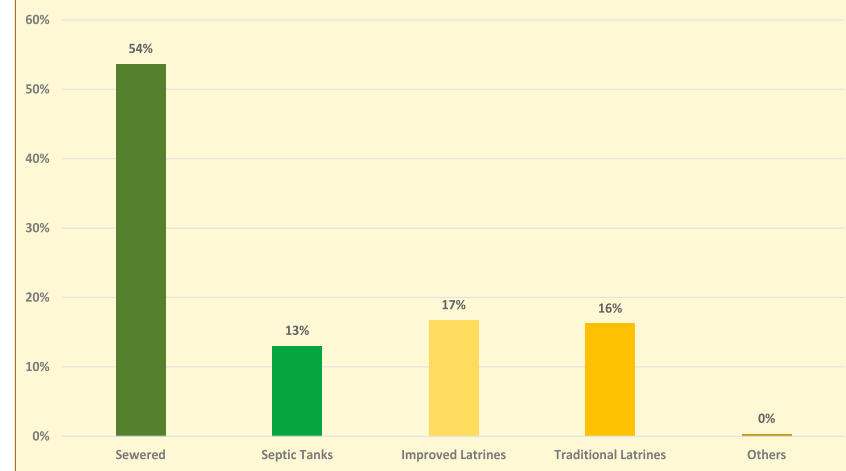
**Chart 5: Access to Sanitation Facilities in Five Towns of Copperbelt Province**



### 2.1.3.1 Overall Access to Sanitation Facilities in Five Towns of Copperbelt Province

It can be observed from Chart 6 below that 54% of sanitation facilities in the five towns of the Copperbelt Province were sewered. 17% of the facilities were 'improved' followed by 16% that were 'traditional'. 13% the facilities accounted for septic tanks. Therefore, it can be noted that 46% of sanitation facilities in the five towns of the Copperbelt Province comprised of OSS systems.

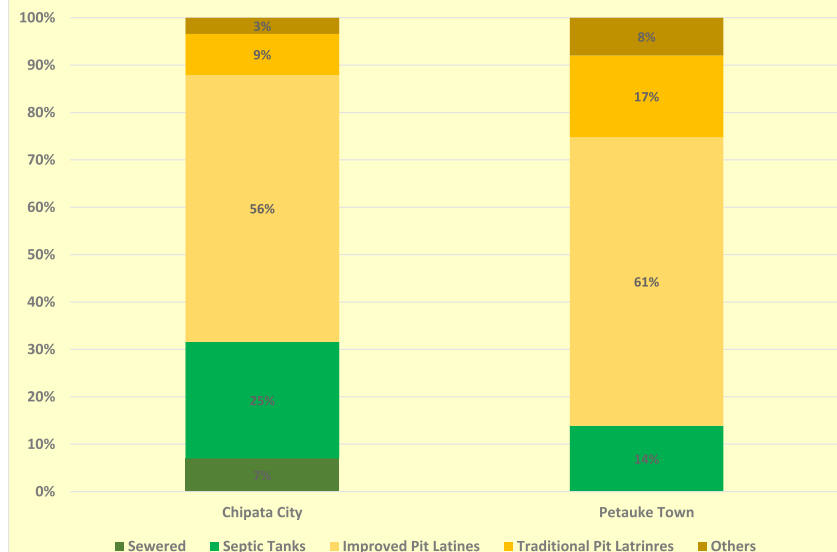
**Chart 6: Overall Access to Sanitation Facilities in Five Towns of the Copperbelt Province**



### 2.1.4 Eastern Province

There were a total of 36,800 sanitation facilities captured in the two towns of Eastern Province namely Chipata and Petauke. It can be observed from Chart 7 below that the majority population relied on OSS systems, i.e. traditional pit latrines to access sanitation. Petauke Town had the highest proportion of OSS' facilities because unlike Chipata City, Petauke Town did not have any reticulated sewers and only relied on OSS. Chipata City had both offsite and onsite sanitation systems with only 7% that accounted for sewered network.

**Chart 7: Access to Sanitation Facilities in Chipata City and Petauke Town**

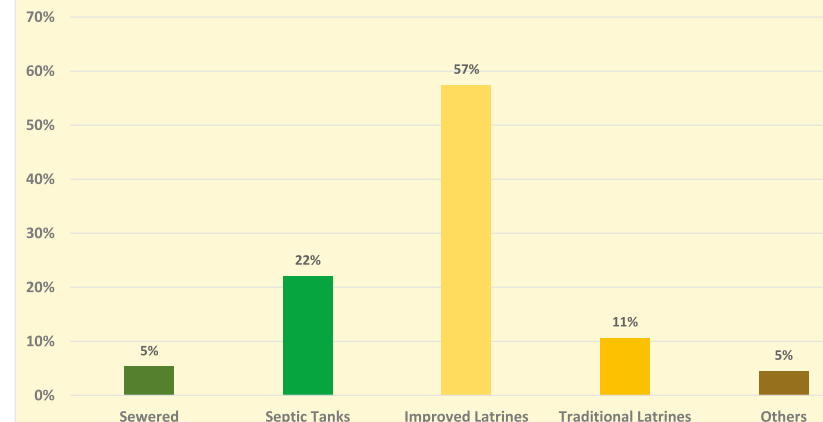


#### 2.1.4.1 Overall Access to Sanitation Facilities in Chipata City and Petauke Town

A total of 36, 794 household sanitation facilities were captured in Chipata City and Petauke Town. It can be observed from Chart 8 below that 65% of sanitation facilities in the two towns were 'basic' followed by 27% that were 'safely managed'. Further, 4% of households did not have any sanitation facility and were thus presumed to have practiced 'open defecation'.

It can be observed from Chart 8 below that 57% of sanitation facilities in the two towns of the Eastern Province were 'improved' latrines followed by septic tanks that accounted for 22%. Further, 11% of the facilities were traditional toilets that are considered as 'unimproved' sanitation facilities. Only a minute 5% of the facilities in the two towns accounted for sewered facilities.

**Chart 8: Overall Access to Sanitation Facilities in Chipata City and Petauke Town**



## 2.2 CONCLUSION

Sanitation baseline data on household access to sanitation facilities is critical for planning, service provision and regulation. As can be observed from the results of the surveys, the majority of facilities, save for the Copperbelt Province relied on 'OSS facilities. With both service provision and regulation now requiring that all improved OSS facilities be safely managed upon becoming full, it is incumbent upon service providers and the regulator to ensure that data is available to operationalise and subsequently regulate the service. This will contribute to efforts aimed at attaining safely managed sanitation services across the entire sanitation service chain as espoused under SDG-6.2 and the Vision 2030. Establishment of baseline data also provides CUs with accurate information that can be used for reporting of progress being made to provide inclusive sanitation services. NWASCO therefore encourages CUs with support from government and Cooperating Partners to continually undertake mapping of sanitation facilities in their service areas so as to have current and up to date information that can be used for decision making.



## RURAL WATER SUPPLY AND SANITATION



### 3.1 INTRODUCTION

The Water Supply and Sanitation Act mandates NWASCO and the commercial utility companies (CUs) to regulate and provide water supply and sanitation services respectively, to all parts of the country. In 2018, NWASCO developed the Rural Water Supply and Sanitation Service Provision and Regulation Framework in which modalities for Rural Water Supply and Sanitation (RWSS) service provision by the CUs and the focus for regulation are articulated.

The CUs as mandated service providers are expected to either provide RWSS services or have oversight, (through management contracts or MoUs) of all stakeholders providing WSS in the rural areas particularly piped water schemes.

In its quest to regulate RWSS, NWASCO has identified and developed guidelines in key focus areas as follows:

- ☞ Minimum Service Levels - setting and ensuring rural water schemes adhere to set minimum service levels
- ☞ Water Quality Monitoring - ensuring that minimum required parameters and numbers of tests and sanitary inspections are carried out; and
- ☞ Tariff Setting - Ensuring that beneficiaries contribute to the Operation and Maintenance and monitoring financial sustainability of the water schemes.

Baseline data is key to ensuring regulation of RWSS is implemented. As such, NWASCO with support from UNICEF embarked on collection of data on piped water schemes in the rural areas and growth centres in seven provinces namely Copperbelt, Central, Luapula, Lusaka, Muchinga, Northern and North Western. Data was collected from a total of 584 piped water schemes in 57 districts. Data for the remaining three Provinces namely (Southern, Eastern and Western) will be collected in the course of 2023.

### 3.2 STATUS OF RURAL WATER SCHEMES

The status of rural water schemes in the 7 provinces in line with the key focus areas for regulation is as follows:

#### 3.2.1 Institutional and Legal Framework Review for Rural Water Supply and Sanitation

The institutional and legal framework is an important part of creating an enabling environment for sustainable RWSS service provision. NWASCO, together with other stakeholders, identified existing laws to be reviewed and those to be developed to ensure mandates and responsibilities were clear.

#### 3.2.1 Luapula Province

##### 3.2.1.1 Overview of Water schemes

The majority of the connections in almost all the districts were individual with Kawambwa District having the highest number as shown in Table 8. Mwense District was predominately served by kiosks and public taps. All the water schemes were generally conducting water quality testing save for the schemes in Chiengi District, Chipili District and Kawambwa District. The common tests done were bacteriological, chlorine residue and pH. These test were mostly done by the EHTs in the districts.

Table 7: Overview of Rural Water Schemes in Luapula

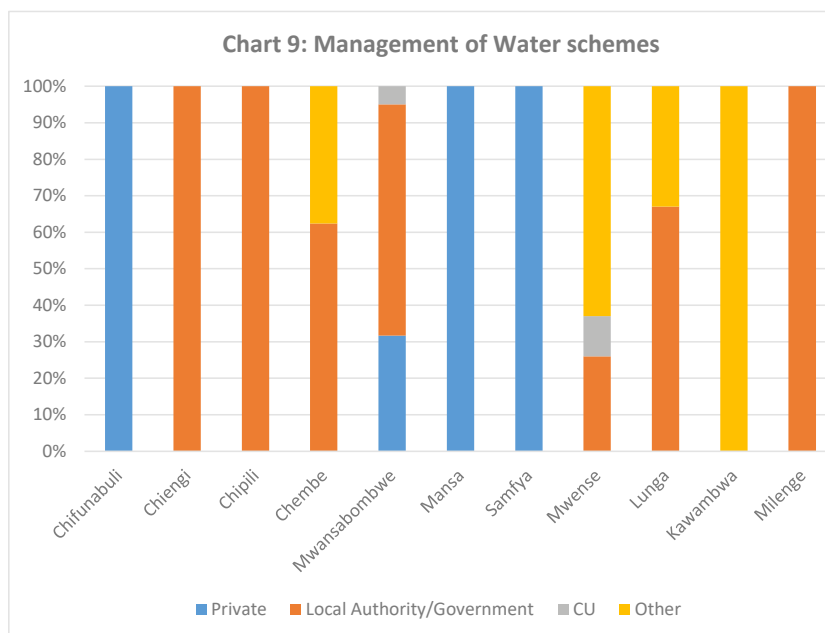
District	Total number of water schemes	Total connections by type			Total No. of Schools connected	Total No. of Clinic/health centers connected	Average Hours of supply	Water quality (how many schemes of the total conduct tests by type)					Average Tariffs/month (ZMW)
		Individual	Kiosks	Public tap				Residue Chlorine	PH	Colour	Turbidity	Bacteriological	
Chifunabuli	8	188	9	35	8	2	1.4	0	4	0	0	7	8
Chiengi	9	92	0	17	2	2	1	No tests done					0
Chipili	5	0	10	28	4	2	3	No tests done					0
Chembe	8	183	4	15	4	3	3	4	5	0	3	8	0
Mwansabombwa	22	328	2	128	7	3	3	1	0	0	1	2	15
Mansa	2	51	0	53	1	1	1	2	2	0	2	2	8
Samfya	17	329	0	21	17	6	1	17	17	0	0	17	8
Mwense	28	171	81	477	18	14	4	3	0	0	0	0	5
Lunga	3	1	0	5	1	2	3	0	0	0	0	2	0
Kawambwa	34	876	16	902	11	4	3	No tests done					0
Milenge	1	31	9	6	1	1	6	No tests done					0
<b>Total</b>	<b>137</b>	<b>2,250</b>	<b>131</b>	<b>1,687</b>	<b>74</b>	<b>40</b>	<b>2.8</b>	<b>27</b>	<b>28</b>	<b>0</b>	<b>6</b>	<b>38</b>	<b>8.8</b>

As shown in Table 7, the average tariff for the province is K8.8 per month. All water schemes in Chifunabuli, Mansa and Samfya Districts were charging for

water supply, while Mwense and Mwansabombwe districts only had 4 and 2 respectively.

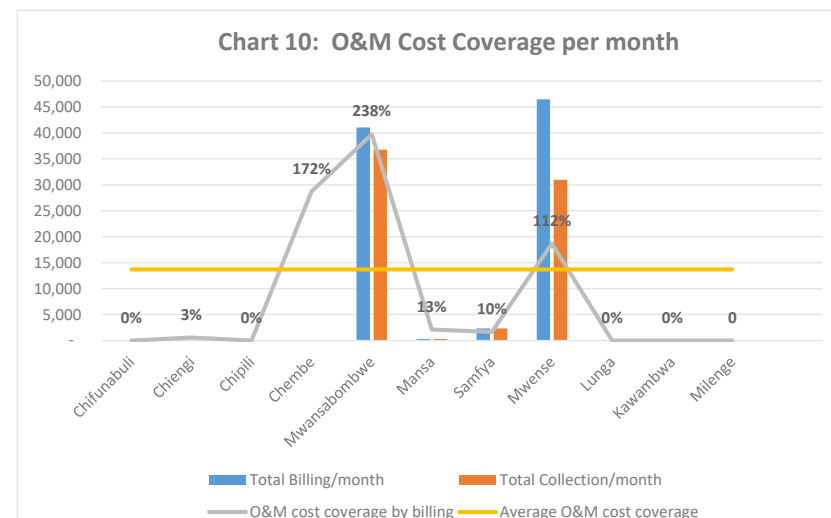
### 3.2.1.2 Management of the Water Schemes

The management of the water schemes in the districts is shown in Chat 9. Management of water schemes were managed by 'other' stakeholders that included the community, royal establishments, non-governmental organisations (NGOs), Churches and Community Based Organisations (CBOs) constituted 45%. This was followed by private and Government/Local Authorities at 25% and 17%, respectively. CUs were the lowest at 4%.



### 3.2.1.3 Operation and Maintenance Cost Coverage by billing

Chart 10 shows the average O&M cost coverage by billing per month which stood at 82%. Of the three districts where all water schemes were run by the private sector, only Samfya District was able to cover O&M costs while Chifunabuli District did not provide any data. In districts where all schemes were run by Local Authorities/Government or 'other' stakeholders, water supply was free thus, O&M cost coverage could not be established.



## 3.2.2 Muchinga Province

### 3.2.2.1 Overview of Water schemes

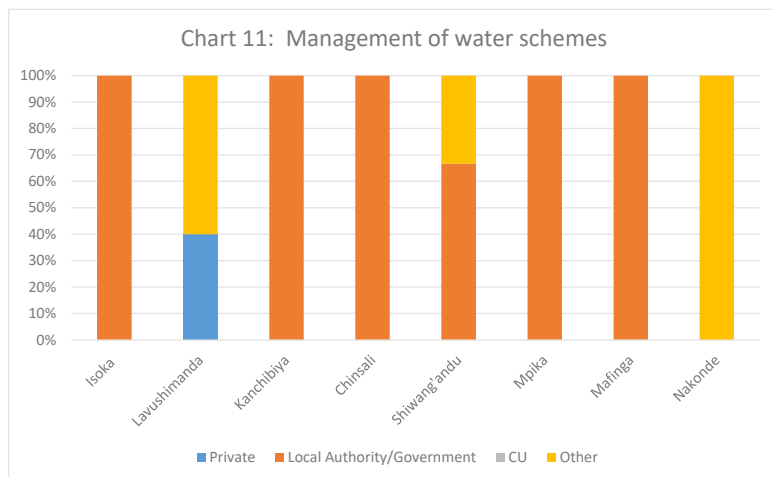
The majority of the connections in almost all the districts were public taps with Isoka having the highest number as shown in Table 8. Shiwang'andu was predominately served by individual connections. All the water schemes were conducting water quality testing save for the schemes in Lavushimanda, Mpika and Mafinga. The tests conducted were generally bacteriological, chlorine residue and pH. These tests were carried out by the EHTs.

**Table 8: Overview of Rural Water Schemes in Muchinga**

District	Total number of water schemes	Total connections by type			Total No. of Schools connecte	Total No. of Clinic/he alth	Average Hours of supply	Water quality (how many schemes of the total conduct					Average Tariffs/m onth (ZMW)
		Individual	Kiosks	Public tap				Residue Chlorine	PH	Colour	Turbidity	Bacteriological	
Isoka	17	23	6	129	6	5	4	0	1	0	0	1	0
Lavushimanda	20	14	0	118	1	1	4	No tests done					20
Kanchibiya	13	7	9	15	0	2	1	1	1	1		1	0
Chinsali	2	23	0	47	2	1	1	1	0	0	0	0	2
Shiwang'andu	6	66	1	43	6	6	2	1	1	1	1	3	0
Mpika	26	27	20	41	2	2	3	No tests done					0
Mafinga	1	2	0	8	1	0	4	No tests done					0
Nakonde	1	60	0	30	1	0	5	0	0	0	0	1	0
<b>Totals</b>	<b>86</b>	<b>222</b>	<b>36</b>	<b>431</b>	<b>19</b>	<b>17</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>11</b>

### 3.2.2.2 Management of the Water Schemes

The management of the water schemes in the districts is shown in Chat 11. The schemes were predominately managed by the local authorities at 73% while 17 % were managed by private sector players and 10% were managed by the 'other' stakeholders. None of the schemes were managed by the CU.



### 3.2.2.3 Operation and Maintenance Cost Coverage by Billing

None of the water schemes in all the districts were charging for water save for one scheme in Lavushimanda and one in Chinsali Districts. As such, billing

and collection indicators were not applicable. Further, the operating costs for the schemes in Muchinga could not be established as these were covered by Local Authorities.

## 3.2.3 Northern Province

### 3.2.3.1 Overview of Water schemes

Chilubi District had the highest number of individual connections while Mungwi District which had the highest number of water schemes had the majority of public stand taps as shown in Table 10. Two of the eight districts in the province, (i.e. Mungwi and Nsama) did not conduct water quality tests. Chilubi District had the highest consistency in conducting the bacteriological, residual chlorine, pH, Turbidity and Colour tests and these were being done by the EHTs in the districts.

As shown in Table 9, only two Districts (i.e. Lunte and Chilubi) had tariffs. Only 30 water schemes in the province charged customers for water supply.

**Table 9: Overview of Rural Water Schemes in Northern Province**

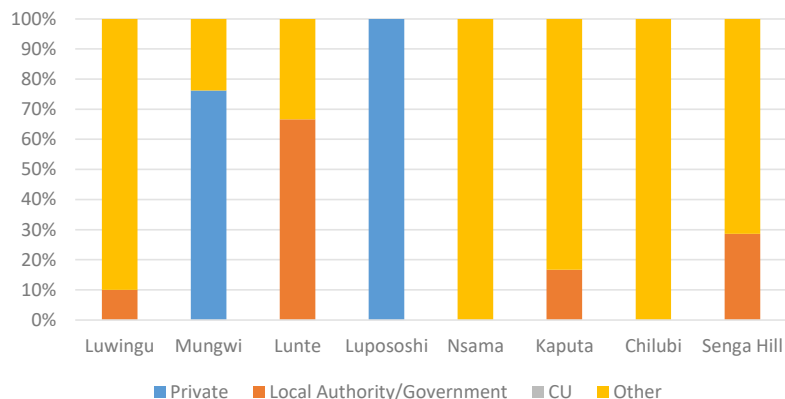
District	Total No of Schemes	Total Connections by type			Total no of schools connected	Total no of Clinics/Health Centres	Average hours of supply	Water Quality (How many Schemes of the Total conducted by test)					Average Tariffs/Mo nth (ZMW)
		Individual	Kiosks	Public Taps				Residual Chlorine	PH	Colour	Turbidity	Bacterio	
Luwingu	10	119	0	24	7	7	24	1	1	1	1	2	0
Mungwi	23	141	21	139	7	7	14	No tests done					0
Lunte	4	22	2	8	0	2	24	0	0	4	4	4	10
Lupososhi	9	101	0	83	4	5	17	1	1	1	1	1	0
Nsama	6	0	14	21	2	1	17	No tests done					0
Kaputa	6	7	0	31	1	3	17	0	0	0	1	1	0
Chilubi	11	346	15	6	2	0	21	10	10	10	10	8	56
<b>Total</b>	<b>69</b>	<b>736</b>	<b>52</b>	<b>312</b>	<b>23</b>	<b>25</b>	<b>134</b>	<b>12</b>	<b>12</b>	<b>16</b>	<b>17</b>	<b>16</b>	<b>33</b>

### 3.2.3.2 Management of the Water Schemes

The management of the water schemes in the districts is shown in Chat 12. About 63% of water schemes were managed by 'other' stakeholders that included the community, royal establishment, NGOs, churches and CBOs. This was followed by private management of 23%. CUs had the lowest at 1%. Local Authorities/ Government managed about 12% of the schemes.



Chart 12: Management of water schemes



### 3.2.3.3 Operation and Maintenance Cost Coverage by billing

All districts save for Chilubi and Lunte did not have a tariff for water supply. The schemes were predominately run by 'other' stakeholders (i.e. community/NGOs/Church) water supply was free thus O&M cost coverage could not be established.

## 3.2.4 North Western Province

### 3.2.4.1 Overview of Water schemes in North Western Province

Table 10 shows that Ikelenge District had the highest number of total connections by Individual households while Kabompo District had the highest number of public stand taps. Only Ikelenge, Kabompo and Manyinga Districts conducted water quality tests. However, not all key parameters (Residual Chlorine, pH, Colour, Turbidity and Bacteriological tests) were conducted by the three districts. These tests were conducted by EHTs. Data on tariffs was only collected from Ikelenge and Kabompo while data from the other districts was not available.

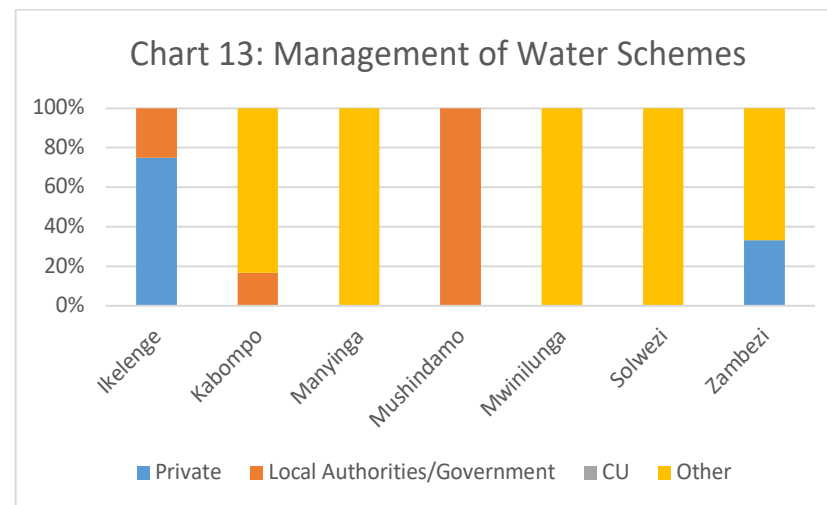
Table 10: Overview of Rural Water Schemes in North Western Province

District	Total No. of Water Schemes	Total Connections by Type			Total No. of Schools Connected	Total No. of Clinic/Health	Average Hours of Supply	Water Quality (How many schemes of the total conducted tests by type)					Average Tariffs/Month (ZMW)
		Individual	Kiosks	Public Taps				Residual Chlorine	pH	Colour	Turbidity	Bacteriological	
Ikelenge	4	281	0	16	4	3	24	0	1	0	0	1	20
Kabompo	6	29	0	84	2	2	24	1	3	2	3	1	40
Manyinga	7	3	0	60	2	4	24	2	2	0	2	6	0
Mushindamo	2	0	0	5	1	0	15	No tests done					0
Mwinilunga	2	56	0	49	2	2	15	No tests done					0
Solwezi	5	3	2	11	0	2	20	No tests done					0
Zambezi	3	13	0	22	3	1	19	No tests done					0
Total	29	385	2	247	14	14	141	3	6	2	5	8	60

### 3.2.4.2 Management of the Water Schemes

The management of the water schemes in the districts is shown in Chat 13. Around 58% of water schemes were managed by 'other' stakeholders that included the community, royal establishment, NGOs and CBOs. This was followed by Local Authorities/ Government who managed 21%, while 17% of schemes was managed by private stakeholders. The CU did not manage any scheme in North Western Province.

Chart 13: Management of Water Schemes



### 3.2.4.3 Operation and Maintenance Cost Coverage by billing

Only one water scheme in each of the districts of Ikelenge and Zambezi had tariffs. Of the two, the water scheme in Ikelenge had an O&M cost coverage of 18% while the coverage of one in Zambezi could not be established as costs could not be ascertained.

## 3.2.5 Central Province

### 3.2.5.1 Overview of province

The majority of the connections in all the districts were individual with Kapiri Mposhi having the highest number as shown in Table 11. Kabwe City was predominately served by public taps and the majority of the water schemes were generally conducting all key water quality tests save for the schemes in Mumbwa District which only conducted bacteriological tests. These test were mostly done by the EHTs in the districts.

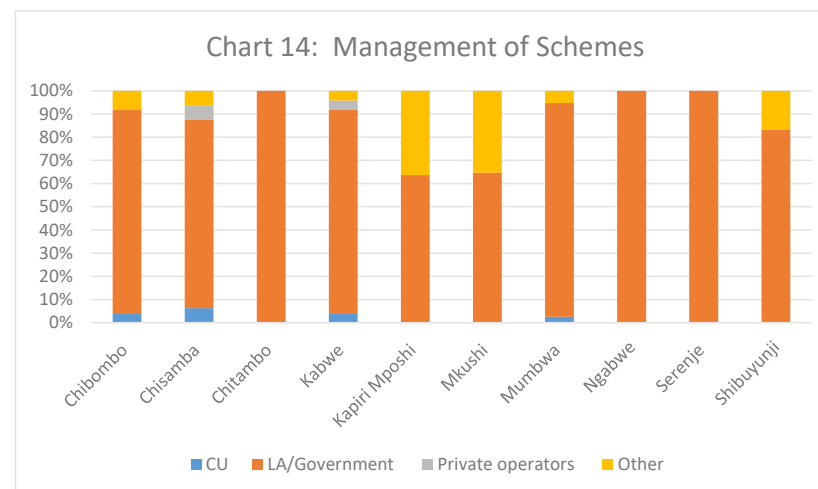
**Table 11: Overview of water schemes in Central Province**

District	Total number of water schemes	Total connections by type			Total Number of schools connected	Total number of clinics/health centers connected	Average hours of supply	Water quality (how many schemes of the total conduct tests by type)					Average tariffs/month ZMW
		Individual	Kiosk	Public tap				Residue chlorine	PH	Colour	Turbidity	Bacteriological	
Chibombo	24	148	19	35	15	12	15	1	5	4	4	6	5
Chisamba	16	86	2	46	13	6	15	5	4	2	3	7	0
Chitambo	9	35	0	43	3	3	15	7	8	8	0	8	0
Kabwe	24	46	0	109	18	7	24	4	5	2	5	6	50
Kapiri Mposhi	12	226	1	41	5	7	15	4	5	6	6	6	0
Mkushi	17	182	0	47	8	11	15	1	0	0	0	1	0
Mumbwa	38	18	46	133	2	4	11.5	0	0	0	2	7	3
Ngabwe	1	1	0	1	0	1	21	0	0	0	0	1	0
Serenje	2	8	0	7	0	2	24	0	0	0	0	0	0
Shibuyunji	6	6	0	6	13	1	8.5	0	1	0	0	2	0
<b>Total</b>	<b>149</b>	<b>756</b>	<b>68</b>	<b>468</b>	<b>77</b>	<b>54</b>	<b>16.4</b>	<b>22</b>	<b>28</b>	<b>22</b>	<b>20</b>	<b>44</b>	<b>5.8</b>

Most of the districts in Central Province had no tariffs except and for Kabwe, Kapiri Mposhi, Mumbwa and Chibombo which had one scheme each out of the total number with a tariff.

### 3.2.5.2 Management of water schemes

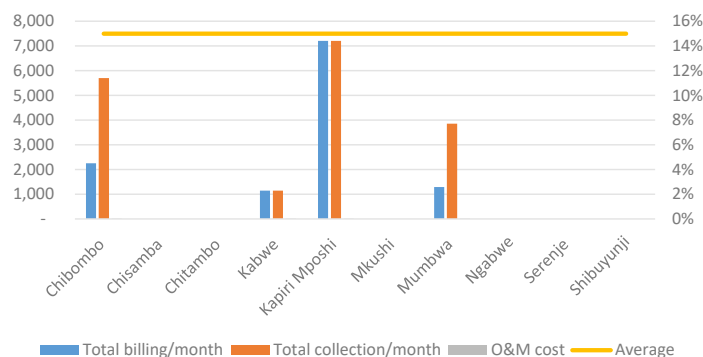
The management of the water schemes in the Central Province is highlighted in Chat 14. Around 84% of the water schemes were managed by the Government/ Local Authorities with the CUs managing 2.7%, the private operators managing 2.3% and 'others' which included Community Based Organisations (CBOs), NGOs and churches managed 11%.



