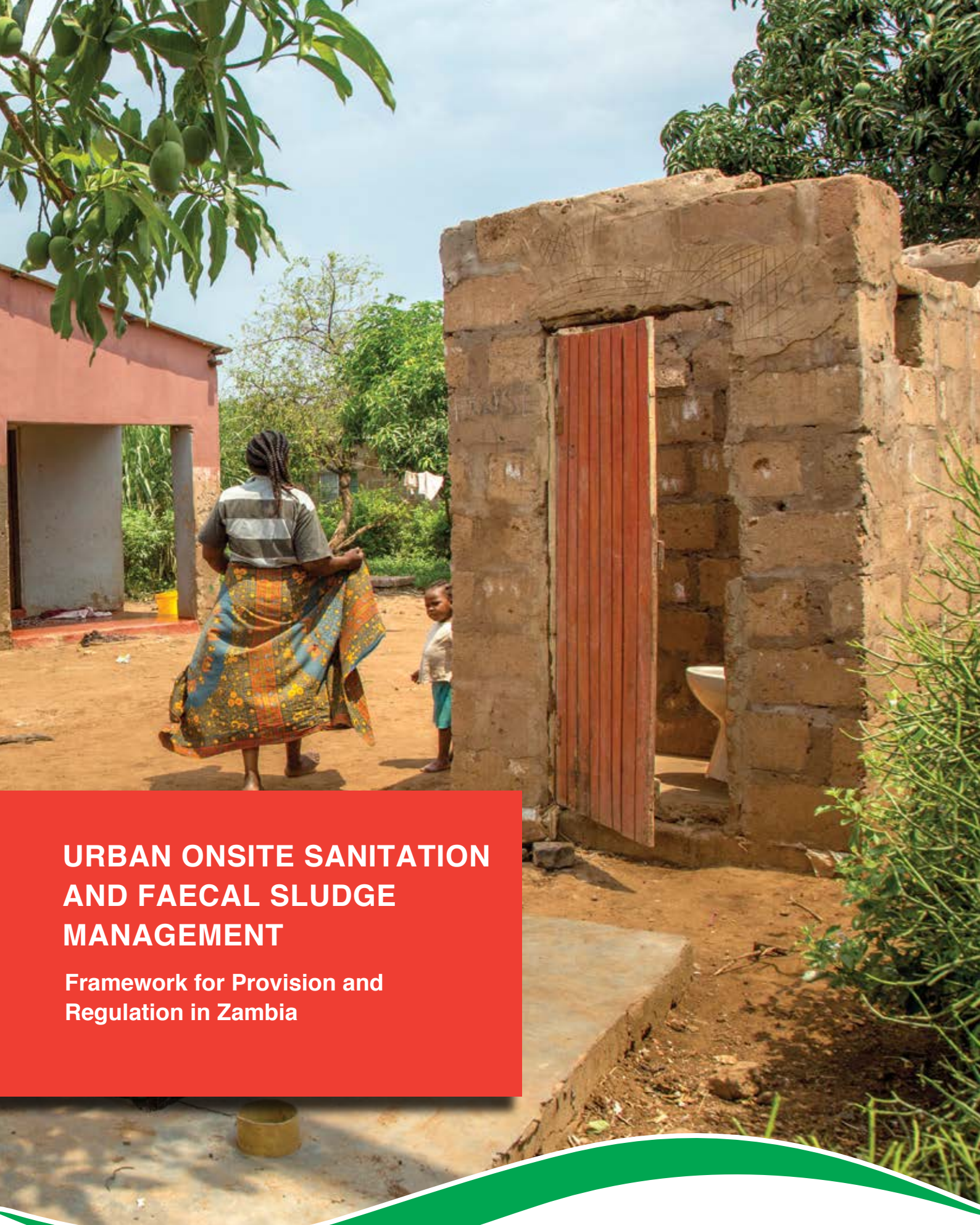


URBAN ONSITE SANITATION AND FAECAL SLUDGE MANAGEMENT

Framework for Provision and Regulation in Zambia

Nwasco
NATIONAL WATER SUPPLY AND SANITATION COUNCIL

Urban Onsite Sanitation and Faecal Sludge Management:

Framework for Provision and Regulation in Zambia

April 2018

NWASCO
NATIONAL WATER SUPPLY AND SANITATION COUNCIL

By 2015 only 86% of the urban population and 44% of the rural population in Zambia had access to basic drinking water services; meanwhile only 49% of the urban population and 19% of the rural population had access to basic sanitation services. For large parts of the populations, particularly the poor, the human right to water supply and sanitation (WSS) is still not assured.

Published by
National Water Supply and
Sanitation Council
164 Mulombwa Close, Fairview
Lusaka
PO Box 34358
T. +260 211 226941/2, 097 7790138
F. +260 211 226904
E. mails@nwasco.org.zm
I. www.nwasco.org.zm

April 2018

Table of Contents

List of Tables

List of Figures

Abbreviations and Acronyms

CBO	Community-based organisation
CBU	Copperbelt University
CLTS	Community-led total sanitation
CUs	Commercial utilities
DHID	Department for Housing and Infrastructure Development
DWWTS	Domestic wastewater treatment systems
DPI	Department for Planning and Information
D-WASHE	District Water, Sanitation, Hygiene and Education Committee
ECZ	Environmental Council of Zambia
EWSC	Eastern Water and Sewerage Company
FS	Faecal sludge
FSM	Faecal sludge management
GIS	Geographical Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GRZ	Government of the Republic of Zambia
JMP	Joint Monitoring Programme for Water Supply and Sanitation
KfW	Kreditanstalt für Wiederaufbau
LA	Local authority
LCC	Lusaka City Council
LGAZ	Local Government Association of Zambia
MCA	Millennium Challenge Account
M&E	Monitoring and evaluation
MDGs	Millennium Development Goals
MIS	Management Information System
MLG	Ministry of Local Government
MLGH	Ministry of Local Government and Housing
MoF	Ministry of Finance
MoH	Ministry of Health
MSL	Minimum service level
MWDSEP	Ministry of Water Development, Sanitation and Environmental Protection
NGOs	Non-governmental organisations
NRWSSP	National Rural Water Supply and Sanitation Programme
NWASCO	National Water Supply and Sanitation Council
NIS	NWASCO Information System
O&M	Operation and maintenance
RWS	Rural water supply
RWSS	Rural water supply and sanitation
RWSSU	Rural Water Supply and Sanitation Unit
SDG	Sustainable Development Goal
SWM	Solid waste management
SI	Statutory Instrument
SLI	Service level indicator
UNZA	University of Zambia
UWSS	Urban water supply and sanitation
V-WASHE	Village Water, Sanitation, Hygiene and Education Committee
WASAZA	Water and Sanitation Association of Zambia
WARMA	Water Resources Management Authority
WRM	Water resources management
WSS	Water supply and sanitation
WSUP	Water and sanitation for the urban poor
ZABS	Zambia Bureau of Standards
ZAWAFE	Zambia Water Forum and Exhibition
ZEMA	Zambia Environmental Management Authority
ZMW	Zambian Kwacha

List of Commercial Utilities (CUs)

ChWSC	Chambeshi Water and Sewerage Company
EWSC	Eastern Water and Sewerage Company
KWSC	Kafubu Water and Sewerage Company
LgWSC	Lukanga Water & Sewerage Company
LPWSC	Luapula Water and Sewerage Company
LWSC	Lusaka Water & Sewerage Company
MWSC	Mulonga Water and Sewerage Company
NWSC	Nkana Water & Sewerage Company
NWWSCL	North Western Water and Sewerage Company Limited
SWSC	Southern Water and Sewerage Company

Foreword

As provided for under the Water Supply and Sanitation Act, No. 28 of 1997 (as amended by Act No. 10 of 2005), NWASCO has the mandate to:

- advise Government on water supply and sanitation matters,
- advise local authorities on commercially viable institutional arrangements for the provision of water supply and sanitation services,
- ensure that utilities and other service providers are licensed in order for them to undertake water supply and sanitation services,
- develop guidelines for the provision of water supply and sanitation services and for ensuring effective technical and financial management of the entities,
- establish and enforce standards for water supply and sanitation services.

The regulatory purview indicated above therefore calls for NWASCO to undertake continuous regulatory enhancement to respond to the changing environment.

Developing a framework for regulation of Urban Onsite Sanitation Services (OSS) is one of the strategic considerations that NWASCO has embarked on with a view to ensuring that there is sustainable provision of safe sanitation in urban and peri-urban areas, including safe discharge of industrial effluent to sewerage infrastructure, to protect the public and the environment.

This clearly aligns with NWASCO's vision which promotes 'Safe, affordable and sustainable water supply and sanitation services for all' and the Vision 2030 in which, among others, a firm commitment has been made by the Government to ensure universal coverage of water supply and sanitation, thereby improving the living conditions of its citizens through continuous improvement of WSS service delivery.

During the launch of the 2016 Urban and Peri-Urban Water Supply and Sanitation Sector Report on 12 April 2017, the ministers in charge of Water Development, Sanitation and Environmental Protection (MWDESP) and Local Government (MLG) gave directives to ensure regulation of urban onsite sanitation, rural water supply and sanitation and solid waste management.

NWASCO has therefore taken cognisance of the concerns raised by various stakeholders and by the two Ministries with regard to inadequate regulatory framework for urban OSS and hence commenced the process of developing the necessary framework for regulating this important aspect.

NWASCO carried out a gap analysis to provide an overview of the existing regulatory framework and the available or missing subsidiary tools thereunder, as the case may be, so as to map out the process in which regulation of Urban Onsite Sanitation Service provision can be improved. The Urban OSS framework is a result of this work, in which gaps were identified and recommendations developed. These recommendations were presented to all stakeholders in various forums for input and validation. Further, the developed framework is aligned to the key activities of the National Urban and Peri-Urban Sanitation Strategy.

It is worth emphasising that a true realisation of this framework called for concerted efforts and collaboration between NWASCO and other stakeholders. In this regard, NWASCO has taken proactive measures to ensure that all critical stakeholders are consulted or rather taken on board in this process.

We urge our readers to use the contents of this document to positively contribute to the sustainable provision of onsite sanitation services, including hygiene promotion, to ensure improved living conditions for the populations living in urban and peri-urban areas.

Kelvin Chitumbo
Director-NWASCO


SANCTUARY
OF
POWER CENTRE
RAT 1226

Acknowledgements

In developing the framework for provision and regulation of urban onsite sanitation services, the National Water and Sanitation Council of Zambia (NWASCO) was mandated to facilitate and coordinate the consultative process under the Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP).

Being a process that required input from stakeholders, NWASCO wish to render its sincere gratitude to the Technical Committee comprising representatives from the Ministry of Water Development, Sanitation and Environmental Protection – Department of Water Supply and Sanitation (WSS), NWASCO, the Water Resources Management Authority (WARMA), the Zambia Environmental Management Agency (ZEMA), Lusaka City Council (LCC), Lusaka Water Sewerage Company (LWSC), UNICEF, GFA Consulting Group and Water and Sanitation for the Urban Poor (WSUP) for the hard work and dedication that was invested in the development of this framework.

NWASCO also acknowledges the contributions received from various local and international stakeholders, Government Ministries, Provincial and Local Authorities, Commercial Utilities, Training Institutions, NGOs, Water and Sanitation Hygiene (WASH) Forum members, the Private Sector and members of the user communities. The contributions received have made and validated the process as an all-inclusive activity.

Particular thanks are also given to the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) who, in collaboration with the Government of the Republic of Zambia through the Ministry of Water Development, Sanitation and Environmental Protection, co-financed and supported the development of this framework.

Last but not least, sincere thanks go to all the other participants not specifically mentioned here, for the invaluable contributions that they made to this process.

The World Bank estimates that poor sanitation costs the world 260 billion USD annually. Poor sanitation contributes to 1.5 million child deaths from diarrhoea each year. Zambia is no exception to the need to accelerate the provision of adequate and safe sanitation.

1. Introduction

1.1 The global situation[1]

After decades promoting sanitation in low and middle-income countries, several countries and the global sanitation community have come to realise that it is time to rethink the approach to accelerating access to quality services. Since 2000, the WHO/UNICEF Joint Monitoring Programme of the Millennium Development Goals (MDGs) has consistently reported that the share of the population in low and middle-income countries that use pit latrines, septic tanks and systems termed as 'unimproved' sanitation facilities is growing.

It is now estimated that between 2.1 and 2.6 billion people in low and middle-income countries rely on onsite technologies that produce tons of untreated faecal sludge (FS) every day. When septic tanks and pit latrines become full, the sludge that is collected from them is largely discharged untreated into open drains, irrigation fields, open lands or surface waters. The amount of untreated FS discharged into the open environment poses a serious public health risk. A 5m^3 truckload of FS dumped into the environment is the equivalent of 5,000 people practising open defecation. Adding to this is the heavy load from raw faeces excreted in the open by an additional 1.1 billion people who still do not have access to any toilet.

1 Source: *Faecal Sludge Management Systems Approach for Implementation and Operation* by the International Water Association (IWA), with EAWAG (the Swiss Federal Institute of Aquatic Science and Technology) in SANDEC (the Department of Water and Sanitation in Developing Countries), UNESCO-IHE (Institute for Water Education), and the Bill & Melinda Gates Foundation's Water Sanitation and Hygiene (WSH) programme, 2014.

The consequences of this waste entering the environment are staggering. The World Bank estimates that poor sanitation costs the world 260 billion USD annually. Poor sanitation contributes to 1.5 million child deaths from diarrhoea each year. Chronic diarrhoea hinders child development by impeding the absorption of essential nutrients that are critical to the development of the mind, body and immune system. It can also impede the absorption of life-saving vaccines.

1.2 The national situation

Zambia is no exception to the need to accelerate the provision of adequate and safe sanitation. The country's Vision 2030 states that universal coverage of both water supply and sanitation services should be achieved.

Despite Zambia's low population density combined with relatively large water resources, the water sector still lags behind in national development goals and was not able to meet the Millennium Development Goals (MDGs). However, the Government of Zambia (GRZ) continues to support the Sustainable Development Goals (SDGs, 2016–2030), which replaced the MDGs. According to the JMP 2017 report, by 2015 only 86% of the urban population and 44% of the rural population in Zambia had access to basic drinking water services; meanwhile only 49% of the urban population and 19% of the rural population had access to basic sanitation services. Thus, the human right to water supply and sanitation (WSS) is still not assured for large parts of the populations, particularly the poor. Continued efforts to improve the water sector are therefore required.

1.3 The reform

The water sector has been undergoing reforms since the early 1990s with the aim of improving access to WSS services and improving water resources management (WRM) through the National Water Policy of 1994. The WSS Act No. 28 of 1997 was passed as the enabling act for that policy. The 2010 National Water Policy focusing on WRM and the corresponding enabling act (the WRM Act No. 21 of 2011) have been established. The process of establishing the WSS policy and enabling act is underway.

The Water Policy of 1994 established the seven sector principles:

- **Principle 1:** Separation of water resources functions from water supply and sanitation
- **Principle 2:** Separation of the regulatory functions from executive functions within the water supply and sanitation sector
- **Principle 3:** Devolution of authority to local authorities and the private sector
- **Principle 4:** Achievement of full cost recovery for water supply and sanitation services through user changes in the long run
- **Principle 5:** Human resource development leading to more effective institutions
- **Principle 6:** Technology appropriate to local conditions
- **Principle 7:** Increased GRZ spending priority and budget spending to the sector

The first four are the major principles of the 1994 Policy and have largely been achieved, according to the review process conducted during the preparation of the 2010 Water Policy. Principles 5 and 6 are targeted in the rural water supply (RWS) programme covering both WRM and WSS.

Under the RWS programme for WSS, the guiding framework for urban water supply

and sanitation (UWSS) is the National UWSS Programme (NUWSSP) 2011–2030 and for rural water supply and sanitation (RWSS), it is the National RWSS Programme (NRWSSP) 2006–2015. The new NRWSSP 2016–2030 is in development. Under these national guiding frameworks, three strategies for UWSS have been developed — the National Water Supply and Sanitation Capacity Development Strategy, the National Urban and Peri-Urban Sanitation Strategy and the Open Defecation Free (ODF) Zambia Strategy.

1.4 The rationale

Currently, provision of water supply and sanitation services to the urban and peri-urban areas of Zambia has been commercialised through the formation of 11 commercial utilities (CUs) since 2000, with the last CU being formed in Luapula in 2008/2009. Since then significant improvements have been recorded in water supply and sewerage services delivery. The regulator NWASCO, also established in 2000, has been instrumental in this service improvement through regulation of water supply and sewerage services. However, onsite sanitation and faecal sludge management have not received similar attention in service provision regulation, despite being recognised in the national water policies and laws (WSS Act No. 28 of 1997) as mandates for the regulator and CUs.[2]

The lack of service provision regulation has resulted in most faecal sludge not reaching the treatment plants (illegal dumping), unhealthy emptying methods that risk public health, pollution of groundwater resources

due to poorly constructed sanitation facilities and private operators charging unregulated amounts for collection. Further, wastewater treatments are not designed to handle faecal sludge.

1.5 The objective

The objective of this publication is to assist in the creation of a regulatory framework for onsite sanitation and faecal sludge management that supports the proper functioning of an integrated management system covering the whole sanitation chain. The regulation of service provision will ensure that faecal matter generated in onsite facilities is effectively contained, collected, transported, treated and disposed of in a safe manner to protect public health and the environment.

1.6 Basis for formulation of regulation framework

The main basis for formulation of the regulation for urban onsite sanitation and faecal sludge management (FSM) is explained in Table 1.

2 Currently, some form of faecal sludge management is practiced by all CUs, by operating vacuum tankers and charging the private operators of vacuum tankers that discharge faecal sludge into their wastewater treatment plants. ZEMA currently only regulates for environmental protection by licensing vacuum tankers and the operation of wastewater treatment plants.

Table 1: Basis of regulation framework

National document	Point of relevance
Vision 2030	Reflects the collective understanding, aspirations and determination of the Zambian people to be a prosperous middle-income nation; sets out the goals and targets to be achieved in the various spheres of our socio-economic life over the next generation
National Water Policy 2010	Provides a comprehensive framework for sustainable development, management and utilisation of water resources
The National Development Plan (7th to be released)	For the period 2017 to 2021, is aimed at attaining the long-term objectives as outlined in the Vision 2030 of becoming a "prosperous middle-income country by 2030"; builds on the achievements and lessons learnt during the implementation of the previous NDPs
The Urban and Regional Planning Act of 2015	Repealed the Town and Country Planning Act of 1962 and the Housing Act of 1975
The Public Health Act, Ch. 295, Vol. 17 of the Laws of Zambia	Mandates local authorities to enforce public health protection
Local Government Ch. 281, Vol. 16 of the Laws of Zambia	Mandates local authorities to provide water supply and sanitation services in the respective districts
WSS Act No. 28 of 1997	*Facilitated formation of NWASCO and CUs:* • Describes mandate for NWASCO WSS service regulation, including onsite sanitation • Facilitates formation of CUs by local authorities (LAs)
SI No. 63 of 2000 (Licensing of Utilities and Service Providers) Regulations under the WSS Act No. 28 of 1997	*Licensing of WSS Service Providers:* Facilitates the licensing of CUs for provision of WSS in the specific areas of CU operations
The Environmental Management (EM) Act No. 12 of 2011	For protection of the environment
The SI No. 112 of 2013, of EM Act No. 12 of 2011, the EM (Licensing) Regulations of 2013	Sets limits and standards for environmental protection
SI No. 100 of 2011	Provides for LAs to undertake activities related to solid waste management (SWM)
National WSS Capacity Development Strategy (2015 to 2020)	Operationalises capacity development components of key sub-sector national programmes (NUWSSP and NRWSSP). *Sector regulation:* The strategy identifies the need for NWASCO to fully utilise the potential of its database and fulfil its mandate as regulator of the WSS sub-sector to cover onsite sanitation and RWSS, which are within its mandate and in need of strengthening (pg. 22)
National Urban and Peri-Urban Sanitation Strategy (2015 to 2030)	*Regulation:* NWASCO to regulate by: • Defining sanitation service levels and standards • Guiding to support enhanced service delivery, including tariffs for onsite sanitation • Developing regulatory instruments, benchmarks and monitoring for sanitation • Reporting on onsite and offsite sanitation service coverage (pg. 10) Sanitation Planning: • LAs carry out the mandate for sanitation and assure the lead in the sanitation planning process in partnership with CUs, based on overall urban planning documents (pg. 10) Management Arrangements: • CUs have primary responsibility for sanitation service provision and (public) asset management. CUs and LAs to consider participation of community-based organisations (CBOs) and the private sector to bring in additional capacity and financing
Open Defecation Free (ODF) Zambia Strategy (2016 to 2020)	*Link to National Urban and Peri-Urban Sanitation Strategy (NUSS) Strategy:* • Preparation of sanitation plans and prioritisation of investments, led by LAs supported by CUs, civil society organisations and the private sector • Sanitation market development, improved sanitation facilities and hygiene behaviours • Implementation of sanitation strategy at the local level through innovative service models – aimed at CUs to take on wider responsibility for sanitation service provision and to promote delegated management models to improve operations of onsite sanitation facilities and decentralised wastewater infrastructure (pg. 12)
NWASCO Strategic Plan (2016 to 2020)	*Initiative of NWASCO in regulation:* NWASCO has outlined clear objectives and activities to enhance the regulatory framework: Develop new regulatory tools, improve regulation of sanitation service provision, enhance stakeholder engagement for enforcement and ensure efficiency and financial viability of CUs that are clearly linked to onsite sanitation and rural WSS.