### 3.2.5.3 Operation and Maintenance Cost Coverage by billing

Chart 15 shows the average O&M cost coverage by billing per month which stood at 15%. All water schemes in the districts did not have tariffs save for one scheme in each of the following districts; Chibombo, Kabwe, Kapiri Mposhi and Mumbwa.

Chart 15: O&amp;M Cost Coverage by Billing



### 3.2.6 Copperbelt Province

#### 3.2.6.1 Overview of Copperbelt province

The majority of the connections in all the districts were individual with Mpongwe having the highest number as shown in Table 12. Luanshya District was predominately served by public taps. The majority the water schemes were generally conducting water quality testing save for the schemes in Mpongwe and Luanshya Districts, which only conducted bacteriological tests. The common tests conducted were bacteriological, chlorine residue and pH. These test were mostly done by the EHTs in the Districts.

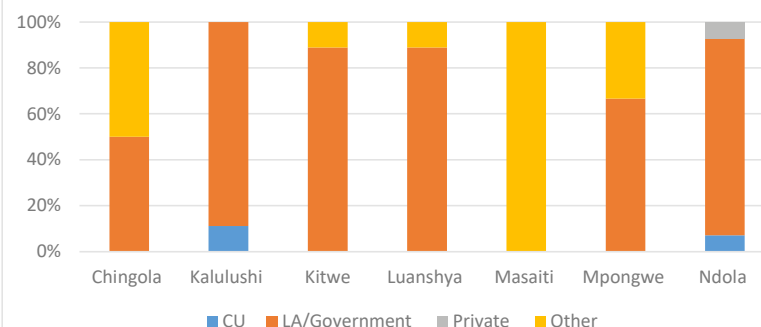
Table 12: Overview of water schemes in Copperbelt Province

District	Total number of water schemes	Total connections by type			Total Number of schools connected	Total number of clinics/health centers connected	Average hours of supply	Water quality (how many schemes of the total conduct tests by type)					Average tariffs/month ZMW
		Individual	Kiosk	Public tap				Residue chlorine	PH	Colour	Turbidity	Bacteriological	
Chingola	4	72	22	8	3	2	15	2	2	0	2	4	0
Kalulushi	9	57	21	27	1	3	18	4	1	0	1	8	0
Kitwe	9	1	24	45	2	1	18	9	9	8	9	9	0
Luanshya	9	6	0	13	2	1	18	0	0	0	0	3	0
Masaiti	4	37	0	48	4	1	8.5	0	2	2	2	2	0
Mpongwe	3	276	0	3	1	0	6	0	0	0	0	0	0
Ndola	14	56	3	16	8	2	15	1	3	3	3	3	0
<b>Total</b>	<b>52</b>	<b>505</b>	<b>70</b>	<b>160</b>	<b>21</b>	<b>10</b>	<b>14.0714</b>	<b>16</b>	<b>17</b>	<b>13</b>	<b>17</b>	<b>29</b>	<b>0</b>

#### 3.2.6.2 Management of water schemes

The management of the water schemes in Copperbelt Province districts is highlighted in Chat 16. Of the 10 districts on the Copperbelt, data was captured from seven. About 77% of the water schemes were managed by the Government/Local Authorities with the CUs managing 4%, private operators managed 7% and 'others' 17% which included Community Based Organisations (CBOs), NGOs and churches.

Chart 16: Management of water schemes





### 3.2.6.3 Operation and maintenance costs

All water schemes in the reported districts did not have a tariff hence the O&M cost coverage by billing indicator was not applicable.

## 3.2.7 Lusaka Province

### 3.2.7.1 Overview of Lusaka province

The majority of the connections in all the districts were individual with Chongwe having the highest number as shown in Table 13. The water schemes were generally conducting water quality testing save for the schemes in Luangwa and Rufunsa which did not carry out any tests. The common tests conducted were bacteriological, chlorine residue and pH. These test were mostly done by the EHTs in the districts.

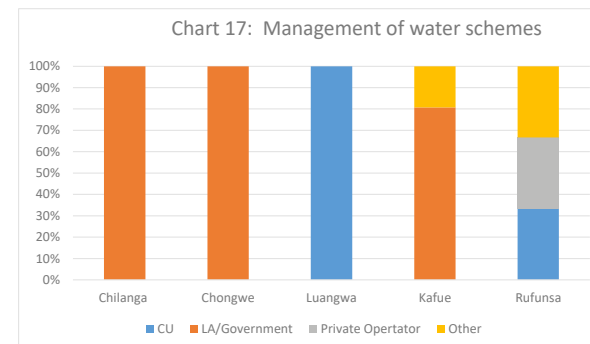
**Table 13: Overview of Lusaka Province**

District	Total number of water schemes	Total connections by type			Total Number of school connected	Total number of clinics/ health centers connected	Average hours of supply	Water quality (how many schemes of the total conduct tests by type)					Average tariffs/ month ZMW
		Individual	Kiosk	Public tap				Residue chloride	PH	Color	Turbidity	Bacteriological	
Chilanga	14	50	10	20	0	0	8.5	0	0	0	0	0	10
Chongwe	10	244	0	35	6	4	11.5	4	3	0	3	1	12.5
Luangwa	1	0	0	0	0	0	0	0	0	0	0	0	0
Kafue	26	1	24	12	1	0	15	0	26	26	26	26	0
Rufunsa	3	14	14	15	2	2	15	0	0	0	0	0	0
Total	54	309	48	82	9	6	10	4	29	26	29	27	4.5

Only four and two water schemes in Chongwe and Chilanga Districts respectively had tariffs. The maximum tariff in Chongwe District was K30 while the lowest was K5. Chilanga District was charging K10 per month

### 3.2.7.2 Management of water schemes

The management of the water schemes in Lusaka Province districts is highlighted in Chat 17. About 80% of the water schemes were managed by the Government and Local Authorities with the CUs managing 2%, private operators 9% and 'others' which included Community Based Organisations (CBOs), NGOs and churches managed 9%.



### 3.2.7.3 Operation and maintenance costs coverage by billing

The O&M cost coverage by billing for the schemes in Chongwe and Chilanga Districts that had tariffs could not be ascertained as the O&M costs for the schemes could not be established.

## 3.3 CONCLUSION

NWASCO will utilise the collected data to initiate regulation of rural water supply and sanitation with focus on the quality of water being supplied, sustainability of water service provision and acceptable service levels. Data collection will continue for the remaining three provinces and some districts that were not captured in the seven provinces. The CUs are urged to engage with the stakeholders managing the rural water schemes to ensure that they operate within the regulatory requirements.



## THE NATIONAL WATER SUPPLY AND SANITATION COUNCIL

## 4.1 INTRODUCTION

The National Water Supply and Sanitation Council (NWASCO) was established pursuant to section 3(1) of the Water Supply and Sanitation Act, No. 28 of 1997 (as amended by Act No. 10 of 2005) and started operations in June 2000.

NWASCO has the mandate to regulate the provision of water supply and sanitation services in the country for efficiency and sustainability. In the year 2022, NWASCO regulated the activities of 11 Commercial Utilities and four Private Schemes as Water Supply and Sanitation (WSS) service providers in accordance with the requirements of the WSS Act No. 28 of 1997. The WSS Service Providers referred to are reflected in detail under Chapters 1, 7 and 8 of this report.

## 4.2 IMPLEMENTATION OF THE STRATEGIC PLAN

NWASCO continued to implement its 2021-2025 Strategic Plan which covers a very critical period as the country progresses towards the attainment of the Vision 2030. The Strategic Plan has six key Strategic Objectives that are aimed at not only enhancing the reputation and position of NWASCO on a global platform, but also see progress in sector performance in pursuit of the Vision 2030. The Strategic Objectives are as follows:

- i. To strengthen the capacity of NWASCO in order to implement regulation for rural water supply and sanitation and urban onsite sanitation service delivery;
- ii. To effectively regulate water supply and sanitation service delivery in order to ensure improved and inclusive service provision;
- iii. To mobilise financial and other resources in order to facilitate for effective operations of NWASCO and ensure financial sustainability of the commercial utilities;
- iv. To promote good corporate governance in order to ensure that NWASCO and commercial utilities are accountable, transparent and efficient in their operations;
- v. To enhance information management systems in order to ensure

availability of up to date information for effective decision making; and

- vi. To coordinate and undertake research and development in order to generate innovation and information for evidence-based sector policy formulation and implementation.

Strides were made in implementing the Strategic Plan with an annual performance achievement of 78%.

## 4.3 MONITORING SERVICE PROVIDERS

In monitoring service providers, NWASCO employs a number of methods which include inspections and assessing performance from various reports submitted by the providers. Further, monitoring is done with the involvement of customers through Water Watch Groups and various digital customer interactive platforms such as MyWatSan Quick fix, LinkedIn and NWASCO Facebook page. The main areas for monitoring are;

- i. Compliance to licence conditions;
- ii. Compliance to Service Level Guarantees and Agreements (SLGs/SLAs) and complaints handling procedures;
- iii. Implementation and compliance to guidelines;
- iv. Organisation management ;
- v. Information management; and
- vi. Implementation of tariff conditions.

### 4.3.1 Licencing

NWASCO issues operating licenses to utilities and private schemes valid for a minimum period of 10 years and renewable for a like period, subject to them complying with the licence conditions. In the reporting period, there were no renewals made to any operating licence. However, amendments were made to Lusaka WSC's licence to remove Chirundu District and add to Southern WSC's licence. The other amendment made was to Lukanga WSC's licence to remove

Itezhi tezhi and add to Southern WSC's licence. This followed the enactment of SI No.114 of 2021. Further there was an amendment to change the licence name from Lafarge Cement Zambia Limited to Chilanga Cement plc.

In fulfilment of Part IV Section 22 of the Water Supply and Sanitation Act No 28 of 1997 which requires that the Council keeps a register of utilities and service providers issued with licences under the Act and publish it at least once every year, Table 14 shows the list of all utilities and service providers holding a licence under this Act.

**Table 14: Licenced Providers**

#	Provider	Licence No.	Effective Date	Expiry Date
Commercial Utilities				
1	LPWSC	L11	20th May 2021	21st May 2031
2	LWSC	L22	5th January 2021	4th January 2031
3	EWSC	L 14	18th January 2021	17th January 2031
4	KWSC	L 15	7th January 2021	6th January 2031
5	MWSC	L 25	10th January 2021	9th January 2031
6	NWSC	L 30	9th January 2021	8th January 2031
7	NWWSC	L 31	10th January 2021	9th January 2031
8	SWSC	L 34	4th January 2021	3rd January 2031
9	WWSC	L45	20th March 2021	19th March 2031
10	CHWSC	L 46	22nd January 2021	21st January 2031
11	LGWSC	L57	28th June 2018	29th June 2028



Awarding good performance

**Private Schemes**

#	Provider	Licence No.	Effective Date	Expiry Date
Commercial Utilities				
1	Kafue Sugar	L13	10th May 2020	11th May 2030
2	Kaleya Small holding	L17	5th January 2021	4th January 2031
3	ZESCO	L35	4th January 2021	3rd January 2031
4	Zambia Sugar Plc Nakambala	L47	4th January 2021	3rd January 2031
5	Chilanga Cement Plc*	L36	14th March 2021	13th March 2031
6	KCM Nampundwe*	L44	15th January 2021	14th January 2031

\* Only supply water within their premises

**4.3.2 Renewal of SLGs/SLAs**

One of the conditions attached to the licence that NWASCO issues to service providers is for them to maintain a Service Level Guarantee (SLG). This highlights the service they pledge to their customers at any time in a given period. This is with respect to sector benchmarks called Minimum Service Levels that the Regulator has set and which service providers must strive to achieve. Where providers are unable to meet the benchmarks, a Service Level Agreement (SLA) is required to be signed. This outlines improvement programmes the CU will undertake in order to achieve the sector benchmarks. Thus, both the SLGs and SLAs are moving targets progressing towards the minimum acceptable levels and are adjusted and signed every three years.

In the reporting period, NWASCO signed the seventh SLGs and SLAs with Southern Water Supply and Sanitation Company after expiry of its previous agreement. The new SLGs and SLAs would thus expire in March 2025.

**4.3.3 Guidelines****Citywide Inclusive Sanitation Planning and Service Provision Guidelines**

Citywide Inclusive Sanitation (CWIS) is a public service approach to urban sanitation where all city dwellers have equitable access to adequate, safe, affordable and improved sanitation services using an array of sanitation technologies.

In accordance with its core function of developing sector guidelines for efficient and effective water supply and sanitation service delivery as enshrined in the Water Supply and Sanitation (WSS) Act No. 28 of 1997, NWASCO launched the Citywide Inclusive Sanitation Planning and Service Provision Guidelines on 20th November 2022. The objective of the guideline is to provide direction to WSS service providers on planning and successful implementation of sustainable, safely managed sanitation services along the entire service chain for various population categories. The guidelines further compel WSS service providers to ensure coordination of various stakeholders in planning, resource mobilisation, implementation and monitoring of appropriate sanitation interventions.

**4.3.4 Inspections**

The Water Supply and Sanitation Act No. 28 of 1997 provides for NWASCO to appoint Inspectors to conduct inspections on any service provider to monitor compliance to the provisions of the Act. The Inspectors are empowered by law to check any aspect of operations and can do this either through comprehensive or target-specific inspections. In the period under review, NWASCO conducted inspections on all the 11 CUs and four Private Schemes and the key findings were as follows:

**Commercial Utilities:**

There was slow up-take of OSS and FSM service provision. The Utilities that made notable progress were Lusaka, Lukanga, Southern and Chambeshi WSCs. These created units to focus



on OSS and FSM and entered into management contracts with private operators or CBOs to offer emptying and transportation services. Further, Faecal Sludge Treatment Plants were also being constructed with the help of cooperating partners;

- ☞ All the CUs experienced financial challenges owing to increased costs of inputs and non-implementation of tariff adjustments;
- ☞ Financial lapses were noted in a number of CUs. Notably, Mulonga, Lukanga, Luapula and Chambeshi WSCs exhibited significant lapses such as non-remittance of both statutory and non-statutory payroll deductions and delayed reconciliations of accounts;
- ☞ Commercial lapses were predominant in almost all CUs, particularly delays in making new connections of paid-up clients and non-verifications of meter readings;
- ☞ Almost all CUs had low focus on low income areas resulting in poor service delivery especially in Mulonga, Nkana and Kafubu WSCs' serviced areas; and
- ☞ All CUs did not have result-oriented strategies to curb non-revenue water.

#### Private Schemes

- ☞ Generally, hours of supply were maintained at 24 hours in most areas except for Camp 3 Township, blocks 9 and 11 of Kafue Gorge, African Housing and Kachenjela Townships of Itezhi Tezhi District, under Zesco Limited, and Group 3B and Group 4 under Kaleya Smallholders Ltd;
- ☞ Only Zambia Sugar PLC fully embraced water and environmental stewardship to effectively curb undesirable water use practices; and
- ☞ Kaleya Smallholders Ltd and Zesco Ltd had inadequacies in water quality monitoring. This was attributed to lack of testing equipment and human resources limitations.

#### 4.3.5 Project Implementation

With the support of the Government of the Republic of Zambia and Cooperating Partners, a number Commercial Utilities continued to implement water and sanitation projects in line with the National Urban WSS Programme that spans the period 2011 – 2030. The programme aims at improving livelihoods and public health for the country's urban population through '*universal*' coverage for water and at least 90% coverage for sanitation. During the year under review, a number of projects recorded low progress owing to cash flow challenges. This led to either re-scoping or complete cancellation of projects. The status of ongoing projects is presented in Table 15:



Water leakages affect water supply.

Table 15: Main Projects and Implementation Status

Implementing Utility	Project description and cost	Project period	Status
LWSC	<ul style="list-style-type: none"> <li>Lusaka Sanitation Programme - aimed at providing adequate sanitation facilities to all urban citizens of Lusaka Province. It intends to benefit over 1 million people with improved sanitation at a cost of about US\$300million.</li> <li>Kafue Bulk Water Project -aimed at providing an additional 50,000m<sup>3</sup> per day into Lusaka City from Kafue River at a cost of US\$150million.</li> </ul>	<p>2015-2022</p> <p>2016 – 2021</p>	<ul style="list-style-type: none"> <li>Component 1 involving improvement of Chungu and Ngwerere Wastewater Treatment Facilities was at 70% while component 2 on onsite sanitation and faecal sludge management was at 100%.</li> <li>The project was successfully completed and commissioned on 29th July 2022. The project has resulted in production of 70,000m<sup>3</sup> per day.</li> </ul>
NWSC	<ul style="list-style-type: none"> <li>Nkana Water Supply and Sanitation Project – aimed at improving service delivery to Kitwe, Kalulushi and Chambishi Towns at a cost of US\$200million</li> </ul>	2015-2022	<ul style="list-style-type: none"> <li>After a lengthy suspension of the projects owing to financial constraints, the project has now been re-scoped to US\$60million. The project will now cater for only critical phases such as rehabilitation of treatment works and distribution infrastructure. Prior to suspension, progress of works involving meter installations, replacement of network valves, rehabilitation and extension of water and sewerage infrastructure was at about 85% completion.</li> </ul>
KWSC	<ul style="list-style-type: none"> <li>Kafulafuta Water Supply System project - aimed at construction of 139Million m<sup>3</sup> reservoir capacity dam with short term water supply capacity of 159,000m<sup>3</sup> per day and long term capacity of 300,000m<sup>3</sup>, intake pump station, transmission lines and distribution systems at a cost of US\$449m to cover Ndola, Luanshya and Masaiti</li> </ul>	2016 – 2021	<ul style="list-style-type: none"> <li>After a lengthy suspension of the project, the Government negotiated with the Contractor to restart the project and reset completion time to December 2023. Progress of works was estimated at about 89% by end of 2022.</li> </ul>



Implementing Utility	Project description and cost	Project period	Status
MWSC	<ul style="list-style-type: none"> <li>The Zambia Water Supply and Sanitation Project - aimed at rehabilitating and expanding water supply and sanitation infrastructure, reducing Non-Revenue Water (NRW) and service improvement to peri-urban areas of Chililabombwe, Chingola, Mufulira at a cost of €156million to cover</li> </ul>	2013 – 2023,	<ul style="list-style-type: none"> <li>Progress on physical works for rehabilitation and expansion of water and sanitation infrastructure stood at 55%. On NRW, a metering ratio of 85% was achieved in addition to leak detection works. On peri-urban works, boreholes, water networks and VIP latrines have been constructed to bring completion rate on this component to 83%.</li> </ul>
LGWSC	<ul style="list-style-type: none"> <li>New Serenje Water Supply Project – aimed at construction of new water infrastructure to improve service provision in Serenje, Shibuyungi at the cost of K8.9million</li> <li>Shibuyunji Water Supply and Sanitation Improvement Project - aimed at improving services to the district at cost of K7.2million.</li> </ul>	2021 – 2022,	<ul style="list-style-type: none"> <li>The project achieved 1.9km pipe network out of a target 2.7km while construction of a pump house and connection to power was completed. Overall, the project was at 90% completion.</li> <li>A 25m<sup>3</sup> reservoir has been installed and over 500 water connections have been resuscitated as well as over 150 sewerage connections. The districts supply hours also increased from 2 to 16. Overall progress was at 90%.</li> </ul>
SWSC	Rehabilitation of Munzuma Rising Main, installation of 4,000 meters and a pumpset to increase volume of water to Choma and reduce NRW at a cost of K8.7million.	2022 – 2023,	The project progressed well and was at 98% completion rate.
CHWSC	<ul style="list-style-type: none"> <li>The Integrated Small Towns Water Supply and Sanitation Programme - aims at improving WSS coverage, reducing NRW as well as increasing hours of supply, consequently, improving financial position of the Utility at a cost is US\$45.6million. The project covers Kasama, Nakonde, Mbala and Mpika</li> <li>Construction of water supply system in Mpulungu at cost of K167.25million.</li> </ul>	<ul style="list-style-type: none"> <li>2020 – 2022 (completion date reset to March 2023)</li> <li>2016 – 2022</li> </ul>	<ul style="list-style-type: none"> <li>Except for the rehabilitation of the Nakonde Water Treatment plant which was only at 5% completion and construction of reservoirs in Kasama and Mbala, other components progressed to over 90% completion rates.</li> <li>The Mpulungu project delayed with progress at only 25%. The Contractor requested for extension of time to December 2023.</li> </ul>

Implementing Utility	Project description and cost	Project period	Status
NWWSC	<ul style="list-style-type: none"> <li>Mufumbwe Water Supply Project -aimed at drilling and equipping 3 new boreholes, constructing a rising main and installing an additional overhead tank at a cost of K12.8million</li> <li>Kawiko Water Supply Project -aimed at construction of a 300m<sup>3</sup> reservoir, a rising main, a pump house and installation of two booster pumps to boost supply in Mwinilunga, at a cost K13million.</li> </ul>	<ul style="list-style-type: none"> <li>2013 – 2019 (Extended)</li> <li>2022 - 2023</li> </ul>	<ul style="list-style-type: none"> <li>The Mufumbwe project was completed and commissioned in February 2022.</li> <li>The project progressed well and achieved 55% completion rate.</li> </ul>
WWSC	Integrated Small Town Water Supply and Sanitation Program -aimed at improving access to clean and safe water supply and sanitation services in Mongu, Kaoma, Senanga and Sesheke at a cost of US\$41.8million.	2016 – 2022 (reset to March 2023)	The construction of a raw water intake in Mongu, treatment works, transmission lines and reservoirs have progressed to about 90% completion rate, while works in Kaoma, Senanga and Sesheke were at estimated completion rates of 56%, 19% and 40%, respectively.
EWSC	Nyimba - Kacholola Rural Water Project Supply - aimed at construction of a water kiosk, water distribution and borehole and water storage of 20m <sup>3</sup> capacity at a cost of K7million.	2020 – 2022	A solar powered borehole, rising main, a kiosk, part of the distribution network and part of storage have been completed and commissioned, though full project scope has not been completed. Overall progress was at about 60%.
LPWSC	Integrated Small Towns Water Supply and Sanitation Programme aimed at improving access to clean and safe water supply and sanitation services in Mansa, Samfya, Mwense and Kawambwa at a total cost of US\$150million.	2020 – 2022 (completion date extended to March 2023)	<ul style="list-style-type: none"> <li>Progress of works in Lot 1 involving rehabilitation of networks, construction of water and wastewater treatment plants in Mansa and Samfya was about 95% with some components already in use. Under Lot 2, covering Mwense and Kawambwa and involving rehabilitation of water treatment plants, construction of reservoirs and distribution networks, progress was at about 88%. On the other hand, Lot 3 that involved construction of Head Office had been completed and awaited handover.</li> </ul>

#### 4.4 SPECIAL REGULATORY SUPERVISION

The Water Supply and Sanitation Act No. 28 of 1997 gives NWASCO the power to monitor and enforce the provisions of the Act. It also allows NWASCO to develop sector guidelines for the provision of water supply and sanitation services. This includes mechanisms for correcting and penalising service providers that contravene the provisions of the Act and regulatory requirements. One of the mechanisms used by NWASCO is the Special Regulatory Supervision (SRS).

Special regulatory supervision is imposed on providers when the performance and corporate governance issues have deteriorated to unacceptable levels which result in poor service delivery, non-compliance to licence conditions which threaten the sustainability of the CU.

A CU is put under SRS if its operational weaknesses and level of service provision erodes beyond what is deemed to be reasonable by NWASCO. This is determined by the number of times a CU fails to adhere to the provisions of the Act and regulatory requirements. A CU that is under SRS is given performance indicators whose monitoring is done more frequently than usual by NWASCO. This is done in order to ensure improved performance of a CU in targeted areas within a defined timeframe. A CU that unjustifiably fails to improve performance on SRS indicators risks its licence being suspended in accordance with section 21 of the WSS Act. Suspension of a licence in most cases results in the dissolution of the CU Board and removal of top management.

There were no CUs placed on SRS apart from North Western WSC which was placed on Special Regulatory Supervision (SRS) in August 2020 had the SRS lifted in September 2022 following improved performance. This is an enforcement step which is an alternative to suspending or cancelling the licence which is normally drastic and have severe impact on the operation of the company as well as significant financial consequences.

#### 4.5 SUSPENSION OF LICENCE

Western WSC operating licence was suspended on 15th March 2022. In accordance with section 21(6) of the WSS Act No. 28 of 1997, the Minister of Water Development and Sanitation appointed a Statutory Manager (SM) on 21st March 2022, for a period of 6 months following the suspension of the Licence. Following improvements in selected performance indicators at the expiry of the statutory managership, a Managing Director was recruited and the suspension of the licence lifted.

The operating license for Luapula Water and Sanitation Company was suspended in June 2022. This followed failure to comply with the regulatory requirements which manifested through continued billing discrepancies, under/overbanking of collected revenues, non-reconciliation of bank accounts, procurement lapses, poor stores management, and non-compliance to water quality monitoring guidelines as well as Service Level Guarantees and Agreements. In accordance with section 21(6) of the WSS Act No. 28 of 1997, the Minister of Water Development and Sanitation appointed the Statutory Manager (SM) in June 2022.

#### 4.6 SANITATION SURCHARGE

The sanitation surcharge is a levy that is charged on a water bill of a customer for selected CUs who met a specified criteria. Funds raised from the surcharge are used to implement sanitation projects approved by NWASCO including OSS and FSM. The surcharge is allowable to a maximum of 5% of a customer's monthly water bill and is awarded based on a CUs level of cost coverage. Currently only 2.5% surcharge has been approved for all qualifying CUs. CUs are required to ring-fence funds collected from the surcharge in accordance with the Ring-Fencing Guidelines failure to which it can be suspended. NWASCO requires CUs to submit sanitation proposals annually for approval prior to utilisation of funds.

In the reporting period, seven CUs were utilising the surcharge with LWSC having had its suspension lifted in October 2022. Table 16 shows a snapshot of the status of the sanitation surcharge funds.

**Table 16: Status of Sanitation Surcharge Funds**

CU	Year Awarded	Total Amount Collected to-Date (ZMW)	Total Amount Spent To-Date (ZMW)
Lusaka WSC*	2007	27,108,007	14,625,386
Nkana WSC	2010	23,367,289	18,792,016
Mulonga WSC	2011	19,008,214	7,761,908
Kafubu WSC	2014	12,441,848	6,122,855
Southern WSC	2015	13,982,581	5,985,923
Lukanga WSC	2015	6,111,043	2,741,599
North Western WSC	2016	4,935,616	1,592,852
<b>Total</b>		<b>106,954,958</b>	<b>57,622,539</b>

\* The surcharge was suspended in 2017 and lifted in October 2022.

## 4.7 TARIFF APPROVALS

NWASCO approves comprehensive tariff adjustments for a 3 year period. A tariff setting model is used when setting the tariffs and considers economic fundamentals in the analysis process. However, CUs are required to apply for a “no objection” from the regulator to implement approved tariffs for the subsequent years, subject to meeting the tariff conditions. Tariff adjustments are mainly necessitated by the increase in the cost of inputs involved in the provision of water supply and sanitation services such as electricity, chemicals and fuel. There were no upwards tariff adjustments in the year under review.

## 4.8 SECTOR INTEGRATED INFORMATION MANAGEMENT SYSTEM

The Ministry of Water Development and Sanitation embarked on a process of developing an Integrated Management Information System (IMIS) that is intended to be the central database and data analysis tool for the ministry for collecting, storing and analysing data and producing defined reports for decision making. The development of the IMIS is being spearheaded by a project steering team supported by a consultant.

The IMIS consists of the Water Supply and Sanitation, Water Resources Management and Development and Management and Support Services

Modules. In the year under review, all the three modules were developed and were undergoing user testing. Once completed, the IMIS is expected to, among other objectives, address the risk of late and inaccurate reporting, improve information traceability, enhance monitoring and accountability and provide secure data storage.

## 4.9 INCREASING AWARENESS AND ENGAGEMENT OF CONSUMERS

The National Water Supply and Sanitation Council (NWASCO), under its consumer affairs mandate, employed the following mechanisms to engage consumers and create awareness:

### 4.9.1 Water Watch Groups

Water Watch Groups (WWGs) are voluntary groups set up by NWASCO whose membership is drawn from the community and act as intermediaries between consumers and service providers.

The main function of the WWGs is to facilitate the resolution of outstanding customer complaints. WWGs also provide feedback to the regulator on status of service delivery and sensitise consumers on their roles and responsibilities. During the period under review, there were a total of 10 Water Watch Groups with one operating in each of the following towns; Chipata, Kabwe, Kasama, Kitwe and Lusaka. Other towns were Ndola, Livingstone, Mongu, Solwezi and Chingola. Throughout the year, the voluntary groups carried out radio programmes in a bid to sensitise consumers on their rights and obligations as it pertains to water and sanitation matters.

### 4.9.2 Social Media

NWASCO engaged stakeholders through various social media platforms such as the website, Facebook and LinkedIn. The focus of the communication was in line with sensitizing stakeholders on the NWASCO current and extended mandate, adherence to Service Level Guarantees and MyWatSan complaint resolution platform. The number of people reached out via Facebook was 35,000 with over 12,000 followers while LinkedIn had 704 followers.

### 4.9.3 Battle of the Brains

NWASCO hosted the second Battle of the Brains Inter-Schools Competition under the theme: *'Towards WASH inclusivity for all'*. The initiative aims to create platforms for engagement among different stakeholders including learners, public and private sector partners, civil society organisations, communities and international organisations through progress dialogue, awareness, sensitisation and engagement on key water supply and sanitation issues.

The competition attracted learners from 17 schools from Lusaka City that culminated into Matero Boys Secondary School scooping the grand prize.

### 4.9.4 National Events

In line with its core function of information dissemination, NWASCO participated in the following events aimed at increasing visibility of its brand and increasing awareness on WSS issues:

#### World Water Day

NWASCO joined the rest of the world in commemorating the World Water Day which was held on 22nd of March under the theme *'Ground Water: Making the Invisible Visible'*. NWASCO called for enhanced collaboration, coordination and cooperation among all stakeholders in the sector to ensure that groundwater resources were properly managed and sustained for present and future generations. The commemoration took place at Ntanisha Wellfield in Chongwe District, Lusaka Province.

#### World Consumer Rights Day

The 2022 World Consumer Rights Day was held on 15th March under the theme *'Fair Digital Finance'*. The theme brought to the fore MyWatSan Quickfix, a digital integrated complaints platform which enables consumers to log in complaints as well as access their water and sanitation account bills from the comfort of their homes or offices. Unresolved complaints in the system are automatically escalated to NWASCO for redress. In embracing digital innovation, MyWatSan Quickfix aims to expedite complaints handling across

the board, from consumer to service provider and regulator, for improved service provision in the country.

#### Global Handwashing Day

NWASCO commemorated the Global Handwashing Day on 15th October under the theme *'Unite for Universal Hand Hygiene'*, in collaboration with Lusaka City Council (LCC) and Bremen Overseas Research and Development Agency (BORDA) Zambia. During the event which was held at Highland Secondary School in Kabanana of Lusaka City, NWASCO donated hand hygiene facilities to the community and schools present.

#### World Toilet Day

NWASCO joined the rest of the world in commemorating World Toilet Day on 19th November, under the theme *'Making the Invisible Visible'*. During the same time, NWASCO participated in the 2nd National Sanitation Summit hosted by the Ministry of Water Development and Sanitation which took place on 18th and 19th November, 2022 at Mulungushi International Conference Center in Lusaka. NWASCO made presentations, participated in panel discussions and exhibited on topics concerning Rural Water Supply and Sanitation (RWSS) and Urban Onsite Sanitation (OSS).

## 4.10 COMPLAINTS HANDLING

NWASCO follows up unresolved water supply and sanitation complaints that are escalated by the consumers in line with the Customer Care Guidelines. Commercial Utilities are expected to resolve complaints within specified timeframes as defined in the Guidelines. The resolution timeframes are standard and have been determined based on the type of complaint.

During the period of January to December, 2022, a total number of 166 unresolved complaints were received by NWASCO out of which 79 were completely resolved thus achieving 47.5 % resolution. The complaints were categorized as follows; 63 on billing, 58 on water supply, nine were on sewage, eight on service request, and 11 on meter, two on leakage, two on pre-paid meters and nine on "other" while four were on water quality.

#### 4.10.1 MyWatSan Quick Fix

In line with its mandate of consumer protection, NWASCO endeavors to address all complaints escalated to it by customers. NWASCO developed MyWatSan Quick fix in 2016 which is a web-based complaints platform utilized by customers to submit complaints to water and sanitation service providers. The application aims at strengthening consumer complaints handling procedures thereby increasing customer satisfaction. Complaints submitted through the platform are automatically escalated to the regulator if not resolved within the specific timeframe. Following some technical challenges faced during the period under review, NWASCO embarked on the development of a new version of the system and piloted it. .

#### 4.11 THE ZAMBIA WATER FORUM AND EXHIBITION

Zambia held its 10th Water Forum and Exhibition (ZAWAFE) from the 14th to 15th July, 2022 under the theme '*Transforming the Investment Outlook for Water Development, Sanitation and Job Creation in Zambia and Africa at large*'. The event was officially opened by the Vice President of the Republic of Zambia, who is the matron for ZAWAFE. The event was followed by the launch of the Zambia Water Investment Programme (ZIP) by the Republican President which was held on 16th July 2022. During the forum, various topical issues pertaining to water and sanitation were discussed by experts. The topics discussed were categorized in the following sub-themes:

1. Water Climate Resilient Development and Gender Transformative (WACDEP-G) Investments;
2. SDG 6 and Water-Energy-Food - Environment (WEFE) Nexus Investments;
3. Transboundary Water Investments and Integrated Water Resources Management;
4. Skills and knowledge for creation of jobs in the water sector;
5. Wastewater treatment and safe reuse for economic, social and entrepreneurial opportunities; and
6. Green infrastructure and the green economy of water-related ecosystems.





#### 4.12 REGULATORY ENHANCEMENT

##### 4.12.1 NWASCO Integrity Committee

NWASCO established an Integrity Committee under the guidance of the Anti-Corruption Commission of Zambia (ACC). The Committee comprises 5 members of staff from different departments. The Integrity Committee is an in-house vehicle used to cultivate a culture of zero tolerance to corruption in NWASCO. It is also a hallmark in management's resolve to institutionalize the fight against corruption. The team underwent an induction training hosted by the Anti-Corruption Commission.

##### 4.13 RESOURCE CENTRE ACTIVITIES

The NWASCO Resource Centre was created in 2011 as a support structure for the CUs and the sector as a whole for knowledge management and promotion of efficiency in water supply and sanitation service delivery. The resource centre has the following functions:

-  Knowledge Management;
-  Efficiency Management;
-  Capacity building; and
-  Research and Development.

The main activities undertaken by the Resource Centre were as follows:

##### 4.13.1 Student Industrial attachments and guest lectures

During the period under review the Resource Centre working with the Skills Advisory Group for Water Supply and Sanitation (SAG -WSS) attached 38 students from various trade schools and Universities to CUs for internship. The student Internship programme is aimed at supporting student to gain industrial training but in the process offers CUs well equipped human resources.

The Resource Centre conducted a guest lecture at Choma Trades Institute as part of its strategic activities to support students. The purpose of the guest lecture was to familiarize the students with the industry as well as enlighten them on the opportunities the Resource Centre and SAG-WSS provides for them.

#### 4.13.2 Corporate Governance Training for CU Boards

Corporate Governance lies at the core of successful management of any company. The CU Boards are responsible for ensuring adherence to good Corporate Governance. In order to enhance knowledge on good corporate governance, NWASCO with support from GIZ, facilitated a training for the Boards of all the 11 CUs, following their appointment. The training covered among other things financial oversight, risk management, strategic planning and stakeholder management.

#### 4.13.3 Utility Platform

NWASCO working with Cooperating Partners launched a Water Utility Platform. The Water Utility Platform is aimed at promoting knowledge exchange on good practices, peer to peer learning, mentorship and shared learning among the commercial water utilities. The Water Utility Platform is in line with the NWASCO strategic objective number 6, which seeks to promote innovation, research and development. The utility platform will among others strengthen coordination and tap into expertise of partners and create a one stop platform for addressing common issues affecting the operation of the CUs.

#### 4.13.4 Research and Development

The 6th strategic objective in the NWASCO 2021 to 2025 Strategic Plan is to coordinate and undertake research and development in order to generate innovation and information for evidence-based sector policy formulation and implementation. In line with this objective, NWASCO supported students pursuing post graduate studies in sanitation at the University of Zambia to provide empirical information on diverse sanitation topics such as occupational health and safety, pricing of OSS and FSM services for low income communities and effectiveness of OSS and FSM service and regulatory frameworks. These topics will provide a pool of information which can support and influence policy formulation on OSS and FSM service delivery and regulation.

#### 4.13.5 Water Operators Partnership

The Eastern and Southern Africa Water and Sanitation (ESAWAS) Regulators

Association has been promoting peer to peer learning among regulators. The Water Operators' Partnerships (WOPs) concept has been used as a vehicle to achieve this. The Water Operators' Partnerships are peer to peer support programmes between organisations in the water and sanitation sector. They work by pairing organisations with strengths in identified areas with those seen to be lagging behind.

During the reporting period, NWASCO got into a WOP agreement with AREEN, a multi-sectorial regulatory body in Burundi that regulates water, energy and sanitation. The mandate of sanitation was recently given to the institution resulting in the need for capacity building. As part of the agreement, NWASCO undertook a situational analysis of AREEN in order to establish the institutions capacity to regulate sanitation, particularly faecal sludge management, and identify any weaknesses that needed to be strengthened. AREEN also undertook a learning visit to NWASCO as part of the partnership. This culminated into the development of an implementation plan which was being executed.

NWASCO also signed a partnership with Public Utilities Regulatory Authority (PURA) of the Gambia whose focus is on enhancing regulatory tools and enforcement.

#### 4.13.6 Learning Visits

NWASCO hosted a number of organisations from different countries who came to appreciate the advancements made by the institution in regulation. In the reporting period, NWASCO hosted a delegations from Nigeria's Ondo State and Malindi County from Kenya and Lesotho's water and electricity regulator. The delegations' focus was to appreciate various aspects of regulation with relation to water supply and sanitation service provision.






### 4.14 SKILLS ADVISORY GROUP FOR WATER SUPPLY AND SANITATION

The Skills Advisory Group for Water Supply and Sanitation (SAG-WSS), whose secretariat is housed at NWASCO, is a government driven multi-stakeholder



committee that was formed in 2020 to coordinate skills demand and skills offer by industry and training institutions, respectively. The SAG-WSS is co-chaired by the Ministry of Technology and Science and the Ministry of Water Development and Sanitation. The membership of the SAG-WSS is drawn from the Vocational Training Institutions (VTIs), CUs, regulators, NGOs, professional bodies, associations, Cooperating Partners and the private sector.

In its quest to contribute to resolving the challenge of inadequately skilled water and sanitation professionals, inadequate coordination and linkage among the training institutions, the employers and the learners and inadequate female participation, the SAG-WSS undertook the following activities:

-  Internship programme for VTI graduates;
-  Awarding best performing female students;
-  Supporting development of short in-service training courses and skills enhancement in water quality assurance, OSS and FSM, small piped water scheme management and sanitation marketing, among others;
-  Holding 'Girls takeover' event where pupils took over selected operations at CUs to gain practical experience of WSS service provision; and
-  Holding the 'Skills day' event which was aimed at displaying and practically demonstrating critical skills required in WSS service delivery.

#### 4.15 LUSAKA WATER SECURITY INITIATIVE

The Lusaka Water Security Initiative's (LuWSI) mission revolves around multi-stakeholder engagement, collaboration, and action to achieve a water secure future. LuWSI continued to implement its 2021-2023 Strategy in the period under review. A brief of activities carried out in the year 2022 are highlighted below:

##### Governance

LuWSI was successfully registered as a Company Limited by Guarantee. This gives the Initiative a legal face and is expected to enhance its reach towards its water security agenda.



##### International Partnership Activities

##### a) **Safe Back to School Campaign – Fit for Schools Project**

The Safe Back to School Campaign has been implemented through a multi-stakeholder approach since 2020. In 2022, the campaign gained interest from an international organization known as Fit for Schools who partnered with LuWSI to support 20 schools in Lusaka District around key thematic areas such as Hygiene Behaviour Change, COVID-19 prevention through the promotion of vaccinations, Solid Waste Management and Menstrual Hygiene Management.

##### b) **Water Stewardship Programme**

LuWSI participated in a session hosted by the Water Stewardship Acceleration Forum (WaSA) on the sidelines of the 2022 World Water Week in Stockholm that showcased successful cases of partnerships around water stewardship. LuWSI was lauded as one of the most successful cases in the world. The session also provided opportunities for learning and engagement of new potential partners.

##### c) **Local Governments for Sustainability (ICLEI) Africa**

Since 2021, LuWSI partnered with ICLEI Africa to implement the Scaling-up and Empowering Movements for Climate Change Advocacy (SEMCCA) – a project aimed at accelerating partnerships and collaboration between civil society and local governments in delivering climate resilience in cities. During the year under review, the partnership delivered learning labs and webinars on various topical issues around climate change advocacy. The partnership also delivered a policy brief on enhancing grassroots participation and accountability in the quest to achieving water security.

##### d) **9th Afri-Cities Summit, Kenya**

LuWSI was represented by the Mayor of Lusaka City at the 2022 Afri-Cities summit in Kenya whose aim was to advance decentralisation and local governance for improved living standards of the citizens. The event provided an opportunity for LuWSI to showcase and benchmark its activities with like-minded initiatives. During the event, Lusaka City was matched with some cities

in Morocco and 4 other cities supported by UN-Habitat to tackle issues around climate change, water supply and sanitation, and solid waste management.

#### e) **FRACTAL – plus**

LuWSI continued to partner with FRACTAL under the FRACTAL –plus project and co-facilitated two learning labs that interrogate evidenced and explored diverse perspectives on the present and future flooding risks for Lusaka. The learning labs brought together various stakeholders including scientists, local authorities, community residents and leaders as well as environmentalists.



#### Local partnership Activities

#### a) **Solid Waste Management Programme**

The solid waste management programme took off in 2022 with partners such as Chilanga Cement, Lusaka City Council, JICA, GIZ and the Worldwide Fund for Nature (WWF) supporting effective management of solid waste in Lusaka through a multi-stakeholder approach. One of the components of the programme involves a waste to energy initiative that will see various types of waste being incinerated to produce energy for industrial use.

To garner even more momentum and sensitise a wide range of stakeholders on the programme, LuWSI facilitated a discussion forum that included panelists from the Zambia Environmental Management Agency (ZEMA), Chilanga Cement Plc, Lusaka City Council, Massive Dynamics and Sunshine Group – Zambia.

#### b) **Water and Environmental Stewardship programme**

As a way of promoting sustainable interventions that enhance stewardship among CUs and private sector companies on water and the environment, LuWSI undertook capacity development on water stewardship and non-revenue water for all water utilities and selected private sector companies. The training was followed by a call for applications to showcase best practices around water and environmental stewardship by the different players which was concluded with award ceremonies during the NWASCO sector report launch and the ZACCI gala for the CUs and private sector.

#### c) **Kafue Flats Joint Action Group**

LuWSI continued to support the coordination of activities under the Kafue Flats Joint Action Group (KFJAG) – an initiative anchored on the protection and conservation of the Kafue Flats ecosystem and biodiversity within and around it. Activities embarked on during the year included tree planting along the Kafue River banks, a learning visit to the Kafue Flats, the development of the KFJAG Constitution and Action Plan and hosting of an Annual General Meeting.

#### d) **Community Sensitisation Programmes**

One of the function areas of LuWSI is to improve understanding among stakeholders on water security threats through awareness raising and education. As such, the Initiative undertook a number of activities to create awareness at household level in Chaisa and Kaunda Square Townships of Lusaka, school level and institutional level on topical issues that included COVID - 19 resilience enhancement, solid waste management, water resource protection and non-revenue water management. Other mechanisms of education and awareness creation were radio programmes and discussion forums.



#### Membership Growth

LuWSI's value and relevance continued to be reflected through its increase in membership from 31 to 33 partners. The organisations that came on board were Center for Water, Sanitation and Rehabilitation (WaSAREC) and the Adventist Development Relief Agency (ADRA).



#### Knowledge and Information Management

LuWSI and its partners NWASCO, BGR and GIZ developed a knowledge and information management repository which also hosts a digital atlas and story maps that were developed through the Water Security Action and Investment Planning (WSAIP) process. The repository has been created as a one-stop hub for WASH sector information to facilitate informed decision making and planning in the water and sanitation sector.



Pumps at water treatment plant



5

## WATER SUPPLY AND SANITATION SECTOR FINANCING



## 5.1 INTRODUCTION

Water and sanitation financing is one of the critical areas that need urgent attention as the country aspires to meet SDG target No. 6; to ensure availability and sustainable management of water and sanitation for all by 2030.

## 5.2 SECTOR PROGRAMMES

Zambia has WASH policies supported by national plans, programmes and/or strategies. However, there are insufficient financial resources to implement these plans. The Ministry of Water Development and Sanitation has three major programmes that articulate the water and sanitation investment requirements which are the National Urban Water Supply and Sanitation, the National Rural Water Supply and Sanitation and the Zambia Water Investment Programmes. The programmes also articulate the modalities to be used to mobilise the required financial resources to implement them.

### 5.2.1 National Urban Water Supply and Sanitation Programme

The National Urban Water Supply and Sanitation Programme (NUWSSP) is a holistic and integrated plan that covers the period 2011 to 2030 and aims at improved livelihood and health of the urban population in Zambia. The NUWSSP consists of a coherent set of institutional and sector support activities aimed at developing and sustaining water supply, sanitation, solid waste management and drainage infrastructure and services in the urban areas of Zambia. The plan stipulates a total investment requirement of ZMW73.46billion (US\$4.081billion). The sources of financing the programme include user charges, government grants, commercial loans, cooperating partners and public private partnerships.

### 5.2.2 National Rural Water Supply and Sanitation Programme

The 1st National Rural Water Supply and Sanitation Program (NRWSSP) was developed for the period 2006-2015 to guide water supply and sanitation interventions in the rural areas. The overall goal of the 1st NRWSSP was to provide sustainable access to water supply and sanitation in rural areas so as to facilitate the achievement of the Millennium Development Goals (MDG)

for water and sanitation and to contribute towards poverty alleviation of Zambia's rural population. The overall cost of the NRWSSP 2006-2015 was ZMW5.26billion (US\$292million). The programme was to be financed by the beneficiary communities, GRZ, NGOs and Cooperating Partners.

The 2nd programme was developed for the period 2019-2030 following the expiry of the earlier one. The overall objective of the programme is to ensure sustainable and equitable access to safe water supply and adequate sanitation to meet basic needs for improved health and poverty alleviation among Zambia's rural population in line with the Vision 2030 and the SDGs. The total budget of the programme is ZMW31.86billion (US\$1.77billion). The sources of financing for the programme are the Government and Cooperating Partners through a basket fund.

### 5.2.3 Zambia Water Investment Programme

The Zambia Water Investment Programme (ZIP) 2022-2030 was formulated in 2022 as a vehicle for the implementation of the National Development Plans to support the attainment of the vision 2030. The primary objective of the ZIP is to enable the mobilization of investments for water supply and sanitation service delivery among others with the aim of improving the investment outlook for water security and sustainable sanitation.

The ZIP has stipulated an investment requirement of US\$5.75billion between 2022 and 2030 for water security investments and job creation. It is expected that the required level of financial resources will be mobilized primarily through grants, concessional loans, PPPs and equity.

## 5.3 EXPENDITURE REQUIREMENTS

The water and sanitation sector requires not only huge capital investments but also financial resources for operation and maintenance. The Zambia Water Investment Programme which was launched in July 2022 has estimated an investment requirement of ZMW103.5billion (US\$5.75billion) in the next 8 years (2022 -2030) if the vision 2030 is to be realised. This translates into an average annual investment requirement of ZMW12.94billion (US\$718.8million)



with government contribution of ZMW2.43billion (US\$135mil). The 2022 national budget only covered 20% of the investment required. Similarly, the 2023 national budget, has only allocated K2.41billion (about US\$134million). This means that there is a backlog in investments.

## 5.4 FINANCING MECHANISM

Government will enhance mobilisation of both domestic and external resources to develop water supply and sanitation infrastructure in the country. In order to attain universal coverage of water supply and sanitation services as espoused in the Vision 2030, the sector requires about ZMW102.6billion (US\$5.7billion). Mobilising such resources requires concerted efforts from the Government, cooperating partners, the private sector and beneficiaries (service providers) through a basket fund. A basket fund is a mechanism for pooling financial resources from different sources to support the attainment of common objectives. Basket funds do not only ensure availability of resources but also ensure adequacy in the allocation of resources for priority areas.

The Ministry of Water Development and Sanitation is in the process of developing a basket financing mechanism as a way of strengthening implementation of water and sanitation activities through harmonisation of financial contributions in the sector. This will not only help reduce the financial gap but will also assist in prioritising resource utilisation. It is envisaged that the sources of financing will typically be governments through taxes, donors through transfers and the beneficiaries through tariffs.

### 5.4.1 Taxes

The Minister of Finance and National Planning unveiled a K167.3billion (US\$9.294billion) 2023 national budget themed '*Stimulating Economic Growth for Improved Livelihoods*'. The 2023 national budget was delivered amid high expectations for the water supply and sanitation sector following the launch of the Zambia Water Investment Programme (ZIP) by his Excellency the President of the Republic of Zambia in July 2022.

The 2023 national budget was also presented against the backdrop of the

COVID-19 pandemic that almost paralysed the entire economy and the water and sanitation sector in particular, due to supply chain disruptions, loss of lives and incomes as well as escalated disease burden.

A total of K2.4billion (US\$134million) was allocated towards water supply and sanitation services in the 2023 budget. This represents an increase of 9% compared to the 2022 allocation of K2.2 billion (US\$122.22million). This allocation was mainly to facilitate;

- the completion of the Kafulafuta Dam Project under KWSC;
- counterpart funding for the Lusaka Sanitation Project under, LWSC;
- completion of the Integrated Small Towns Water Supply and Sanitation project under Chambeshi, Western and Luapula WSCs;
- completion of the Transforming Rural Livelihoods in Western Zambia under WWSC;
- completion of the Nkana Water Supply and Sanitation Project under NWSC; and
- completion of the Zambia Water and Sanitation Project under MWSC.

Despite the increase in the proportion of the WASH budget to the national budget from 1.27% to 1.44%, this was still very low considering the immense needs of the sector as shown in Chart 18.

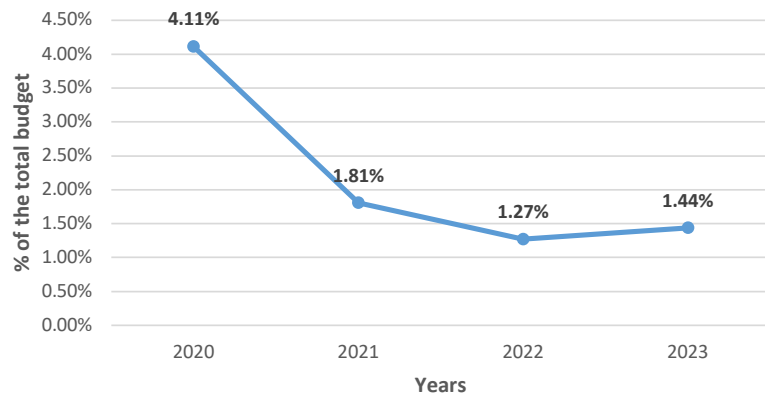
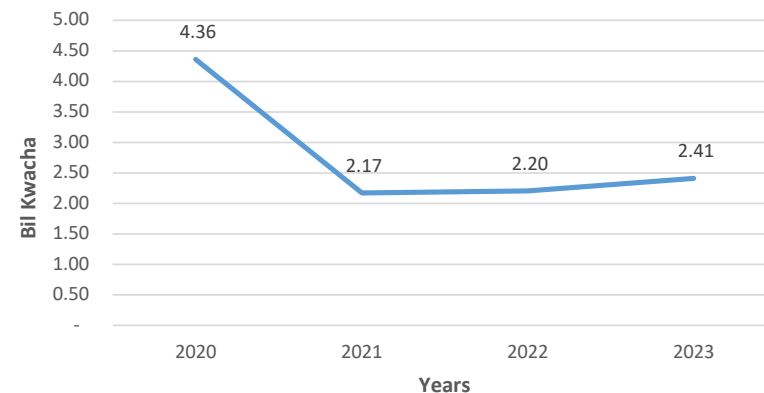
**Chart 18: Share of WASH Budget of the National****Chart 19: National WASH Budget Trends**

Chart 19 shows the trends in the water supply and sanitation sector budgets. The water sector budget declined by 50% in 2021, before recording a minimal increase of 1.38% in 2022. An increase of 9.5% was provided in the 2023 national budget which translates into an increase of ZMW205.64million (US\$11.424). This allocation is still very low considering the huge financing requirements in the sector of ZMW12.94billion (US\$718.75million) per annum.

The national budget should not only have indicated concrete measures to raise the annual investment requirements to finance the investment programmes through taxes, but ought to have also indicated how the backlog from previous years would be covered.

The budget allocation to the sector has been predominately dedicated towards water supply and sanitation projects, particularly to cover counterpart funding for the transfers received from Cooperating Partners. While this is a good move in ensuring that there is infrastructure development to enable the country meet the vision 2030 and SDG 6, there is need to strike a balance between spending on capital outlays and operations and maintenance in order to maintain the existing and new water supply and sanitation facilities.

#### Other sources of budget financing

##### **i. Constituency Development Funds (CDF)**

The allocation for CDF was increased from K25.7million to K28.3mil per

constituency with an indication that priority should be put on improving water and sanitation service delivery in communities. In order to ensure firm commitment of part of the CDF funds towards water and sanitation, a minimum threshold (in %) of the CDF funds should be provided for sanitation interventions, in line with the aspirations of the Zambia Water Investment Programme which seeks to leverage on CDF as a source of funding.

## ii. Value Added Tax

Although the water and sanitation sector is considered a social sector, it has huge potential to contribute towards economic development by ensuring that services are available for other sectors to thrive and also job creation particularly in the rural areas.

Consideration should be made to zero rate water supply and sanitation services in order to reduce the costs of water supply and sanitation service provision. This will help to mitigate the financial challenges faced by CUs in their quest to deliver adequate and quality services to all.

## iii. Customs Duty

Providing a relief on customs duty will lower the cost of water supply and sanitation service provision thereby reducing the funding gap and enabling affordable access to services. Consideration should be made to waiver customs duty on imported inputs such as water pumps and machinery, water treatment chemicals and pre-fabricated water treatment plants.

## 5.4.2 Transfers

Over 80% of sector financing is through transfers from Cooperating Partners. These are mainly in form of concessional loans and grants. In the reporting period, the WSS sector continued to receive support through transfers owing to good relations with various Cooperating Partners. Key to receiving support from Cooperating Partners was the aspect of good corporate governance.

In the period under review, the WSS sector strived towards implementing tenants of good corporate governance as seen from the appointment of boards

in all CU's and NWASCO and training thereof in Good Corporate Governance. This has provided a strong basis to attract support as it promotes accountability and mitigates the risk of misapplication of funds.

## 5.4.3 Tariffs

The water supply and sanitation sector in Zambia has been guided by the seven sector principles enshrined in the National Water Policy of 1994, which was revised in 2020. NWASCO is an implementing agency for the WSS Act No. 28 of 1997 including all policy matters relating to WSS to ensure efficiency and sustainability of service delivery. The fourth sector principle states: *'Achievement of full cost recovery for the water supply and sanitation services through user charges in the long run'*. This principle implies that the user pays the full cost of service delivery.

Since 2000, NWASCO has approved upwards tariff adjustments for the CUs pursuant to this principle. However, the progress towards full cost recovery has been slow. Full Cost Recovery aims at ensuring that the WSS service providers are able to cover at least the cost of Operation & Maintenance (O&M) and in the long run, cover the cost of capital investments.

The starting point when considering cost recovery is to have a clear definition of costs and a mechanism to ensure that only justifiable costs are considered. The definition of full cost recovery adopted by NWASCO is O&M costs including depreciation and finance costs as well as necessary provisions such as terminal benefits.

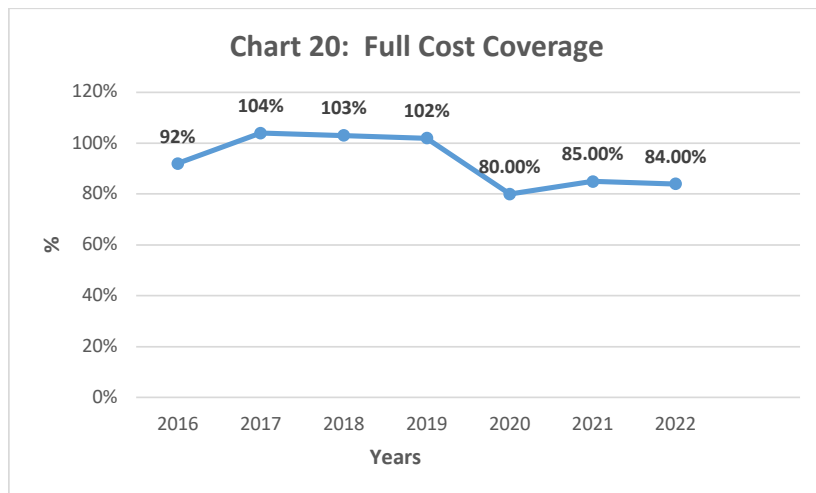
NWASCO uses a cost plus method to set water supply and sanitation tariffs. The key consideration of cost-plus regulation is that it allows NWASCO to balance the competing objectives of affordability of the service to the customers and financial sustainability of service provision while allowing the utility a degree of flexibility to effectively conduct business.

NWASCO has adopted a tariff structure that takes into consideration different consumer categories for water and sanitation namely; domestic, institutional, commercial and public water points (kiosks). This is done through a rising

block tariff structure except for public water points where a flat volumetric tariff is applied.

The water supply and sanitation sector in Zambia is labour intensive, hence the main and the most predictable cost driver for water supply and sanitation service delivery is labour. This is followed by energy and chemicals that are mainly influenced by currency fluctuations making them very unpredictable.

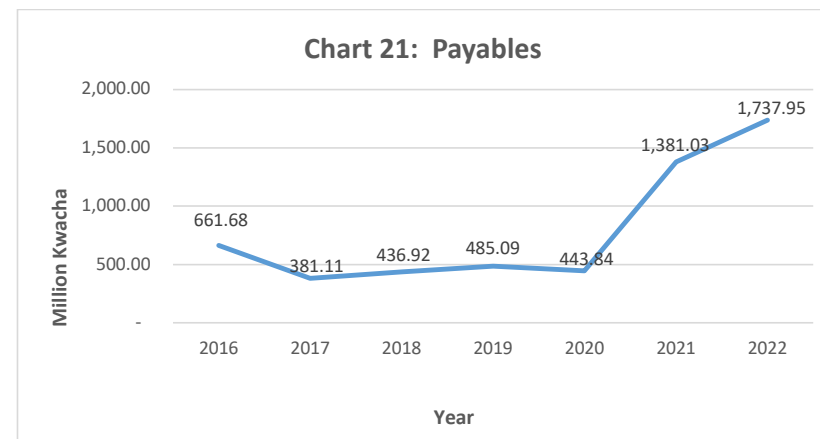
The sector had been making steady progress towards full cost recovery over the years owing to the upwards water supply and sanitation tariff adjustments effected annually in the past as shown in Chart 20. However, the CUs have not had an upwards tariff adjustment since 2020, despite increases in the cost of service provision particularly electricity, water treatment chemicals, fuel as well as volatility in foreign exchange and inflation rates. The trends in cost coverage can be seen in Chart 20. The cost coverage in 2022 dropped slightly to 84%.