1.7 Process of formulation of the framework

The formulation involved a detailed assessment of the current situation and development trends regarding urban onsite sanitation in Zambia via:

- Review of reports in the water sector compiled in recent years
- Study and review of policies, laws, national programmes and strategies
- Considerations of the NWASCO strategic plan
- Consideration of various CU strategic plans
- Consideration of LA plans and operations
- Consultations with NWASCO and MWDSEP*)
- Consultation and obtaining stakeholder input into the framework through the NWASCO Technical Committee comprising representatives from MWDSEP, WARMA, ZEMA, LCC, WSUP, GIZ, NWASCO, GFA Consulting Group, etc. meeting regularly
- Holding a wider stakeholder workshop, from 28 February to 1 March 2017, to consult on the framework. The stakeholders included MWDSEP, MLG, MoH, MWDSEP, MOGE/UNICEF, MCA-Zambia, USAID Zambia, NWASCO, WARMA, ZEMA, UNZA, CBU, WASAZA, LAs (LCC, Chipata City Council), CUs (ChWSC, EWSC, KWSC, LgWSC, LWSC, MWSC, NWSC, NWWSCL, SWSC), NGOs (WSUP, WaterAid, CARE International, Toilet Yanga, etc), private sector (Geochi Services Ltd, NECOS, etc.), COWI and other stakeholders.3
- Further consultation during the Local Government Association (LGA) Annual Conference in Livingstone, 24 to 28 April 2017, for all LAs in Zambia
- Presentation to the ZAWAFE Conference on 12 June 2017

3 For abbreviations and acronyms used here, please refer to the list at the front of this book

1.8 Government commitment and support

The Government of the Republic of Zambia is committed to improving the living conditions of its citizens through continuous improvement of WSS service delivery as contained in the Vision 2030 for universal coverage of water supply and sanitation. During the launch of the 2016 Urban and Peri-Urban Water Supply and Sanitation Sector Report on 12 April 2017, directives were given by the ministers of Water Development, Sanitation and Environmental Protection (MWDESP) and Local Government (MLG):

> ‘As you are aware, provision of sanitation services and regulation of onsite sanitation continue to lag behind, particularly in rural and peri-urban areas. I am therefore directing NWASCO to ensure that regulation for onsite sanitation and rural water supply is enforced’
>
> *MWDSEP, Hon. Lloyd Kaziya (MP)*

> ‘You may be aware that the solid waste management function still remains the mandate of the MLG. However, my ministry will still depend on ZEMA and NWASCO to regulate the sector. I therefore call upon NWASCO to develop strategies for regulating the business side of solid waste management’
>
> *MLG, Hon. Vincent Mwale (MP)*

Lack of onsite sanitation services leads to scooping toilets in which faecal matter is left to accumulate in a small pit by the toilet and later scooped out and thrown in the surrounding environment.

2. Situation Analysis

2.1 Regulations governing onsite sanitation provision

The regulations governing provision of rural water supply and sanitation services are:

- The Environmental Management Act No. 12 of 2011: *For protection of the environment.*
- The Statutory Instrument No. 112 of 2013, of EM Act No. 12 of 2011, The Environmental Management (Licensing) Regulations of 2013: *Sets limits and standards for environmental protection.*
- The Public Health Act Chapter 295, Volume 17 of the Laws of Zambia: *Mandates local authorities to enforce public health protection.*
- The Water Supply and Sanitation Act No. 28 of 1997: *Mandates NWASCO to regulate water supply and sanitation provision in urban, peri-urban and rural areas.*
- The Statutory Instrument No. 63 of 2000, The Water Supply and Sanitation (Licensing of Utilities and Service Providers) Regulations, 2000: *Details procedures for licensing of service providers.*
- The Urban and Regional Planning Act of 2015 (repealed the Town and Country Planning Act of 1962 and the Housing Act of 1975): *Details the integrated planning of districts and regions and mandates local authorities to enforce building standards as set out by the planning departments of the Ministry of Local Government.*
- Local Government Chapter 281, Volume 16 of the Laws of Zambia: *Mandates local authorities for provision of water supply*

and sanitation services in the respective districts.

- Statutory Instrument No. 100 of 2011: *Provides for local authorities to undertake activities related to solid waste management.*

2.2 Policy developments in the water sector

The 2016 Draft Water, Sanitation and Solid Waste Management Policy defines sanitation as:

- safe collection
- transportation
- treatment and disposal or reuse of human excreta, domestic liquid waste, industrial effluents and municipal solid waste

One measure is to develop strategies, standards and guidelines for:

- service delivery of WSS services
- regulation of WSS services

Targeting (including non-piped WSS):

- urban and peri-urban WSS service provision
- rural WSS service provision
- schools and other public institutions and places (urban, peri-urban and rural areas)

2.3 NWASCO's mandate

Excerpts from Section 4 WSS Act No. 28 of 1997, the mandate for NWASCO to regulate water supply and sanitation services are:

Section 4 (d) – Develop sector guidelines for:

- the provision of water supply and sanitation services
- the establishment of water supply and sanitation utilities
- the technical and financial management of utilities
- the setting of tariffs for the provision of water supply and sanitation services

Section 4 (e) – Establish and enforce standards for:

- water supply or sanitation services
- the management of utilities and other service providers
- the design, construction, operation and maintenance of water supply and sanitation facilities.

NWASCO initiates the process for development of standards as per the water supply and sanitation sub-sector requirements with the Zambia Bureau of Standards (ZABS) and/or the Zambia Environmental Management Authority (ZEMA) and

- ZABS develops design and construction standards related to WSS facilities such water consumption design figures, etc.
- ZEMA develops environment protection standards related to WSS facilities such as limits for effluent and faecal sludge.

2.4 Implementation of the National Urban and Peri-Urban Sanitation Strategy

The National Urban and Peri-Urban Sanitation Strategy has outlined specific activities related to improving sanitation service delivery. The framework is aligned to the activities of this strategy, as presented in Table 2. Detailed excerpts from the National Urban and Peri-Urban Sanitation Strategy are in Annex 3.

Table 2: Key activities of the National Urban and Peri-Urban Sanitation Strategy

No.	Activity	Output	Anticipated deadline	Respon-sible
1	Support MLGH and LGAZ (Local Government Association of Zambia) in **developing a ranking and reward system** and conducting annual nominations for cities recognised for progress in improved sanitation	Urban sanitation indicator framework approved	Q4/2016	MLGH & LGAZ
		Cities ranked and rewarded according to urban sanitation indicator framework annually (reports)	Q4/2030	MLGH & LGAZ
2	Support production of MLGH **national guidelines for preparation of urban sanitation plans**	MLGH guidelines for urban sanitation planning, including community participation, cross-cutting issues and cost effectiveness published and disseminated	Q2/2016	MLGH
3	Support NWASCO, ZABS and MLGH in development, promotion and dissemination of **sanitation standards that take into account equity and inclusiveness**	**Code of practice** for sanitation developed, including **standard sanitation designs for facilities for children and the physically challenged**	Q2/2016	NWASCO, ZABS, MLGH
4	Support CUs in the preparation of **asset management plans**	Asset management plans available by all CUs as per regulatory standards	Q4/2018	CUs
5	Assist NWASCO in developing **guidelines for enhancing operational performance of wastewater and faecal sludge management facilities**	Guidelines for enhancing operational performance of wastewater and FSM facilities developed	Q4/2017	NWASCO
6	Support NWASCO in developing **standard contracts and guidelines for CUs to apply delegated management models**	Guidelines and standard contracts developed by NWASCO	Q4/2016	NWASCO
7	Support NWASCO in developing **service level agreements, including service areas for private service providers**	Service level agreements developed	Q4/2016	NWASCO
8	Support the process to **include FSM services in the mandate of existing and new water trusts**	2 more water trusts provide sanitation services to peri-urban communities	Q4/2016	CUs and water trusts
9	Support NWASCO, LAs and CUs in developing a **public sanitation concept** (including designs, guidelines and service contracts)	Public sanitation concept developed and published	Q4/2016	NWASCO, CUs, LAs
10	Support MLGH and NWASCO in developing **incentive mechanisms** to invest in sanitation	Incentives available to invest in sanitation (e.g. tax incentives, result-based grants)	Q4/2016–2030	
11	Investigate the possibility of introducing an **FS treatment charge** or increasing the **sanitation surcharge** to cover FS treatment costs		Q2/2018	NWASCO, MLGH
12	Assist NWASCO in **revising the level and structure of sanitation tariffs to cover at least O&M costs**	Water, sewerage and faecal sludge management costs are separated in CU financial statements	Q4/2017	NWASCO
		The 'polluter pays principle' introduced for polluting industries in wastewater treatment pricing	Q4/2017	NWASCO, ZEMA
13	Support NWASCO and MLGH in developing a national harmonised framework for monitoring and reporting on urban sanitation developments	**Harmonised sanitation coverage / access definitions developed**	Q2/2016	MLGH and NWASCO
		Annual coverage and sanitation access published	Q4/2016–2030	MLGH and NWASCO

No.	Activity	Output	Anticipated deadline	Respon-sible
14	Support NWASCO in developing **regulatory tools including performance indicators and guidelines for onsite sanitation services**	Annual sector report includes **customer-oriented sanitation performance indicator**	Q4/2016–2030	NWASCO
		NWASCO – CU s**ervice level indicator includes onsite sanitation**	Q2/2017	NWASCO
		NWASCO **sanitation regulation guidelines** published	Q2/2017	NWASCO
15	Support NWASCO to **incorporate onsite sanitation into the NWASCO Information System (NIS)**	Annual sanitation coverage data includes other onsite sanitation facilities (other than septic tanks)	Q4/2016–2030	NWASCO
16	Support NWASCO in developing a **performance monitoring system for emptying services and FSM**	At least 3 shit flow diagrams published	Q4/2016	CUs together with the LAs
17	Support ZEMA in developing a **wastewater quality monitoring programme** incorporating provisions for environmental and public health assessments	Results from water quality monitoring published	Q2/2017–2030	ZEMA
18	Support ZABS in the development of **standards for sanitation technologies**	Published standards	Q2/2016	ZABS
19	Support ZABS in the development of **codes of practice and building codes**	Published codes of practice and building codes	Q4/2016	ZABS

2.5 NWASCO initiatives in regulation of WSS services

NWASCO's vision is 'Safe, affordable and sustainable water supply and sanitation services for all'. As a regulator, to achieve the vision entails ensuring that licensed service providers are delivering good quality water supply and sanitation services at affordable cost to their customers while operating efficiently and sustainably. This cannot be fully achieved without the regulator itself undertaking continuous regulatory enhancement that will respond to the changing environment. NWASCO's fourth strategic plan for the period 2016 to 2020 is thus anchored in this commitment. Through a consultative process, various concerns from stakeholders were also considered. Paramount among the concerns raised was the call for regulation of onsite sanitation and rural water supply and sanitation. NWASCO has placed emphasis on these areas while being mindful of the need for a stepwise approach matching the capacity of the sector institutions involved. Improving regulation of onsite sanitation and rural water supply and sanitation will be the next milestone for the sector, raising the need for enhanced coordination and collaboration among various players. NWASCO's core responsibilities are to:

1. license water supply and sanitation providers,
2. establish and enforce sector standards and guidelines,
3. advise providers on procedures for handling complaints from consumers,
4. disseminate information to consumers and the public on water supply and sanitation issues, and
5. advise the government on water supply and sanitation matters.

In its strategic plan, NWASCO has outlined clear objectives and activities to enhance the regulatory framework by developing new regulatory tools, improving regulation of sanitation service provision, enhancing stakeholder engagement for enforcement and ensuring efficiency and financial viability of commercial utilities that are clearly linked to onsite sanitation and rural water supply and sanitation. The NWASCO Strategic Plan activities are presented in the following table.

To support NWASCO in taking consecutive steps, a gap analysis was carried out to provide an overview on existing and possibly missing regulatory tools to be reviewed or developed to improve regulation of urban sanitation service provision. Annex 4 provides an overview of the main findings and recommendations, allowing NWASCO to decide on its priorities and the way forward.

Table 3: NWASCO Strategic Plan activities

No.	Activity	Timeframe	Budget in ZMW
1	Undertake study of new areas for development of regulations, standards, guidelines	2017–2019	140,000
2	Develop identified regulations, standards and/or guidelines	2018–2020	130,000
3	Develop regulations/standards for “other service providers”	2017–2018	100,000
4	Implement limited regulation for “other service providers”	2019–2020	100,000
5	Develop RWSS regulation strategy	2016	300,000
6	Implement RWSS regulation strategy	2017–2020	400,000
7	Develop/incorporate new indicators for reporting	2016–2020	n/a
8	Undertake study to explore various forms of sanitation regulation	2016	120,000
9	Establish baseline for the status of sanitation service delivery	2016–2018	1,050,000
10	Develop guideline for separation of costs related to sewerage and water services	2017	200,000
11	Develop pricing strategy for sanitation	2018–2020	80,000
12	Increase the number of CUs with sanitation surcharge	2016–2020	n/a
13	Hold meetings with other local regulators	2016–2020	75,000
14	Engage stakeholders in town planning to ensure WSS service delivery is a prerequisite to area development	2016–2020	100,000
15	Develop systems to ensure progressive cost coverage towards set targets for financial viability	2017–2020	n/a
16	Ensure an increase in the number of household sewerage connections	2016–2019	n/a
17	Facilitate strategic partnerships between “other service providers” and CUs to increase the number of people accessing water supply and sanitation services	2016–2020	n/a
18	Establish capacity requirements for NWASCO to regulate rural and onsite sanitation	2017	200,000
19	Identify regulatory areas for training e.g. sanitation, rural	2017–2020	275,000
20	Increase revenue sources through licensing (for other service providers serving populations less than CUs but more than 500) and rural regulation	2018–2020	n/a

2.6 Urban water supply and sanitation service coverage

As can be seen from Table 4 below, sanitation coverage in urban areas is much lower than that of water. For water, seven out of 11 CUs meet the sector benchmark of at least 80% coverage. In terms of sanitation, only one CU meets sector coverage of at least 80%; seven are far away from the benchmark.

2.7 Current commercial utilities' activities

Nine out of the created CUs provide some form of faecal sludge management service by way of operating vacuum tankers and/or allowing private operators to discharge faecal sludge into their wastewater treatment plants. Table 5 on the next page depicts current activities of CUs based on CU records of 2014 and the NWASCO Water Sector Report of 2014.

Table 4: Urban water supply and sanitation service coverage (NWASCO Water Sector Report for 2015)

Commercial utility (CU)	Operating since	No. of water connections	No. of towns serviced	Population served	Water service coverage (%)	Sanitation coverage (%)
Lusaka WSC	1989	94,184	6	2,246,825	82.9	73.7
Nkana WSC	2000	58,701	3	753,782	95.8	70.6
Kafubu WSC	2000	60,462	3	690,530	87.5	69.6
Mulonga WSC	2000	51,429	3	489,160	97.1	82.1
Lukanga WSC	2006	23,550	8	419,081	72.5	34.2
Southern WSC	2000	45,626	21	396,335	90.3	58.6
Chambeshi WSC	2003	19,294	12	331,308	73.8	21.0
Northwestern WSC	2000	12,968	8	255,979	85.4	17.8
Eastern WSC	2009	17,301	10	276,840	82.0	52.8
Western WSC	2000	12,314	10	204,185	50.2	29.2
Luapula WSC	2009	5,899	7	206,400	30.0	14.0
Totals		**401,728**	**91**	**6,270,425**	**82.6***	**60.5***

* average coverage

Worse than relevant average and benchmark not achieved

Better than relevant average but sector benchmark not achieved

Achieved sector benchmark of at least 80% coverage

Table 5: Current vacuum tanker operations based on information received from CUs

Commercial utility (CU)	Start of operations*	Number of water connections*	Number of towns serviced*	Sanitation coverage* (%)	Served with sewerage (%)	Number of Tankers operated				Estimated annual volume of effluent/sludge transported (cu. m)			Estimated Annual revenue generated (ZMW)		
						CU		PO discharging into CU's WWTP		CU	PO discharging into CU's WWTP	Total	CU	Private Operator	Total
						No.	Capacity (litres)	No.	Capacity (litres)						
Lusaka WSC	1989	92,440	7	75	15 - 20	None	None	31	3,600 to 15,000	None	36,000	36,000	None	1,200,000	1,200,000
Nkana WSC	2000	53,499	3	67	67	1	10,000	Not known	3,000 to 7000	1,440	Not known	1,440	72,288		72,288
Kafubu WSC	2000	56,141	3	64	64	None	None	1	10,000	None	1,800	1,800	None	27,000	27,000
Mulonga WSC	2000	49,535	3	85	85	1	7,000	2	Not known	1,008	50	1,058	63,749	7,560	71,309
Lukanga WSC	2006	22,146	6	26	26	1	7,000	Not known	Not known	588	Not known	588	48,200	Not known	48,200
Southern WSC	2000	41,061	16	49	49	1	5,000	2	3,000 (in 2016) and 5000	4,623	615	5,238	485,440	12,300	497,740
Chambeshi WSC	2003	16,438	12	20	20	None	None	None	None	None	None	None	None	None	None
North-western WSC	2000	11,655	8	34	34	1	6,000	Not known	Not known	1,152	Not known	1,152	76,800	750	77,550
Eastern WSC	2009	15,534	8	39	39	1	6,000		Nil			-	223,516		223,516
Western WSC	2000	12,015	7	47	47	1	5,000	None	None	470	None	470	41,600	None	41,600
Luapula WSC	2009	5,312	7	16	16	None	None	None	None	None	None	None	None	None	None

* Source: NWASCO Water Sector Report of 2014

Worse than relevant average and benchmark not achieved Better than relevant average but sector benchmark not achieved Achieved sector benchmark of at least 80% coverage

2.8 Current practices and gaps in regulation

The summary of current practices from key actors is depicted in Table 6. The practices indicate that NWASCO is regulating sanitation service provision only through sewerage systems and not onsite sanitation, while ZEMA licenses the exhauster trucks and the construction and operation of wastewater treatment plants. The details of this assessment, including gaps and recommendations for NWASCO and other actors, are presented in Annex 4. Different key stakeholders use different definitions in reporting and may need harmonising. For this purpose, a list of definitions and their sources are found in Annex 5.