In 2020, NWASCO approved upwards tariff adjustments for all the 11 CUs covering the period of 2020 to 2022. The average approved adjustments

across all the 11 CUs was 22.4% for water supply and 25.3% for sanitation. This translated into a maximum increase of K2 per cubic meter for water and K1 per cubic meter for sanitation for domestic customers.

However, the approved tariff adjustments were not implemented. Failure to increase tariffs in 2020 eroded the gains made in the sector as far as cost recovery is concerned as can be noted from Chart 21. The full cost coverage by total revenue dropped from 102% in 2019 to 84% in 2022. The failure to increase the tariffs also resulted in failure by the CUs to meet statutory and non-statutory obligations as they fell due i.e. supplier obligations, terminal benefits, PAYE, NAPSA, electricity and salaries. This contributed significantly to an increase in the CUs payables from ZMW485.09 in 2019 to ZMW1,737.95 in 2022 as shown in Chart 21.



Failure to implement cost recovery tariff contributed to the following:

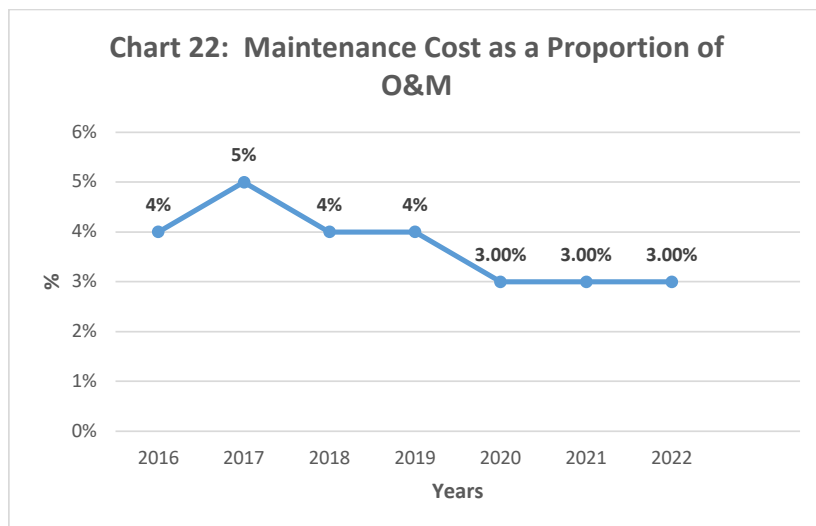
- i. Compromise in service- this can be noted in the;
- b). reduction in hours of water supply from 18 hours in 2020 to 17 hours in 2022.

- c). failure to expand networks to cater for unserved areas; and
- d). non-compliance to water quality standards

v. Neglecting Maintenance

vi. A surge in demand by the CUs for financial assistance from the Government to cover O&M related costs such as repair of equipment, maintenance of networks, salaries and terminal benefits.

The CUs have overtime been reducing the maintenance costs to accommodate other cost elements such as chemicals and electricity. This has resulted in failure to repair and replace dilapidated water supply and sanitation infrastructure as well as equipment. As such, the number of water supply interruptions due to system break down and pump failures has increased. The trend in maintenance costs is shown in Chart 22.



The absence of cost recovery tariffs for water and sanitation service provision increases the burden on government to cover the deficit. At the current level of

the tariff, government should provide operation grants to the CUs to cover the annual deficit which is estimated at about K2.7billion.

## 5.5 CONCLUSION

Financing of the water supply and sanitation sector is a coordinated interplay of Taxes, Transfers and Tariffs (3Ts). The proportional contributions from the 3Ts must be carefully determined and appropriately allocated. The Government should endeavor to increase the budget allocation to the water supply and sanitation sector. Water supply and sanitation tariffs should be progressively increased towards full cost recovery while ensuring improved efficiency in service provision. The role of the private sector in financing water supply and sanitation investments has been recognized in all the sector programmes. Therefore, there is need to ensure that an enabling environment for Public Private Partnerships (PPPs) is created. Additionally, there is need for exploring new sources of finance such Trade and better use of existing sources to make universal access to WSS a reality.



Metering enables customers to pay according to consumption.





Water treatment plant



6

## PROGRESS ON MEETING SERVICE LEVEL AGREEMENTS AND ADHERENCE TO SERVICE LEVEL GUARANTEES



## 6.1 INTRODUCTION

To ensure that CUs give a progressively better service to their customers, NWASCO has formulated guidelines on Minimum Service Levels (MSL). MSLs are simply standards which define the acceptable minimum level of service which providers must achieve over a specified timeframe. The guidelines have eleven indicators (shown in Table 17) used to set Service Level Guarantees (SLGs) and Service Level Agreements (SLAs). SLGs compel CUs to provide a certain agreed-upon minimum level of service to their customers at any given time while SLAs set-out stepwise interventions that a CU will undertake to attain the desirable sector benchmarks of service provision normally every after 3 years. It is a requirement that SLGs are displayed at all customer service points for the information of the public.

As a license condition issued under the WSS Act No. 28 of 1997, all water and sanitation service providers are required to formulate and maintain SLGs and SLAs which NWASCO monitors.

The service indicators have timeframes (measured from commencement of operations of a particular Utility) within which they are to be attained and it is thus important to determine the progress made by the CUs towards attaining the acceptable benchmarks. The eleventh indicator is support to institutions which is not measurable.

**Table 17: Service Level Indicators (SI)**

	SERVICE INDICATOR	MEASUREMENT
SI 1	Coverage of the Service Area	% of population served with drinking water and sanitation.
SI 2	Drinking Water Quality	No. of tests carried out and test results within the national standards for drinking water.
SI 3	Service Hours	Water supply hours per day and hours to attend to customers per week.
SI 4	Billing for Services	Billing, meter reading sequences, conditions for payment of bills by the customer.
SI 5	Client Contacts	Complaints from clients, the response time on any other contacts with customers.
SI 6	Interruption of Water Supply and Blockage of Sewer	Unplanned interruption of supply or sewer evacuation due to maintenance and repair work
SI 7	Pressure in the Network and Minimum Flow Rate at the Customer Point for Water Supply	Minimum flow rate of 7 litres/min required at customer connection
SI 8	Unjustified Disconnections	No. of unjustified disconnections and the compensation to be paid by the provider to the customer
SI 9	Sewage Flooding	The number of times sewage floods a connection per year <0.5
SI 10	Quality of Discharged Sewage	In terms of BOD <sub>5</sub> , COD, Nitrates, Phosphorous, etc
SI 11	Support to Public Institutions to Curb Wastage and Settle Bills Promptly	Activities put in place by the water and sanitation providers.

## 6.2 PROGRESS MADE IN ACHIEVING SERVICE LEVEL AGREEMENTS AND ADHERENCE TO SERVICE LEVEL GUARANTEES

Service Level Agreements/ Guarantees are signed for specific towns under each CU. Every town has its own target for the three-year period in the SLA that enables the CU progress towards the acceptable benchmark. The analysis therefore considers achievement of individual targets such that failure in one town may translate into overall non-achievement of the Service Indicator.

Key:	✓	Achieved	x	Not achieved
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### SI 1 Service Coverage – Proportion of population serviced with water

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	✓	✓	x	x	x	x	x	x	x	x	x
SLA	✓	✓	x	x	x	x	x	x	x	x	x

Water service coverage is influenced by the growth in number of domestic connections and population in the service areas.

Although all CUs increased number of domestic connections, only LWSC and NWSC met both the SLG and SLA targets.

KWSC planned to meet their targets through network extensions under Kafulafuta Water Supply Project which however was suspended in the year under review. MWSC did not meet their target for Chingola as the expected improvement in Chingola South through the water network extension project was not completed. Generally, CUs lacked resources for network extensions to unserved areas.

### SI 2 Drinking Water Quality – Assessment through compliance to Water Quality Monitoring Guidelines

Due to its impact on the health of consumers, CUs are required to guarantee their customers an overall compliance of 95%. This indicator focuses on factors likely to influence test results, the number of tests conducted and compliance of results to the standards for drinking water without considering the 10 integrity parameters under ISO 17025.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	✓	✓	x	x	x	x	✓	x	✓	x
SLA	x	✓	✓	x	x	x	x	✓	x	✓	x

Three CUs namely MWSC, WWSC and LPWSC had compromised some aspects of ISO/IEC 17025, which emphasises on factors likely to influence the correctness of test results.

LWSC experienced significant failures in chlorine residual and bacteriological tests in addition to conducting fewer tests than required for two parameters. The CU experienced frequent failures of their chlorine dosing equipment and had ineffective filters to adequately address turbidity. MWSC and SWSC experienced high turbidity cases in a number of their districts. CHWSC's second quarter results were rejected for integrity reasons, therefore conducting less tests than required.

For further analysis of compliance to integrity parameters, see section 7.2.2.1

### SI 3 Service Hours- water supply hours per day and hours to attend to customers per week

This service indicator depicts the average duration of water supply at the customer connection and is specific to an area. In addition, CUs are also expected to have offices accessible to customers for a minimum number of hours per week.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	√	x	x	x	√	√	x	x	x	√
SLA	x	x	x	x	x	x	x	x	x	x	x

Despite the improvements in supply hours in a number of areas in Lusaka as a result of the commissioning of the Kafue Bulk Project, LWSC still had other areas experiencing low supply hours where the CU did not meet the agreed targets. MWSC faced the challenge of raw water availability which was pumped from the KCM raw water intake. The blocking of water pipes in Petauke District under EWSC mainly due to water hardness caused by calcium deposits continued to worsen and affected water supply in the district.

KWSC continued to experience high water losses due to dilapidated networks. NWWSC did not meet this target due to frequent shut downs caused by pump failures and high turbidity levels of raw water. Similarly, LGWSC and WWSC had frequent shut downs caused by equipment failures.

None of the CUs managed to achieve targets enshrined in their SLAs.

**SI 4 Billing for Services – Billing, meter reading sequences, conditions for payment of bills by the customer and metering ratio**

The billing for services indicator specifies the frequency at which CUs should read customer meters and distribute bills, the conditions related to payments of bills by customers and the number of customers with water meters

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	x	x	√	x	x	x	x	x	√	x
SLA	x	x	x	√	x	x	x	x	x	√	x

As all CUs have already met the indicators related to billing and payment conditions, the analysis in this section focuses on metering.

Previously 100% metered, NWWSC and LPWSC lost that status due to failure to replace faulty meters and connecting new customers without meters. CUs indicated that they had limited financial resources to procure meters hence failed to meet their targets under this service indicator.

**SI 5 Client Contacts - Complaints from clients, the response time on any other contacts with customers**

This service indicator specifies the timeframes CUs are expected to take to respond to customer complaints or any other contacts with customers.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	√	√	√	√	√	√	√	x	√	x	√
SLA	√	√	√	√	√	√	√	x	√	x	√

Most CUs managed to resolve complaints presented to them within the stipulated timeframes save for NWWSC and EWSC. The majority of complaints reported in the period related to leakages, billing, water supply interruptions and time taken to connect new customers.



<b>SI 6</b>	<b><u>Interruption of Water Supply &amp; Blockage of Sewer - Unplanned interruption of water supply or sewer diversion due to maintenance or repair</u></b>
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The service indicator reflects the proportion of the population in the CUs' service area that is subjected to interruptions in water supply or blockage of sewer for a specified duration

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	√	√	x	√	√	x	x	x	√	x
SLA	x	√	√	x	√	√	x	x	x	√	x

CUs experienced unplanned interruptions of water supply and blockage of sewer lasting more than 20 hours for various reasons as detailed in Section 7.2.2.2.

**SI 7 Pressure & Flow in the Network for Water – Minimum flow rate of 7 litres/min required at customer connection**

Pressure and flow in the network for water service indicator specifies the maximum acceptable proportion (<5%) of connections in a service area with water flow rate of less than 7 litres per minute.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	√	√	√	√	√	√	√	√	√	√	√
SLA	√	√	√	√	√	√	√	√	√	√	√

In the reporting period, the pressure challenges encountered were within the acceptable limit.

**SI 8 Unjustified Disconnections – No. of unjustified disconnections and the compensation paid by the provider to the customer**

This service indicator specifies the maximum acceptable proportion of the total connections for a CU that should be subjected to unjustifiable disconnections which is less than 0.2% of the customer base.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	√	√	√	√	√	√	√	√	√	√	√
SLA	√	√	√	√	√	√	√	√	√	√	√

Consumers who are unjustifiably disconnected from their water and sanitation services are entitled to a written apology and/ or compensation equivalent to one month's billing. Consumers have the right to be heard and explained to in case they have misunderstandings with their billing. There were no significant numbers of unjustifiable disconnections reported in the period.

**SI 9 Sewage Flooding – The number of times sewage floods a connection per year < 5**

The Sewage Flooding service indicator specifies the maximum acceptable proportion of connections that can be flooded with sewage in a year which is less than 0.5% of the total connections.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	√	√	x	√	√	√	√	√	√	√
SLA	x	√	√	x	√	√	√	√	√	√	√

MWSC experienced flooding in a number of areas owing to aging infrastructure

and vandalism of sanitation facilities such as manhole covers.

#### **SI 10 Quality of Discharged Sewage – In terms of BOD<sub>5</sub>, COD, Nitrates, phosphorus, and others.**

CUs are expected to treat sewage in line with the ZEMA regulations for effluent discharge in terms of number of tests conducted and compliance to the standards.

	LWSC	NWSC	KWSC	MWSC	LGWSC	SWSC	CHWSC	NWWSC	WWSC	EWSC	LPWSC
SLG	x	x	✓	x	✓	✓	N.R	x	N.R	✓	N.R
SLA	x	x	✓	x	✓	✓	N.R	x	N.R	✓	N.R

Non-compliance to sewage effluent discharge into the aquatic environment is considered using a number of factors and these include the quality of receiving waters, the volume of discharge and adherence to the standards (limits) of effluents and wastewater as per ZEMA regulations. This section assesses the CUs' compliance to the latter.

LWSC, NWSC, MWSC and NWWSC were non-compliant to the standards for sewage effluent discharges as required by ZEMA. CHWSC, WWSC and LPWSC had no effluent from their sewage treatment plants.

### **6.3 CONCLUSION**

Liquidity challenges for CUs continued to affect their ability to maintain their Service Level Guarantees, let alone meet their Service Level Agreements. This was evident in the Service Indicators that performed badly because of the significant investments required to record improvements. These were water coverage, drinking water quality, hours of supply and billing for services.



Manual Pit emptier ensuring safe disposal of human waste.



## COMPARATIVE PERFORMANCE OF COMMERCIAL UTILITIES



## 7.1 OVERVIEW

The comparative performance of Commercial Utilities (CUs) during the period, 1st January to 31st December, 2022 is presented in this chapter.

Performance analysis is undertaken to establish where a Utility is coming from (past trends), how it has performed against others (comparative performance) and how it has performed against good practice (acceptable performance/benchmarks).

Comparative performance is necessary to induce competition as CUs operate as monopolies in their respective areas. Each CU is thus, motivated to improve on its previous performance, as well as, outperform others.

The comparative information can be used by consumers and other key stakeholders to appreciate the performance and challenges of their respective service providers. Other key stakeholders such as Government and Cooperating Partners may also use the information to plan appropriate interventions.

### 7.1.1 Total Population in the Service Areas of Commercial Utilities

There are eleven licenced Commercial Utilities operating in Zambia. A CU is licenced to operate in the entire district. However, this chapter only covers urban and peri-urban areas within the district. Each CU services an entire province except for the Copperbelt Province which has three CUs operating in three districts each while Muchinga and Northern Provinces are serviced by a single CU.

The total population in the CU serviced areas for the reporting period was estimated at 8.03 million. This may differ from that reported by the Zambia Statistics Agency (ZSA) because of the difference in the delineation of rural and urban areas. Some of the CUs' licenced operating areas overlap with what is defined as rural by ZSA. For example, ZSA classifies districts such as Manyinga in North-Western Province, Masaiti on the Copperbelt Province and Mwense in Luapula Province as almost entirely rural, yet these are part of the CUs' serviced areas.

Out of the 8.03 million estimated urban population, less than 1% reside in areas serviced by four Private Schemes which are business entities that provide WSS services as a fringe benefit to their employees.

### 7.1.2 Clustering of Commercial Utilities

CUs are clustered according to size, based on the water production volumes and number of connections in the licenced areas as shown in Table 18. Clustering allows the performance of CUs to be compared in the context of similar sized Utilities.

CUs with more than 50,000 connections and water production above 50million m<sup>3</sup> per year are placed in Cluster 1. CUs with connections between 20,000 and 50,000 and water production between 10million and 50million m<sup>3</sup> per year are in Cluster 2. CUs with connections less than 20,000 and production less than 10million m<sup>3</sup> per year are in Cluster 3. As the CUs grow in size, the limits set for the cluster could be revised. MWSC remained in cluster 1 as it remained within the threshold, despite the drop in water production that was as a result of raw water availability challenges at Konkola Copper Mines. And despite SWSC's big number of connections, it remains in cluster 2 owing to the huge difference in production volumes when compared to Utilities in Cluster 1.



Clean and safe water supply

Table 18: Clustering of CUs

Cluster	CU	Total Population in Service Area	No. of connections	Water Production (Million m3)
1	LWSC	3,012,425	134,807	106.1
	NWSC	901,756	74,882	53.9
	KWSC	810,273	70,915	61.5
	MWSC	597,318	61,197	30.3
2	LGWSC	481,163	11,836	3.9
	SWSC	549,062	65,482	21.9
	CHWSC	505,917	32,721	12.8
3	NWWSC	306,540	19,220	6.7
	EWSC	350,574	27,616	6.5
	WWSC	253,289	16,784	8.3
	LPWSC	266,044	32,126	14.3
<b>TOTAL</b>	<b>11 CUs</b>	<b>8,034,361</b>	<b>547,586</b>	<b>326</b>

## 7.2 PERFORMANCE ANALYSIS

CU performance is measured in the following five broad categories of indicators:

- i. Operational
- ii. Financial
- iii. Staff Efficiency
- iv. Service Level
- v. Corporate Governance and Management

### 7.2.1 Operational Indicators

The effectiveness and efficiency of a CU in providing water and sanitation services is assessed using operational indicators. These comprise Water and Sanitation Coverage, Non-Revenue Water (NRW), Metering Ratio, Energy Efficiency and Maintenance Efficiency. The primary data used in calculating operational indicators include number of connections, population, water production figures, number of meters energy usage and maintenance works.

#### 7.2.1.1 Total Connections

The total number of water connections increased by 19,918 in the reporting period. The bulk of this increase was attributed to domestic connections which increased by 17,999 while non-domestic increased by 1,919.

The highest increase in the number of connections was by LWSC with 4,657. Other CUs that made notable new connections were ChWSC, LPWSC and EWSC with 2,740, 2,564 and 2,473 respectively.

Table 19: Total Connections

	Total Domestic 2022	Total Non-Domestic 2022	Total Connections 2022	Total Connections 2021
LWSC	119,555	15,252	134,807	130,150
NWSC	71,199	3,683	74,882	72,963
KWSC	67,959	2,956	70,915	69,530
MWSC	57,487	3,710	61,197	60,423
LGWSC	30,089	2,037	32,126	31,268
SWSC	62,202	3,280	65,482	64,870
CHWSC	30,367	2,354	32,721	29,981
NWWSC	17,892	1,328	19,220	18,771
WWSC	15,600	1,382	16,982	15,495
EWSC	25,641	1,975	27,616	25,143
LPWSC	11,152	684	11,836	9,272
<b>Total</b>	<b>509,143</b>	<b>38,641</b>	<b>547,784</b>	<b>527,866</b>



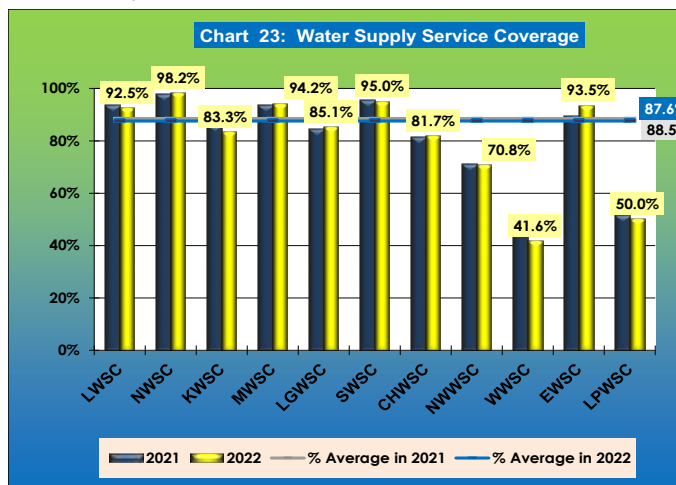
### 7.2.1.2 Water Supply Coverage

Water coverage represents the proportion of population serviced by domestic connections through individual household connections, kiosks, public stand posts and shared taps.

It is important to note that due to increases in population figures, the coverage in percentage terms may not depict the actual growth in people served. Therefore, Chart 23 and Table 19 show the water supply coverage in percentage and absolute terms, respectively.

<b>Benchmark for service coverage (water supply and sanitation)</b>	Good	100%
	Acceptable	95% - 99%
	Unacceptable	<95%

The acceptable benchmark for water coverage for the period 2021-2025 is 95%. This will be adjusted to 100% for the period beyond 2025 in order to align to the national aspirations of universal coverage for water supply.



There was a slight decline in the water coverage by the CUs which was recorded at 87.6%. This was mainly due to the increase in population that was not matched with the increase in a number of domestic connections. Some CUs such as LWSC had malfunctioned kiosks removed from the computation of coverage. However, there was an addition of 123,117 people that accessed safe water supply. NWSC and SWSC were still the only CUs that met the acceptable benchmark of 95%.

### 7.2.1.3 Water Coverage Ratio of household connections to Kiosks/Public Stand posts

It is desirable that CUs serve the population through individual connections. Kiosks/public stand posts should ideally be a stop-gap measure in consideration of affordability of individual connections. They are also used as an alternative mode of service provision where it is not feasible to lay a network for individual connections such as unplanned high density (peri-urban) areas.

The proportions of persons served by individual household connections to that of kiosks and/ public stand posts did not change significantly in the period under consideration as shown in Table 20.

The water supply coverage depicted in Chart 23 has been broken down to reflect access to the low income households which are predominately served through kiosks/public stand taps. Table 20 shows access by the different service levels (household connections vs public taps).

**Table 20: Water Coverage Proportions**

	Total Population 2021	Population Served 2021	Proportion of Population Served by Household Connections 2021	Proportion of Population Served by Public Standposts & Kiosks 2021	Total Population 2022	Population Served 2022	Proportion of Population Served by Household Connections 2022	Proportion of Population Served by Public Standposts & Kiosks 2022
LWSC	2,924,716	2,740,603	37.8%	62.2%	3,012,425	2,786,596	38.8%	61.2%
NWSC	889,307	872,720	72.5%	27.5%	901,756	885,273	73.0%	27.0%
KWSC	791,548	680,704	89.8%	10.2%	810,273	674,906	92.4%	7.6%
MWSC	581,907	545,579	78.3%	21.7%	597,318	562,401	76.9%	23.1%
LGWSC	473,128	400,819	43.1%	56.9%	481,163	409,590	43.4%	56.6%
SWSC	530,751	507,089	89.4%	10.6%	549,062	521,549	88.8%	11.2%
CHWSC	489,458	398,675	56.8%	43.2%	505,917	413,517	57.1%	42.9%
NWWSC	301,416	214,833	50.3%	49.7%	306,540	216,903	51.4%	48.6%
WWSC	246,877	115,593	95.2%	4.8%	253,289	105,447	92.8%	7.2%
EWSC	341,827	314,421	52.0%	48.0%	350,574	327,792	54.5%	45.5%
LPWSC	237,160	122,845	65.3%	34.7%	266,044	133,024	77.5%	22.5%
Total	7,808,095	6,913,881	58.2%	41.8%	8,034,361	7,036,998	59.0%	41.0%

In the past three years, LWSC and LGWSC continued to have less than 50% of the proportion of the population served by individual connections. This implies that the majority of people in these CUs have basic access to water mainly through kiosks/public water points and may even have 'limited' access depending on the distance and/or time taken to draw water. The desirable trend is to have more people served by individual connections.

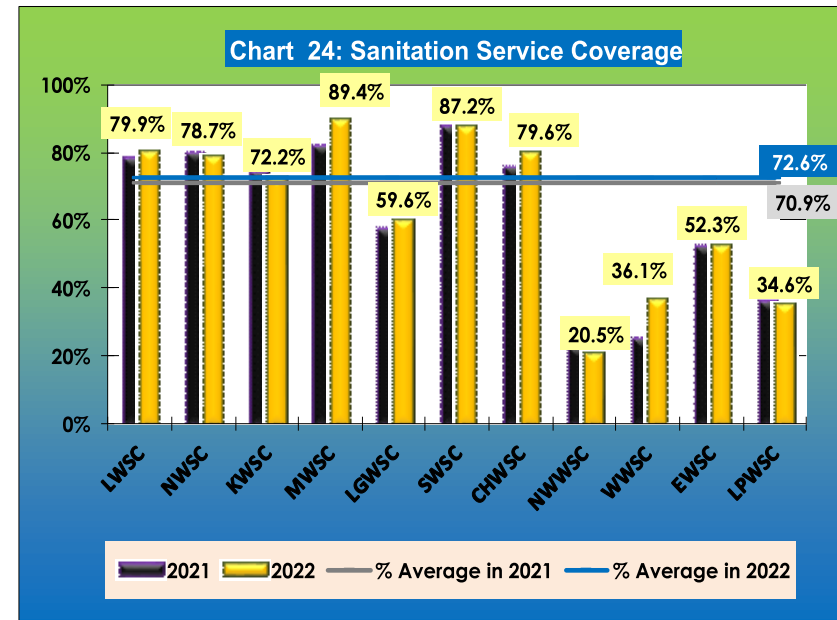
#### 7.2.1.4 Sanitation Coverage

Sanitation coverage consists of the population serviced by offsite (centralised system) and septic tanks only.

Benchmark for Sanitation coverage	Good	>90%
	Acceptable	85% - 90%
	Unacceptable	<85%

The acceptable benchmark for sanitation coverage for the period 2021-2025 is 85%. It will be increased to 90% for the period beyond 2025 in order to align to the national aspirations of 90% coverage for sanitation by 2030.

Onsite sanitation facilities such as traditional pit latrines are not considered as acceptable for urban sanitation because they do not meet the basic criteria for improved sanitation facilities. However other improved sanitation facilities can be considered based on availability of accurate data on existing facilities. This will be complimented by the enforcement of the code of practice/standards for onsite sanitation being developed by ZABS.



The average sanitation coverage for CUs' serviced areas increased from 70.9% to 72.6%, translating into 295,390 more people accessing safe and adequate sanitation. Only MWSC and SWSC met the acceptable benchmark. NWWSC, WWSC and LPWSC remained significantly below the acceptable benchmark with coverages of 20.5%, 36.1% and 34.6% respectively.

Table 21 shows the total number of sewer connections across CU service areas.

**Table 21: Total Sewer Connections**

CU	Total Sewer Connections 2021	Domestic Sewer Connections 2021	Total Sewer Connections 2022	Domestic Sewer Connections 2022
LWSC	39,724	35,771	43,221	39,268
NWSC	65,916	62,767	75,184	72,025
KWSC	47,576	45,629	49,743	47,701
MWSC	59,153	55,955	63,244	59,914
LGWSC	1,426	12,338	1,654	13,175
SWSC	14,559	13,910	15,589	14,838
CHWSC	4,685	4,685	4,685	4,685
NWWSC	615	588	741	714
WWSC	1,223	1,223	104	104
EWSC	3,749	1,975	5,676	3,831
LPWSC	12,950	1,220	13,790	1,437
Total	251,576	236,061	273,631	257,692

**7.2.1.5 Population Served with Sanitation**

Table 22 shows the proportions of people serviced by septic tanks and those on the network.

**Safely managed latrine.**

**Table 22: Sanitation Coverage Proportions**

CU	Total Population 2021	Population Served 2021	Proportion of Population Served on Sewer Network 2021	Proportion of Population Served by Septic Tanks 2021	Total Population 2022	Population Served 2022	Proportion of Population Served on Sewer Network 2022	Proportion of Population Served by Septic Tanks 2022
LWSC	2,924,716	2,277,538	23.2%	76.8%	3,012,425	2,406,935	22.9%	77.1%
NWSC	889,307	702,891	82.0%	18.0%	901,756	709,198	81.1%	18.9%
KWSC	791,548	583,133	67.6%	32.4%	810,273	585,330	67.2%	32.8%
MWSC	581,907	474,163	91.0%	9.0%	597,318	533,846	84.6%	15.4%
LGWSC	473,128	271,275	31.8%	68.2%	481,163	286,705	30.7%	69.3%
SWSC	530,751	461,607	21.2%	78.8%	549,062	479,023	21.6%	78.4%
CHWSC	489,458	367,824	10.6%	89.4%	505,917	402,725	10.0%	90.0%
NWWSC	301,416	68,736	5.1%	94.9%	306,540	62,874	6.6%	93.4%
WWSC	246,877	62,107	10.3%	89.7%	253,289	91,338	2.0%	98.0%
EWSC	341,827	183,462	8.5%	91.5%	350,574	183,415	8.2%	91.8%
LPWSC	237,160	85,356	13.6%	86.4%	266,044	92,093	12.6%	87.4%
Total	7,808,095	5,538,092	39.6%	60.4%	8,034,361	5,833,482	38.3%	61.7%

The sanitation coverage depicted in Chart 24 has been broken down to reflect access to different systems. Table 22 which shows access by the different sanitation systems.

There was a slight increase in the proportion of people served with septic tanks. CUs continued to capture data on onsite sanitation facilities available in their service areas. In the reporting period, WWSC undertook surveys. The majority of people continued to access sanitation services through septic tanks.

#### 7.2.1.6 WHO/UNICEF Joint Monitoring Programme Sanitation Service Ladders

The WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) is responsible for global monitoring of the Sustainable Development Goals (SDGs) targets related to WASH. The WHO/UNICEF JMP uses sanitation service ladders to monitor, benchmark and report progress made by individual



member countries in attaining the SDG targets on WASH. Therefore, in order to increase national harmonization of all sanitation indicators, NWASCO now requires all CUs to capture and report sanitation data in accordance with the WHO/UNICEF JMP sanitation service ladders shown in Table 23.

**Table 23: The New JMP ladder for Sanitation Services**

SERVICE LEVEL	DEFINITION
<b>SAFELY MANAGED</b>	Use of improved facilities that are not shared with other households and where excreta is safely disposed of in situ or transported and treated offsite.
<b>BASIC</b>	Use of improved facilities that are not shared with other households.
<b>LIMITED</b>	Use of improved facilities that are shared between two or more households.
<b>UNIMPROVED</b>	Use of pit latrines without a slab or platform, hanging latrines or bucket latrines
<b>OPEN DEFECACTION</b>	Disposal of human faeces in fields, forests, bushes, open bodies of water, other open spaces or with solid waste

**Note:** Improved sanitation facilities are those designed to hygienically separate excreta from human contact, and include: flush/pour flush to piped sewer system, septic tanks or pit latrines; ventilated improved pit latrines, composting toilets or pit latrines with slabs.

#### 7.2.1.7 Proportion of population serviced by sewer connections, septic tanks and pit latrines

Chart 25 depicts proportion of population accessing sanitation using sewer connections, septic tanks and pit latrines, i.e. improved and traditional. The information provided in Chart 25 on proportions of population using Onsite Sanitation (OSS) facilities is not exhaustive as the process of citywide sanitation mapping of OSS facilities by CUs is still ongoing. However, the available data has been included in this report.

NWASCO therefore encourages all CUs to continue undertaking citywide mapping and reporting of OSS facilities in their service areas so as to have complete data that can be used for the development of Faecal Sludge Management service models and benchmarking across all CUs.

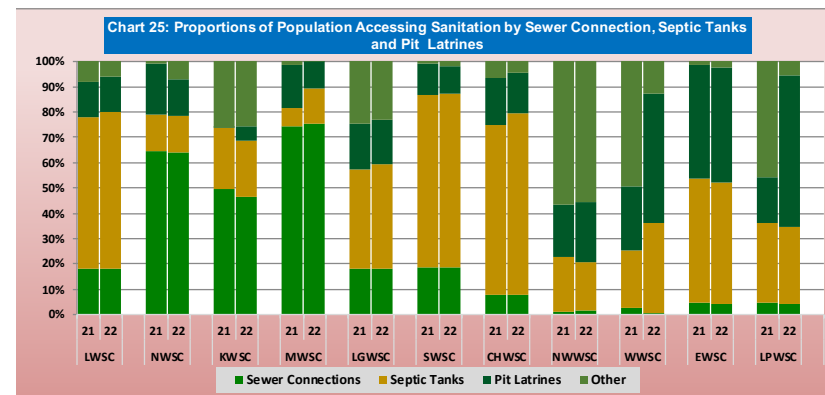
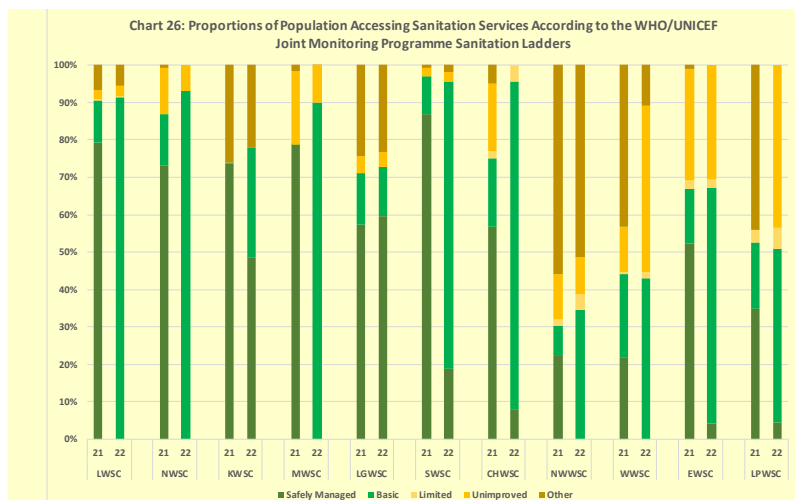


Chart 25 shows that the largest proportion of the population served by NWSC, KWSC and MWSC relied on offsite sanitation systems through sewer network. CHWSC had the highest proportion of population (72%) served by OSS facilities followed by SWSC (68%) and LWSC (62%). WWSC recorded an increase in the proportion of population served by septic tanks and pit latrines from 23% and 26% in 2021 to 35% and 52% in 2022 respectively. However, there were significant populations in service areas under NWWSC, LPWSC, LGWSC and KWSC who fell in the category 'other' which consisted of populations yet to be captured by the CUs or were practicing open defaecation.

#### i. Safely Managed Sanitation Services

Chart 26 depicts proportions of population accessing sanitation services according to the WHO/UNICEF JMP sanitation service ladders.



For purposes of this report, safely managed sanitation is taken as sewer systems and septic tanks. It can be observed that the majority population in all CUs, save for NWWSC and LPWSC accessed sanitation using safely managed and basic + limited services. WWSC recorded the highest increase in proportion of population accessing sanitation using safely managed services attributed mostly to increase in population using septic tanks that was captured through sanitation surveys. LWSC also recorded an increase in safely managed services through more septic tanks from the sanitation surveys.

## ii. Basic and Limited Services

Use of improved facilities that are not shared fall under basic services. The data for limited sanitation services was not conclusive as the CUs were still undertaking baseline surveys to capture the data. Therefore, for now basic and limited sanitation have been combined for ease of reporting.

## iii. Unimproved services

The proportion of the population that does not fall in any of the two categories outlined in (i) and (ii) above was considered to fall under unimproved services. This category arises from incomplete data capture for the two categories above and those practicing open defaecation.

### 7.2.1.8 Benchmarking on Faecal Sludge Management

NWASCO has embraced a Citywide Inclusive Sanitation (CWIS) approach to urban sanitation services delivery to ensure equity, safe management and financial sustainability in OSS and FSM services. Following the development of the frameworks for urban OSS and FSM management, NWASCO has developed a benchmarking system which will initially focus on two key performance indicators. The indicators and the benchmarks are shown in Table 24.

Table 24: Key performance indicators for Faecal Sludge Management

SN	Performance Indicator	Measurement	Data Requirements	Definition
1.	Desludged Septic tanks (%)	Percentage of septic tanks Desludged	i.Total number of septic tanks desludged; ii.Total planned number of septic tanks to be desludged in a zone	(Number of planned septic tanks desludged)/(Total Number of septic tanks in Zone)
2.	Desludged Improved Pit Latrines (%)	Percentage of Improved Pit Latrines Desludged	i.Total number of Improved Pit Latrines desludged; ii.Total planned number of Improved Pit Latrines to be desludged in a zone	(Number of planned Improved Pit Latrines desludged)/(Total Number of Improved Pit Latrines in Zone)

Benchmarks for desludged improved pit latrine and septic tank	Good	>95%
	Acceptable	85% - 95%
	Unacceptable	<85%

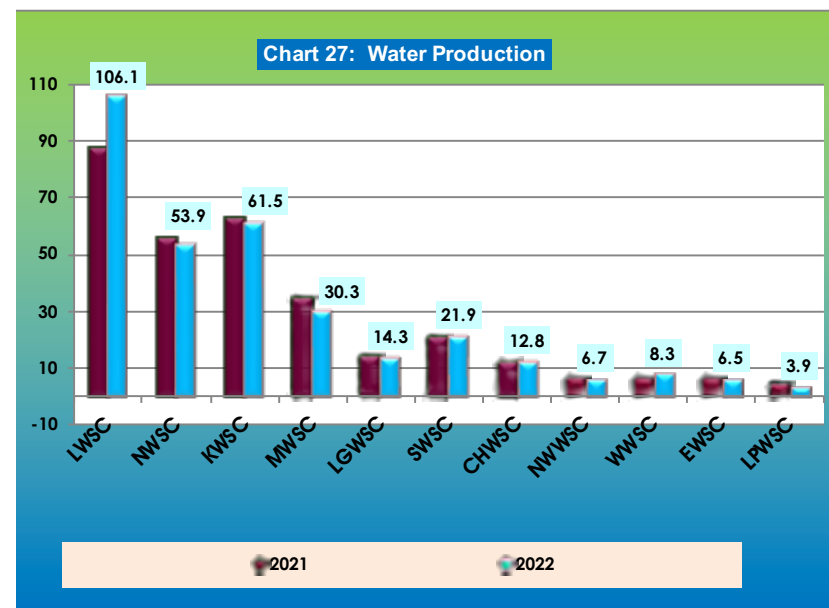
NWASCO has been working with the CUs to set up business and service delivery models following the development of the Citywide Inclusive Sanitation Planning and Service Delivery Guideline. Only two CUs namely LGWSC and KWSC collected conclusive data on the KPIs indicated in Table 24.

LGWSC met the good benchmark for desludging both pits and septic tanks of 100% while KWSC was below the acceptable benchmark. It is important that all CUs formulate periodical emptying schedules if safe management of sludge is going to be achieved and for effective monitoring of the indicator.

### 7.2.1.9 Water Production

Water production reflects the volume of water treated and distributed into a network.

The figures in Chart 27 for water production are looked at in relation to the water losses depicted in Chart 29. With good operational efficiency, an increase in water production should only be necessitated by an increase in demand, customer base and/ or improved hours of supply. CUs should therefore aim at reducing NRW first before considering to increase production.



The total water production overall reduced by 15.6mil m<sup>3</sup> during the reporting period. The notable increase observed in LWSC of 18.4mil m<sup>3</sup> was due to additional production from the Lusaka bulk water supply line. The reduction for NWSC, KWSC MWSC and LPWSC was attributed mainly to increased pump breakdowns that resulted in prolonged periods of supply interruption.

### 7.2.1.10 Metering Ratio

Metering ratio is the proportion of the metered connections compared to the total connections

Metering is required in order to measure the amount of water consumed, as well as charge consumers according to their consumption. It is one of the important strategies for managing NRW.

There was a reduction in the metering ratio from 81.5% to 75.5%. This implies that some CUs might have connected customers without meters and/or lost meters through theft or damage.

Seven CUs dropped their metering ratio namely LWSC, NWSC, KWSC, SWSC, LPWSC, CHWSC and NWWSC due to above stated reasons. LPWSC and NWWSC who have been at 100% metering ratio recorded a drop. Despite the drop in the metering ratio, LPWSC and NWWSC concerted efforts at replacing malfunctioning meters.

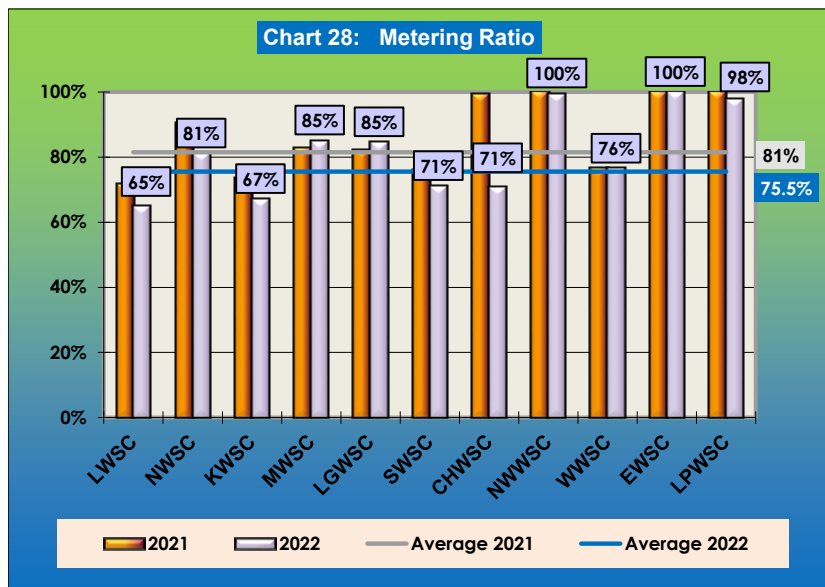


Table 26 shows the proportions of water sold as metered and unmetered. The metered volumes are derived from meter readings while the unmetered sold volumes are estimated from the applicable flat rate tariffs for each CU.

**Table 26: Proportions of water sold for metered and unmetered**

CU	Total Water Sold 2021 m <sup>3</sup>	Proportion of sold water Metered 2021	Proportion of Sold Water Unmetered 2021	Total Water Sold 2022 m <sup>3</sup>	Proportion of sold water Metered 2022	Proportion of Sold Water Unmetered 2022
LWSC	46.58	60%	40%	49.00	63%	37%
NWSC	23.32	61%	39%	21.67	56%	44%
KWSC	17.67	77%	23%	17.01	75%	25%
MWSC	13.52	117%	-17%	16.53	86%	14%
LGWSC	6.34	78%	22%	6.22	77%	23%
SWSC	11.19	66%	34%	11.38	66%	34%
CHWSC	8.00	99%	1%	8.31	99%	1.3%
NWWSC	3.68	100%	0%	3.80	100%	0%
WWSC	2.49	68%	32%	2.65	56%	44%
EWSC	3.41	100%	0%	3.54	100%	0%
LPWSC	1.14	100%	0%	1.12	98%	2%
Total	137.32	73.9%	26.1%	141.22	71.3%	28.7%

The bulk of the volume of water sold was metered at about 71% against a metering ratio of 75.5%. Instances where the proportion of water sold which is metered is significantly lower than the metering ratio may imply that the proportion of customers who are metered are predominantly low consumers. This may have been the case for CUs such as NWSC, LGWSC, SWSC and WWSC. Commercial Utilities should prioritise metering high consuming customers especially institutions and commercials.

#### 7.2.1.11 Water Loss Performance Indicators

Water losses are reported using different parameters such as the percentage of NRW (Chart 29), infrastructure leakage index (Table 27) and water loss per connection and length of water network/litre/day (Table 28).

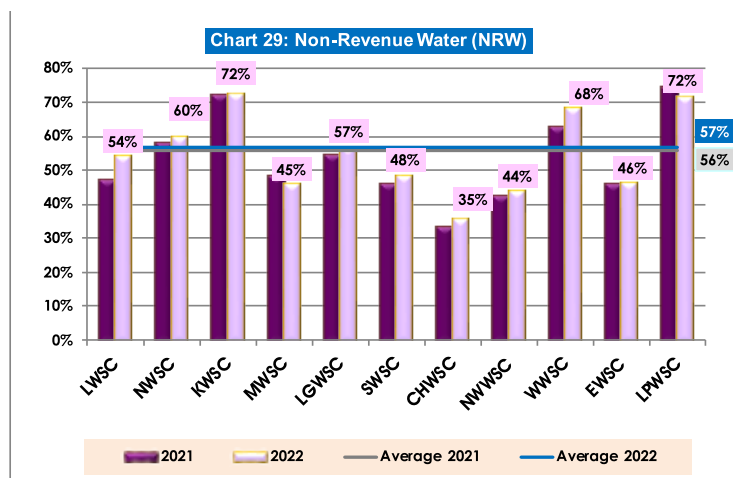
NRW, when compared with the total quantity of water put into supply, fluctuates widely in time and cannot, therefore, be expressed in a single fixed figure

such as percentage, without extensive qualification. To be truly meaningful, the water lost, expressed as a percentage should always be related either to the distribution system (length of water network) and/or to service points (customer connections).

#### 7.2.1.11.1 Non-Revenue Water

Non-Revenue Water (NRW) is the difference between the quantity of treated water distributed in the network and the quantity of water billed as shown in Chart 29. NRW consists of technical losses (leakages) and commercial losses (illegal connections, unbilled customers, wastage on un-metered customers' premises etc.). In the absence of metering, the volumes could be unreliable estimates.

Benchmark for Non-Revenue Water	Good	<20%
	Acceptable	20-25%
	Unacceptable	>25%



The overall average NRW during the period under review increased from 56% to 57% against a benchmark of 25%. None of the CUs met the acceptable benchmark of NRW of 25%. Only 2 CUs namely MWSC and LPWSC had slight reductions in the NRW. KWSC and LPWSC continued to post abnormally high NRW which requires urgent attention. The NRW water figure reflected on CHWSC was not reliable as the CU was using unsound methods to estimate inputs in the absence of meters, particularly production side.

#### 7.2.1.11.2 Network Failures per 100km

Network failures per 100km shows how weak the network is, thus contributing to water losses. The higher the number, the more porous the network. A porous network may lead to increased water losses hence timely repair of leakages is required. LWSC, NWSC and EWSC had relatively low number of failures on their main lines while NWWSC and WWSC had relatively high number of failures per 100km.

**Table 27: Failures per 100km of main line**

CU	2021	2022
LWSC	0.3	0.2
NWSC	0.7	0.5
KWSC	2.3	19.0
MWSC	8.6	7.1
LGWSC	0.8	0.2
SWSC	6.1	11.6
CHWSC	11.8	56.1
NWWSC	116.5	129.9
WWSC	97.1	62.6
EWSC	2.1	1.3
LPWSC	9.7	2.8



**Table 38: Infrastructure leakage Index Guidelines****7.2.1.11.3 Water loss per connection and length of water network in litres/day**

The International Water Association (IWA) has developed the Infrastructure Leakage Index (ILI) as a method of performance comparison which can be used by a water Utility to measure its own success. The index is calculated from the ratio of current annual real losses to unavoidable annual real losses (UARL), the basis for developing a leakage management strategy. According to IWA classification, the lower the ILI, the better is the Utility's performance. It also allows inter-company and inter-country comparisons.

**Table 29: IWA Infrastructure Leakage Index Technical Performance Categories**

Infrastructure Leakage Index International Water Association classification

Category	Comments/ Recommendations
A	Further loss reduction may be uneconomic unless there are shortages; careful analysis needed to identify cost effective improvement
B	Potential for marked improvements; consider pressure management; better active leakage control practices, and better network maintenance
C	Poor leakage record; tolerable only if water is plentiful and cheap; even then, analyse level and nature of leakage and intensify leakage reduction efforts
D	Horribly inefficient use of resources; leakage reduction programs imperative and high priority

**IWA comments / Recommendations on categories****7.2.1.11.4 Infrastructure Leakage Index**

Table 30 shows the ILI for CUs. The technical performance of CUs is compared to the IWA Guidelines in Table 29.

**Table 30: Infrastructure Leakage Index**

CU	2021	2022	Category
LWSC	34.4	45.9	D
NWSC	57.6	56.2	D
KWSC	76.5	74.4	D
MWSC	35.4	28.8	D
LGWSC	40.5	42.5	D
SWSC	14.0	15.3	C
CHWSC	19.1	25.0	D
NWWSC	13.0	13.8	C
WWSC	56.4	64.3	D
EWSC	12.6	12.4	C
LPWSC	62.3	27.8	D

All CUs had an undesirable ILI. The status quo remained the same for all the CUs. Commercial Utilities need to have in place comprehensive programmes for NRW reduction.

Table 31 is used to check whether CUs are conforming to the loss in litres/day/connection standard, within the categories that they fell in. A loss of greater than 1,000 litres/day/connection is unacceptably high.

**Table 31: Water loss per connection and length of water network in litres/day**

Provider	Water Loss per length of network per day 2021 (L/km/day)	Water Loss per length of network per day 2022 (L/km/day)	Water Loss per Connection per Day 2021 (L/con/day)	Water Loss per Connection per Day 2022 (L/con/day)
LWSC	45,277	60,031	865	1,160
NWSC	87,389	85,563	1,209	1,178
KWSC	89,097	87,546	1,774	1,718
MWSC	51,605	41,328	952	617
LGWSC	14,321	7,657	662	690
SWSC	11,413	12,431	401	441
CHWSC	6,025	9,505	358	380
NWWSC	9,850	10,575	396	417
WWSC	26,642	27,023	733	905
EWSC	12,875	13,497	312	298
LPWSC	23,172	15,153	976	648

The magnitude of losses per day per connection remained almost the same when compared to 2021 while those per length of network reduced. LWSC, NWSC KWSC and WWSC recorded unacceptably high losses per connection per day of above 1000 litres. KWSC, LWSC and NWSC continued to have the highest losses per length of network per day.

#### 7.2.1.11.5 Lost Revenues due to NRW in 2022

To appreciate the magnitude of water losses, the NRW figures were translated into monetary terms, as shown in Table 32. Any loss of revenue in business is unacceptable. However, in the water sector, a benchmark of 25% has been set as acceptable loss. If NRW is not reduced to the acceptable benchmark, the magnitude of loss becomes even greater as the business expands. CUs must strive to come up with strategies of realising some of the lost revenue.

**Table 32: Lost Revenues due to NRW**

	Metering Ratio 2022	Total Water Billing (ZMW) 2022	NRW 2022 (in %)	NRW (ZMW) 2021	NRW (ZMW) 2022
LWSC	65%	359,681,778	54%	269,859,733	418,850,209
NWSC	81%	130,757,925	60%	199,856,306	194,267,989
KWSC	67%	114,189,343	72%	297,350,514	298,642,701
MWSC	85%	115,358,854	45%	112,888,622	96,231,121
LGWSC	85%	47,935,827	57%	60,774,911	62,362,900
SWSC	71%	92,353,014	48%	74,857,557	85,488,338
CHWSC	71%	32,384,265	35%	13,705,230	17,691,914
NWWSC	100%	25,736,255	44%	18,437,440	19,830,769
WWSC	76%	18,712,977	68%	27,949,995	39,564,747
EWSC	100%	33,389,101	46%	27,088,873	28,328,276
LPWSC	98%	8,229,774	72%	23,877,165	20,646,627
Total		978,729,115		1,126,646,347	1,281,905,591

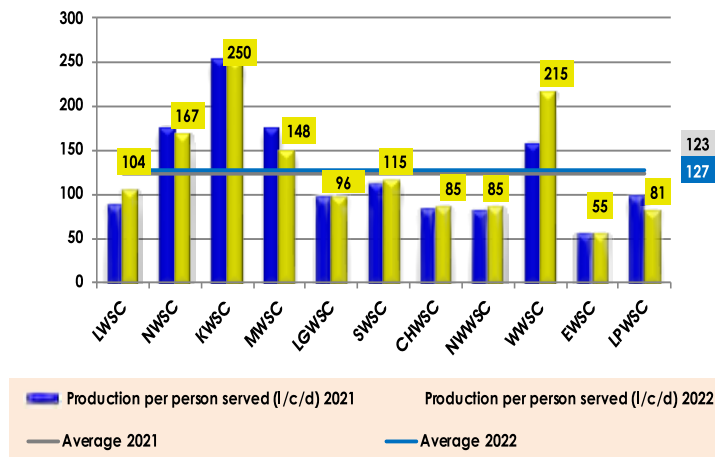
The loss of revenue due to NRW poses a serious threat to financial viability of the CUs. There was an increase in lost revenue due to NRW of over K155million. At the benchmark of 25% NRW, the acceptable loss would have been about K565million against the actual loss of about K1.28billion.

#### 7.2.1.12 Production and Consumption in Litre per Capita per Day

Charts 30 and 31 show the average amounts of water produced and consumed per person per day, respectively. An analysis of the two charts reveals the degree to which CUs are able to meet the required water consumption standards.

According to the World Health Organisation (WHO) guidelines, 50 litres is the acceptable minimum water consumption required per person per day for basic hygienic considerations. However, this is a bare minimum and still poses health risks.

Chart 30: Per Capita Production

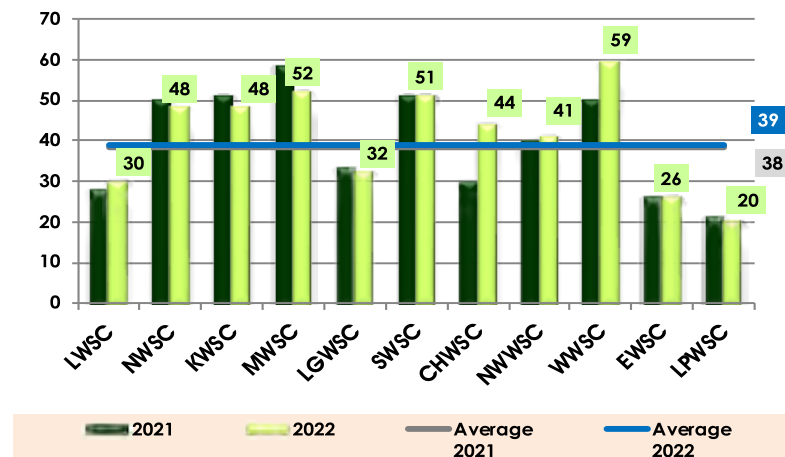


Only three CUs namely MWSC, SWSC and WWSC met the minimum recommended consumption volume of 50 litres per capita per day in Chart 31. The average per capita consumption however increased slightly from 38 to 39 litres.



Familiarisation tour at water treatment plant

Chart 31: Consumption: Litre/Capita/Day



The low consumption per l/c/d for EWSC and LPWSC could be attributed to their high metering and low sewerage coverage which may result in low water usage. When metered, customers generally become more cautious with water usage. Where sewerage coverage is low, people utilise facilities which use little or no water.

LWSC and LGWSC have a higher proportion of their population served by public water points and kiosks which tend to pose limitation to the quantity of water drawn, hence the low consumption per capita per day.

CUs with higher per capita production could either have higher NRW or high non-domestic consumption. This was true for KWSC and WWSC which had high production per capita but low consumption per capita hence most of the water went to waste. NWSC and MWSC high per capital production could be mainly due to the huge industrial base which form part of non-domestic customers.

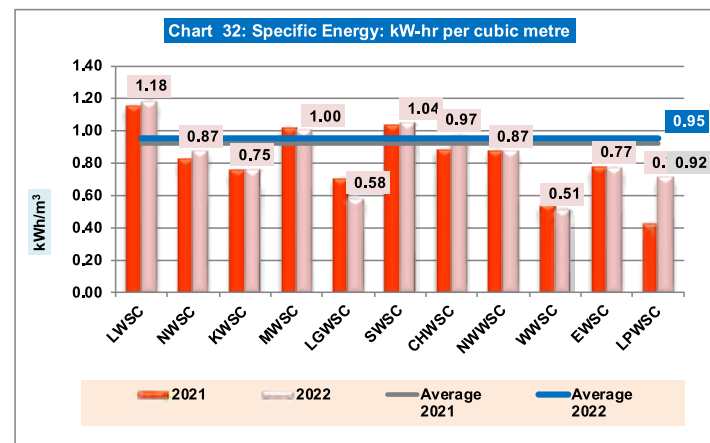
### 7.2.1.13 Specific Energy

Energy consumption has traditionally been reported as a monetary figure which also includes costs related to fuel used in the running of vehicles and other machinery not directly related to water production or waste-water treatment. The main contributor to the energy cost however, is energy used in pumping operations. It has become important for Utilities to single out this part and report it separately so as to help Utilities monitor their energy usage and therefore develop energy efficiency strategies aimed at using energy more sustainably and efficiently.

It should be noted that specific energy in kWh/m<sup>3</sup>, in Chart 32, cannot be used to compare one Utility to another because of the different operating environments and technologies used in pumping and treatment processes. The operating environment includes type of water source used i.e. surface, groundwater or both, distribution method used i.e. gravity or pumping, and length of distribution system and pressure head. It is however, possible for Utilities to benchmark their individual pumping stations and treatment plants with those employing similar technologies in other Utilities. A downward trend for specific energy is desirable.



NWASCO Board inspecting Iolanda Water Treatment Plant.



The recommended sector range for specific energy per cubic meter is 0.39 – 1.03kW-hr/m<sup>3</sup>. All CUs were within the recommended range except for LWSC. The increased specific energy for LWSC could be attributed to the high energy required to pump water from Iolanda Water Treatment Plant which is 65km from the City of Lusaka and at an elevation distance of over 100 meters.