Table 6: Current practices in onsite sanitation and faecal sludge management (highlighted areas indicate gaps)

Stakeholder		Collection	Transport	Treatment	Disposal/ end use
Type	Group				
GRZ	Ministry of Water, Sanitation and Environmental Protection	Policy and laws	Policy and laws	Policy and laws	Policy and laws
Regulating agents	NWASCO (Service provision regulation)	None (GAP)	None (GAP)	None; only regulates amount charged by CUs to private operators discharging into their treatment plants (GAP)	
	ZEMA (Environment protection)		Licensing exhauster trucks	Licensing for environment protection	None (there are no standards) (GAP)
Implementing agents	Local authority	Enforcement standards for onsite facilities/ buildings not adequately done			
Service providers	CU	None (GAP)	None (GAP)	O&M treatment facilities. Facilities not designed for FS (GAP)	
	Private operators	Emptying onsite facilities (includes septic tanks and pit latrines)	Transport FS	O&M treatment facilities (where engaged)	
	CBOs	Emptying onsite facilities not safe; some emptiers lack protective clothing (GAP)	Transport FS		
Customers	Non-domestic, community (investors)	Onsite facilities not constructed and operated properly leading to difficulties in emptying (GAP)			Reuse

From existing regulation institutional arrangements shown in Figure 1 below, the following gaps were identified:

- The Zambia Environmental Management Authority (ZEMA) regulates onsite sanitation for environmental protection purposes; however, the provision of onsite sanitation services is not regulated.
- Sanitation service provision tools such as service level guarantees and agreements between the regulator NWASCO and the commercial utilities (CUs), which were created to provide urban WSS services, does not include onsite sanitation and faecal sludge management.
- Onsite sanitation facilities such as pit latrines and septic tanks are not constructed to enable safe emptying and protection of the environment as there are no national standards for this purpose.
- ZEMA has developed effluent standards, but faecal sludge standards are not in place. ZEMA does not regulate community emptying either.
- Unsafe emptying of pit latrines, especially in peri-urban areas, results in public health risk and potential environmental pollution.
- Existing building codes are outdated and require updating.

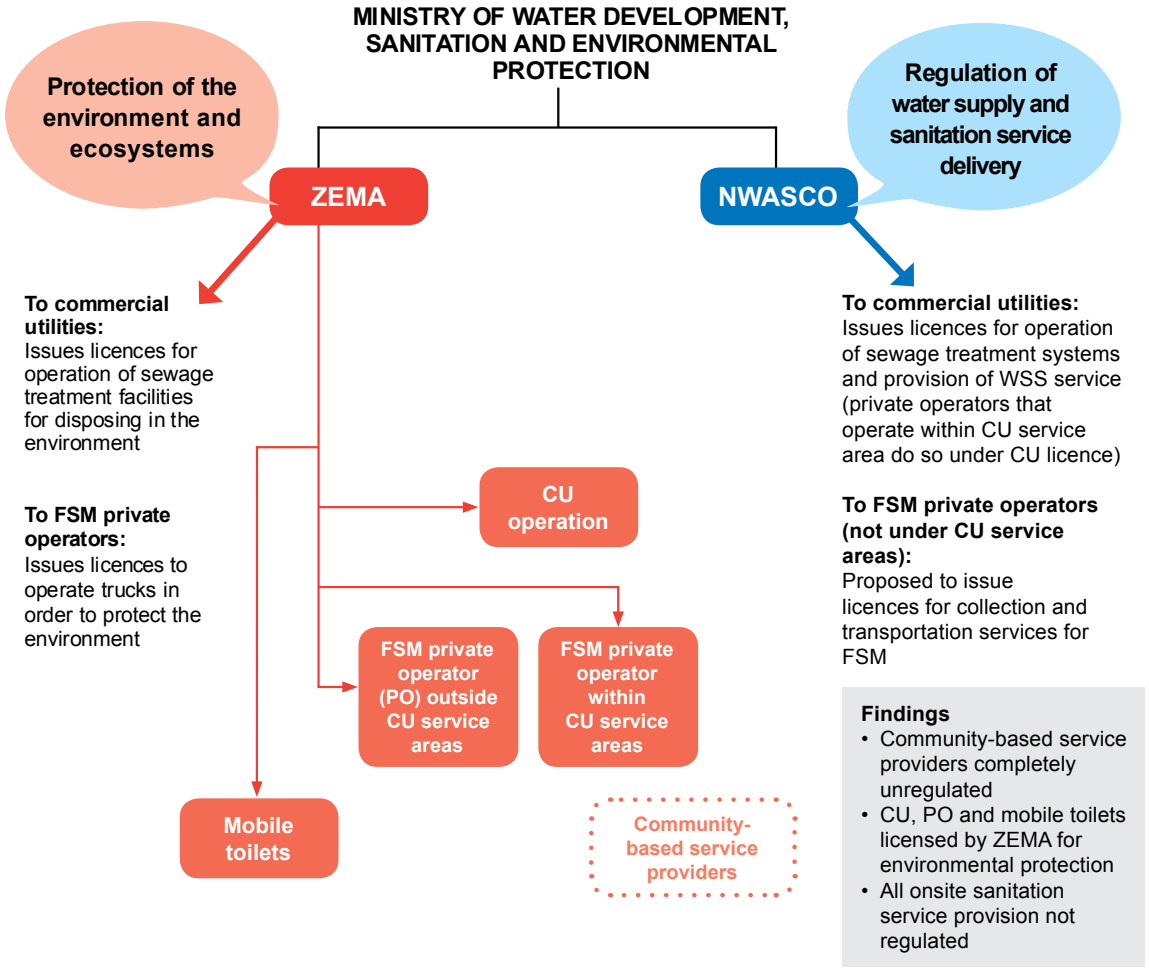


Figure 1: Existing institutional arrangements for regulation of onsite sanitation and FSM

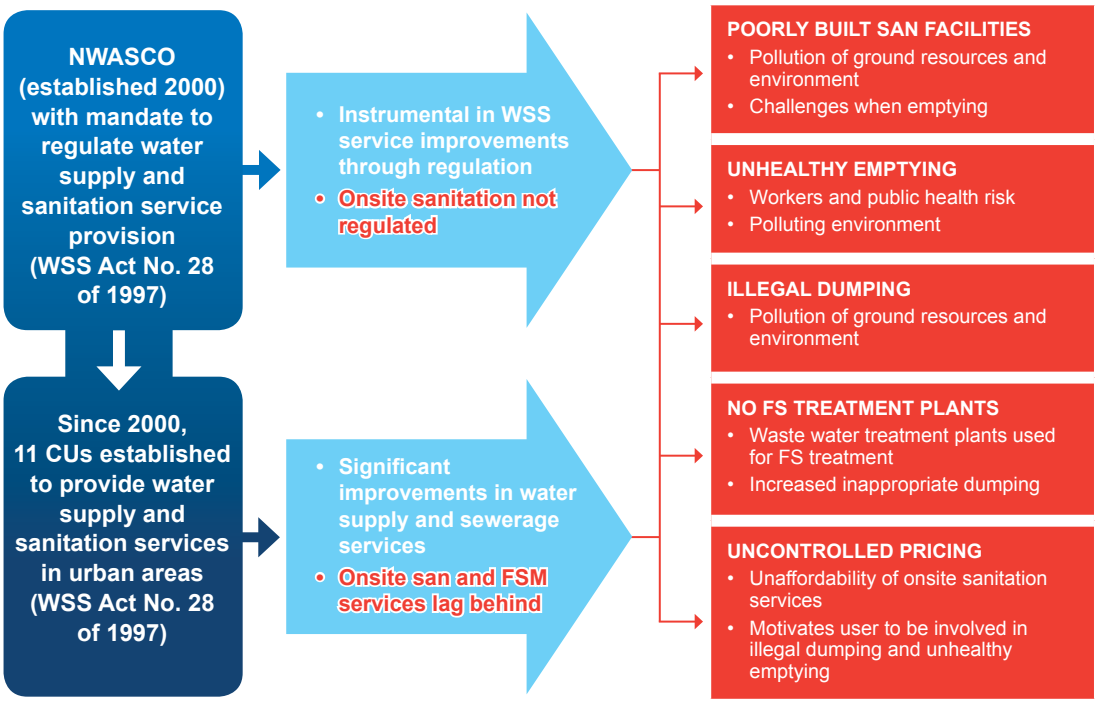


Figure 2: The effects of lack of onsite sanitation service regulation

The lack of regulation for onsite sanitation service provision, as depicted in Figure 2 above, has resulted in poorly built sanitation facilities, unhealthy emptying, illegal dumping, non-availability of faecal sludge treatment facilities, inadequate treatment of faecal sludge and uncontrolled pricing.

The challenges experienced are:

- Inadequate coordination and agreement on what is acceptable sanitation
- Discharging of trade/industrial effluent into CU sewer system
- Inadequate coordination of actors in the sanitation service chain
- Sanitation facilities constructed without proper standards
- Inadequate enforcement of constructed onsite sanitation facilities
- No regulation and standards for FSM (including handling/reuse)
- Inadequate data on existing onsite sanitation service provision

The sanitation service provision and regulatory framework is aimed at addressing these gaps and challenges.

3. The Faecal Sludge Management Approach

Faecal sludge management services (FSMs) collectively consist of emptying, conveyance (transportation), treatment and disposal/reuse of resulting faecal sludge from excreta containment facilities (onsite sanitation facilities). Thus, FSM services consider the complete sanitation service chain from containment, collection and transportation to treatment and disposal/reuse, as shown in Figure 3.

Weak links in the FSM service chain are caused by many factors, such as households not being able to afford professional emptying services, collection and transport trucks unable to access narrow lanes and paths leading to houses, operators not able to afford the transport of FS over long distances to treatment facilities, and the lack of legitimate FS discharge locations or treatment facilities. The solution to overcoming these problems and designing functioning and sustainable FSM requires a systems-level approach that addresses every step in the service chain.

To move towards complete and functioning FSM service chains, an integrated systems-level approach that incorporates technology, management and planning is recommended. This means that all links of the sanitation chain need to be operated and managed sustainably to ensure continued service provision that protects both public health and the environment. Figure 3 depicts the typical sanitation service chain.

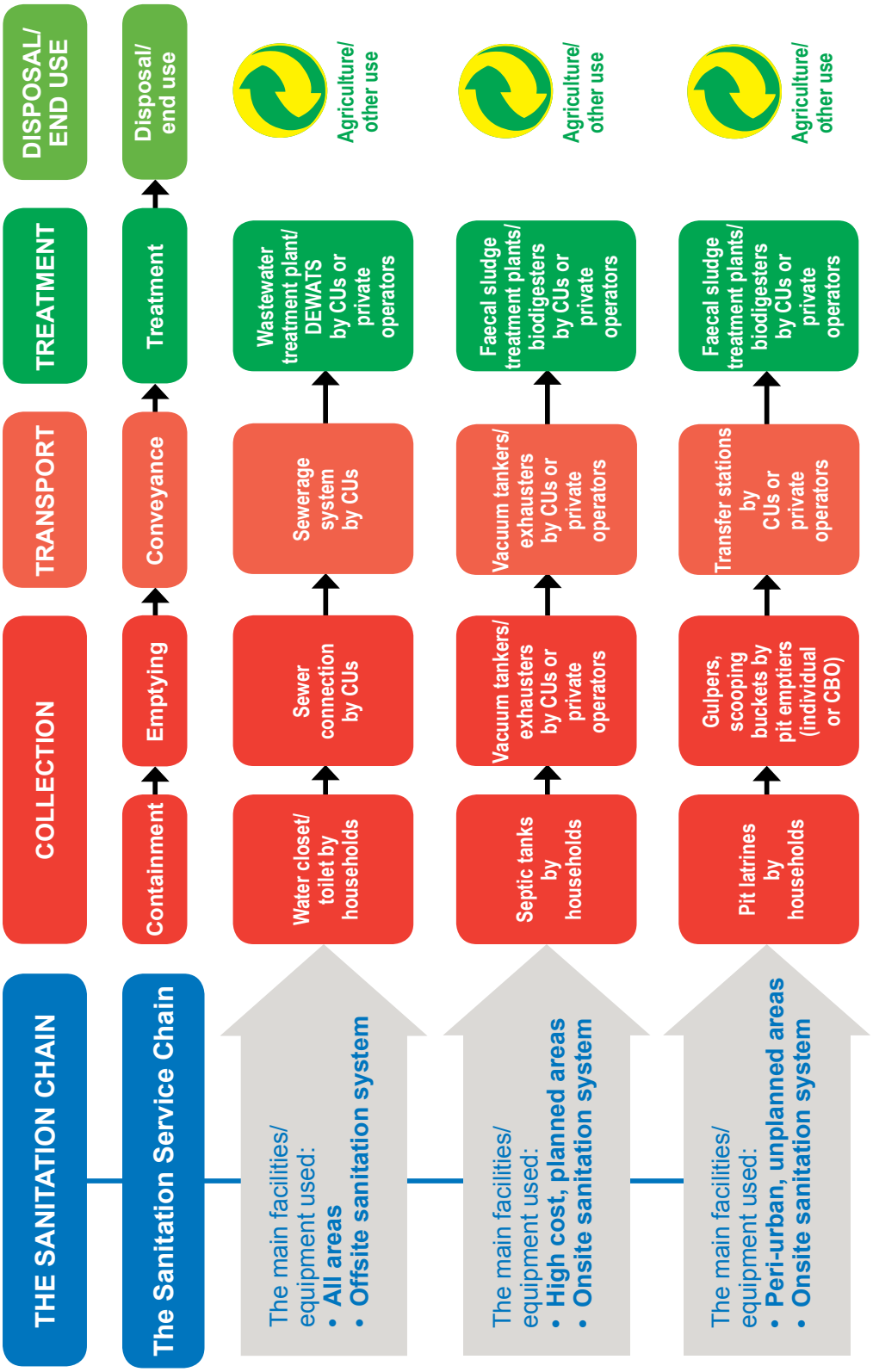


Figure 3: The sanitation chain, showing the service chain

4. The Approach for Provision and Regulation of Urban Sanitation Service

4.1 Preferred future with sustainable urban sanitation

- Increased coverage for sanitation in line with Vision 2030
- Clean and healthy towns with reduced water pollution and fewer outbreaks of water- and sanitation-related diseases
- Clear M&E for monitoring progress on national and SDG targets
- Information system on sanitation services in place
- Standards for sanitation facilities construction in place and enforced
- Regulations and standards for FSM (including handling/reuse)
- Regulation of discharge of trade/industrial effluent into CU sewerage systems
- Regulation of onsite sanitation service provision
- End open defecation

4.2 Preferred setup in provision of sustainable urban sanitation

The preferred setup for provision of urban sanitation services is shown in Figure 4.

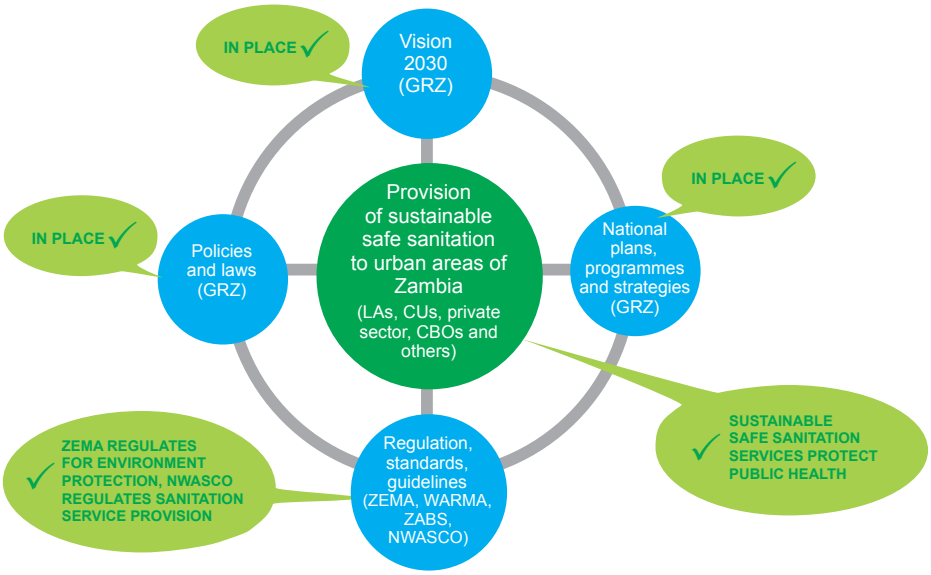


Figure 4: Preferred setup for provision of urban sanitation services

4.3 Categorisation of WSS service areas and the new service provision and licensing arrangements

4.3.1 Categorisation of WSS service areas

The current trend is that more piped water supply schemes are being planned and constructed as growth centres emerge. Figure 5 shows the categorisation of areas.

Figure 5 shows that:

- A district contains urban, peri-urban and rural areas.
- Urban areas are the developed part of a district; the district administration is located within.

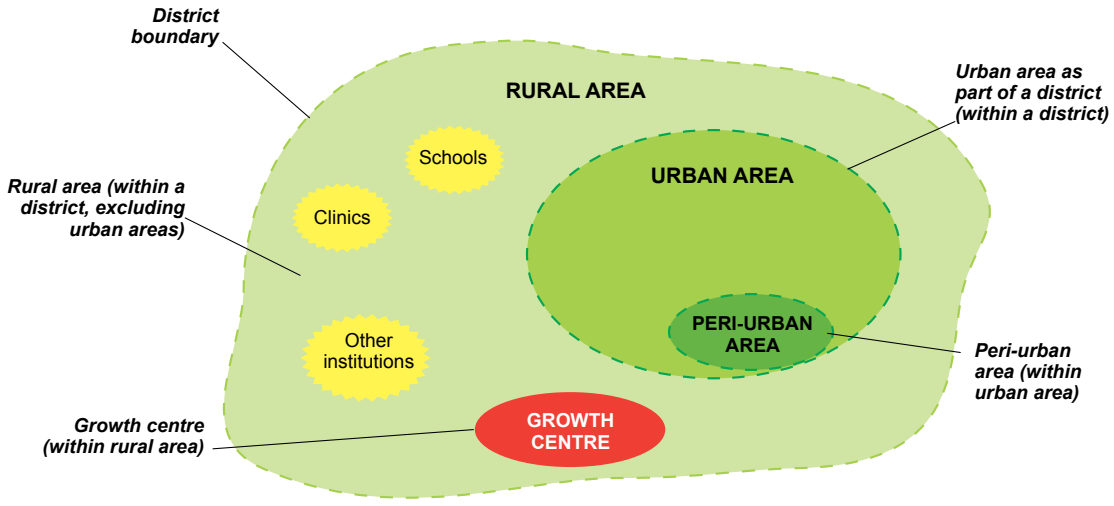


Figure 5: Categorisation of areas

- Peri-urban areas are unplanned settlements within urban areas and these are densely populated with lower service levels than urban areas.
- Growth centres are developing zones within the rural areas of a particular district, which may eventually turn into a separate district. These are characterised by a relatively concentrated population and piped water supply provision is targeted.
- Within rural areas, there are sparsely located institutions such as schools, clinics, etc.

4.3.2 The new service provision and licensing arrangements

The operating service licence from NWASCO shall be issued to a commercial utility (CU) to cover the entire district. Other WSS service providers shall be issued with NWASCO permits. Table 7 below shows the new service provision and licensing arrangements.