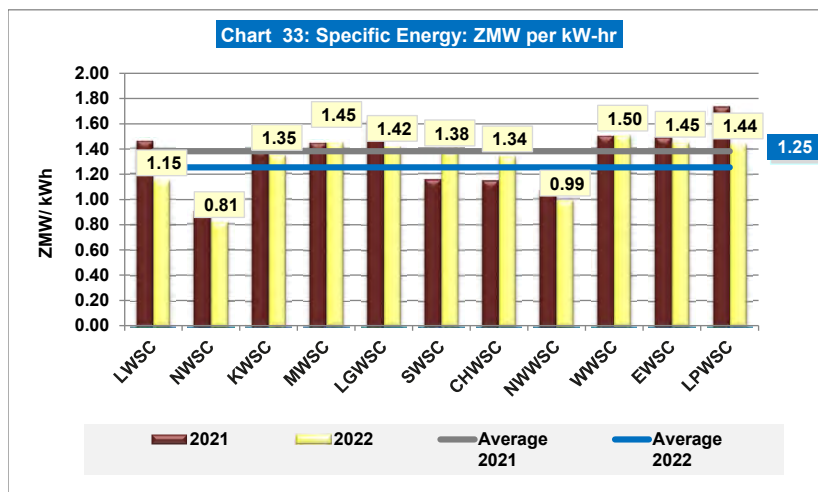


Chart 33 shows the specific energy in Kwacha per kilowatt hour. The specific energy in Kwacha per kilowatt hour must be looked at in comparison to the electricity cost per kilowatt hour for 2022 which were as stated below.

**Table 33: Electricity Tariffs**

Category	2022 Tariff ( K)
Commercial	1.07(≤200kWh)
	1.85 (>200 kWh)
Social	1.19
Maximum Demand 1	0.61
Maximum Demand 2	0.53
Maximum Demand 3	0.43

It is expected that all CUs specific energy ZMW/kW-hr should fall within the maximum charge per kilowatt hour of K1.19 for social tariff for treatment and pump stations. However, administrative offices were charged at the

commercial rate mainly in the highest band of K1.85 per kW-h which when factored in would push the figure above K1.19 per kW-h. For the period under consideration, LWSC, KWSC, MWSC, CHWSC, SWSC, LGWSC, WWSC, EWSC and LPWSC had a specific energy higher than the maximum charge of K1.19. CUs are encouraged to institute energy reduction strategies to optimise energy usage.

#### 7.2.1.14 Maintenance

A good Maintenance Management System (MMS) is required for a CU to reduce down time. A good MMS entails good planning, record keeping, skilled personnel to undertake maintenance, effective monitoring and evaluation of systems and processes. Charts 34, 35 and 36 depict the extent to which planned and unplanned maintenance works were attended to.

#### 7.2.1.15 Sewer Blockages

This indicator measures sewer blockages per 100 connections and per 100km of sewer network to show the density of blockages. A high number of blockages may reflect a poor state of the sewer network and/or poor maintenance. Blockages may also indicate bad usage practices (such as dumping solid waste in manholes) and also overloading of the network. Table 34 shows the number of blockages per connection and per 100km sewer network.



**Sewage overflow.**



**Table 34: Sewer Blockages**

	Sewer Blockages/ 100 Connections 2021	Sewer Blockages/ 100 Connections 2022	Sewer Blockages/100km 2021	Sewer Blockages/100km 2022
CHWSC	1.5	0.8	8.3	3.1
EWSC	15.2	48.3	931.5	2,980.9
KWSC	2.5	77.6	0.2	5,933.5
LGWSC	0.0	1.4	1,057.9	536.3
LPWSC	12.7	6.3	-	62.9
LWSC	0.3	0.5	13.0	27.5
MWSC	6.1	15.4	321.1	818.3
NWSC	5.7	4.2	340.1	273.5
NWWSC	11.4	20.2	266.6	553.2
SWSC	5.7	5.6	548.2	545.5
WWSC	0.2	27.9	0.1	64.9

KWSC and EWSC had the highest numbers of sewer blockages for both per 100 connections and per 100km. This was mainly due to the deplorable state of the sewer networks.

#### 7.2.1.16 Plant Utilisation: Water and Sewage

Plant Utilisation in Table 35 reflects the operational efficiency of the plant in relation to the design capacity. A low level of plant utilisation could indicate inadequacies in maintenance or frequent downtime. Fully utilised plants could signal the need for new investment to expand infrastructure.

**Table 35: Plant Utilisation: Water and Sewage**

CU	Plant Utilisation Water 2021	Plant Utilisation Water 2022	Plant Utilisation Sewage 2021	Plant Utilisation Sewage 2022
LWSC	79.3%	84.4%	51.7%	78.5%
NWSC	80.2%	77.8%	90.6%	88.3%
KWSC	67.1%	65.8%	78.4%	81.7%
MWSC	40.8%	35.8%	58.5%	47.1%
LGWSC	68.3%	60.2%	29.7%	29.7%
SWSC	63.5%	67.2%	46.0%	46.0%
CHWSC	64.5%	69.6%	38.3%	38.3%
NWWSC	62.7%	65.9%	14.0%	14.0%
WWSC	38.7%	47.4%	N/A	N/A
EWSC	66.6%	69.5%	79.8%	79.8%
LPWSC	36.8%	37.8%	N/A	N/A

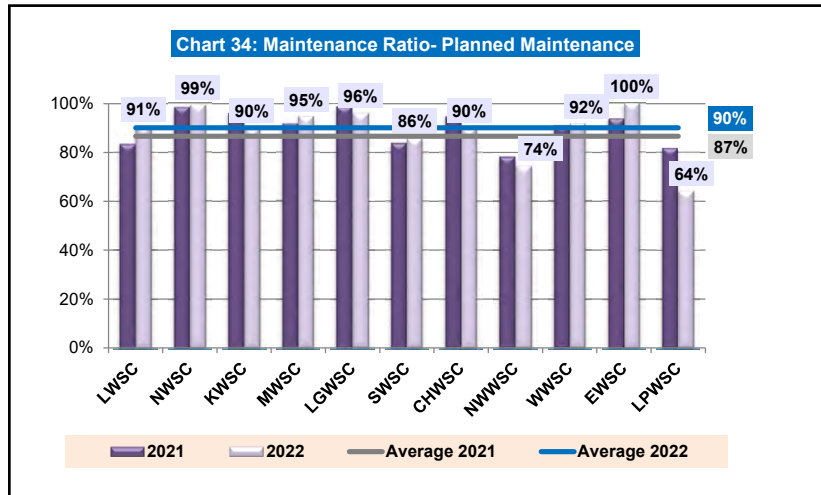
In an attempt to meet demand amid high water losses, CUs may resort to increasing utilisation of their plants. Three CUs reduced their water plant utilisation namely NWSC, KWSC, LGWSC and MWSC. LGWSC recorded the highest drop in plant utilisation for water due to a breakdown at their main water treatment plant which lasted for over 3 months. Drops recorded in other CUs namely KWSC, NWSC and MWSC were due to breakdowns as well as non-availability of raw water particularly MWSC.

Only MWSC reduced their wastewater plant utilisation as a result of reduced in flows. Despite having sewage ponds in Mansa under LPWSC, very limited flow was received due to the dilapidated sewer network. Similarly there was no overflow from the sewage ponds under WWSC.

### 7.2.1.17 Maintenance Ratio

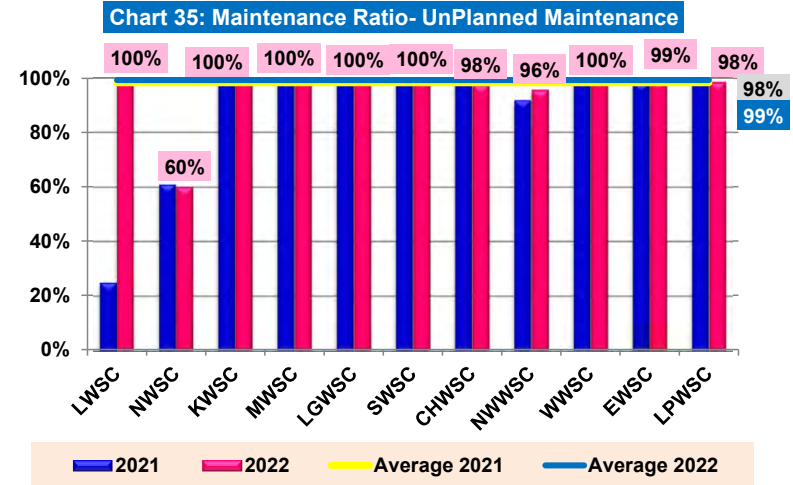
#### i. Planned Maintenance

In order to ensure that CUs have developed and are implementing Maintenance Management Systems, the number of planned maintenance works with those that were actually carried out is compared in Chart 34. CUs should ensure that they have robust Maintenance Management Systems that they adhere to and carry out at least 95% of the planned works.



The average ratio on planned maintenance improved slightly although it was still below the benchmark. Four CUs namely NWSC, MWSC, LGWSC and EWSC met the target of 95% on execution of planned maintenance works. The low maintenance ratio for LPWSC and NWWSC was largely attributed to the lack of maintenance materials.

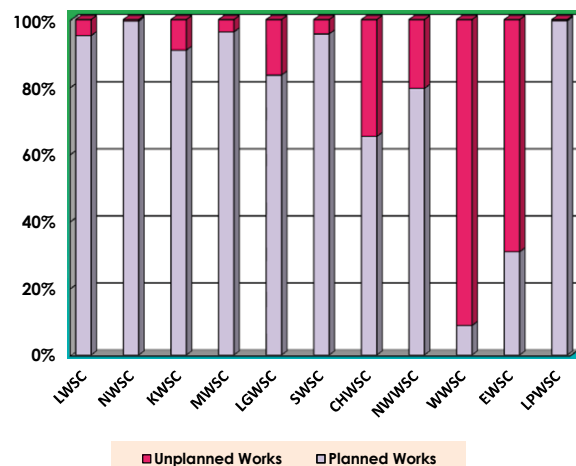
All unplanned maintenance works should ideally be executed within a short period of time as they are usually deemed as emergencies. Nearly all the unplanned works were executed during the year under review.



#### ii. Planned vs Unplanned Maintenance

To further appreciate the volume of maintenance works that CUs undertake, the quantity of unplanned works undertaken was compared to the planned works. Unplanned works generally arise from unexpected disturbances to the infrastructure/ facilities.

Chart 36: Planned vs Unplanned Maintenance Works



EWSC and WWSC had the highest proportion of unplanned works which may indicate poor planning or infrastructure challenges.

## 7.2.2 SERVICE LEVEL INDICATORS

These portray the quality of service a company is rendering to its customers. Three major ones include water quality, hours of supply and resolution of customer complaints.

### 7.2.2.1 Water Quality

Water quality is very important due to the health impact it has on the consumers. The two types of parameters considered are bacteriological (total and faecal coliforms) and physiochemical (Chlorine residue, pH, turbidity and colour). Chlorine residue test is given prominence under physiochemical parameters because of its relation to the bacteriological aspect of water.

For water quality monitoring, the assessment criteria used is in line with ISO/

IEC 17025: 2005 standard (General requirement for the competence of testing and calibration laboratories). The overall compliance is assessed through a sequential three-step process as below:

#### a). Confidence level

The confidence level step is the first stage of assessment and evaluates the credibility of the whole water quality monitoring chain with respect to 10 equally weighted key criteria that are likely to influence the correctness of test results. The criteria are:

- Availability and accessibility of laboratory quality manual and Standard Operating Procedures (SOPs)
- Availability and state of water testing equipment
- Calibration of water testing equipment
- Laboratory operating environment
- Availability of fit-for-use chemicals and reagents
- Reporting ethics (data manipulation, selective reporting, etc.)
- Recording of data in a prescribed format
- Adherence to sampling, sample handling and testing protocols
- Evidence of feedback to stations and evidence of corrective action
- Qualification and competence of personnel

Providers are required to meet at least 80% of the criteria, failure to which they are rated red/D.

#### b). Number of samples tested in relation to the minimum required

The second stage of assessment considers the number of analysed samples for each prescribed parameter against the required minimum tests in a particular network. This assessment step requires that service providers analyse at least 95% of all samples required for each parameter for each network serviced. Failure by more than 5% in any single network is considered as non-compliance with a rating of orange/C.

### c). Number of tests meeting the national drinking water standards

This is the final stage of assessment and considers the number of test results that meet the national drinking water standards specified in ZS 190: 2010 for each particular parameter from all samples analysed.

If the overall compliance score is at least 95%, it is rated green/A or else a yellow/B rating applies.

Table 36 shows the performance of providers in the reported year.

	Rating	Performance
Benchmark	D	< 80% at competence level stage
	C	< 95% to required samples analysed
	B	< 95% to National Drinking Water Standards
	A	≥ 95% to National Drinking Water Standards



Inspector checking for residue chlorine at customer premises

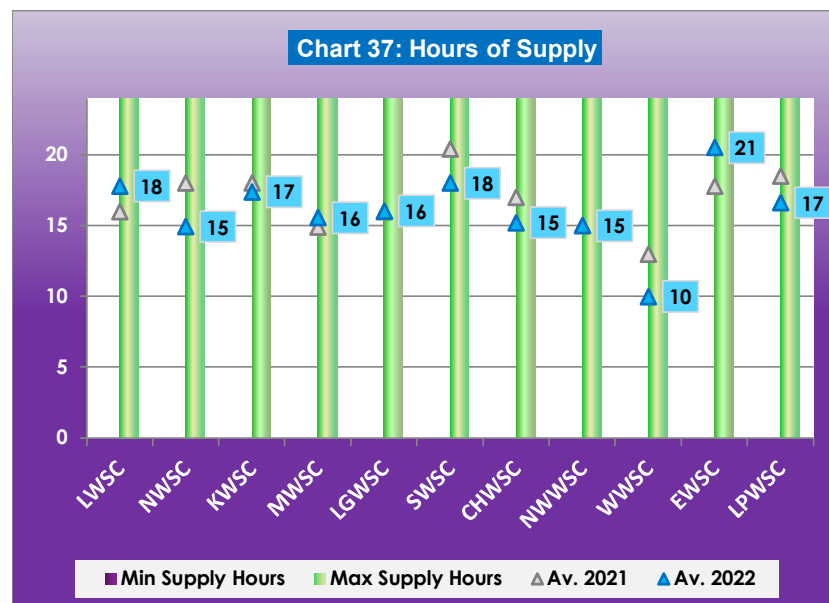
Table 36: Water Quality Analysis

Name of CU	Confidence level	Overall Rating	Remarks
LWSC	87%	C	Considerable residual chlorine and bacteriological failures in Lusaka, Chongwe and Chilanga. Further, the CU did not conduct adequate chlorine residual and bacteriological tests in Lusaka.
NWSC	85%	A	
KWSC	90%	A	
MWSC	91%	B	High turbidity and colour in Chingola and Mufulira
LGWSC	75%	D	Failed on Confidence level for the poor state of testing equipment, non-availability of laboratory manuals in districts, inadequate feedback on tests conducted and inadequate staff capacity.
SWSC	94%	B	High turbidity and colour in Kalomo, Monze and Livingstone
CHWSC	92%	C	The tests conducted in the second quarter were disregarded on grounds of integrity
NWWSC	84%	A	
WWSC	72%	D	Manipulation of water quality data for residual chlorine particularly in Kalabo District and also failure to calibrate testing equipment
EWSC	92%	A	
LPWSC	75%	D	Did not have a qualified lab personnel, lapses in sample handling

### 7.2.2.2 Hours of Supply

Chart 37 shows the range of hours supplied by the CUs per day.

Benchmark for hours of supply (cluster 1 and 2)	Good	20 - 24 hours
	Acceptable	18 - 20 hours
	Unacceptable	<18 hours
Benchmark for hours of supply (cluster 3)	Good	>18 hours
	Acceptable	16 -18 hours
	Unacceptable	<16 hours



There was hardly any change in the sector average for hours of supply between 2021 and 2022. WWSC and MWSC had the highest reductions in the hours of supply dropping by 3 and 6 hours, respectively. The drop was mainly attributed to breakdowns and supply interruptions due to the ongoing project activities in the two CUs. The drop in LPWSC was as a result of numerous plant shut downs due to power outages and low voltage in Mansa and Samfya.

Only SWSC met the sector benchmark in clusters 1 and 2, respectively. In cluster 3, only EWSC and LPWSC met the benchmark. The increase in the hours of supply for LWSC was due to the coming on board of the Kafue Bulk line.

#### 7.2.2.2.1 Minimum Supply Hours

The least number of hours of water supply were in areas such as:

- Under LWSC, parts of Roma Township and Roma Park, parts of Woodlands Township, Bauleni, Kabanana, upper parts of Chunga and upper parts of Ibex Hill Townships in Lusaka City, Gabon Township of Chirundu District, the entire Chongwe District and Longridge area of Chilanga;
- Under NWSC, Luangwa, parts of Chamboli, Wusakile T and E Townships in Kitwe District and parts of Chibuluma in Kalulushi District;
- Under KWSC, parts of Kabushi (Changanya, Mangwana and Kariba Sections), Upper Mushili Kansengu and Twapia in Ndola City and the parts of Kamirenda in Luanshya District;
- Under MWSC, parts of Twatasha, Lulamba Stages 5, 6 and 7, Twatasha Site and Service, Nchanga North, Chiwempala, Maiteneke and Chabanyama Townships in Chingola District, Kamuchanga, Chibolya and Kalukanya, Mine Are and Eastlea Townships in Mufulira District;
- Under LGWSC, most parts of Kabwe and Mumbwa Districts, Medium area in Mkushi District, as well as Kamwala and Town Centre areas in Serenje District;



- Under SWSC, parts of Dambwa North Extension, South and Off Airport and parts of Ellen Britel in Livingstone Town, Highlands area in Mazabuka District and Bwacha area in Kalomo District and Mayandi Township in Gwembe District.
- Under CHWSC, Mulenga Hill 1,2 and 3, upper part of Location and Police camp Townships in Kasama District, parts of Tazara Sections B and C and Chibansa Townships in Mpika District and Rural Compound in Chinsali District, Chelston and Police Camp in Luwingu district;
- Under NWWSC, parts of Zambia Compound, Kazomba and upper parts of Weigh Bridge, Zambia Compound, Magrade and Cheshire areas in Solwezi District and most parts of Mufumbwe;
- Under WWSC, Boma, North Park, parts of Imwiko stage 2 and Wenela Areas in Mongu District, Mulamatila and Airport in Kaoma District, Katuya and Mungule Townships in Senanga District;
- Under EWSC, most parts of Petauke District, East Rise, Chimwemwe, Magazine, Old gym, St Ann, parts of Muchini, Navutika, Motel and Kalongwezi Townships of Chipata; and
- Under LPWSC, St Mary's and Lupili in Kawambwa District, Ndeke Air Strip and Robby areas, Kafimbwa, parts of Low Density and parts of Police Camp in Nchelenge District and most parts of Samfya District.

#### 7.2.2.2.2 Interruption of Service

Major interruptions in water supply lasting for more than 48 hours continuously were experienced in a number of areas as shown in Table 37:

**Table 37: Interruption of Water Supply**

CU	District/Town	Details
LWSC	Lusaka City	There were supply interruptions at Iolanda Water Works mainly due to power interruptions resulting from maintenance works by the Electricity Company (ZESCO)
	Chongwe	The drying of the dam in the dry season and high turbidity in the rainy season resulted in water supply interruption for most part of the year
LGWSC	Kabwe	Mulungushi Dam was not operational for over three months due to a burst on the transmission line resulting in supply interruption in parts of Kabwe
CHWSC	Mpika	Pump failure at the intake due to an electrical fault, interrupting supply in the entire district
	Luwingu	Motor failure on Lubufubu intake which resulted in water interruption in the entire district
	Kasama	Tazara, due to a blocked main water pipe
	Mungwi	Pump failure at the intake due to an electrical fault, interrupting supply in the entire district
	Mpika	Failure of the pump at Kamwanya pump station in Malashi
	Nakonde	Intermittent water supply due to high turbidity of the raw water.
NWWSC	Solwezi	Pump failures at Kifubwa water treatment plant in Solwezi which affected supply to most parts of the District.
WWSC	Kaoma, Mongu, Senanga and Sesheke	Supply interruptions mainly due to the works on the ongoing Integrated Small Towns Water Supply and Sanitation Project (ISTWSSP).
LPWSC	Samfya	There was no water in the district for 2 days due to shut of the plant due to high turbidity.
	Nchelenge	Supply interruptions due to pump failure in Kashikishi
MWSC	Mufulira	Kalukanya, parts of mine Area and Eastlea had no supply for over 4 days.

CU	District/Town	Details
SWSC	Siavonga	Failure at the raw water intake affecting most parts of the district.a

### 7.2.2.3 Customer Complaints

Complaints figures are important in gauging customer satisfaction regarding the service received from the provider. By regulation, CUs are required to keep a record of customer complaints and resolve them within a stipulated timeframe. Customer awareness plays a critical role in ensuring that complaints are reported and resolved.

A reduction in the number of complaints could indicate improvement in service and/or that customers are losing confidence in providers not attending to their complaints.



Orienting customer to MyWatSan online complaints platform.

Table 38: Customer Complaints

CU	Total Customer Complaints 2021	Total Customer Complaints 2022	Total Complaints Resolved 2022	Total Complaints % Resolution 2022	Complaints per 100 Connections 2021	Complaints per 100 Connections 2022
LWSC	54,124	35,333	33,767	96%	94	26
NWSC	7,829	6,274	5,975	95%	11	8
KWSC	8,193	8,178	7,276	89%	12	12
MWSC	20,382	31,393	30,176	96%	32	51
LGWSC	12,935	14,961	13,794	92%	28	18
SWSC	3,837	9,607	9,607	100%	6	15
CHWSC	32,228	27,729	26,904	97%	107	85
NWWSC	3,763	4,309	3,289	76%	20	22
WWSC	5,390	4,076	3,560	87%	35	29
EWSC	8,694	9,361	7,846	84%	35	34
LPWSC	2,615	2,189	2,094	96%	41	47
Total Complaints	159,990	153,410	144,288	94%	30	28

The overall complaints resolution rate increased from 92% to 94% but was still below the acceptable benchmark of 95% as shown in Table 38. Six CUs namely SWSC, LWSC, NWSC, CHWSC, LPWSC and MWSC met the benchmark. NWWSC had the lowest resolution rates at 76%. On the other hand, CHWSC continued to have the highest complaints per 100 connections.

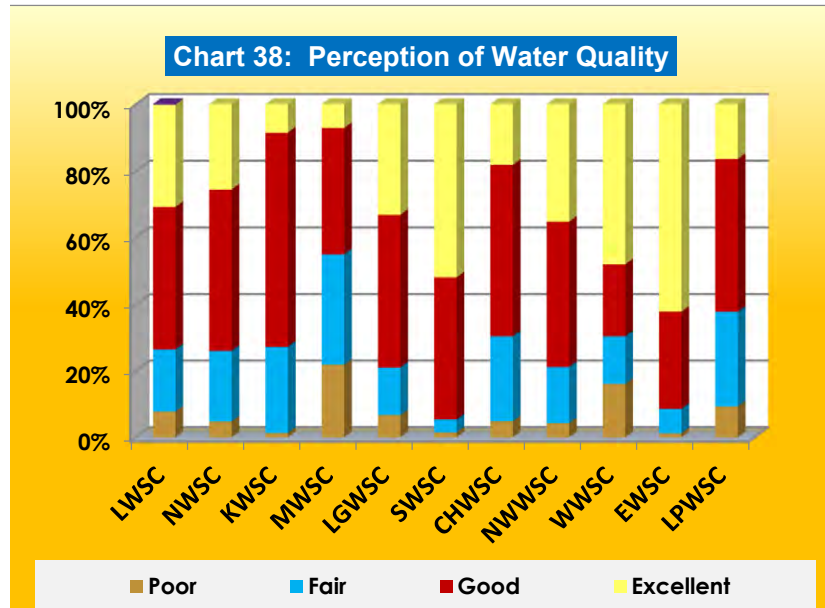
### 7.2.2.4 Customer Satisfaction

Customer perceptions in four (4) sections namely Quality of Water, Quantity of Water, Customer Service and Service Levels were obtained in a customer satisfaction survey from all the 11 CUs. The survey was conducted in Lusaka, Mongu, Livingstone, Kabwe, Kasama customers, Chipata, Chingola, Kitwe, Ndola, Solwezi and Mansa covering a total sample size of 2,444. The sample size for each CU was determined scientifically using the total number of

connections for each district. The results of the survey were categorised into four (4) sections:

#### 7.2.2.4.1 Quality of Water

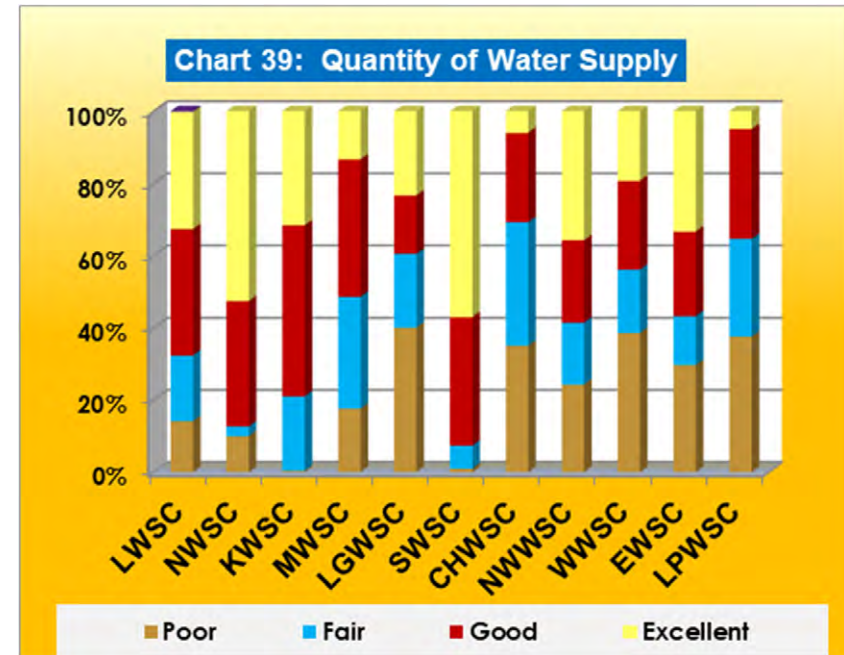
Customers were requested to provide their perception on the quality of water supplied to them based on the visual aspects and the taste. The feedback of the customers on the quality of water is shown in Chart 38.



A large number of customers from EWSC and SWSC held an excellent perception of the water quality. This review was because of the lack of smell of the water supplied and satisfactory taste. Customers indicated that the water did not have any undesirable smell. On the hand, customers from MWSC and WWSC said the water was of poor quality due to the occasional presence of brownish and black particles especially during the rainy season.

#### 7.2.2.4.2 Quantity of Water

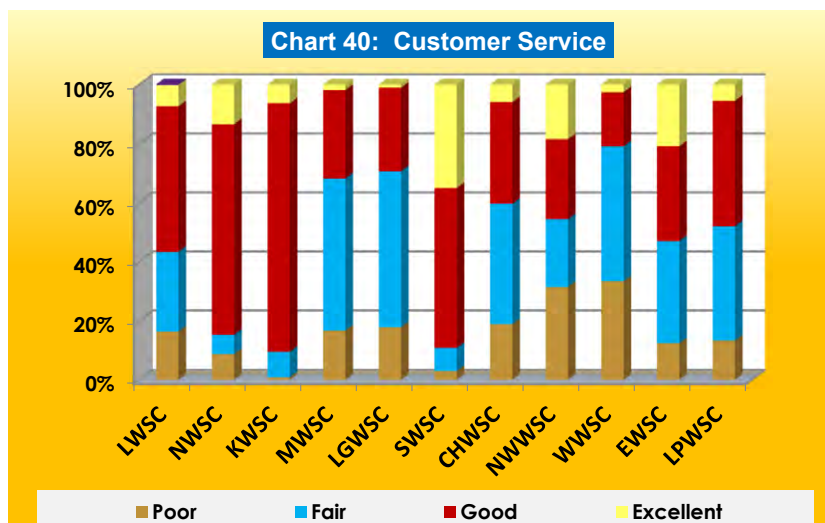
Customers were requested to give feedback on the quantity of water supplied by the CUs which focused on the hours of supply and the pressure. Chart 39 shows customer responses.



Customers from SWSC and EWSC indicated an excellent satisfaction towards water quantity. This was because of satisfactory hours of supply and water pressure. However, customers from WWSC, LPWSC, LGWSC and CHWSC indicated insufficient quantity of water supply due to supply interruptions.

### 7.2.2.4.3 Customer Service

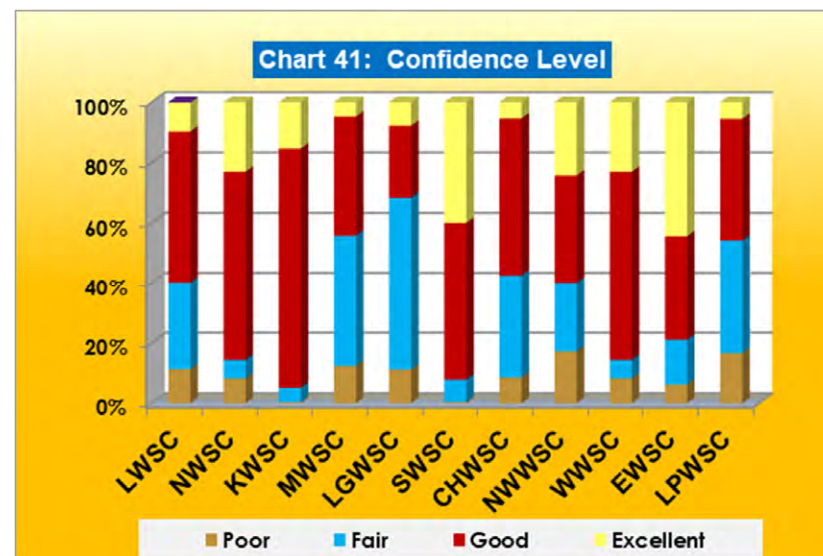
Feedback on the customer service of the CUs took into account the response time to complaints and general customer care. Chart 40 indicates responses from customers on the customer service being received.