Table 7: The new service provision and licensing arrangements for water supply and sanitation

Area	Water supply technology mainly used	Sanitation technology used	Service provision responsibility	Licensing arrangements for service provision
Urban	Conventional water supply systems with individual connections, standpipes and kiosk, etc.	Conventional sewer systems or FSM with onsite san. (septic tanks, pit latrines, etc.)	CU	Overall NWASCO licence for the whole district. SLA/SLG* cover all urban areas
Peri-urban	Piped water supply schemes with mainly standpipes, kiosks and few individual connections	FSM with onsite sanitation, mainly pit latrines, septic tanks, DEWATS*	CU	Overall NWASCO licence for the whole district. SLA/SLG cover all peri-urban areas
			Delegated management to community or private sector, e.g. water trusts	Through CU licence using a management contract that includes SLA/SLG for peri-urban areas as licensed to a CU
Rural growth centres	Targeted for piped water supply schemes with mainly standpipes, kiosks and few individual connections Moves from water point supply	FSM with onsite sanitation, mainly pit latrines, septic tanks, DEWATS	CU	Overall NWASCO licence for the whole district. SLA/SLG cover growth centres taken up by CUs
			Local authority (LA) Not yet taken up by CUs	NWASCO permit with specific conditions for piped schemes - MoU between LA and CU - MoU between CU and community - MoU between LA and community
Rural institutions (public or private e.g. schools, clinics)	Piped water supply schemes with mainly standpipes. May have kiosks and few individual connections	FSM with onsite sanitation, mainly pit latrines, septic tanks, DEWATS	Respective institution (school, clinic/ health centre, depot)	NWASCO permit with specific conditions for specific type of institution
Rural settlements (sparsely populated)	Water point supply consisting mainly of boreholes and protected shallow wells fitted with hand pumps	Mainly pit latrines, with some septic tanks	Local authority (LA)	NWASCO permit with specific conditions for point sources. Strategies and guidelines, e.g. NUSS, ODF Strategy,* SOMAP*

* SLA = Service Level Agreement, SLG = Service Level Guarantee, DEWAT = Decentralised Wastewater Treatment System, ODF = open defecation free, SOMAP = Sustainable Operations and Maintenance Project

5. The Regulatory Framework

The regulatory framework for urban sanitation focuses on onsite sanitation and faecal sludge management. Figure 6 shows the arrangements for urban sanitation regulation focusing on onsite sanitation.

NWASCO shall regulate onsite sanitation through existing licences with CUs covering their respective areas of service as licenced. Any private operator operating within the service areas of a CU shall have a management contract with the CU stipulating adherence to the requirements of the regulator; this contract shall have the approval of NWASCO. The National Urban and Peri-Urban Sanitation Strategy (NUSS) provides guidance on management arrangements for sanitation service provision under the CU operational service areas. In some instances, other service providers or private operators may work outside the CUs licenced area. These operators shall have specific licences from NWASCO.

This is illustrated in Figure 6 opposite.

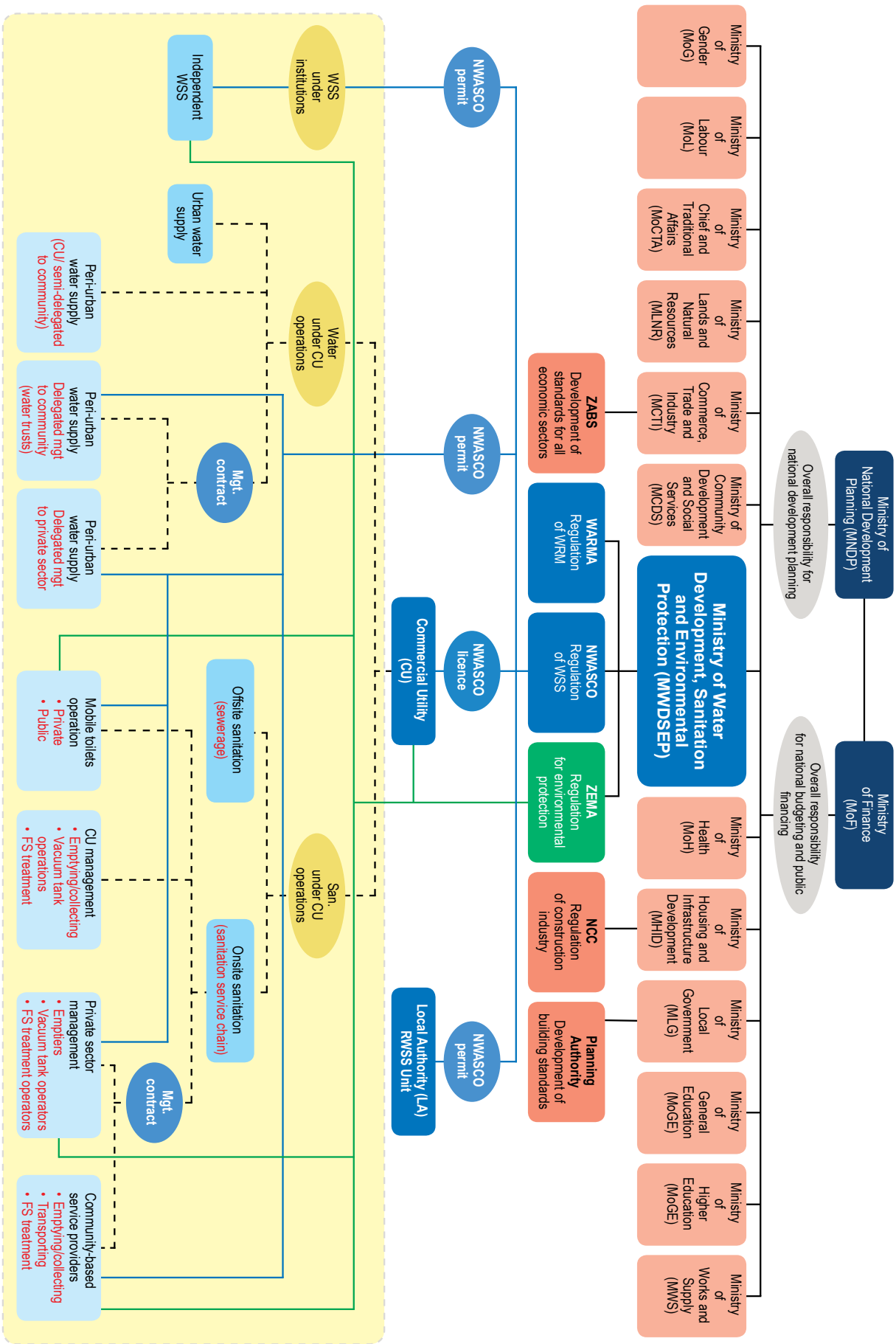


Figure 6: Recommended organisational arrangements for provision and regulation of urban water supply and sanitation

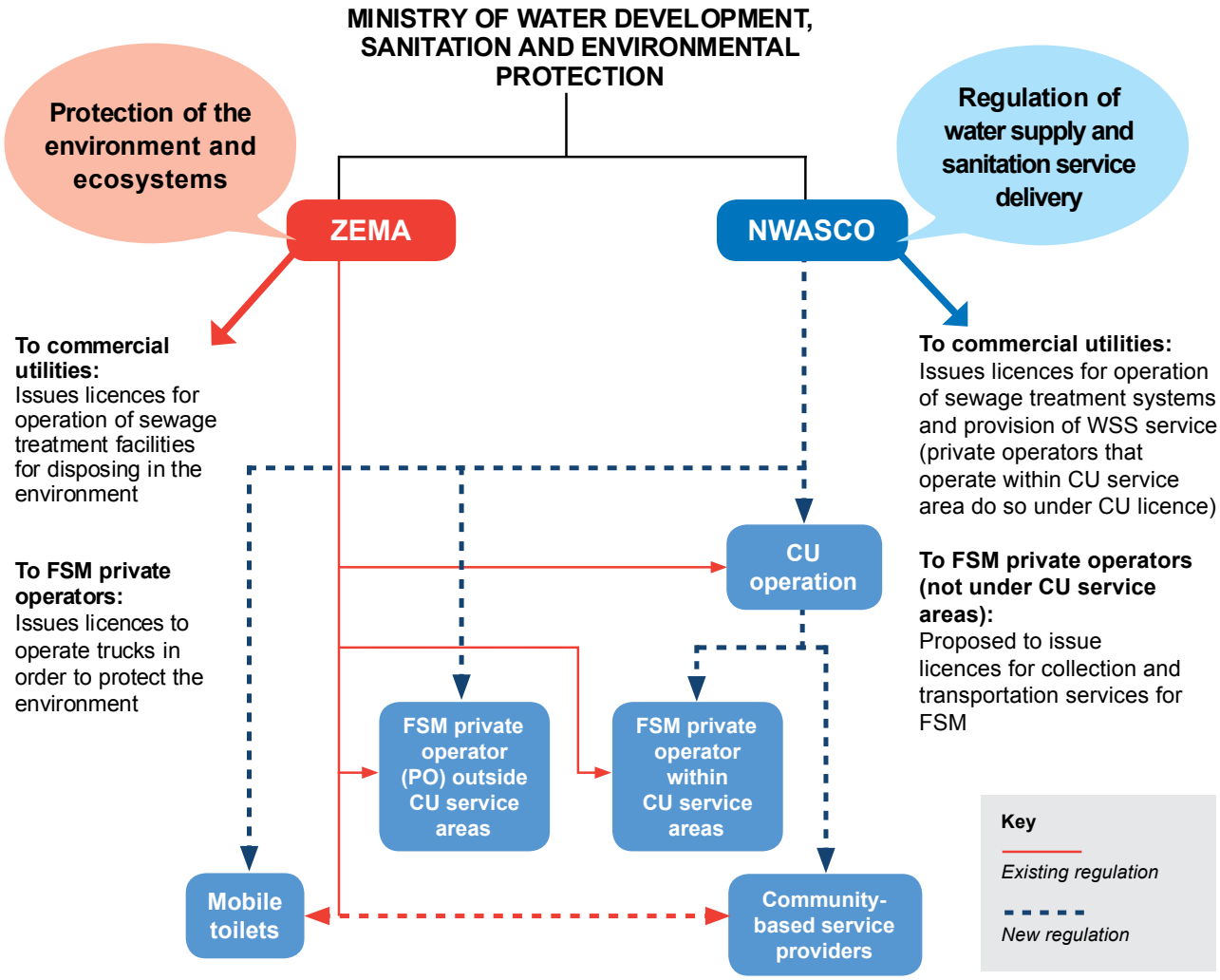


Figure 7: Recommended arrangements for onsite sanitation service provision regulation (ZEMA and NWASCO mandates)

Figure 7 illustrates the arrangements for regulation of onsite sanitation provision to cover environmental protection by ZEMA and service provision by NWASCO.

5.1 The regulatory framework

The regulatory framework for urban sanitation is depicted in Table 8. Details on the recommended actions are explained in Annex 4.

Table 8: Regulatory framework for urban sanitation

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
Institutional arrangements				
1	Water sector institutions	Institutional arrangements	To clearly show roles and responsibilities and ensure effective coordination according to mandates.	**Amendments to institutional arrangements:** 1. CUs shall have overall responsibility for WSS service provision in the entire district and shall be specifically responsible for WSS service provision to cover • urban areas • peri-urban areas • growth centres with piped systems taken up in their licences 2. Local authorities shall have specific responsibility for WSS services in rural settlements for WSS points. LAs shall also continue to be responsible for piped systems not yet taken up by CUs and be supported by CUs through MoUs. 3. Institutions, public or private, shall obtain NWASCO permits to operate WSS facilities within their premises. 4. WARMA is developing ambient water regulations which include groundwater. Drilling of boreholes for commercial purposes shall be subject to WAMRA licensing. 5. WARMA, ZABS, National Council for Construction (NCC) should be shown on the institutional arrangements for the development of standards.
Licensing and permits				
1	NWASCO	WSS Service Provision Licence	Stipulates conditions under which the service provider will operate, as well as the delineation of the operating area.	**Amendment to licensing arrangements:** 1. Whoever provides a service, whether onsite or offsite sanitation, should do so with a licence. A NWASCO licence shall be for overall responsibility and NWASCO permits for subsequent responsibilities. 2. CU licences to be amended to cover entire district boundaries. All other service providers within a district have NWASCO permits.
2	ZEMA	Emission Licence	The objective of the emission licence is to control the emission or discharge of pollutants or contaminants, which cause or are likely to cause an adverse effect, into the environment.	**Develop new standards for onsite sanitation to take account of the entire sanitation service chain.**

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
3	ZEMA	Waste Management Licence	The objective of the waste management licence is to control (a) the reclaiming, reusing, recovery or recycling of waste, (b) the collecting and disposal of waste from industrial, commercial, domestic or community activities, (c) the transportation of waste to disposal site, (d) the ownership, construction or operation of a waste disposal site or other facility for the permanent disposal or storage of waste, and (e) the transit, trade in or export of waste.	**Develop limits to include faecal sludge and recycling activities. This includes specific limits for treatment products for agriculture use, fuel, biogas, etc.** **All transportation trucks should be licensed.**
4	Local Government Council	Business Licence	Businesses operating in Zambia are typically required to obtain one or more licences and permits, depending on the activities of their enterprise.	**No amendments required.**
5	Local Government/ LAs	Permit to discharge effluent into sewerage system	Controls owners or operators of a trade or industrial undertaking wishing to discharge effluent from their plant into an existing sewerage system.	**Amendment to the LGA Act:** 1. CUs to monitor and the LA to enforce in the short term. Local Govt. Administration Act should be amended and incorporated into the WSS Act to enable NWASCO to issue permits to industries discharging trade effluent in the public sewer system and the CUs to monitor. Trade effluent regulations to be reviewed. Consultant engaged to review this regulation. 2. Pricing strategy study under NWASCO being done for both quality and quantity. (Formula shall be self-regulating, and include pre-treatment standards.) 3. Enforcement – there has to be collaboration with LAs. (Gap in collaboration between CU and LAs affects enforcement.) LAs have a leverage on industries. 4. Short-term responsible institution should be LA while working with CUs. Local authority to enforce according to Local Government Administration Act while CUs monitor as per WSS Act.
Regulations				
1	ZEMA, local authorities, CUs	Registration and inspection regulations of septic tanks (New)	In general, all onsite septic tank systems or domestic wastewater treatment systems (DWWTS) will have to be registered.	**Registration and inspection regulations of septic tanks:** • Database to be developed. • Responsibility of LA under building regulations • ZEMA and CU need access to database

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
2	MWDSEP	Statutory Instrument (SI): Regulations governing O&M of onsite sanitation facilities (New)	Establishes regulations for the operation and maintenance of onsite sanitation facilities and/or domestic wastewater treatment systems and/or onsite sanitation facilities.	**Amendment of the WSS Act governing operation and maintenance of onsite sanitation facilities.**
			Defines desludging / emptying/ transportation requirements.	
			Defines registration and monitoring requirements.	
3		SI: Waste Management (use of sewage and FS in agriculture) Regulations (New)	Defines standards for the use or disposal of sewage and faecal sludge.	**Amend existing regulation for sewage effluent and faecal sludge reuse:** ZEMA needs to develop standards to be applied to use sewage and faecal sludge.
			Establishes the general requirements, pollutant limits, operational standards, and management practices, as well as frequency of monitoring, record keeping, and reporting requirements.	
4	MLG	Enforcement (New)	To regulate designs in line with existing laws.	Mapping of sanitation facilities in all urban areas incl. development tools and information system (GIS-based), and to be housed at NWASCO.
			Inspections for building plans and projects to ensure compliance with building regulations (needs to be updated).	
By-laws				
1	Ministry of Local Government /Councils	By-law	In Zambia, local laws established by LAs to be applied within their jurisdiction are referred to as by-laws because their scope is regulated by central government; by-laws facilitate implementation of service delivery activities.	**Develop new by-laws for enforcement:** To have by-laws for minimum standards set by NWASCO/ZEMA for sanitation facilities in certain areas (e.g. high-cost, medium-cost etc.) relating to building permits and building codes. (Enforcement of construction of e.g. septic tanks or connection to sewer lines if existing.)
Monitoring and performance reporting				
1	NWASCO	Annual Sector Report	In line with its mandate to inform the public on WSS issues, NWASCO publishes an annual sector report on the performance and status of the sector.	Update annual sector reporting to include onsite sanitation.
Service Level Agreement and Guarantee				
1	NWASCO	Programme to reach the required minimum service levels	The licensed service provider undertakes to achieve defined levels of service in a specified timeframe to its customers as agreed with NWASCO.	**Amend programme to reach the required minimum service levels:** To add onsite sanitation and faecal sludge management to the existing service contract, e.g. a facility should be desludged within 24 hours of a complaint. Actual response time in Kanyama and Chazanga is 3 days, down from 7.

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
2	NWASCO	Service Level Agreement	The regulator and the provider will agree on stepwise progress towards the required minimum service level by signing adjusted service level agreements every 3 years, based on a relevant programme.	**Amend the service level agreements:** Mechanisms for more regular monitoring; modify the wording.
3		Service Level Guarantee	Every licensed service provider must prepare and submit a service level guarantee defining in a detailed way the service level offered to their customers for a period of 3 years.	**Amend the service level guarantees:** Performance of a service provider is monitored annually.
Standards				
1	ZABS	ZS 323: 2007 Effluent Discharged into Inland Surface Waters General Limits	Lays down the tolerance limits for effluent discharged into inland surface waters.	Develop tolerance limits, including discharge into soil.
2	ZEMA	Standards for treatment, discharge and reuse of faecal sludge and effluents from faecal sludge treatment plants (New)	ZEMA has the mandate to develop standards and guidelines relating to the protection of air, water, land and other natural resources and the prevention and control of pollution, the discharge of waste and the control of toxic substances.	**Develop new standards for faecal sludge treatment, disposal or reuse.**
3	NWASCO/ ZABS	Standards for onsite (household) sanitation facilities (New)	Defines design criteria and specifications for household sanitation facilities.	**To work with all institutions linked to onsite sanitation:** 1. Include MLG (Physical Planning) and Ministry of Infrastructure as part of the responsible Institutions. 2. LAs to play a critical role in standardisation at the local level depending on the environment.
Code of Practice				
1	NWASCO/ ZEMA/ ZABS/ MWDSEP	Code of Practice: Onsite Sanitation Systems (New)	This code of practice could provide guidance on the design, operation and maintenance of onsite sanitation/ wastewater treatment systems.	**Develop code of practice:** 1. Code of practice should be dependent on type of technology and localised according to building codes. 2. Learn lessons from previous designs. 3. Code of practice cannot be enforced. Can be enforced through NWASCO guidelines.
Building codes				
1	MLG / Department of Physical Planning	Building codes	A building code (or building regulations) specifies the standards for constructed objects such as buildings and non-building structures. The main purpose of building codes is to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures.	**Revise building codes:** Code of practice should be dependent on type of technology and localised according to building codes.