Customers serviced by SWSC indicated an excellent customer service arising from the minimal complaint resolution time. Customers of NWSC, KWSC and LWSC indicated a good customer service. However, customers of WWSC and NWWSC indicated poor customer service due to unresolved complaints.

### 7.2.2.4.4 Confidence Level

The level of confidence that customers have in their CU is depicted in Chart 41.



Customers from EWSC and SWSC had high confidence levels in their CU because of the CUs' adherence to the water supply schedule while customers from NWWSC, WWSC and LPWSC rated their CUs confidence levels as poor due to an increase in supply interruptions.

## 7.2.3 FINANCIAL INDICATORS

Financial indicators analyse the revenues and costs of the CUs to illustrate viability and sustainability.

### 7.2.3.1 Billing and Revenue

Billing for water and sewerage services is shown in Table 39. This is the revenue that the CUs get for providing water supply and sewerage services. It excludes other charges such as sanitation surcharge, meter charges, reconnection fees and penalties. The billing for water and sewerage services are reflected separately in order to monitor viability of the two business units.



**Table 39: Billing for Water and Sewerage Services**

CU	Billing Water 2021 (ZMW)	Billing Sewer 2021 (ZMW)	Total Billing Water and Sewer (ZMW) 2021	Billing Water 2022 (ZMW)	Billing Sewer 2022 (ZMW)	Total Billing Water and Sewer (ZMW) 2022
LWSC	305,779,629	77,948,935	383,728,563	359,681,778	100,072,715	459,754,494
NWSC	144,723,532	40,346,449	185,069,982	130,757,925	35,108,632	165,866,557
KWSC	116,671,366	37,828,995	154,500,360	114,189,343	37,858,200	152,047,543
MWSC	121,904,685	32,705,977	154,610,661	115,358,854	33,030,782	148,389,636
LGWSC	51,005,319	6,400,318	57,405,637	47,935,827	6,731,470	53,652,498
SWSC	88,266,341	6,171,913	94,438,254	92,353,014	6,614,644	98,967,659
CHWSC	28,015,410	394,027	28,409,437	32,384,265	404,029	32,788,294
NWWSC	24,965,196	525,166	25,490,362	25,736,255	585,029	26,321,284
WWSC	16,748,542	115,507	16,864,048	18,712,977	127,494	18,840,471
EWSC	32,251,484	1,264,003	33,515,487	33,389,101	1,045,474	34,434,575
LPWSC	8,211,486	542,966	8,754,452	8,229,774	622,505	8,852,279
Total	938,542,990	204,244,257	1,142,787,245	978,729,115	222,200,974	1,199,915,290

The billing increased by K58.1mil in the year under review. However, this was a decrease compared to the K67.2million growth experienced between 2020 and 2021. LWSC recorded an increase of 21% which was attributed to the increase in the number of connections and increased sales. The decrease in NWSC was mainly due to reduced sales to Mopani copper mines in Kitwe who are the largest single customer from an average monthly consumption of 115,000m<sup>3</sup> to 45,000m<sup>3</sup>. Similarly, the drop in MWSC was largely attributed to the drop in consumption by Konkola Copper Mines.

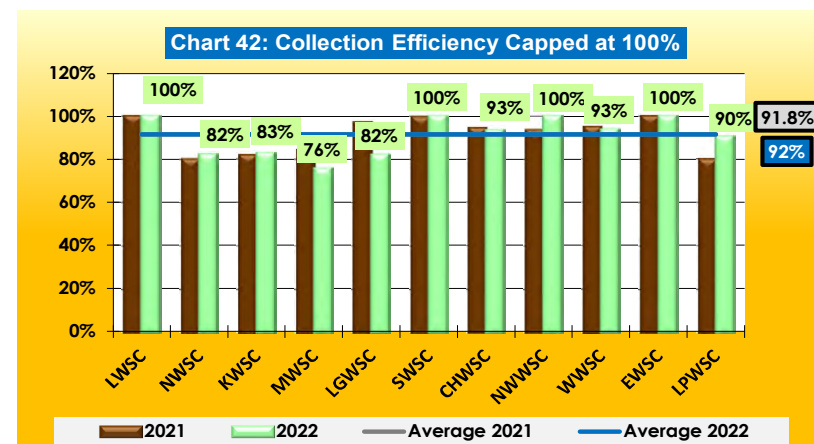
#### 7.2.3.1.1 Collection Efficiency

The collection efficiency (shown in Chart 42) is the proportion of billed amounts that are collected. Since 2021, the collection efficiency reflected in this report does not include payment towards arrears from the previous years. Such arrears are reflected in Table 51. This practice enables a fair comparison between billing and collections for the reporting period. The calculation

considers collections and billing for water supply and sewerage only. Other charges are not included.

It should be noted that the 85% benchmark was revised to 90% in 2021 in order to keep up with the sector improvements.

Benchmark for collection efficiency	Good	>95%
	Acceptable	90% - 95%
	Unacceptable	<90%



The sector average collection efficiency remained the same at 92% slightly above the new benchmark of 90%. Seven CUs namely LWSC, SWSC, CHWSC, NWWSC, EWSC, WWSC and LPWSC met the benchmark of 90%. The high collection efficiencies recorded by most CUs were due to payment of water supply and sewerage bills by Government Institutions and departments.

#### 7.2.3.1.2 Collections towards arrears

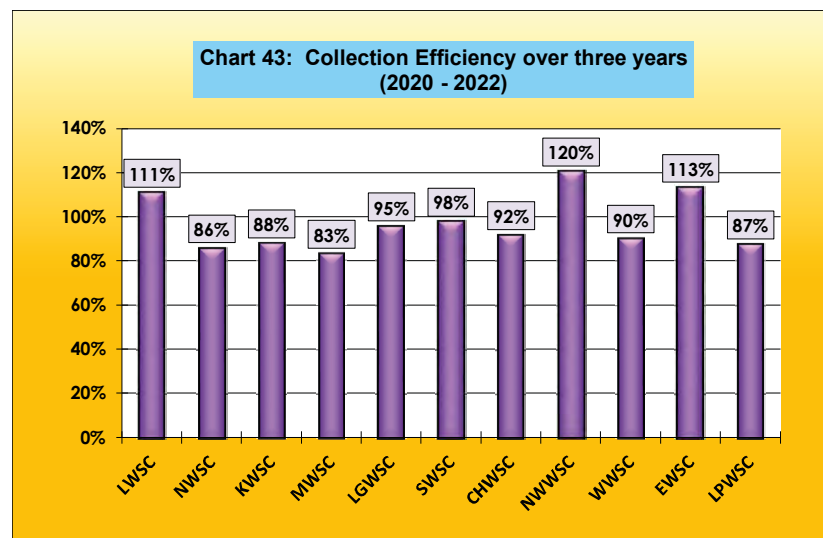
Collections that are above the total billing are considered to be payments towards arrears. Therefore, CUs whose collection efficiency was above 100% was capped at 100%. Only LWSC, EWSC, NWWSC and SWSC had collections



above 100% which were 106.2%, 104.6%, 112.7% and 100.3% respectively.

### 7.2.3.1.3 Collection Efficiency over three years

Calculating collection efficiency over a three-year period ensures that distortions are evened-out to give a more realistic picture of the collection efficiency as shown in Chart 43.



Six CUs namely LWSC, LGWSC, SWSC, NWWSC, WWSC and EWSC met the acceptable benchmark of 90% over a three-year period.

### 7.2.3.1.4 Trade Receivables and Payables

A trade receivable is a legally enforceable claim for payment held by a business against its customer/clients for goods supplied and/or services rendered. Trade receivable is shown in a Statement of Financial Position as a current asset. Payables are current liabilities of a business shown on a company's Statement of Financial Position. The payables include both trade and non-trade.

Failure to manage trade receivables and payables may affect the working capital of the business in terms of poor liquidity which may result in its inability to meet operational obligations when they fall due thereby straining supplier relationships. The desired trend is that both trade receivables and payables should be reducing.

**Table 40: Trade Receivables and Payables**

CU	Trade Receivables (ZMW) 2021	Trade Payables (ZMW) 2021	Trade Receivables (ZMW) 2022	Trade Payables (ZMW) 2022
LWSC	290,045,430	201,285,648	254,715,362	238,148,285
NWSC	124,885,738	271,742,595	194,793,284	299,411,295
KWSC	388,471,259	336,861,004	390,978,416	375,581,901
MWSC	190,572,078	211,637,191	249,187,581	260,413,466
LGWSC	61,417,481	64,434,336	71,289,616	70,117,140
SWSC	42,999,812	71,727,185	40,540,637	95,825,885
CHWSC	31,340,364	77,537,574	33,311,899	85,595,810
NWWSC	17,879,385	29,916,448	15,674,913	52,138,591
WWSC	12,310,982	15,055,996	12,872,738	67,636,278
EWSC	10,819,504	39,685,186	10,549,169	53,342,671
LPWSC	11,210,174	61,150,660	12,900,631	139,735,108
Total	1,181,952,206	1,381,033,823	1,286,814,246	1,737,946,430

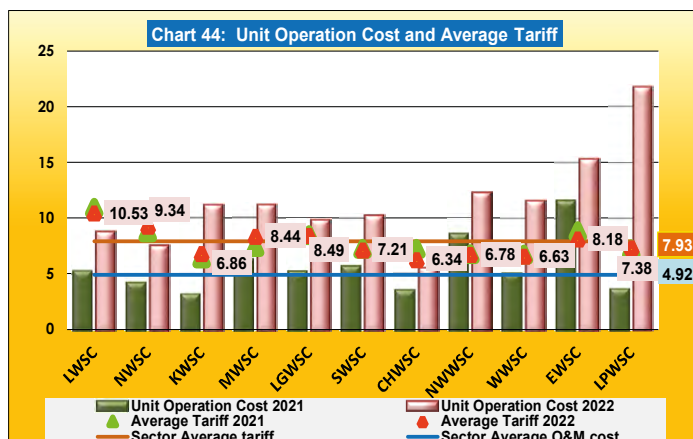
There was an increase in the trade receivables of about 9% mainly as a result of non-payment of bills by some domestic customers. LWSC, SWSC, NWWSC and EWSC were the only CUs that had reductions in receivables. The increase in payables of 26% was attributed to delayed payments of suppliers, statutory and staff liabilities. WWSC and LPWSC had the highest increase in payables of 349% and 129%. This increase could be attributed to escalation of costs without a corresponding increase in water and sanitation tariffs.

### 7.2.3.1.5 Average Tariff and Unit Operation Cost

Water and sewerage tariffs are raised periodically to move the CUs towards full cost recovery through user charges in line with the National Water

Policy. NWASCO approves all tariff adjustments and has the responsibility of ensuring that only justified costs are passed on to the customers. Thus, the justified operational costs of providing water and sanitation services have a direct bearing on the price of water.

For financial viability, the average tariff (billing/m<sup>3</sup>) should be equal to or higher than the unit operation cost. The unit operation cost includes the cost related to water and sewerage services whereas the average tariff does not incorporate the revenue from the sewerage services. For CUs that are not 100% metered, the average tariff is calculated by converting an assessed consumption of water using the rising block tariff. Chart 44 shows the water average tariff and total unit operation cost for water and sewerage services.



As shown in Chart 44, the average water tariff was only able to cover the O&M costs for LWSC, NWSC and CHWSC. However, it should be noted that the cost incurred was mainly dependent on the cash flows which in a number of cases was not available.

With the migration to separate tariffs for water and sanitation, CUs with higher sanitation coverage will be expected to have a higher average tariff, hence will be able to cover their costs. The unit operation cost has increased by over 50% while the average tariff has reduced by more than 40% posing a threat to the sustainability of the CUs. The sector should deeply reflect on this.

### 7.2.3.1.6 Computation of Tariffs

The cost drivers of CU activities in the cost structure are specific to their operating environments, hence the tariffs differ. It is worth noting that, consumption of up to 6m<sup>3</sup> is considered a lifeline, therefore the tariff per cubic meter is priced at, or below, the rate of cost recovery. Cross-subsidisation in the tariff structure compensates for the lifeline band.

Table 41 shows computation of a water bill for a metered domestic customer using the rising block tariff at different consumption volumes. This does not include fixed meter charge (at K15) or sewerage charges.

**Table 41: Computation of Bill using Rising Block Tariffs for Domestic Customer Water**

CU	2021			2022		
	Water Bill of 6 m <sup>3</sup> (Low consumption) (in K)	Water Bill of 30 m <sup>3</sup> (Medium consumption) (in K)	Water Bill of 60 m <sup>3</sup> (High consumption) (in K)	* Water Bill of 6 m <sup>3</sup> (Low consumption) (in K)*	"Water Bill of 30 m <sup>3</sup> (Medium consumption) (in K)"	"Water Bill of 60 m <sup>3</sup> (High consumption) (in K)"
LWSC	35	206	449	35	206	449
NWSC	27	169	385	27	169	385
KWSC	27	173	374	27	173	374
MWSC	29	161	362	29	161	362
LGWSC	29	179	434	35	212	518
SWSC	29	216	487	31	227	510
CHWSC	29	246	555	29	246	555
NWWSC	23	195	477	24	206	503
WWSC	31	236	536	31	236	536
EWSC	36	282	672	36	282	672
LPWSC	32	249	525	32	249	525
Average	33	231	526	34	237	539

CUs did not implement upward tariff adjustment in the year under review hence there was no change in the bill computation. EWSC had the highest bill in all the low consumption brackets while KWSC, MWSC and NWSC had the lowest.

### 7.2.3.2 Cost Analysis

#### 7.2.3.2.1 Operation and Maintenance Costs

Cost containment is very critical in service provision. The major operation costs consist of personnel, chemical, maintenance and energy which have a direct impact on the viability of a CU. The 'Other Cost' component includes administrative costs, operational consumables, services by sub-contractors and vehicle running expenses. Operational costs are normally analysed during tariff adjustments in order to remove unjustified costs that may otherwise be passed on to the consumers.

CUs operate under varying socio-economic conditions hence the differences in their costs. That notwithstanding, the proportion of the various cost elements to the overall costs and the trends are of essence. For certain cost categories such as chemicals, a reduction may not necessarily be desirable as this may mean a compromise in the quality of water rather than cost containment and so are the maintenance costs. Energy costs include electricity and fuel.

Table 42 shows the actual cost of operation in the reporting year

	Personnel Cost (in '000 K)			Chemicals Cost (in '000 K)			Energy Cost (in '000 K)			Maintenance Cost (in '000 K)			Other Cost (in '000 K)			Total O&M Cost (in '000 K)		
	2021	2022	% change	2021	2022	% change	2021	2022	% change	2021	2022	% change	2021	2022	% change	2021	2022	% change
LWSC	159,228	185,980	16.8%	14,678	25,627	75%	149,312	146,262	-2%	4,987	13,114	163%	44,552	57,415	29%	372,756	428,399	15%
NWSC	70,502	72,526	2.9%	13,099	16,333	25%	45,879	42,855	-7%	5,596	4,746	-15%	20,728	25,642	24%	155,804	162,102	4%
KWSC	70,045	92,061	31.4%	10,844	13,666	26%	68,957	68,746	0%	3,679	3,919	7%	13,801	11,247	-19%	167,327	189,638	13%
MWSC	81,660	76,842	-6%	8,738	9,094	4%	52,508	46,315	-12%	13,168	5,777	-56%	26,471	45,886	73%	182,544	183,914	1%
LGWSC	32,133	32,836	2.2%	3,527	3,103	-12%	17,305	14,918	-14%	2,393	2,134	-11%	8,053	8,012	-1%	63,411	61,003	-4%
SWSC	51,237	58,812	14.8%	7,429	7,947	7%	27,259	34,000	25%	2,002	1,914	-4%	14,637	13,590	-7%	102,563	116,263	13%
CHWSC	20,609	21,673	5.2%	484	790	63%	12,453	17,397	40%	908	1,396	54%	3,048	4,193	38%	37,502	45,449	21%
NWWSC	24,999	28,219	13%	1,339	1,815	36%	6,011	6,041	1%	3,402	1,787	-47%	5,519	8,573	55%	41,271	46,436	13%
WWSC	18,432	18,878	2%	973	1,803	85%	5,605	6,356	13%	329	376	14%	1,992	3,219	62%	27,331	30,631	12%
EWSC	30,199	31,510	4.3%	3,204	3,145	-2%	7,615	7,704	1%	2,574	2,578	0%	9,640	9,231	-4%	53,232	54,169	2%
LPWSC	10,034	9,503	-5.3%	644	755	17%	3,040	3,285	8%	481	165	-66%	2,136	10,537	393%	16,335	24,246	48%
Totals	569,078	628,840	10.5%	64,958	84,080	29%	395,943	393,880	-1%	39,518	37,904	-4%	150,578	197,545	31%	1,220,075	1,342,249	10%

Note: Red-negative trend, Green- positive trend (considering reduction of 10% and increase of 20%)

Overall costs increased by 10% due to increases in personnel, fuel and chemicals among other inputs costs as well as other costs.

### Personnel Costs

Personnel costs include wages and salaries, training and other staff-related costs such as medicals, recruitment and provision for retirement benefits.

Overall personnel cost increased by 10.5%. Only KWSC was above the 20% mark-up increase in personnel costs.

### Chemical Costs

Chemical costs increased by 29% with most CUs recording a significant increase. This was because the price of chemicals generally increased. In addition, for LWSC, the increase is also attributed to the increased production following the commissioning of the Kafue Bulk line. For WWSC the increase was also as a result of increased usage. The reduction in chemical costs for LGWSC was due to the reduced usage of Aluminium Sulphate and the shift from the use of granular chlorine to pellets which is a better alternative.

### Energy Costs

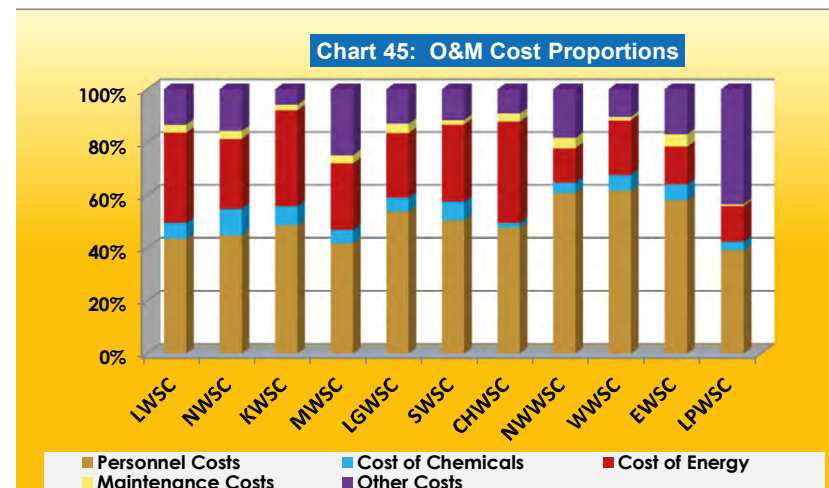
Energy costs reduced slightly by 1%. This was due to load shedding in the latter part of the year by ZESCO and plant shut downs.

### Maintenance Costs

Overall maintenance costs decreased by 4%. This could be attributed to the fact that CUs neglected expenditure on maintenance works as they were under financial stress. CHWSC experience numerous pump breakdowns which resulted in the increase in maintenance costs.

### Cost Proportions

The cost proportions in Table 42 are shown in Chart 45.



The highest proportion of costs was attributed to personnel which accounted for 47% of total operational costs. WWSC had the highest proportion of personnel costs at 62% followed by NWWSC at 61%. LPWSC used to be the highest in the past years but in 2022 top management salaries were being paid by the Government and Cooperating Partners following the suspension of the operating licence.

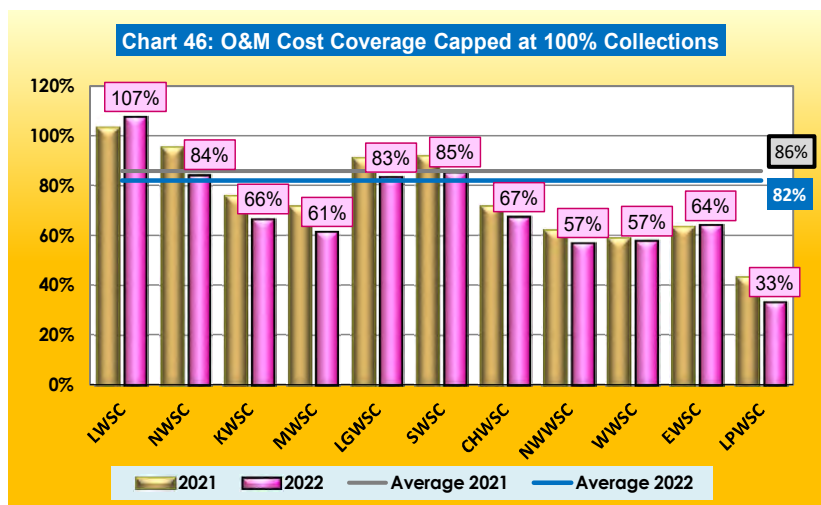
Personnel costs were followed by Energy (29%) then 'other cost' (15%), Chemical (6%) and maintenance (3%).

#### 7.2.3.2.2 Operation and Maintenance Cost Coverage by capped Collections

This indicates the extent to which the level of collection is able to cover all the operational costs.

Benchmark for coverage of O+M cost	Good	>150%
	Acceptable	100 – 150 %
	Unacceptable	< 100%

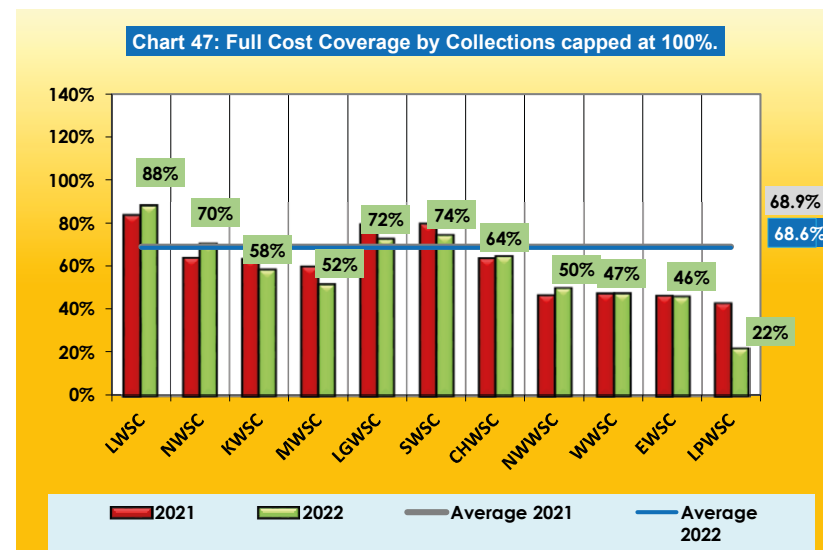
The analysis in Chart 20 considers revenue collections from water and sewerage billing only. It does not include income from other fees (such as penalties, meter charges, surcharges), operating grants from Government and Cooperating Partners. The collections are capped at 100% for CUs whose collection efficiency was above 100%.



Only LWSC met the acceptable benchmark of 100%. Despite most CUs collecting above the 90% benchmark, the O&M cost coverage dropped due to an increase in the cost of inputs which was not matched by any increase in tariffs.

### 7.2.3.2.3 Full Cost Coverage by Collection capped at 100%

Full cost includes all O&M costs plus depreciation, finance charges and allowable provisions such as pension. The total collections reflect all payments for water and sanitation billing collected in the period. As earlier indicated, the collections were capped 100%.



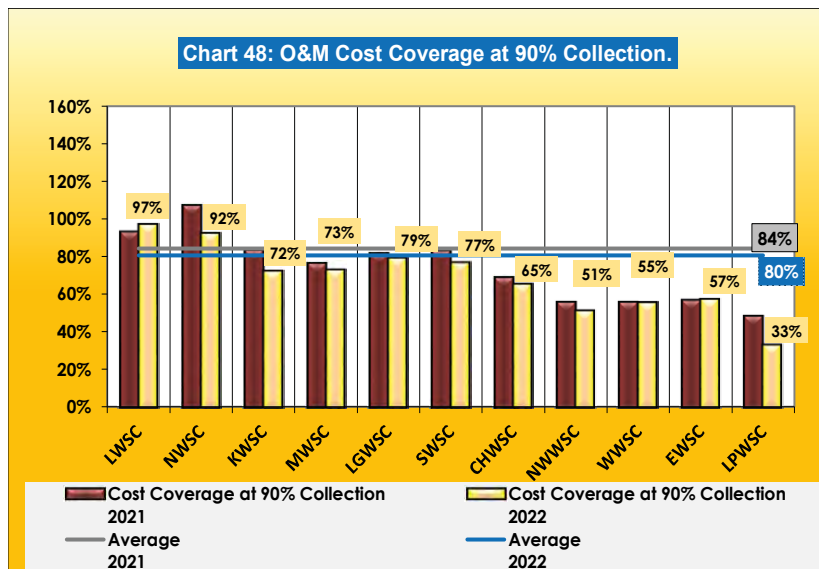
The average full cost covered by collections dropped slightly as shown in Chart 47. LWSC, NWSC, CHWSC, and NWWSC recorded an increase in the cost coverage ratios.

### 7.2.3.2.4 Operation and Maintenance Cost Coverage at 90% Collection

Chart 48 shows the cost coverage assuming an acceptable benchmark for collection efficiency of 90% of the billed amount. NWASCO uses the benchmark for collection efficiency to arrive at a tariff that would cover O&M costs at a certain level. NWASCO desires an upward trend in cost coverage to ensure sustainability of the CUs and therefore recommends an adverse variance of



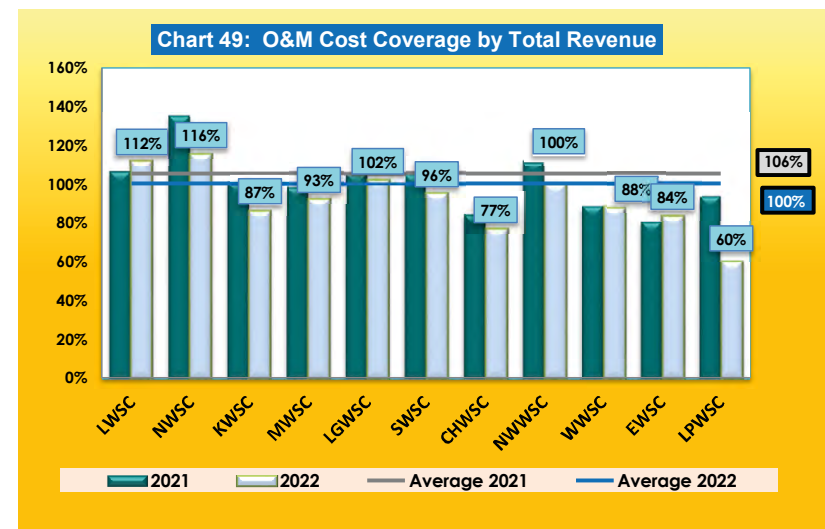
not more than 10% of the approved costs. The ability to meet the approved cost coverage levels is driven by good cost containment versus generated revenue. CUs and their Boards must adhere to the approved tariff revenue and cost structures.



The O&M cost coverage at the benchmark of 90% collection dropped for all CUs except for LWSC and EWSC. The drop observed in Chart 48, was mainly due to the increase in the input costs that was not matched without any increase in the water and sanitation tariffs.

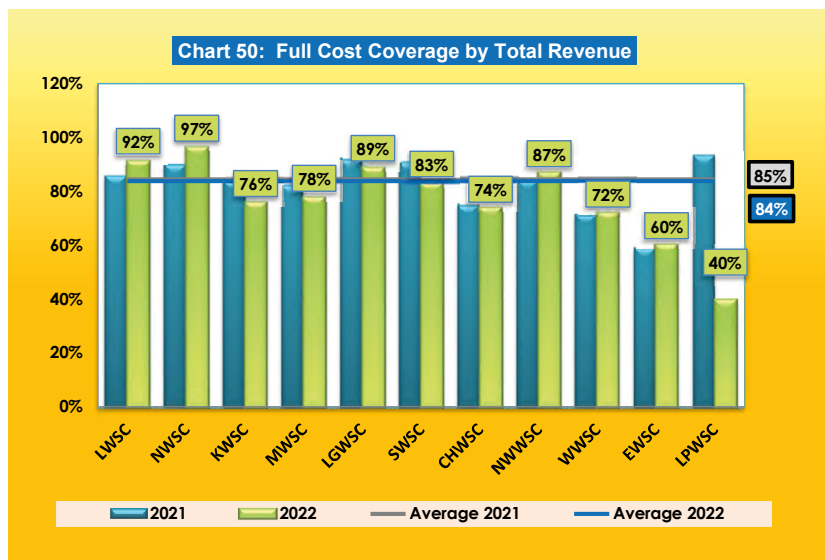
#### 7.2.3.2.5 Operational and Maintenance Cost Coverage by Total Revenue

Charts 49 and 50 depict the financial performance of the CUs. Total revenue includes net billed amounts, other income such as penalty fees, interest, subsidies and recurrent (income) grants.



The average O&M cost coverage by total revenue dropped as result of the increased costs that were not matched by the increase in revenue. All CUs were below the benchmark of 100% save for LWSC, NWSC, LGWSC and NWWSC. For sustainability, CUs need to seriously concert efforts to managing their costs, improving collection efficiency and increasing the revenue base.

Chart 50 shows the full cost coverage by total revenue. The full costs include depreciation and finance charges and the revenues include net billed amounts, other income such as other fees (meters charges and connection/reconnection), interest, subsidies and recurrent (income) grants.