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
WSS guidelines				
1	NWASCO	Sanitation Service Provision Guidelines (New)	The guideline establishes sanitation service provision incl. containment, emptying, transportation, storage and treatment facilities as well as disposal/reuse mechanisms	**Develop new guideline for sanitation service provision:** ZEMA and LAs to be included in the processes.
2		Minimum Service Level Guidelines	This stipulates an acceptable minimum level of service that providers must achieve within a defined timeframe.	**Update Minimum Service Level Guidelines to include onsite sanitation**
3		Annual Reporting Guidelines	Ensures that the licensed water and sanitation service providers submit a standardised annual report to NWASCO (financial and technical report) allowing NWASCO to prepare its annual sector report to fulfil their reporting obligations.	**Update Annual Reporting Guidelines to include onsite sanitation (split onsite and offsite sanitation).** Harmonisation with international reporting standards. Include SDGs and all other international standard protocols (6.3.1 and 6.3.2).
4		Tariff Adjustment Guidelines	Ensure sufficient revenues to enable the licensed service providers to operate on a sustainable basis, protect consumers, provide efficiency incentives for service providers, conserve treated water and protect the environment.	**Update Tariff Adjustment Guidelines to include onsite sanitation:** 1. Special focus and emphasis on sanitation services. 2. Tariff to support the sanitation service chain. 3. Incentivise CUs to do WASH programmes; incentives needed to make onsite sanitation attractive to CUs.
5		Accounting Guidelines	Assists licensed water and sanitation service providers to periodically deliver reliable and relevant accounting information.	**Update Accounting Guidelines to include onsite sanitation.**
6		Water Quality Monitoring Guidelines	Ensure through regular monitoring that the quality standards set by ZABS are being complied with so that customers can have confidence that the water they consume is potable and that the wastewater and the faecal sludge they produce is treated and disposed of safely.	**Update Water Quality Monitoring Guidelines to include onsite sanitation:** 1. Set trade effluent penalty charges. 2. WARMA to be included in monitoring of water sources, regulation of boreholes. 3. NWASCO to work with WARMA on water source protection guidelines. 4. WARMA activities: • Developing ambient water standards to recommend to ZABS • Interagency committee – ZABS, ZEMA, Zambia River Authority (ZRA), NWASCO • Establishing ambient water guidelines
7		Business Planning Guidelines	Outlines the framework of a business plan to be prepared by licensed water and sanitation service providers (business plans are prepared for a period of 3 years).	**Update Business Planning Guidelines to include onsite sanitation:** Establish trade effluent penalty charges.
8		Financial Projections Guidelines	Ensures that service providers prepare financial projections in a standardised manner in order to fulfil the requirements as stipulated by their licence.	**Update Financial Projections Guidelines to include onsite sanitation.**

No.	Responsible Institution	Element of regulation	Purpose	Resolutions for the framework
9	NWASCO	Investment Planning Guideline	Specifies the basic elements of investment planning.	**Update Investment Planning Guideline to include onsite sanitation.**
10	MWDSEP	National guidelines for the preparation of urban sanitation plans	Planning forms an integral part of the service delivery cycle in which the projected outcome/ objectives determine the prioritisation of improvements and the design of projects to meet the identified needs.	**Develop new guidelines urgently.**
Inspection				
1	ZEMA, local authorities, CUs	Inspection Plan (New)	According to the Public Health Act 1995, local authorities are responsible for the inspection of sanitation facilities.	**Develop Inspection Plan.** • ZEMA and LA to undertake these inspections incl. MoH (health inspectors) – forming teams to do inspections. Delegation to CU possible. • Innovative inspection methods need to be developed to handle large number of onsite sanitation facilities being inspected. This could include creating an up-to-date GIS database linked to routine operations of service providers, etc. Inspection plans should be appropriately designed to be cost effective and incorporated into the cost structure for operation of the sanitation service chain.
2	NWASC/ WARMA/ ZEMA/ LAs/CUs	Monitoring of the quality of onsite sanitation (New)	Monitoring of quality of onsite sanitation facilities and avoiding groundwater pollution.	Integrated sanitation quality monitoring.
3	LAs/CUs	Siting, design, construction and usage of onsite sanitation facilities (septic tanks, etc) (New)	Promotion of health and mitigation of pollution.	Adequate monitoring during the construction of onsite facilities.
Financing				
1	NWASCO/ MWDSEP	Incentive mechanism to invest in sanitation (New)	For sanitation financing: If CUs do not have the financial means to invest in sanitation service provision, NWASCO and MWDSEP need to develop incentives linked to a sustainable financing mechanism that can provide financial incentives to invest in sanitation (e.g. tax incentives, results-based grants, sanitation surcharge, assistance to gain access to concessional (soft) loans.	**Develop and implement an incentive mechanism** Examples: • Incentives like additional funds to CU if involved in sanitation activities • Encouraging involvement of PPP • Use of sanitation surcharge funds on sanitation activities investments and monitoring • To push all water projects to include sanitation • Selling of final product (cake) to raise money • Selling of biogas to raise money

5.2 The roles and responsibilities

The key actors in urban sanitation and their roles and responsibilities are shown in Table 9 below.

Table 9: Key actors and their roles and responsibilities in urban onsite sanitation

Stakeholder		Collection	Transport	Treatment	Disposal/ end use
Type	**Group**				
GRZ	Ministry of Water Development, Sanitation and Environmental Protection as lead	Policy and laws	Policy and laws	Policy and laws	Policy and laws
Regulating agents	NWASCO (service provision regulation)	• Setting onsite sanitation construction standards (with ZABS) • Setting standards for FS desludging services • Price regulation for emptying of septic tanks and pit latrines and other sanitation facilities, incl. consumer protection	Licence for service provision to CU/ private operators/ CBOs *(includes price regulation, service quality, consumer protection)*	License CU and private operators for service provision *(includes price regulation for FS treatment and discharge, service quality, consumer protection for FS discharge)*	
	ZEMA (environmental protection regulation)		Licensing for environment protection of transportation vehicles; emptying standards and service quality	Licensing for environment protection; setting FS treatment standards	Licensing for environment protection for use of end products
Implementing agents	Local authority	Enforcing standards for onsite facilities/ buildings			
Service providers	CU	Monitoring onsite facilities for functionality and service quality	Monitoring operation of transporters	O&M treatment facilities	
	Private operators	Emptying onsite facilities (includes septic tanks and pit latrines)	Transport FS	O&M treatment facilities (where engaged)	Use of end products
	CBOs	Emptying onsite facilities	Transport FS		
Customers	Non-domestic, community (investors)	Building onsite facilities, O&M			Reuse

5.3 Implementation of the strategy and plan

Due to the fact that implementation of regulation for urban sanitation may present a huge challenge if carried out all at once, the proposed approach is to implement in stages, beginning in Lusaka. Lusaka city provides an opportunity to get it right because there are sufficient planned investments under the Lusaka Sanitation Project supported by the World Bank, the European Investment Bank (EIB), the German development bank KfW, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and the Millennium Challenge Account (MCA). Therefore, activities being implemented at Lusaka Water and Sewerage Company need to be integrated with implementation of regulation by NWASCO. The lessons learnt from the Lusaka Sanitation Project can then be scaled out. Care should be taken as Lusaka Water provides service to the largest city, whose needs and experiences may be somewhat different than others. For instance, Lusaka has at least 31 exhauster trucks operated by private operators; this is not representative of the situation in most other CUs. Regardless, the implementation of regulations will impact every CU and present new challenges; thus the implementation sequence proposed is in stages.

5.3.1 Stage One: Institutional / legal framework

The institutional and legal framework is an important part of creating an enabling environment for sustainable sanitation service provision. NWASCO, together with other stakeholders, shall have to review the existing laws such as the Local Government Act (presently under review) to ensure issues of enforcement are addressed and that the regulator is specifically included in administering its regulatory and enforcement mandates. Further, the drafting of the Water Supply and Sanitation Act to support implementation of the updated Water Supply and Sanitation Policy provides an opportunity to further strengthen the role of the regulator. For instance, the regulator may consider

to begin to regulate industries discharging process effluent into sewerage systems.

5.3.2 Stage Two: Development of regulatory tools

Regulatory tools need to be developed:

1. Working together with actors such as the ZABS, ZEMA, LAs and CUs, standards need to be developed. The immediate need is the development of onsite sanitation and faecal sludge standards to cover the whole sanitation service chain. Onsite facilities such as toilets are the starting point to ensure that the sanitation service chain functions effectively.
2. Guidelines shall provide Lusaka Water and Sewerage Company and other CUs with targets and set standards to be reached. They will entail:
    - Developing and issuing new sanitation service provision guidelines, which shall define minimum standards for sanitation facilities including toilets, emptying equipment, storage and treatment facilities, as well as disposal/reuse mechanisms covering the whole sanitation service, including O&M, planning and management and monitoring and reporting obligations, etc.
    - Updating existing guidelines consisting of the minimum service level guidelines, annual reporting guidelines, tariff setting guidelines, accounting guidelines, and investment and business planning guidelines as the first priorities. Other guidelines can follow.

5.3.3 Stage Three: Amend licences and associated service level agreements and guaranties

The CUs will develop onsite sanitation and faecal sludge management plans in alignment with the new guidelines. Service level agreements and guarantees and licences will need to reflect these changes. Where outsourcing of services is done by a CU (such as private operators with exhauster trucks), a management contract will need to be signed in accordance with newly developed sanitation service provision guidelines.

This contract shall reflect the regulator conditions given to the CUs to adhere to set standards. It is anticipated that CUs shall have urban sanitation plans as part of investment planning, which shall then be linked to strategic plans and budgets approved by their boards.

All CUs should have a comprehensive urban sanitation plan which includes onsite and FSM. This plan could be stipulated in the licence to ensure that CUs develop these plans and that the sanitation agenda becomes a priority through regulation.

5.3.4 Stage Four: Undertake a detailed baseline survey

At the present time, the only sanitation data that exists concerns sewerage systems. Thus, an urban sanitation baseline survey and the development of a sanitation database are necessary steps for establishing a comprehensive sanitation reporting programme. The information collected during the survey could include the type of sanitation facilities (onsite and offsite), size, their condition and usage etc.

5.3.5 Create a database

Creating a database would help utilities establish their customer base and support management in planning, monitoring and reporting on the entire sanitation service chain. It could also provide important information regarding what type of FS is generated, which would help in designing the treatment facilities. Currently, NWASCO is supporting the CUs in GIS development. Ideally, every CU would have their own database which could be linked to a national database.

5.3.6 Strengthening of NWASCO

Onsite sanitation regulation is an additional responsibility and new area for the regulator. Therefore, capacity building measures need to be undertaken for institutional strengthening based on assessed needs, which could include formal and informal training, study tours and twinning with other regulators in and outside the region to keep learning and exchanging ideas. Partnerships and twinning arrangements are critical in ensuring that NWASCO keeps improving in its mandate of regulation.

5.4 Monitoring the sanitation chain

To date, monitoring by sector institutions (mainly MLGH and NWASCO) has focused primarily on the use of particular sanitation facilities and somewhat on the public health impacts of sanitation.

Both MLGH and NWASCO define the indicator sanitation coverage as the '*percentage or proportion of the population with household access to adequate sanitation*'; however, the definition varies widely. While NWASCO reports on the percentage of population that uses a flush or pour-flush toilet connected to a sewer system or a septic tank, MWDSEP reports on the percentage of population using an improved sanitation facility as defined by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP).

In both cases, the indicator does not address the subsequent management of wastewater or faecal waste. According to MLGH (2015) National Urban and Peri-Urban Sanitation Strategy (2015–2030):

> '*adequate sanitation is a sanitation system that is accessible and available (located not more than 100 m away from home and is easy to access for children, elderly and handicapped at all times during the day); it is acceptable for the user and provides a safe and convenient, private, secure and dignified place and complies with the socio-cultural norms of society (e.g. smell and reuse aspects); it is affordable and can realistically be paid for by the households and provides a hand washing facility.*'

For further sanitation definitions, refer to Annex 5.

The current reporting does not allow for the monitoring of the whole sanitation chain and

the services provided by licensed service providers. Therefore, it will be important to incorporate respective indicators into the existing sector monitoring systems at MWDSEP and NWASCO. The reporting then needs to address the safe management of wastewater and faecal sludge from containment through emptying, transport, treatment and reuse or disposal.

Based on the definition of adequate sanitation adopted by the sector institutions, a new set of indicators needs to be developed to monitor elements of sanitation management that are currently not covered under the NWASCO or MWDSEP sector monitoring.

To monitor access to adequate sanitation there is a need to develop a monitoring framework that allows for monitoring the treatment of faecal waste and classifying FS flows as 'safe' and 'unsafe' for different purposes. In the example[1] shown in Figure 8 below, green arrows represent safe flows, while red arrows indicate unsafe discharges into the environment. Reliable data are scarce, but it is estimated that the bulk of faecal wastes in urban areas in Zambia are currently discharged unsafely into the environment.

1 *Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment*, by UNICEF and WHO, 2015.

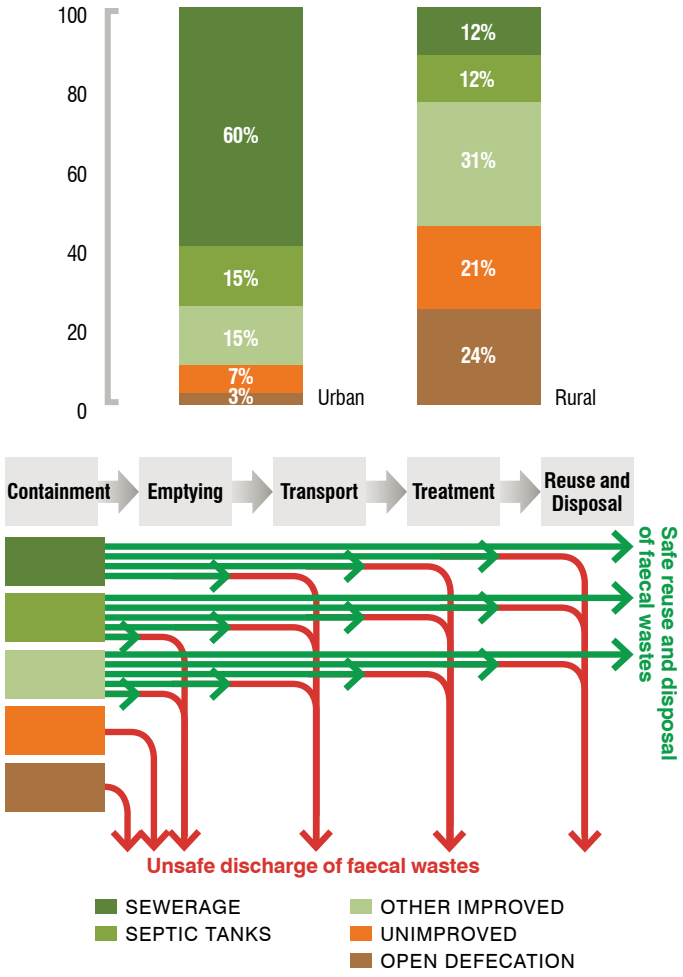


Figure 8: Example of how to classify waste water and faecal sludge as safe and unsafe (JMP 2015)[1]

The CUs and NWASCO currently report on containment at the user facility level through the 'improved' classification. This data can be further disaggregated to separately report proportions of populations accessing different types of improved facilities, as well as unimproved facilities and open defecation. These are not routinely reported as separate rungs on the 'sanitation ladder', since certain types of latrines, septic tanks and sewered systems can all be safely managed, meaning that excreta are safely disposed *in situ* or treated offsite. However, such disaggregation is essential to calculate safe management of faecal wastes.

By estimating the proportion of faecal wastes from these facilities that are discharged unsafely due to unhygienic emptying, ineffective transport and inadequate treatment, the total amount of safe and unsafe discharges of faecal wastes can be calculated.

The following information or indicators in Table 10 below are being recommended to be included in the monitoring system of NWASCO as well as in the annual report of MLGH to allow for monitoring of the whole sanitation chain.

Table 10: Recommended indicators

Indicator	Definition
Percentage of population using adequate sanitation	Percentage of population using an improved sanitation facility not shared with other households (basic service)
Percentage of population using safely managed sanitation services or Percentage of population with access to sanitation services provided by the CUs	Percentage of population using an improved sanitation facility not shared with other households and where excreta is safely disposed *in situ* or treated offsite. Includes: a. Percentage of population using a pour-flush toilet connected to a sewer network that is connected to a decentralised treatment plant b. Percentage of population using a pour-flush toilet connected to a sewer network that is connected to a communal septic tank, which is emptied and the faecal sludge disposed of safely c. Percentage of population using a pour-flush toilet connected to a septic tank, which is emptied and the faecal sludge disposed of safely d. Percentage of population using a pour-flush toilet connected to a pit, which is emptied and the faecal sludge disposed of safely e. Percentage of population using a compost latrine which can be emptied and compost disposed of safely f. Percentage of population using a VIP latrine which can be emptied and faecal sludge disposed of safely g. Percentage of population using a urine-diversion latrine which can be emptied and sanitation products disposed of safely or reused
Percentage of population using an unimproved sanitation facility	Percentage of population using unimproved sanitation facilities (flush/pour-flush not going to sewer/septic tank/pit, pit latrines without a slab, hanging and bucket latrine), with or without sharing with other households
Percentage of population practising open defecation	Percentage of population practising open defecation (defecating in bushes, fields, open water bodies or other open spaces)
Percentage of population with handwashing facilities with soap and water at home	Population with a handwashing facility with soap and water in the household
Share of human excreta that reaches designated disposal sites or Percentage of wastewater safely treated	Proportion of wastewater (sewage and faecal sludge) generated by households and by economic activities which is safely treated compared to total wastewater generated by households and economic activities

5.5 Addressing hygiene

The full benefits of improvements in access to sanitation and drinking water cannot be realised without good hygiene. Of the range of hygiene behaviours considered important for health, handwashing with soap is a top priority in all settings. Menstrual hygiene management should also be a priority for improving the health, welfare and dignity of women and girls.

In 2008 and 2009, the JMP supported a review by the monitoring group of the Public-Private Partnership on Handwashing, MICS, DHS and USAID. It was agreed that the most practical approach leading to reliable measurement of handwashing in national household surveys was observation of the place where people wash their hands and noting the presence of water and soap (or local alternative) at that location. This provides a measure of whether households have the necessary tools for handwashing and is a proxy for their behaviour. Observation by survey enumerators represents a more reliable, valid and efficient indicator for measuring handwashing behaviour than asking individuals to report their own behaviour.

Existing sanitation data cover sewerage systems only. To establish a sanitation-reporting programme, a baseline survey and a comprehensive sanitation database are needed.

6. The Budget

The provisional estimated budget, mainly based on the NWASCO Strategic Plan, is presented in Table 11.

Table 11: Estimated budget

No.	Activity	Estimated budget (ZMW)	Comment
1	Institutional/ legal framework	200,000	Depends on recent changes in the water sector
2	Regulation tools (e.g. guidelines and standards) for onsite sanitation and FSM (including meetings and workshops)	150,000	Priority guidelines: • Sanitation provision guidelines (new to include onsite sanitation and FSM) • Tariff setting guideline to be updated after the KfW-supported tariff study, which includes pricing strategy, is completed • Minimum service levels, service level agreements and guarantees *(require revision)* • Investment and business planning guidelines *(require revision)* • Reporting guidelines *(require revision)* • Accounting guidelines *(require revision)* • Water quality guidelines *(require revision)* • Financial projection guidelines *(require revision)* • Other guidelines as determined by NWASCO
3	Coordinate development of onsite sanitation and FS standards with sector-responsible agencies	300,000	• Physical Planning Department of MLG now is responsible for building and onsite facilities standards/codes related to housing development • ZEMA is responsible for effluent and FS standards development • ZABS is responsible for design and construction of water supply and sanitation systems
4	Undertake a detailed baseline survey and create a database of onsite sanitation facilities	1,050,000	
5	Stakeholder engagement and regulation process facilitation		
6	Strengthening of NWASCO	350,000	Includes study tours (ZMW 150,000)
	Total	**2,050,000**	

Developing standards and guidelines for provision of sanitation services, including the collection and safe treatment of faecal sludge, are part of the new framework.

7. Recommendations, Timeframe and Deliverables

The Framework for Provision and Regulation of Urban Onsite Sanitation, after being subjected to wide stakeholder consultations in the water sector through meetings, workshops, conferences and reviews, has been agreed upon and the next step is implementation. The stakeholders, which include the relevant ministries, ZEMA, ZABS, JICA, UNICEF, AfDB, World Bank, MCA, WSUP, LAs, CUs, SNV, Plan and cooperating partners etc., are expected to participate.

The implementation begins with updating/ developing licensing arrangements, which includes the review of existing licences held by all WSS service providers, including SLAs and SLGs. This is followed by updating or developing standards and guidelines. The deliverables and timeframes are presented below.