None of the CUs met the benchmark of 100%. However five CUs namely LWSC, NWSC, NWWSC, WWSC and EWSC recorded an increase.

### 7.2.3.3 Financial Ratio Analysis

This section presents Profitability, Liquidity and Activity ratios to provide more information on whether each CU is applying its assets in an efficient and profitable manner. One major ratio from each of the above classes appropriate to the WSS sector was analysed as highlighted in Table 43.

**Table 43: Financial Ratios**

	Current Ratio		Net Profit Margin		Non-Current Asset Turnover	
	2021	2022	2021	2022	2021	2022
LWSC	2.75	1.94	-17%	5%	0.56	0.24
NWSC	1.42	1.48	-11%	-3%	0.17	0.15
KWSC	1.22	1.13	-19%	-31%	0.13	0.12
MWSC	1.24	2.92	-21%	-27%	0.29	0.11
LGWSC	1.06	0.32	-2%	-89%	0.07	0.22
SWSC	0.60	0.47	-3%	-12%	0.24	0.24
CHWSC	0.43	0.53	-33%	-35%	0.10	0.09
NWWSC	0.87	0.90	-9%	-15%	0.46	0.41
WWSC	1.06	0.68	-23%	-32%	0.93	1.17
EWSC	0.37	0.52	-44%	-41%	0.20	0.21
LPWSC	0.24	1.45	-7%	-2%	0.20	0.20

#### i). Liquidity Ratios

**The Current Ratio** is the ratio of current assets to current liabilities: it indicates a company's ability to satisfy its current liabilities with its current assets (Current ratio = Current assets/ current liabilities). For current ratio, a range of 1 to 3 is acceptable for the water sector and indicates that a company is able to meet its financial obligations partially or in full as they fall due.

LWSC, NWSC, KWSC, MWSC and LPWSC were within the acceptable range for Current Ratio. However, consideration has to be made on the extent to which the trade receivables are able to be collected as they make up a significant proportion of the current assets.

#### ii). Profitability Ratios

The Net Profit Margin is the ratio of net Income to Turnover and indicates how much of each Kwacha of Turnover is left over after all expenses. (Net Profit

Margin = Net Income/ Turnover). Only LWSC made a profit partly due to an increase of 21% in the billing.

### iii). Activity Ratios

Non-Current Asset Turnover is the ratio of turnover to fixed (non-current) assets. The ratio indicates the ability of the company's management to put the fixed assets to work to generate sales. (Fixed Asset Turnover= Turnover/Fixed assets).

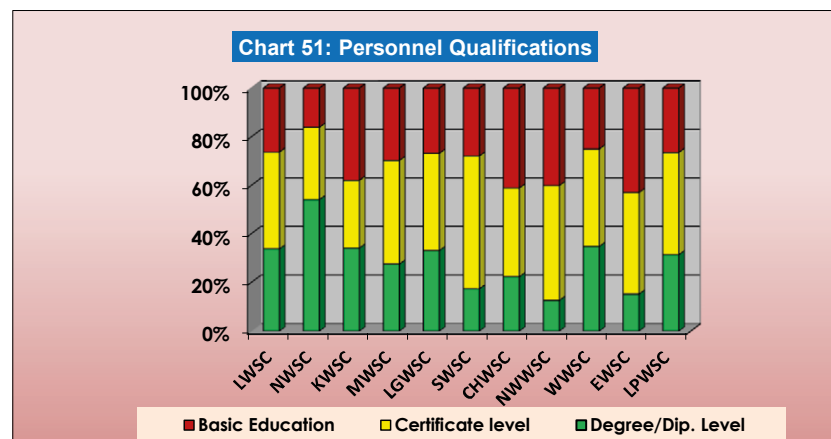
The desirable trend for CUs is to have higher ratios than in the previous year. Only LGWSC, WWSC and EWSC had a desirable trend.

## 7.2.4 STAFF EFFICIENCY INDICATORS

These measure the output of personnel in relation to various aspects of operations such as billing, connections and personnel costs.

### 7.2.4.1 Human Resource Development

Chart 51 shows the personnel qualifications in the sector.



There was an overall net decrease in the total number of staff in the CUs by 89. The drops for LWSC, MWSC and NWSC of 22 and 24 respectively was mainly attributed to separations. The categorisation of staff was 31% degree and diploma holders, 39% certificate and the rest basic education. The Zambian water sector is labour intensive, hence it is desirable to have a higher proportion of skilled staff with certificates and diplomas who tend to be more of field workers.

LWSC, SWSC, NWWSC, MWSC, WWSC and LPWSC had a desirable proportion of staff qualifications with majority of staff with certificate. EWSC had the most undesirable proportion of staff qualifications with 43%. NWSC had the most qualified staff with degree at 54%.

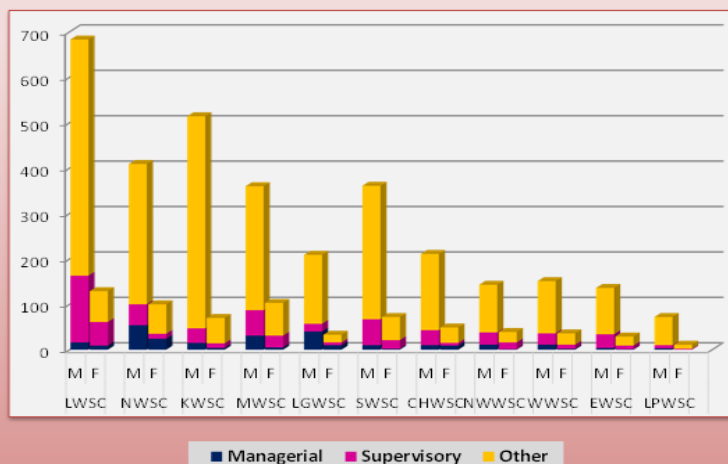
### 7.2.4.2 Gender Mainstreaming

The number of personnel working in the sector has been disaggregated by gender to show the extent of participation of women and men. Table 44 and Chart 52 shows the proportion of males to females and their hierarchy in the organisation respectively.

**Table 44: Number of Staff Disaggregated by Gender**

CU	Female 2021	Male 2021	Female 2022	Male 2022
LWSC	129	551	104	652
NWSC	100	409	105	428
KWSC	70	514	68	520
MWSC	103	360	116	369
LGWSC	33	209	11	62
SWSC	72	361	76	362
CHWSC	49	211	48	210
NWWSC	39	143	38	125
WWSC	36	151	31	148
EWSC	29	136	28	134
LPWSC	11	72	35	207
	<b>671</b>	<b>3,117</b>	<b>660</b>	<b>3,217</b>

Chart 52: Gender Proportions at Organisation Levels



The percentage of women working in the CUs at various levels in the hierarchy remained at 17%. This is still below the 30% provided for in the National Gender Policy. Female representation at managerial positions increased to 23% from 21% while the supervisory increased to 26% from 22%. The females represented at other levels reduced to 14%.

#### 7.2.4.3 Staff per 1,000 Connections

This indicates the number of employees servicing 1,000 connections. The computation includes staff on at least a year's contract.

Staff efficiency can be measured as “staff per 1,000 water connections” as well as “staff per 1,000 water and sewer connections” (Chart 53 and 54). CUs must endeavour to keep the staff per 1,000 water connections within the acceptable benchmark highlighted below in order to be efficient.

The combined staff efficiency for water and sanitation is derived from the total

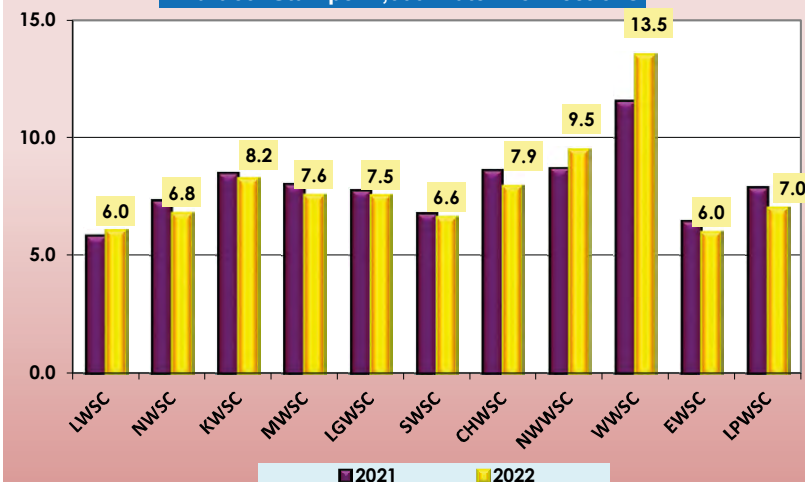
number of staff divided by the total number of water and sewer connections, assuming that the time spent on a water connection is the same as that on a sewer connection.

Benchmark for staff per 1,000 water connections (Cluster 1)	Good	5
	Acceptable	6– 8
	Unacceptable	>8

Benchmark for staff per 1,000 water connections (Cluster 1)	Good	9
	Acceptable	10 – 14
	Unacceptable	>14

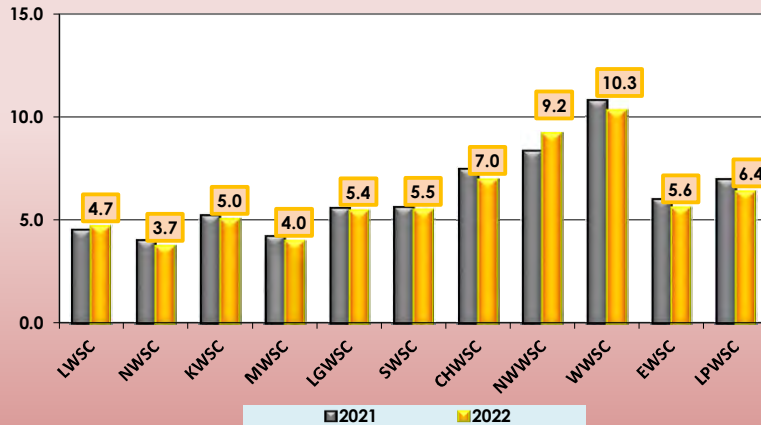
Chart 53: Staff per 1,000 Water Connections



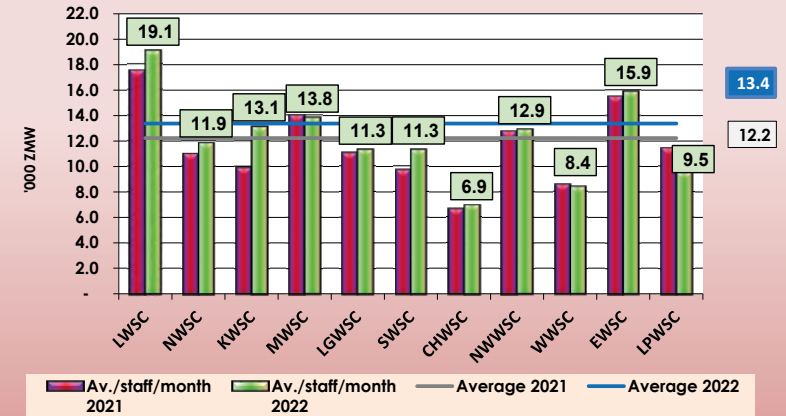
In Cluster 1, all CUs, except KWSC, met the ‘acceptable benchmark’ for staff per 1,000 connections while all CUs met the ‘acceptable benchmark’ under

cluster 2 and 3.

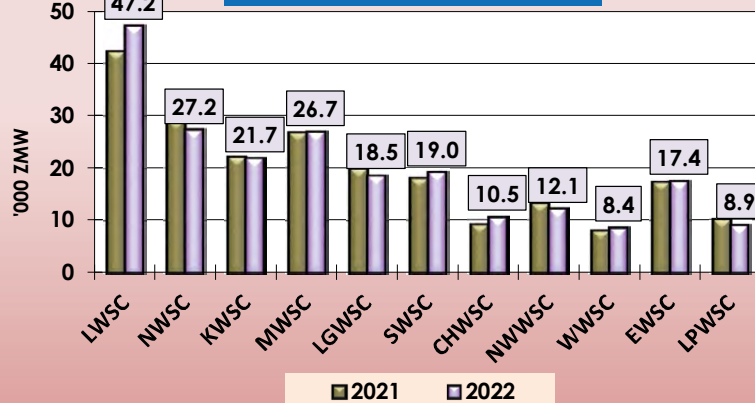
**Chart 54: Staff per 1,000 Water and Sewer Connections**



**Chart 56: Average Personnel Cost/ Staff /Month**



**Chart 55: Billing/Staff/Month**



Like in the previous years, none of the CUs had the desirable ratio of 3 to 1 for billed revenue to staff costs. However, LWSC and NWSC were close with ratios of 2.95 and 2.29 respectively.

#### 7.2.4.5 Summary of staff efficiency

Drawing from Charts 55 and 56, Table 45 gives a consolidated view of staff efficiency.



Table 45: Observations on Staff Efficiency

Commercial Utility	No. of Staff	Staff/1000 water connections	Av. personnel cost/Staff/ Month (K)	Billing/Staff /Month (K)	Collection/Staff /Month (K)	Staff Cost in Relation to Billing and Collection (K)
LWSC	680	6	19,087	56,342	59,822	0.33
NWSC	509	7	11,874	27,156	22,308	0.49
KWSC	584	8	13,136	21,696	17,942	0.68
MWSC	463	8	13,831	26,708	20,220	0.62
LGWSC	242	8	11,307	18,475	15,425	0.68
SWSC	433	7	11,319	19,047	19,097	0.59
CHWSC	260	8	6,947	10,509	9,768	0.69
NWWSC	182	9	12,921	12,052	13,582	1.00
WWSC	187	14	8,413	8,396	7,834	1.05
EWSC	165	6	15,914	17,391	18,196	0.89
LPWSC	83	7	9,541	8,888	8,026	1.14
Average						0.54

For staff cost in relation to billing and collection, the desirable target for the sector is 0.4 (or 40%) or less. The average staff efficiency worsened from 0.50 to 0.54. This was mainly attributed to the increase in personnel costs and drop in collection efficiency. Only LWSC met the benchmark for staff efficiency.

## 7.2.5 CORPORATE GOVERNANCE AND MANAGEMENT INDICATORS

Adherence to good corporate governance enhances performance of the CU. It is the role of the Board and Management to steer the Utility in a strategic direction thus achieve the CU's objectives.

In order to assess the performance of the Board and Management, it is important to focus on corporate decisions and expenditure on the Boards of Directors.

### 7.2.5.1 Performance of the Boards

The performance of the Boards was based on the number of Board meetings held, the key decisions made during the meeting and budgetary control as shown in Table 46.

Table 46: Corporate Governance Indicators

	Approved Corporate Documents				Full Board Meetings				Budget variance against approved
	Strategic plan	Approved Budget	2022 Annual report with audited accounts	Investment plan	Attendance	Meetings held	Meetings planned	Total Board expenditure as a % of O&M costs	
LWSC	✓	✓	✗	✓	96%	11	8	0.2	28%
NWSC	✓	✓	✓	✓	94%	7	5	0.8	19%
KWSC	✓	✓	✗	✓	100%	4	4	0.1	17%
MWSC	✓	✓	✗	✓	96%	5	5	0.3	15%
LgWSC	✓	✓	✗	✗	85%	2	4	0.7	23%
SWSC	✓	✓	✓	✓	63%	3	4	0.5	4%
ChWSC	✓	✓	✗	✗	100%	2	2	0.6	2%
NWWSC	✓	✓	✗	✓	75%	3	4	0.8	-7%
WWSC	✗	✗	✗	✗	90%	2	4	0.8	33%
EWSC	✓	✓	✓	✗	88%	5	5	1.1	21%
LPWSC	✓	✗	✓	✗	86%	2	2	0.3	-23%

#### i). Budgetary Control

Budgetary control is one of the key functions of the Board. A budget variance of  $\pm 10\%$  is acceptable. This could be attributed to the unforeseen cash flow constraints that most CUs experienced hence less expenditure. Five out of the 11 CUs i.e. LWSC, NWSC, KWSC, MWSC, LGWSC, WWSC, EWSC and LPWSC operated outside the recommended budget variance.

#### ii). Board Meetings

Board Meetings should be held once a quarter and costs maintained within 1% of the total O&M for big CUs (Cluster 1) and 1.5% for the smaller ones (Cluster 2 and 3). All CUs operated within the recommended board expenditure limits.

#### iii). Status on Corporate Documents

It is the role of the Board of Directors to ensure that the CUs have the corporate documents and ensure they monitor their implementation. Three out of 11 CUs namely NWWSC, WWSC and LPWSC did not have audited accounts for 2021.

### 7.3 QUALITY OF SUBMITTED INFORMATION

As part of the licence conditions, all service providers are required to submit via an information system developed by NWASCO, an annual report with accurate data by 31st January of each year.

All CUs submitted the data on time and with fairly good quality as illustrated in Table 47.

Table 47: Quality of Submitted Information

Utility	Quality of Submitted Information in the NWASCO Information System 2022	
	The Annual Report	Remark
Lusaka WSC	Fair	Timely. <i>Major clarifications required.</i>
Nkana WSC	Good	Timely.
Kafubu WSC	Fair	Timely. <i>Minor clarifications required.</i>
Mulonga WSC	Fair	Timely. <i>Minor clarifications required.</i>
Lukanga WSC	Fair	Timely. <i>Minor clarifications required.</i>
Southern WSC	Good	Timely.
Chambeshi WSC	Fair	Timely. <i>Major clarifications required.</i>
North Western WSC	Fair	Timely. <i>Minor clarifications required.</i>
Western WSC	Fair	Timely. <i>Major clarifications required.</i>
Eastern WSC	Good	Timely.
Luapula WSC	Good	Timely

Note: All submitted data is checked for accuracy and completeness. Where data is found to be lacking, verifications are done with the CU, as well as with data

collected during routine inspections carried out during the year under review. The data presented in this report is therefore believed to be complete and accurate



Inspector scrutinising records





Access to water is critical











## PERFORMANCE OF PRIVATE SCHEMES



## 8.1 INTRODUCTION

Private Schemes are companies that provide WSS services primarily to their employees as a fringe benefit. The WSS services are run as an auxiliary function and not on a commercial basis. There were six licenced Private Schemes in the reporting period:

-  Kaleya Smallholders;
-  ZESCO;
-  Zambia Sugar;
-  Kafue Sugar;
-  Chilanga Cement Plc; and
-  Nampundwe Konkola Copper Mines (KCM) Plc.

However, Chilanga Cement Plc and Nampundwe KCM were only licenced to provide WSS within their premises and not the community as amended in September 2018 and September 2020 respectively. Hence the monitoring of water quality on these two Private Schemes is done mainly through the Lusaka WSC and Lukanga WSC respectively where they handed over their community areas.

ZESCO operated four Schemes namely Iteshi Tezhi, Kafue Gorge and Victoria Falls (Southern Province) and Musonda Falls (Luapula Province). Private Schemes in the reporting period demonstrated commitment to improving water supply and sanitation in their operating areas. This was through improvement projects, capacity building through trainings and procurement of equipment particularly for water quality testing. Zambia Sugar had continued to rehabilitate its sewage ponds with the last one to receive attention being the Chula Ponds. In order to improve water quality monitoring, ZESCO acquired

testing equipment for Kafue Gorge.

The regulatory performance requirements for Private Schemes providing services on non-commercial basis are minimal and mainly relate to service level aspects of WSS coverage, hours of supply and water quality. The performance of the Private Schemes is shown in Table 48.

**Table 48: Performance of Private Schemes**

	Population in Service Area	Service Coverage %	Sanitation service coverage	Hours of Supply 2021	Hours of Supply 2022	Water Quality Compliance 2021	Water Quality Compliance 2022
Kaleya Small Holders	2,687	100%	56%	16	19	97.9%	99.7%
ZESCO	6,896	100%	81%	18	18	96.0%	96.9%
Zambia Sugar Plc	15,088	100%	95%	24	24	95.0%	98.0%
Kafue Sugar	158	100%	80%	24	24	85.9%	91.7%
Total	24,829						

**Note:** The reduction in population in service area was due to reapportionment between CU and Private Schemes

## 8.2 COVERAGE

All Private Schemes provided water to all consumers within their area of operation through individual connections and public stand taps except Zambia Sugar that covered 94% of its population.

On sanitation, save for Kafue Sugar and Kaleya Smallholders, all other Private Schemes provided sanitation services through individual connections and discharging into sewage ponds or into communal or individual septic tanks.

### 8.3 HOURS OF SUPPLY

Farmers and Lungayi D Townships under Kaleya Small Holders recorded the lowest hours of supply at 18 hours while under ZESCO, the upper parts of Kafue Gorge's Camp 3 Township had the lowest supply hours with some areas going to a number of days without supply. Ngomona Township under Zambia Sugar had pockets of areas with discontinuous supply while the rest of the areas were 24 hours.

### 8.4 WATER QUALITY COMPLIANCE

All schemes were compliant to the ZABS Drinking Water Quality Standards save for Kafue Sugar Plc which recorded failures in chlorine residual tests. Further, the scheme did not conduct the number of bacteriological tests in accordance with NWASCO guidelines.

In order to improve water quality monitoring, Zambia Sugar procured water testing equipment for each of the water treatment plants which was capable of testing a wide variety of parameters to replace the colour comparators that were not in good condition. Other Private Schemes continued to outsource laboratory services.

The need for continuous capacity development was evident in the reporting year for Private Schemes because of changes in staff managing water and sanitation operations in a number of schemes.



Inspector checking water at customer premises





Water intake

## CONCLUSION





Among the functions of NWASCO is to disseminate information on the performance of the water supply and sanitation sector to the public, as mandated by the Water Supply and Sanitation Act No. 28 of 1997. Therefore this report provides an insight into the performance of each water supply and sanitation service provider for the 2022 reporting year.

The sector recorded positive trends in only two indicators namely sanitation coverage and collection efficiency, making 2022 the year with the lowest number of recorded positive trends in the past five years in the nine indicators used in the NWASCO benchmarking. Non-revenue water (NRW) sector average reached the highest of 58% since NWASCO started reporting on the indicator in 2001. With the sector benchmark of 25%, it is clear that tackling NRW will require new strategies to be addressed. This has also opened up a space for new ideas and innovations in the sector.

Similarly, operation and maintenance cost coverage has also reached its lowest recorded in the last 10 years while metering ratio also continued to decline. Hours of supply were affected mainly by the continued breakdowns of equipment due to poor maintenance practices, and dwindling and poor raw water sources.

In the period under review, three CUs did not meet the requirements of the 10 integrity parameters for water quality based on the ISO 17025 and another four recorded non-compliance to the standards for drinking water.

## 9.1 PROGRESS TOWARDS ATTAINING NATIONAL GOALS

The Eighth National Development Plan (8NDP) was launched in September 2022 and covers the period 2022 – 2026. Therefore, progress on its strategies will be comprehensively analysed in the 2023 Sector Report. However, it can be noted that water and sanitation are covered under the Human and Social Development strategic development area number 2 of the plan. In particular, strategic outcome number 3 with the following strategies:

Strategy 1: Improve access to clean and safe water – the first programme under this strategy is the infrastructure development. In the reporting period, a

number of projects were on-going in all CUs. Examples include the Integrated Small Towns Water Supply and Sanitation projects in WWSC, LPWSC and CHWSC, the Zambia Water Supply Programme in MWSC and the Lusaka Sanitation Programme in LWSC. Other projects implemented are discussed in section 4.3.5 under chapter 4.

The second programme under the strategy is water quality monitoring. In the reporting period, this was taken care of under some projects that would see the construction of laboratories and equipping them. This was the case for the Integrated Small Towns Water Supply and Sanitation projects.

Strategy 2: Improve sanitation services – the strategy has four programmes namely infrastructure development, solid waste management, sanitation and hygiene promotion and investment promotion. Sanitation infrastructure was addressed alongside the projects discussed in section 4.3.5. Additionally, CUs continued on their quest to embrace On-site Sanitation through institutionalising the OSS and FSM business. OSS data capture through GIS mapping exercises and sanitation surveys were some of the activities done.

Solid waste has a profound bearing on sanitation and hygiene and must therefore be addressed by the relevant authorities such as the Local Authorities.

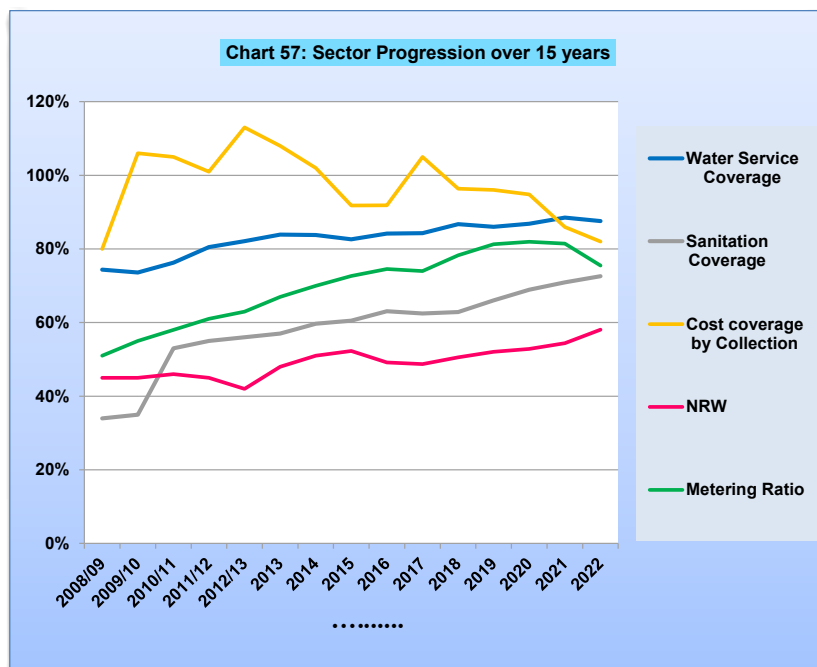
In July 2022, the Zambia Water Investment Programme (ZIP) was launched that would see the leveraging of some US\$5.75 billion for water security and creation of 200,000 formal jobs. The implementation of the ZIP would greatly benefit the water supply and sanitation sector that is in need of investments in order to attain national sector targets.

## 9.2 SECTOR PROGRESSION OVER 15 YEARS – URBAN & PERI URBAN AREAS

Chat 57 shows the performance of the sector on a few critical indicators over a period of 15 years. Despite 123,117 additional people accessing water in the reporting period, water coverage declined by 1%. In terms of connections, 17,999 domestic connections were added.



Sanitation coverage on the other hand increased noticeably by 1.7% with 295,390 additional people having sanitation services through sewer networks and septic tanks.



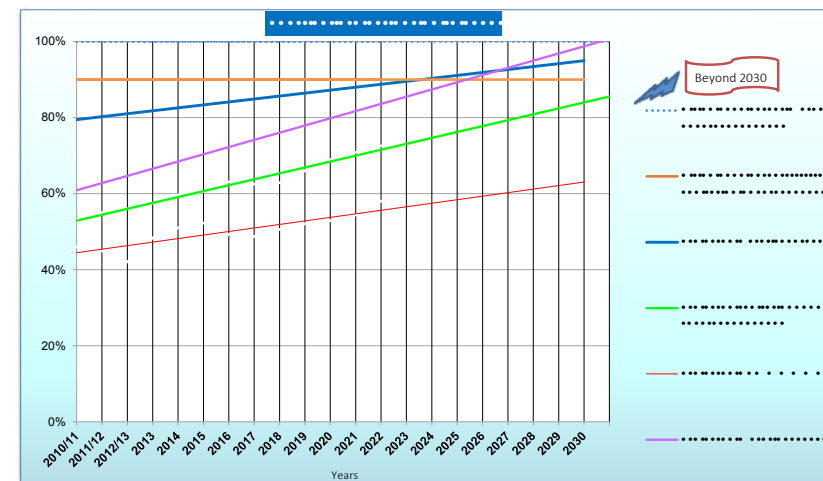
Cost coverage by collection for the sector continued on the unfavourable downward trend since 2018 to 82% in 2022. In the reporting period, there was a general increase cost of chemicals and other inputs with an unmatched increase in billing and collection. Non-revenue Water continued to worsen having increased from 56% to 58.1%. This is partly attributed to dilapidating infrastructure and unconventional and unsound methods of estimating unmetered production and consumption. The need for the finalisation and implementation of the National NRW Strategy cannot be overemphasised, if

significant progress towards attaining the targets on NRW is to be attained.

Metering ratio for the sector also declined from 82% to 75.5%. In absolute terms, there were 16,386 fewer metered connections owing to faulty meters and failure to meter new connections.

### 9.3 PROJECTIONS UP TO 2030 – URBAN AND PERI-URBAN AREAS

Chart 58 demonstrates the progression of sector averages up to 2030 for urban and peri-urban water and sanitation coverages, metering ratio and NRW with the assumption that progression is maintained at more or less the same rate. These projections were made from 2010/11.



With the dismal performance of the sector in the reporting period, the Chart shows that the country is not likely to meet its Vision 2030 targets for urban and peri-urban water and sanitation coverage of 100% and 90% respectively unless pragmatic interventions are employed. Additionally, NRW and metering ratio will not reach the sector benchmarks until after 2030. Attainment of these targets is extended further when access to services in rural areas is taken into

account considering the lower coverage rates in rural areas. It is important therefore that the sector deeply thinks through pragmatic strategies that need to be employed in order to change current negative trend.



Newly constructed Water treatment plant in Samfya





Waste water treatment plant.







# WATER SUPPLY AND SANITATION SECTOR REPORT 2022

OVER



**Ensuring Better Services and Fair Value**



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