Table 12: Deliverables and recommended timeframe

Deliverable	Timeframe
Institutional and legal framework agreement	TBA
Agreed regulatory framework	February/March 2017
Minimum service levels guidelines and standards for onsite sanitation and faecal sludge management	September 2017
Other guidelines and standards for onsite sanitation and faecal sludge management	End of 2017
Definitions of national sanitation standards/ code of practice	End of 2017
Baseline survey and creation of database of onsite sanitation facilities	2016–2018
Strengthening of NWASCO	2017

ANNEXES

ANNEX 1:
Organisational arrangements for provision and regulation of urban water supply and sanitation

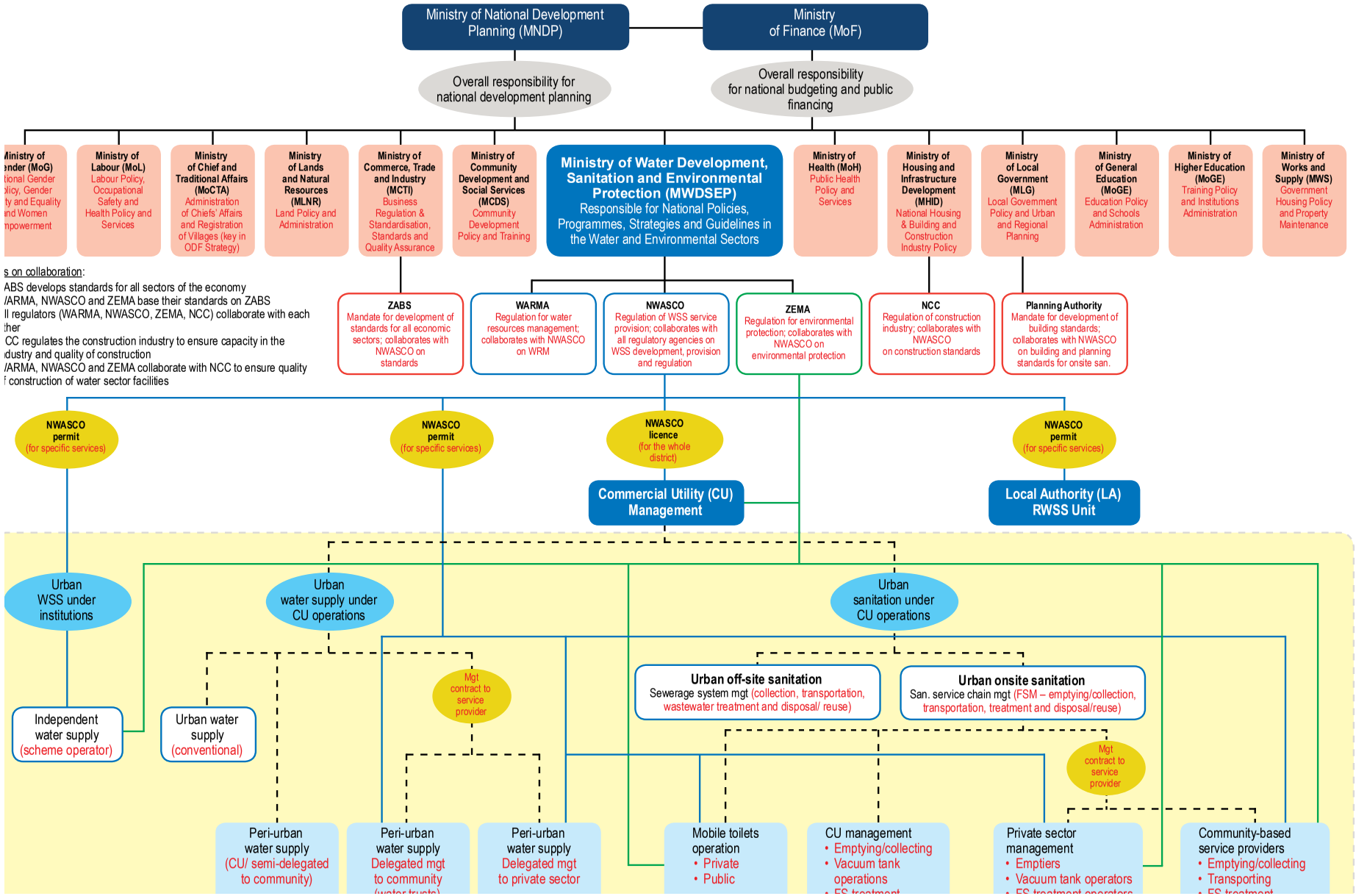
ANNEX 2:
Regulation flowchart for urban onsite sanitation service provision

ANNEX 3:
Extract from the National Urban and Peri-Urban Strategy (2015–2030)

ANNEX 4:
Regulatory framework for urban sanitation services: Detailed findings and recommendations

ANNEX 5:
List of sanitation definitions

Annex 1: Organisational arrangements for provision and regulation of urban water supply and sanitation



Annex 2: Regulation flowchart for urban onsite sanitation service provision

		Management requirements		Sanitation Service Chain				
		Aspect	Responsibility	Collection	Transport	Treatment	Disposal/end use	
ENABLING ENVIRONMENT	Political will and government support	Water sector policies and laws	Ministry responsible	• The Vision 2030 • The Water Policy 2010 • The Water Supply and Sanitation Policy Draft 2016 • The Water Supply and Sanitation Act of 1997 • The National Development Programmes (7th to be released) • The National Urban Water Supply and Sanitation Programme (2015 to 2030)		• The National Water Supply and Sanitation Capacity Development Strategy • The National Urban and Peri-Urban Sanitation Strategy • The Open Defecation Free (ODF) Strategy		Stage 1
		Water sector programmes						
		Water sector strategies						
	Licensing	Service provision licence	NWASCO	Stipulates conditions under which the service provider will operate, as well as delineation of the service area				Stage 2
		Emission and waste management licences	ZEMA	1. Control emission or discharge of pollutants or contaminants 2. Control (a) recovery or recycling of waste, (b) collection & disposal of waste from industrial, commercial, domestic or community activities, (c) transportation of waste, (d) ownership, construction or operation of a waste disposal/storage site, and (e) transit, trade in or export of waste				
		Business licences	Local authority	Businesses operating in Zambia are typically required to obtain one or more licences and permits, depending on the activities of their enterprise				
	Regulations	Standards and code of practice	NWASCO, ZABS, ZEMA	National standards for sanitation facilities established, led by NWASCO. Design and construction by ZABs, limits for environmental protection by ZEMA				
		Building codes	Planning authority of government	Planning Authority establishes building standards in collaboration with NWASCO				
		Statutory requirements	ZRA, PACRA, NAPSA, LCC, etc					
		Environmental protection regulations	ZEMA	Effluent standards in place. Need to establish FS standards				
		WSS service provision regulations	NWASCO	Service standards for sewerage systems in place. Need to establish service standards and regulations for onsite sanitation				
	Enforcement	Enforcement of Public Health Act, building and construction standards	Local authorities	Enforce provision of toilets at every property according to national building standards (can delegate enforcement to CUs as per WSS Act, 1997)				
IMPLEMENTATION	Operations	Overall management of the sanitation service chain	Commercial utilities (CUs)	Sanitation service chain for sewerage system is in place. Need for CUs to manage the sanitation service chain for onsite sanitation operation and maintenance				Stage 3
		FS containment	Users/producers of waste	Sanitation facilities built according to national standards/ practice				
		Emptying	CBOs, private sector, CUs	Emptying of san facilities ensures protection of environment and public health				
		Transfer stations (TSs)		→	TSs operate to meet ZEMA and NWASCO standards and regulations			
		Transport		→	Transport of FS meets ZEMA standards and NWASCO service level standards			
		Treatment			→	Treatment of FS meets ZEMA standards and NWASCO service levels		
		Disposal/end use				→	Disposal of FS meets ZEMA standards and NWASCO service levels	

Annex 3: Extract from the National Urban and Peri-Urban Strategy (2015–2030)

No.	Activity	Output	Anticipated deadline	Responsibility
1	Support MLGH and LGAZ in **developing a ranking and reward system** and conducting annual nominations for cities recognised for progress in improved sanitation	Urban sanitation indicator framework approved	Q4/2016	MLGH and LGAZ
		Cities ranked and rewarded according to urban sanitation indicator framework annually (reports)	Q4/2030	MLGH and LGAZ
2	Support CUs and LAs to jointly prepare communication campaigns to residents / customers to disseminate information about plans for improvement and service level enhancement	1 sanitation-related communication campaign by each CU in partnership with at least one associated LA	Q4/2016	CUs and LAs
3	Support production of MLGH **national guidelines for preparation of urban sanitation plans**	MLGH guidelines for urban sanitation planning including community participation, cross-cutting issues and cost effectiveness, published and disseminated	Q2/2016	MLGH
4	Support LAs and CUs to adopt their lead role in planning process and establish urban sanitation task forces	4 urban sanitation task forces established and MoUs signed between LAs and CUs	Q2/2016	LAs and CUs
5	Support LAs and CUs in elaborating sanitation plans as per guidelines involving communities and other stakeholders in decision-making/ sanitation planning processes	4 urban sanitation plans including cross-cutting issues published	Q2/2016	LAs and CUs
		4 urban sanitation plans contain prioritization considering health risk assessment	Q2/2016	LAs and CUs
6	Support NWASCO, ZABS and MLGH in development, promotion and dissemination of **sanitation standards that take into account equity and inclusiveness**	**Code of practice for sanitation** developed, included into **standard sanitation designs for facilities for children and physically challenged**	Q2/2016	NWASCO, ZABS, MLGH
7	Support MLGH in stakeholder coordination	At least 4 technical working group meetings per year at national level	Annually	MLGH
		In at least 4 provinces P-WASHE and D-WASHE meetings are held regularly	Quarterly	MLGH
8	Support the CUs and MLGH in preparing a detailed inventory of the status of sanitation infrastructure in all towns	Status report on sanitation infrastructure for all CUs	Q4/2016	CUs and MLGH
9	Support CUs in the preparation of **asset management plans**	Asset management plans available by all CUs as per regulatory standards	Q4/2018	CUs
10	Support CUs and the MoH in developing sanitation safety plans for sewered and non-sewered infrastructure	Sanitation safety plans prepared by all CUs and submitted to MoH	Q4/2018	CUs and MoH
11	Assist CUs to improve operational performance of sanitation services and reduce their O&M costs per capita served	CUs conduct studies to improve their operational performance and reduce their O&M costs per capita served	Q4/2017	CUs
12	Assist NWASCO in developing **guidelines for enhancing operational performance of wastewater and faecal sludge management facilities**	Guidelines for enhancing operational performance of wastewater and FSM facilities developed	Q4/2017	NWASCO

No.	Activity	Output	Anticipated deadline	Responsibility
13	Support CUs in enhancing household sanitation facilities and faecal sludge management systems	At least 3 more CUs have applied FSM practices for onsite sanitation facilities	Q4/2018	CUs
		Operational performance of infrastructure assessed and improved in 5 systems by 20% (effluent quality measured in BOD, energy use of sewerage plants, efficiency of FSM facilities)	Q4/2018	CUs
14	Support NWASCO in developing **standard contracts and guidelines for CUs to apply delegated management models**	**Guidelines and standard contracts** developed by NWASCO	Q4/2016	NWASCO
15	Support NWASCO in developing **service level agreements, including service areas for private service providers**	Service level agreements developed	Q4/2016	NWASCO
16	Support CUs in enhancing service quality and allowing for competition for sludge emptying services	At least one service telephone line/centre established at CU for residents to enquire about sludge emptying services	Q2/2017	NWASCO and CUs
17	Support the process to **include FSM services in the mandate of existing and new water trusts**	2 more water trusts provide sanitation services to peri-urban communities	Q4/2016	CUs and water trusts
18	Support NWASCO, LAs and CUs in developing a **public sanitation concept** (incl. designs, guidelines, and service contracts)	Public sanitation concept developed and published	Q4/2016	NWASCO, CUs, LAs
19	Liaise with other actors for school sanitation and sanitation in health centres	Institutional sanitation is integrated into the urban sanitation plans	Q2/2018	LAs and CUs, MLGH, MoE, MoH
20	Support MLGH and NWASCO to increase investments in sanitation infrastructure	Infrastructure development tool available	Q4/2016	MLGH, NWASCO
		Improved cost recovery of sanitation services	Q4/2019	MLGH
21	Support MLGH and NWASCO in developing **incentive mechanisms** to invest in sanitation	Incentives available to invest in sanitation (e.g. tax incentives, result-based grants)	Q4/2016–2030	
22	Investigate the possibility of introducing an **FS treatment charge** or increasing the **sanitation surcharge** to cover FS treatment costs		Q2/2018	NWASCO, MLGH
23	Assist in development of a scheme to support business development of delegated FSM service providers			
24	Assist NWASCO in **revising the level and structure of sanitation tariffs to cover at least O&M costs**	Water, sewerage and faecal sludge management costs are separated in the CUs financial statements	Q4/2017	NWASCO
		The “polluter pays principle” introduced for polluting industries in wastewater treatment pricing	Q4/2017	NWASCO, ZEMA
25	Support MLGH in developing a local sanitation levy (e.g. on ground rates) and national tax	Applied sanitation levy and tax scheme	Q4/2017	MLGH
		Increased LAs’ revenue earmarked for sanitation activities	Q4/2017	MLGH

Annex 3: Extract from the National Urban and Peri-Urban Strategy (2015–2030) (CONT.)

No.	Activity	Output	Anticipated deadline	Responsibility
26	Develop a smart subsidy approach for the poorest of the poor	X no. of HH benefitted from subsidy	Q4/2017	MLGH, MCD
27	Support NWASCO and MLGH in developing a national harmonised framework for monitoring and reporting on urban sanitation developments	**Harmonized sanitation coverage/access definitions** developed	Q2/2016	MLGH and NWASCO
		Annual coverage and sanitation access published	Q4/2016 – 2030	MLGH and NWASCO
28	Support NWASCO in developing **regulatory tools incl. performance indicators and guidelines for onsite sanitation services**	Annual sector report includes **customer-oriented sanitation performance indicator**	Q4/2016 – 2030	NWASCO
		NWASCO – CU **service level indicator includes onsite sanitation**	Q2/2017	NWASCO
		NWASCO **sanitation regulation guidelines** published	Q2/2017	NWASCO
29	Support NWASCO in **including onsite sanitation into the NIS**	Annual sanitation coverage data includes other onsite sanitation facilities (other than septic tanks)	Q4/2016– 2030	NWASCO
30	Support NWASCO/CUs in mapping of wastewater management and other sanitation infrastructure/ facilities	Map with coverage data published	Q4/2016– 2030	NWASCO
31	Support NWASCO in developing a **performance monitoring system for emptying services and FSM**	At least 3 shit-flow diagrams published	Q4/2016	CUs together with the LAs
32	Support ZEMA in developing a **wastewater quality monitoring programme** incorporating provisions for environmental and public health assessments	Results from water quality monitoring published	Q2/2017– 2030	ZEMA
33	Support ZABS in the development of **standards for sanitation technologies**	Published standards	Q2/2016	ZABS
34	Support ZABS in the development of **codes of practice** and **building codes**	Published codes of practice and building codes	Q4/2016	ZABS

Annex 4: Regulatory framework for urban sanitation services: Detailed findings and recommendations

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Licensing	**NWASCO**	**Licence**	Stipulates conditions under which the service provider will operate, as well as the delineation of the operating area. According to the Water Supply and Sanitation Act 1997 "*a utility or a service provider shall not operate except (...) under the authority of a licence (...)*" The regulations on licensing are covered by the Statutory Instrument No. 63 of 2000 The Water Supply and Sanitation (Licensing of Utilities and Service Providers) Regulations, 2000. Thereby a sanitation service provider shall apply to NWASCO for a licence to provide sanitation services. To apply for a licence, the service provider needs to provide a business plan, a company registration certificate, financial information, and an investment plan. Besides the application fee, a licensed service provider has to pay a monthly licence fee to NWASCO (depending on the number of consumers). The licensed service provider must keep and maintain records of its activities for the purpose of regulation in accordance with the information management systems of NWASCO. Data and information must be submitted according to the quality standards set by NWASCO (guidelines). According to the information obtained from NWASCO licenses are valid for up to 10 years. At the moment NWASCO implements the policy to license any service provider that serves more than 50 households or 500 people (refer to the NWASCO brochure on licensing). In case the licensed service provider (e.g. CU) enters into agreements with other service providers to provide services within their supply area these service providers need to be included in the licence. It is up to NWASCO to determine whether a specific provider must hold a licence or not, based upon the information gathered by the registration of the provider (NWASCO brochure on licensing). All licensed service providers (CUs) have to inform NWASCO when they are about to engage in discussions or enter into a contract with another service provider. The licence holder must submit to NWASCO all contracts made with other service providers before signing such contracts and these contracts shall only be effected with the consent of NWASCO. NWASCO may suspend or cancel the licence of the CU in the event the CU enters into an agreement of which the beneficial impact on the provision of sanitation services cannot be demonstrated.	**Finding** 1. The Statutory Instrument No. 63 of 2000 might need to be amended to include relevant information related to sanitation service provision into (i) the registration and application form (First Schedule) for providers of water supply and sanitation services, and (ii) the reporting obligations of the licensed service providers (CUs) as outlined in the Third Schedule. 2. NWASCO needs to decide to which extent they want to license "other sanitation service providers" than CUs, including exhauster trucks, treatment plant operators (this may include owners of septic tanks as they "operate" a domestic wastewater treatment facility). 3. In case an exhauster truck or any other service provider operates within the sanitation service area of a CU, the current regulatory framework requires a contractual agreement between the service provider and the CU. In this case, the service provider is covered by the licence of the CU and NWASCO needs to approve the contract. Other service providers can be exhauster trucks, manual pit emptiers, and faecal sludge treatment plant operators if they provide services within the service area of the CU and the required infrastructure does not belong to the CU. 4. At the moment the licence template does not give any information on service providers that provide services on behalf of the licensee (in this case the CU or a licensed private scheme) or that operate in their service area. **Recommendation** 1. The licence template needs to be amended to allow for the inclusion of "other service providers" providing water supply or sanitation services on behalf of the CU. Standardised contract templates need to be developed by NWASCO for the different sanitation service providers that assist the CUs in establishing effective and legally binding contractual relationship for onsite sanitation service provision. 2. In case the sanitation service provider provides services outside the service area of the CU but e.g. disposes of the collected sludge at the treatment facility of the CU a separate licence by NWASCO could be established if decided respectively. 3. In the course of licensing sanitation service providers, a different approach than the applied consumer threshold of 500 people should be considered. Contrary to water supply, sanitation services are not provided on a daily or weekly basis, meaning that the customer base is likely not to exceed 50 households to guarantee a sufficient income for the service provider. A threshold of annual revenue or amount of faecal sludge transported/treated or disposed of might provide an alternative for the decision of licensing. 4. The licensing of NWASCO needs to be aligned with the current licensing procedures of ZEMA. This is particularly important when it comes to allocating disposal sites for registered exhauster trucks currently done by ZEMA (refer to ZEMA Waste Management Licence).

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Licensing	**ZEMA**	**Emission Licence**	The objective of the emission licence is to control the emission or discharge of pollutants or contaminants, which cause or are likely to cause an adverse effect, into the environment. According to the current regulatory framework, every person or legal entity that discharges effluent or sludge into the environment requires an emission licence from ZEMA. Therefore, all operators of sewage and/or faecal sludge treatment plants require an emission licence. Any onsite sanitation facility/system discharges effluent or sludge into the environment at some stage. Therefore, a broad interpretation of the legal framework would require that every owner of an onsite sanitation facility must apply for an emission licence and the effluent is subject to regular checks through ZEMA.	**Finding** 1. Owners of septic tanks currently don't need a licence issued by ZEMA although septic tanks can be considered as domestic (onsite) wastewater treatment plants and they discharge effluent into the environment. **Recommendation** 1. It is recommended that NWASCO together with ZEMA and the local authorities develops standards for the construction and O&M of septic tanks/ domestic wastewater treatment systems to ensure that effluent standards set by ZEMA/ ZABS can be met. 2. Together with ZEMA it needs to be decided which onsite sanitation facilities should be considered a 'domestic wastewater/faecal sludge treatment system' and therefore fall under the regulations established. ZEMA needs to decide if they want to include owners of septic tanks in the existing licensing scheme. 3. This would aim at the protection of the environment or if they decide to exclude them (as NWASCO does it with schemes that supply less than 50 households) and only require a licence or permit if certain conditions are met (e.g. size or volumes disposed of). 4. NWASCO together with ZEMA should establish 'general binding rules' that need to be followed by owners/operators However, in this case the 'operator' of a septic tank or small 'wastewater faecal sludge treatment plant' should at least meet general binding rules that need to be established (e.g. the sewage must be domestic in nature and not cause any pollution or the septic tank needs to be located at least XXX m from any water body). The framework most likely requires the definition of a threshold when a person or entity needs to apply for a licence e.g. one must apply for a permit if volumes for discharging exceed 5 cu. metres (5,000 litres) per day. 5. In this context it is recommended to discuss with ZEMA which role they have to play when it comes to the development of standard designs. 6. In addition, an inspection framework needs to be established allowing for the monitoring and supervision of the discharge. According to the current setup, ZEMA and the local authorities will be responsible for inspections carried out. While ZEMA needs to control and monitor effluent qualities and the effects of the discharge into the environment, local authorities have to check and approve the construction of a septic tank (under the building regulations). This would include a register of septic tanks and/or any wastewater/faecal sludge treatment plant. 7. Any standard designs for onsite sanitation facilities/domestic wastewater or faecal sludge treatment systems need to ensure that effluent standards can be guaranteed or discharge requirements are met. As mentioned above this requires a clear definition of domestic wastewater/faecal sludge treatment systems. 8. Currently, the standards for effluent apply only for transport and disposal. Standards and regulations for the use of sewage and faecal sludge in agriculture also need to be defined.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
	ZEMA	**Waste Management Licence**	The objective of the waste management licence is to control (a) the reclaiming, reusing, recovery or recycling of waste; (b) the collecting and disposal of waste from industrial, commercial, domestic or community activities; (c) the transportation of waste to disposal site; (d) the ownership, construction or operation of a waste disposal site or other facility for the permanent disposal or storage of waste; and (e) the transit, trade in or export of waste. According to ZEMA faecal sludge is considered waste. People or legal entities that transport faecal sludge require a waste management licence. The licence is granted for a period of 3 years. All licence holders are registered at ZEMA. The licence specifies where the exhauster truck has to dispose of the faecal sludge (authorised disposal facility). Vacuum trucks are only allowed to operate during normal working hours (i.e. between dawn and dusk). Operators of exhauster trucks have to submit two (bi-annual: mid-January and mid-July) reports per year to ZEMA related to the transportation of the waste. According to the Statutory Instrument No. 112 of 2013 The Environmental Management (Licensing) Regulations, the licence is issued for the transportation of waste and is usually issued for the specific type of waste, in this case called sewage of effluent. Again the limits for effluent and wastewater apply.	**Finding** 1. ZEMA has effluent standards as outlined in the Statutory Instrument No. 112 of 2013 The Environmental Management Regulations. There are no standards for wastewater sludge or faecal sludge. **Recommendation** 1. Together with ZEMA and the CUs (who in most cases operate the treatment sites where the sludge is disposed of) it should be discussed if there is a need to define limits for faecal sludge disposal, in particular as its composition and structure is different from wastewater or effluent as it may affect the operation of, in particular, biological treatment plants designed for the treatment of domestic wastewater. The same applies for the disposal or reuse of treated sludge (e.g. in agriculture). 2. In any case ZEMA should provide relevant information on exhauster truck licensing, registering and reporting to NWASCO on a regular basis to allow for the alignment of activities.
	Local Govt Council	**Business Licence**	Businesses operating in Zambia are typically required to obtain one or more licences and permits, depending on the activities of their enterprise. • A business needs to be registered at PACRA • Each business needs to obtain a VAT tax number at the Zambia Revenue Authority (ZRA), promoters must file the certificate of incorporation • They need to register for social security at the National Pensions Scheme Authority and for VAT at ZRA • All businesses are required to pay a business levy to commence business activities at Lusaka City Council	**Finding** Existent
Monitoring and performance reporting	**NWASCO**	**Annual Sector Report**	In line with its mandate to inform the public on WSS issues, NWASCO publishes an annual sector report on the performance and status of the sector. The sector report highlights the performance of providers against set sector benchmarks derived from the Minimum Service Level Guidelines as well as compares the performance of the licensed service providers against each other. Currently NWASCO presents the following information related to sanitation service provision in its sector report:	**Finding** 1. A comprehensive definition of sanitation coverage has been presented in the MLGH (2016) Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft). As well, clear objectives have been defined in the NUWSSP. However, there is no harmonized monitoring and reporting on urban sanitation developments resulting in different figures for e.g. sanitation coverage being published by NWASCO and MLGH.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Monitoring and performance reporting	**NWASCO**	**Annual Sector Report**	National level: • No. of persons with access to sanitation services • National urban sanitation coverage (defined as % of urban population served with sewerage only) • Total urban population served with sewerage The comparative performance of the CUs includes the following information: • Sanitation coverage defined as the ratio of urban population with access to adequate sanitation Sanitation coverage as reported by the CUs and NWASCO consists of the population serviced by offsite (centralised system/ sewer connections) and septic tanks only. Other onsite facilities such as pit latrines are not considered acceptable for urban sanitation and therefore households with access to onsite sanitation facilities other than septic tanks are not considered having access to 'adequate sanitation' • Total sewer connections • Proportion of population served on sewer network • Proportion of population served by septic tanks For the reporting on progress on meeting service level agreements and adherence to service level guarantees the following service level indicators (SLIs) are being considered: • **SLI 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. • **SLI 10** Quality of Discharged Sewer (In terms of BOD5, COD, nitrates, phosphorus, etc.) – Standards for sewage effluent discharges as required by ZEMA have to be met meaning no. of tests carried out and tests results within the standards for effluent.	2. NWASCO has formulated guidelines on Minimum Service Levels (MSL) that currently do not set comprehensive targets for the utilities with regard to sanitation service provision and/or improving sanitation coverage (let alone onsite sanitation). Although the MSL Guideline defines an SLI for sanitation coverage as % of population with adequate sanitation facilities (connected to sewer and individual installations) and a benchmark of 75–90% the performance of the CUs is not presented in the latest sector report. **Recommendation** 1. To achieve the set sector objectives NWASCO needs to revise the Minimum Service Level Guideline, Service Level Agreements and Service Level Guarantees and set clear targets for the utilities to achieve to improve sanitation service provision particularly in urban areas that include onsite sanitation and faecal sludge management. 2. The reporting needs to be revised and additional indicators need to be defined. Besides, the utilities need to plan for the set targets in their business and investment plans and consider the cost implications in their tariff proposals. 3. With the introduction of minimum service levels (lowest acceptable technology for a household sanitation facility) for high cost, medium cost and low cost housing as well as peri-urban areas in the NUWSSP, a more detailed and disaggregated planning and reporting will be required by the CUs. 4. Based on the definition of adequate sanitation adopted by the sector institutions, a new set of indicators needs to be developed that provides targets and allows for monitoring of additional elements of sanitation management considering a wider aspect of onsite sanitation than rather the connection to a septic tank. 5. Indicators need to be developed that allow for monitoring the treatment of faecal waste and classifying faecal waste flows as 'safe' and 'unsafe' for different purposes. The CUs and NWASCO currently report on containment at the user facility level through the 'improved' classification although the sector report only presents information on sewer connections and septic tanks. This data has to be further disaggregated to separately report proportions of populations accessing different types of improved facilities, as well as unimproved facilities and open defecation. These are not routinely reported as separate rungs on the 'sanitation ladder', since certain types of latrines, septic tanks, and sewered systems can all be safely managed meaning that excreta are safely disposed *in situ* or treated offsite. However, such disaggregation is essential to calculate safe management of faecal wastes. By estimating the proportion of faecal wastes from these facilities that are discharged unsafely due to unhygienic emptying, ineffective transport and inadequate treatment, the total amount of safe and unsafe discharges of faecal wastes can be calculated and reported respectively.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
				6. Besides clear targets for sanitation coverage including sewer connections, septic tanks and onsite sanitation facilities that can be emptied and the faecal sludge disposed of safely, NWASCO should set clear targets for faecal sludge management. The following indicators could be considered: • Percentage of population with adequate sanitation whose excreta are safely managed, or Percentage of population using safely managed sanitation services • Percentage of population with access to sanitation services provided by the CUs • Share of human excreta that reaches designated disposal sites 7. NWASCO and MLGH need to develop a harmonised framework for monitoring and reporting urban sanitation developments including harmonised sanitation coverage/access definitions. 8. NWASCO needs to include onsite sanitation into the NIS accordingly.
WSS Guidelines	**NWASCO**	**Minimum Service Level Guidelines**	Minimum Service Level stipulates an acceptable minimum level of service providers must achieve within a defined timeframe. Requirements regarding the price of water aiming at full cost recovery and social feasibility, as well as standards for a minimum service level, are some of the main instruments of regulation necessary to balance the interests of the providers and the consumers in a market with limited competition. As the name indicates, the required minimum service level is a standard, which can and should be exceeded by the provider whenever possible. The defined minimum service level complements the standards approved by the Zambia Bureau of Standards for the water and sanitation sector. Guidelines are issued to set targets for the sector as a whole and set standards to be reached by the providers. The present guidelines indicate not only the service level the providers have to meet but also the specific timeframe within which indicators have to be achieved. In order to allow assessment of the service rendered to the consumers and to give directions on the development the regulator has currently selected 11 service level indicators (SLI). Benchmarks indicating the standards reached by efficient water and sewerage companies in Africa are used to set targets for the sector. In order to guide the provider this document includes a list of the necessary monitoring tools the provider needs to have in place in order to verify his service level. To document the services rendered, providers shall forward a Service Level Report to NWASCO not later than 31 December each year for a reporting period from 1 October to 30 September following year. Reporting requirements are included in the guidelines. Minimum service levels and respective timeframes to achieve them need to be defined by NWASCO.	*Please refer to Annual Sector Report above.*

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
WSS Guidelines	**NWASCO**	**Minimum Service Level Guidelines**	Currently only 4 SLIs relate to sanitation service provision: **SLI 1: (Sanitation) Coverage of the Service Area** Population served with individual connections to the water and sewer networks, as well as public stand posts, kiosks etc. Indicator: % of population with adequate sanitation facilities (connected to sewer and individual installations) 75–90% **SLI 6: Interruption of Water Supply and Blockage of Sewer** Unannounced interruption of supply or sewer evacuation due to maintenance and repair work Indicator: % of connected properties subject to an unannounced supply interruption of 20-36 hours in the reporting time <15, 36-48 hours <8% and >48 hours <3% **SLI 9: Sewer Flooding** Number of households flooded with sewer during a year Indicator: Maximum of 0.5% of total connections **SLI 10: Quality of Discharged Sewer** Non- and insufficient treated discharged effluent, as well as tests carried out (quantity and quality) particularly MES, DCO, DBO5 and NK. Indicator: No. of tests carried out and tests results within the standards of ECZ for effluent	
	NWASCO	**Tariff Adjustment Guidelines**	• Ensures sufficient revenues for the licensed service providers to enable them to operate on a sustainable basis • Ensures the protection of consumers from being overcharged • Ensures the provision of efficiency incentives for the service providers • Ensures the conservation of treated water • Ensures the protection of the environment **Statutory Instrument No. 63 of 2000 The Water Supply and Sanitation (Licensing of Utilities and Service Providers) Regulations, 2000:** NWASCO must establish guidelines for the setting of tariffs charged for the provision of sanitation services which (i) allow for total cost recovery under the premise of efficient management by the service provider and sufficient investment for infrastructure (ii) bring the bill the consumer has to pay (...), (iii) make the consumer benefit from reductions in costs achieved through enhanced efficiency; and (iv) do not pass expenses due to inefficiency on the part of providers on to consumers.	**Finding** 1. The guideline currently does not provide clear guidance on how to establish sustainable and affordable tariffs for sewerage as well as onsite sanitation/ faecal sludge management. 2. The statutory instrument does not require the tariffs to be affordable for poor customers. The current tariff adjustment guideline recognises the importance of delivering affordable services to the poor alongside the principle of full cost recovery. The tariff guideline also allows for cross-subsidisation. **Recommendation** 1. The relevance of affordable sanitation tariffs and the implications on the service provider need to be discussed and respective policy principles need to be formulated. 2. The guideline needs to be extended to define a tariff system and the respective calculation for onsite sanitation service provision mainly relating to emptying, treatment and disposal services. In addition, to avoid cross-subsidisation of sanitation services through water service provision, utilities need to calculate sanitation services based on the actual cost involved (please also refer to accounting). 3. Existing tariffs and tariff structure need to be revised to cover at least O&M costs.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
WSS Guidelines				4. In setting tariffs for providing sanitation services to households, it will be important to differentiate at least between the following levels of service: the provision of sanitation services to a household not connected to a sewer (using an onsite sanitation facility), and the provision of sanitation services to a household connected to a sewer. 5. Eligible costs need to be defined and the accounting systems of the utilities amended if sanitation services aren't separate cost centres. 6. The purpose of any sanitation surcharge included in the water tariff needs to be clearly explained and guidance provided how the utilities will be allowed to use the money. 7. A tariff set for the provision of sanitation services to a household must (a) support the viability and sustainability of sanitation services to the poor; (b) recognise the significant public health benefit of efficient and sustainable sanitation services; and discourage usage practices that may degrade the natural environment. 8. Detailed recommendations need to be elaborated based on the tariff study to be implemented by NWASCO and financed by KfW.
	NWASCO / ZEMA	**Water Quality Monitoring Guidelines**	• Ensures through regular monitoring that the quality standards set by the Zambia Bureau of Standards (ZABS) are being complied with: That the customers can have confidence that the water they consume is potable and that the wastewater and the faecal sludge they produce is treated and disposed of safely • Ensures that all licensed water and sanitation service providers follow a systematic way of water quality, effluent and sludge disposal/reuse monitoring so as to have uniformity of the process • Ensures that providers conduct risk assessments at all stages of water quality monitoring through water safety planning	**Finding** 1. There are no specific standards for faecal sludge disposal. General limits for disposal are set in ZABS. 2. The guidelines currently do not provide a framework for monitoring the treatment, disposal and reuse of faecal sludge and sludge from wastewater treatment plants. **Recommendation** 1. Needs to be extended to allow for monitoring of quality standards set (or to be set) by ZABS and/or ZEMA with regard to effluent disposal and disposal/reuse of faecal sludge and sludge from wastewater treatment plants. 2. A wastewater and faecal sludge monitoring programme including environmental and public health assessments needs to be prepared.
	NWASCO	**Business Planning Guidelines**	Outlines the framework of a business plan to be prepared by licensed water and sanitation service providers (business plans are prepared for a period of 3 years)	**Finding** 1. The existing guidelines do not include onsite sanitation and FSM service provision. **Recommendation** 1. Needs to be extended to allow for sufficient consideration of sanitation services to be provided by the licensed service provider.
	NWASCO	**Financial Projections Guidelines**	• Ensures that service providers prepare financial projections in a standardised manner in order to fulfil the requirements as stipulated by their licence • Ensures that the financial implications of any planned water supply and sanitation services are assessed properly Note: Financial projections have to be submitted as a complement to a Tariff Adjustment Proposal or an Investment Plan.	**Finding** 1. The existing guidelines do not include onsite sanitation and FSM service provision. **Recommendation** 1. Needs to be extended to allow for sufficient consideration of sanitation services to be provided by the licensed service provider.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
WSS Guidelines	**NWASCO**	**Annual Reporting Guidelines**	• Ensures that the licensed water and sanitation service providers submit a standardised annual report to NWASCO (financial and technical report) allowing NWASCO to prepare its annual sector report • Ensures that the licensed water and sanitation service providers fulfil their reporting obligations towards their shareholders	**Finding** 1. The existing guidelines do not include onsite sanitation and FSM service provision. **Recommendation** 1. Needs to be extended to allow for sufficient reporting on sanitation services provided by the licensed service provider as well as on services provided by other service providers operating under the licence of the CUs. *Please refer to the elaborations under Annual Sector Report.*
	NWASCO	**Accounting Guidelines**	• Assists licensed water and sanitation service providers to periodically deliver reliable and relevant accounting information • Recommends disclosure of accounting bases used in arriving at the amount attributable to major items • Defines the content of the fields in the NWASCO Information System (NIS) • Enables licensed water and sanitation service providers to submit financial statements complying with the requirements laid out in the Annual Reporting Guidelines • Harmonises the maintenance and reporting of accounting information among the providers	**Finding** 1. The existing guidelines do provide information on how to separate the accounting of the CUs such that water supply and sanitation/sewerage services are separated. Cost categories and cost centres for onsite sanitation and FSM service provision are not foreseen. **Recommendation** 1. Need to be amended to allow for the separation of water, sewerage costs and onsite sanitation cost.
	NWASCO	**Investment Planning Guideline**	• Specifies the basic elements of investment planning • Harmonises the presentation of investment planning documents and specifies the contents of them	**Finding** 1. The existing guidelines do not include onsite sanitation and FSM service provision. **Recommendation** 1. Needs to be extended to include relevant aspects of onsite sanitation service provision focusing on collection, transport, treatment and disposal of faecal sludge.
	NWASCO	**Sanitation Service Provision Guidelines**	• Defines minimum standards for sanitation facilities including toilets, emptying equipment, storage and treatment facilities as well as disposal/ reuse mechanisms • Defines different sanitation systems covering the whole sanitation chain incl. operation and maintenance requirements • Defines design criteria • Helps the licensed sanitation service providers to plan how to improve sanitation service provision including faecal sludge management • Assists licensed sanitation service providers to enhance operational performance of wastewater and faecal sludge management facilities • Defines the necessary procedures allowing licensed service providers to outsource parts of the service provision to the private sector, CBOs, NGOs etc. including procurement guidelines, standard contracts • Defines monitoring and reporting obligations	**Finding** 1. Currently these guidelines do not exist. **Recommendation** 1. It is recommended to prepare these guidelines together with the revision of the existing ones.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
WSS Guidelines	**MLGH**	**National guidelines for the preparation of urban sanitation plans**	Planning forms an integral part of the service delivery cycle in which the projected outcome/objectives determine the prioritisation of improvements and the design of projects to meet the identified needs. This process will then lead toward recommendations for funding from national finances to support the implementation of these plans.	**Finding** Currently being developed.
Service Level Agreement and Guarantee	**NWASCO**	**Programme to reach the required minimum service levels**	The licensed service provider undertakes to achieve defined levels of service in a specified timeframe to its customers as agreed with NWASCO. The achievement or the progress is measured against service level indicators – SLIs defined by NWASCO as outlined in its Minimum Service Level Guidelines. The service level to be achieved will be regularly adjusted according to the development of the sector. Therefore, the provider will need time to comply with new requirements. The licensed service provider must demonstrate how they intend to reach the required minimum service level, including the applied measures and the timeframe. This programme has to be proposed with the first Service Level Agreement and the Service Level Guarantee. A maximum timeframe for each indicator is included in these guidelines.	**Finding** 1. The existing minimum service levels do not include onsite sanitation and FSM service provision. **Recommendation** 1. Minimum service levels need to be reviewed to include relevant aspects of onsite sanitation (focusing on collection, transport, treatment and disposal of faecal sludge), including respective indicators and benchmarks. 2. Licensed service providers need to prepare a programme and submit it to NWASCO on how they intend to reach the required service levels; it needs to be included in the existing service level agreements and guarantees.
	NWASCO	**Service Level Agreement**	The regulator and the provider will agree on a stepwise progress towards the required minimum service level by signing (adjusted) service level agreements every 3 years based on a relevant programme. All licensed service providers have to prepare and submit a proposal for service level improvements for the subsequent 3-year period. The service level agreement will be signed between the service provider and NWASCO outlining in detail the intended improvement to the service level that should be achieved in the time.	**Finding** 1. Generally, the CUs provide a proposal for the overall supply area derived from the proposals made for each town/city in their supply area (as defined in the licence). In some cases, the SLA covers a wider area than the supply area of the utility as defined in their licence (e.g. EWSC, LPWSC). There the SLA covers the whole district rather than only the urban area (town). In all these SLAs, onsite sanitation and FSM are included. **Recommendation** 1. The CUs should propose service level agreements that include clear proposals on how they intend to improve onsite sanitation service provision, including faecal sludge management, in their sanitation service area as defined in their licence. To allow for a standardised process, the respective indicators and benchmarks need to be defined and included in the minimum service level guidelines by NWASCO. 2. The CUs need to make a new proposal before the end of the current agreement but not later than the last day covered by the agreement. To ensure that the CUs start working on improving their sanitation service provision respective indicators need to be included in their next service level agreement with NWASCO. Most of the SLAs expire on 31 March 2018. The one of LPWSC expires on 31 December 2017. 3. For the district sanitation planning process an alignment with the SLA is considered important to increase effectiveness of integrated planning processes.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Service Level Agreement and Guarantee	**NWASCO**	**Service Level Agreement**		4. According to the information obtained by NWASCO, current valid SLAs do not match the supply areas as defined in the licences of the service providers, e.g. while the licence of EWSC specifies that EWSC has to provide water supply and sanitation services in 8 towns (assumption is that this refers to the areas included within the town council boundaries only), the current SLA covers 8 districts which include urban and rural areas. 5. It is considered important to amend the licence or the SLA allowing them to cover the same area. 6. Based on the new licensing procedures, NWASCO needs to develop service level agreements including the definition of service areas (contained in the licence) for other (private) sanitation service providers. This only applies if they are working outside the service area of a CU and do not operate under their respective licence.
	NWASCO	**Service Level Guarantee**	Every licensed service provider must prepare and submit a service level guarantee defining in a detailed way the service level they intends to offer clients for a period of three years. The service level guarantee will contain all the information set out in the Minimum Service Level Guidelines published by NWASCO and will duly take into consideration the minimum standards of service defined in this guideline. After approval from NWASCO, the Service Level Guarantee must be published and presented to the public as deemed necessary. Adjustments to the Service Level Guarantee can only be made after approval by NWASCO. The provider shall at all times guarantee a specific service level to the customer with increasing progress towards the minimum service level standard required by the regulator.	*Please refer to Service Level Agreement below.*
	Local Govt/ councils	**By-laws**	In Zambia, local laws established by local authorities to be applied within their jurisdiction are referred to as by-laws because their scope is regulated by the central government. The Local Government Act empowers local authorities to formulate by-laws that facilitate implementation of service delivery activities. Nothing contained in this Act shall be construed as empowering a council to make any by-law which is in conflict with or derogates from the provisions of any other written law; and to the extent that any by-law conflicts with or derogates from the provisions of any other written law, it shall be void. For example, a by-law may be issued by a local authority to establish a waste management unit and compel all citizens in its jurisdiction to comply with. For at least 30 days before application is made to the minister for confirmation of a by-law, a copy of the by-law shall be deposited at the offices of the council and shall, at all reasonable times, be open to the inspection of any interested person. No by-law made by a council under this act shall have the force of law until it has been confirmed by the minister.	**Finding** 1. According to the information obtained there are currently no existing by-laws that are considered relevant for sanitation service provision. **Recommendation** 1. Specific by-laws for enforcement of building regulations and other identified measures may be issued by the councils. A guideline in the form of a template can assist to ensure that by-laws are made for specific local conditions. Where consideration is at national level, the minister can issue a statutory instrument that must be applied by all LAs. 2. Councils may issue by-laws on sanitation, e.g. to regulate sewage disposal or to provide provisions of services to premises, meaning that a person who wants to construct a building must ensure that provision is made for treatment and disposal of domestic sewage. 3. A council may also prescribe minimum standards and criteria dealing with the discharge of sewage or any other substance into the sewage disposal system. 4. A council may also decide on levels of supply of sanitation to households residing in certain areas (e.g. sewerage systems in high-cost areas) or permit sanitation methods e.g. simple, unimproved pit latrines. 5. It needs to be discussed with the MLGH and the local authorities to which extent by-laws are the appropriate regulatory tools to enhance the regulatory framework.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
By-laws	**ZABS**	**ZS 323: 2007 Effluent Discharged into Inland Surface Waters General Limits**	• Lays down the tolerance limits for effluents discharged into inland surface waters	**Finding** 1. ZEMA currently regulates the effluent discharge to water but does not provide standards for effluent which is percolated into the soil (e.g. effluent from septic tanks or from faecal sludge treatment plants like the one operated by the Kanyama Water Trust). Information suggests that ZEMA applies the same regulations as for the discharge into water bodies. **Recommendation** 1. From a technical point of view, it is highly recommendable to establish separate regulations for septic tank effluent to avoid soil or media clogging to a degree where infiltration is reduced dramatically and anaerobic, saturated conditions develop. There is a significant difference between discharging into a water body or into the soil. 2. In addition, there is a need to develop a standard for sewage and faecal sludge to be used in agriculture and other reuse purposes. *Refer to standards for treatment, discharge and reuse of faecal sludge and effluents from faecal sludge treatment plants as outlined below.*
Standards	**ZEMA**	**Standards for treatment, discharge and reuse of faecal sludge and effluents from faecal sludge treatment plants**	ZEMA has the mandate to develop standards and guidelines relating to the protection of air, water, land and other natural resources and the prevention and control of pollution, the discharge of waste and the control of toxic substances. The guiding regulation is laid out in the Statutory Instrument No.112 of 2013 The Environmental Management (Licensing) Regulations. The Third Schedule provides for the Limits for Effluent and Wastewater.	**Finding** 1. — AS ABOVE — ZEMA currently only regulates the effluent discharge to water but does not provide standards for effluent which is percolated into the soil. Information suggests that ZEMA applies the same regulations as for the discharge into water bodies. **Recommendation** 1. There is a need to develop, in liaison with ZEMA and ZABS, standards and guidelines relating to the treatment and disposal or reuse of treated faecal sludge or effluents from faecal sludge treatment plants and/or onsite sanitation facilities (e.g. septic tanks). This mainly relates to the reuse of sludge in agriculture and the discharge of effluents into the soil rather than water bodies (existent). 2. Clearly, different standards and a different selection of treatment parameters should be stipulated depending on whether treated waste is used in agriculture or discharged into the environment. For reuse, hygiene-related variables (Helminth eggs in biosolids and faecal coliforms in wastewater) and nitrogen are the relevant criteria, whereas for discharge, variables such as COD or BOD and NH_4 are of key importance. Compared to sludge from wastewater treatment plants or from municipal wastewater, FS characteristics differ widely according to location (from household to household, from city district to city district, from city to city). Storage duration, temperature, intrusion of groundwater in septic tanks, performance of septic tanks, tank emptying technology and pattern are parameters which influence the sludge quality and are therefore responsible for its high variability. Unlike digested sludge produced in mechanised biological wastewater treatment plants or in other types of wastewater treatment works (e.g. waste stabilisation ponds, oxidation ditches), the organic stability of FS attains varying levels. This variability, caused by the anaerobic degradation process occurring in onsite sanitation systems, is dependent on several factors, such as ambient temperature, retention period and the presence of inhibiting substances. The fact that faecal matter is not mixed or stirred impairs the degradation process.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Standards	**ZEMA**	**Standards for treatment, discharge and reuse of faecal sludge and effluents from faecal sludge treatment plants**		A basic distinction can usually be made between sludge which is upon collection still relatively fresh or contains a fair amount of recently deposited excreta (e.g. sludge from frequently emptied, unsewered public toilets) and sludge which have been retained in on-plot pits or vaults for months or years and which has undergone biochemical degradation to a variable degree (e.g. sludge from septic tanks – septage). Moreover, varying amounts of water or wastewater, which have accumulated in vaults or pits, are collected alongside with the solids. This implies that FS cannot be regarded as a kind of wastewater. Treatment thus calls for specific treatment schemes and design criteria. Due to the high variability of this material, design of a treatment system should not be based on standard characteristics but rather on the results obtained on a case-to-case basis. This requires that sustainable FS treatment technologies still require large inputs of field research, development and testing before they may be propagated as "state-of-the-art" options or even a "technical standard". *For information please refer to WHO Guidelines 20016 or EU Guidelines USEPA guidelines for biosolids.*
	MLGH / Dept of Physical Planning	**Standards for onsite (household) sanitation facilities**	• Defines design criteria and specifications for household sanitation facilities • Provide technical drawings, specifications and BoQs for household sanitation facilities • Establishes building codes	**Finding** 1. Currently no clear standards for onsite sanitation facilities exist besides the provisions in the outdated building codes and common practice. **Recommendation** 1. The Physical Planning Department of MLGH are custodians of the recently established Urban and Regional Planning Act of 2015. The subsidiary regulation that specifies standards is yet to be developed. It needs to be discussed and decided if MLGH together with NWASCO can provide guidance to fill the existing gap in the meantime and to ensure that the respective guidelines of NWASCO can be prepared. 2. For any onsite treatment facility (e.g. septic tanks) regulations and licensing procedures need to be developed by ZEMA (refer to the respective information in this table). *Closely linked to the "Code of practice for sanitation" as mentioned below.*

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
	NWASCO / ZEMA / ZABS / MLGH	**Code of Practice: On-site Sanitation Systems**	This code of practice could provide guidance on the design, operation and maintenance of onsite sanitation/wastewater treatment systems. It will assist authorities, developers, system manufacturers, system designers, installers and operators to deal with various systems. This code of practice may set out the following: • An assessment methodology for the determination of site suitability for an onsite sanitation system and identification of the minimum environmental protection requirements • A methodology for the selection of a suitable onsite sanitation system for sites in unsewered areas • Information on the design and installation of conventional septic tank systems and other suitable onsite sanitation facilities (including designs for facilities for children and physically challenged) • Maintenance requirements for the above onsite sanitation systems	**Finding** According to the information obtained, no code of practice currently exists. **Recommendation** 1. It is strongly recommended to develop an overall framework of best practice in relation to the development of onsite sanitation systems/wastewater treatment and disposal systems for unsewered areas, for the protection of the environment and specifically water quality. 2. Besides septic tanks (an underground tank where the solids sink to the bottom and the liquid flows out and soaks into the ground) and cesspools (also called cesspit – a sealed tank that collects the sewage), it needs to be decided if other onsite sanitation facilities should be included, due to the fact that not all households have a domestic water connection (at their premises) and particularly poor households may not be able to afford them.
Code of Practice	**MLGH / Dept of Physical Planning**	**Building codes**	A building code (or building regulations) is a set of rules that specifies the standards for constructed objects such as buildings and non-building structures. The main purpose of building codes is to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. The building code becomes law of a particular jurisdiction when formally enacted by the appropriate governmental authority. Building codes are generally intended to be applied by architects, engineers, constructors and regulators but are also used for various purposes by safety inspectors, real estate developers, subcontractors, manufacturers of building products and materials, insurance companies, facility managers, tenants and others. For residential properties building codes usually include specifications on how toilets need to be designed.	**Finding** 1. The Ministry of Local Government and Housing under the Department of Physical Planning has established national building codes that due to their age need to be revised. **Recommendation** 1. The revision of building codes will be strongly linked to the development of standards for sanitation facilities as mentioned above.
Building Code	**ZEMA**	**Permit to discharge effluent into sewerage system**	Controls owners or operators of a trade or industrial undertaking wishing to discharge effluent from their plant into an existing sewerage system. Written permission from the local authority operating or supervising the sewerage system must be obtained. A local authority may impose conditions under which effluent may be accepted or prescribe methods for pre-treating the effluent prior to accepting the effluent into the sewerage system (by-law).	**Finding** Existent.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Permit	**ZEMA, local authorities, CUs**	**Inspection Plan**	According to the Public Health Act 1995, local authorities are responsible for the inspection of sanitation facilities.	**Finding** 1. No inspection plan exists. 2. Inspection of sanitation facilities needs to be carried out regularly or at least after construction and based on demand if any nuisance or public health risks occur. 3. Although the establishment of a suitable sanitation facility and its preconditions are mandatory to obtain a building permit, hardly any inspections are carried out nor do LAs enforce the existing building standards. **Recommendation** 1. A regime for inspecting at least septic tanks should be established. Initial ideas suggest that either ZEMA or local authorities should be responsible for the development of respective inspection plans. The aim of the plan is to protect human health and water from the risks posed by domestic wastewater treatment systems/onsite sanitation facilities. 2. The plan should be delivered by the LA or delegated to the CUs and the number of inspections for each area should be allocated on a risk basis. 'Risk-based' means putting resources where the danger to human health and the environment is greatest. The plan would focus particularly on areas where the potential risk to public health and pollution of valuable water resources is higher. 3. An inspection under the national inspection plan checks that a septic tank or onsite sanitation facility is fit for purpose and that it does not pose a risk to human health or the environment. If a system fails an inspection, then an advisory notice should be issued. This would specify what is wrong and what measures need to be taken to fix the problem. 4. If the task is delegated to the CUs, capacities need to be developed.
Inspection Plan	**ZEMA, local authorities, CUs**	**Registration and inspection regulations of septic tanks**	In general, all onsite septic tank systems or domestic wastewater treatment systems (DWWTS) will have to be registered. All new developments where a DWWTS is constructed or installed shall ensure that the system is registered within a defined number of days of connection of the premises to the DWWTS.	**Finding** None existent. **Recommendation** 1. Current legislation suggests that ZEMA could be responsible to establish the registration process, because of the environmental risks of pollution involved, as well as to maintain the database and the inspection records. 2. ZEMA could develop a national inspection plan in close cooperation with local authorities and the CUs, using a risk-based approach to prioritise areas of higher risk to human health and water quality. 3. ZEMA would have a supervisory role in relation to each local authority's performance of its functions under the public health regulations. It would also be responsible for the establishment and maintenance of a register of inspectors which is made available to the local authorities.

Regulatory tools	Institution	Type of tool	Objective and relevance	Findings and recommendations
Regulations	**MLNREP**	**Statutory Instrument: Regulations governing the operation and maintenance of onsite sanitation facilities**	• Establishes regulations for the operation and maintenance of onsite sanitation facilities and/or domestic wastewater treatment systems and/or onsite sanitation facilities • Defines desludging/emptying requirements • Defines registration and monitoring requirements	**Finding** None existent. **Recommendation** To be discussed and developed if considered appropriate.
	MLNREP	**Statutory Instrument: Waste Management (Use of Sewage and FS in Agriculture) Regulations**	• Defines standards for the use or disposal of sewage and faecal sludge • Establishes the general requirements, pollutant limits, operational standards and management practices, as well as frequency of monitoring, record keeping and reporting requirements	**Finding** None existent. **Recommendation** To be discussed and developed if considered appropriate.
Incentive mechanism	**NWASCO / MLGH**	**Incentive mechanism to invest in sanitation**	Current sanitation tariffs are set in a way that they do not allow to cover O&M cost, let alone to finance asset rehabilitation or extension. The tariff system and tariff calculation need to be revised in a manner that people pay according to the volume of wastewater or estimated volume of faecal sludge they discharge ('polluter pays principle' e.g. based on the number of person per household). The sanitation tariff should also depend on the type of customers (domestic, commercial/industrial, institutional) and their level of income. It could be set so as to recover only operation and maintenance costs for low income customers, but also to include asset rehabilitation expenditure for higher income customers. However, if the CUs do not have the financial means to invest in sanitation service provision, NWASCO and MLGH need to develop incentive mechanisms linked to a sustainable financing mechanism that can provide financial incentives to invest in sanitation (e.g. tax incentives, results-based grants, sanitation surcharge, assistance to gain access to concessional (soft) loans).	**Finding** None existent. **Recommendation** 1. Assess opportunities and development of incentive mechanism and/or financing mechanisms. 2. Investigate the possibility of introducing an FS treatment charge or increasing the sanitation surcharge to cover FS treatment costs or cross-subsidize cost for emptying of onsite sanitation facilities.

Annex 5: List of sanitation definitions

Word / description	Definition	Source
Adequate sanitation	This refers to a sanitation facility that provides privacy and separates human excreta from human contact.	UNICEF/WHO Joint Monitoring Programme guidelines
(Access to) Adequate sanitation	Households with access to sanitation facilities which: • Hygienically separate human excreta and industrial effluents from contact with humans, animals and insects (particularly flies) • Have handwashing facilities • Do not pollute drinking water sources • Do not cause intolerable smells • Ensure privacy for those using the latrines • Are kept clean Public institutions are required to have facilities that meet the foregoing criteria in line with the public health and building requirements. Acceptable technologies and systems currently include systems that utilise technologies such as: i) Offsite a. Sewer networks connected to a treatment plant b. Sewer networks connected to a communal septic tank, which has to be emptied when full ii) Onsite a. Decentralised Wastewater Treatment Systems (DEWATs) b. Individual septic tank; EcoSan technologies (such as Bio-digester Septic Tank [BST] and urine-diversion latrine) c. Pour-flush latrine d. Compost latrine e. Ventilated improved pit latrine (VIP) f. Pit latrine with a slab / smooth floor surface Acceptability will also be linked to specific service cluster conditions. For solid waste management, access is given for the household where waste collection is carried out according to standards and by-laws.	MLGH (2016). Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft)
Adequate sanitation	Adequate sanitation is a sanitation system that is accessible and available (located not more than 100 m away from home and is easy to access for children, elderly and handicapped at all times during the day); it is acceptable for the user and provides a safe and convenient, private, secure and dignified place and complies with the socio-cultural norms of society (e.g. smell and reuse aspects); it is affordable and can realistically be paid for by the households and provides a handwashing facility.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)

Word / description	Definition	Source
Adequate sanitation (urban areas only)	Adequate sanitation in urban areas is defined as a flush or pour-flush toilet connected to a sewer system or a septic tank.	NWASCO Urban and Peri-Urban Water Supply and Sanitation Sector Report 2015
Basic sanitation	Basic sanitation refers to the management of human faeces at the household level. Basic sanitation is improved sanitation: facilities that ensure hygienic separation of human excreta from human contact. They include: • Flush or pour-flush toilet/latrine to a piped sewer system, a septic tank or a pit latrine • Ventilated improved pit latrine • Pit latrine with slab • Composting toilet	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Biogas	Biogas is the common name for the mixture of gases released from anaerobic digestion. Typically biogas is comprised of methane (50–75%), carbon dioxide (25–50%) and varying quantities of nitrogen, hydrogen sulphide, water and other components.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Black water	Black water is the mixture of urine, faeces and flush water along with anal cleansing water (if anal cleansing is practiced) and/or dry cleansing material (e.g. toilet paper). Black water has all the pathogens of faeces and all the nutrients of urine, but diluted in flush water.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Bucket toilet	Bucket refers to the use of a bucket or other container for the retention of faeces (and sometimes urine and anal cleaning material), which are periodically removed for treatment, disposal, or use as fertilizer.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Bush facilities	No facilities or bush or field includes defecation in the bush or field or ditch; excreta deposited on the ground and covered with a layer of earth (cat method); excreta wrapped and thrown into garbage; and defecation into surface water (drainage channel, beach, river, stream or sea).	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
By-law	A by-law is a rule or law established by an organisation or community to regulate itself, as allowed or provided for by some higher authority. The higher authority, generally a legislature or some other government body, establishes the degree of control that the by-laws may exercise. In Zambia local laws established by local authorities are referred to as by-laws because their scope is regulated by central government. According to the Local Government Act, a council may make by-laws for the good rule and government of its area. Details are laid out in the respective chapters of the Act 81ff.	Local Government Act

Word / description	Definition	Source
City	City means a district for which a city is established under the Local Government Act.	
Collection and storage/ treatment	Collection and Storage/Treatment describe the ways of collecting, storing, and sometimes treating sanitation products that are generated at the user interface. Treatment that is provided by different sanitation technologies is often a function of storage and usually passive (e.g. no energy inputs). Thus, sanitation products that are 'treated' by sanitation technologies often require subsequent treatment before use or disposal.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Community-Led Total Sanitation	Community-Led Total Sanitation (CLTS) is an approach to achieve behaviour change in mainly rural people by a process of "triggering", leading to spontaneous and long-term abandonment of open defecation practices. CLTS takes an approach to rural sanitation that works without hardware subsidies and that facilitates communities to recognise the problem of open defecation and take collective action to clean up and become "open defecation free".	
Compost	Compost is the earth-like, brown/black material that is the result of decomposed organic matter. Generally, compost has been hygienised sufficiently that it can be used safely in agriculture. Because of leaching, some of the nutrients are lost, but the material is still rich in nutrients and organic matter.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Composting toilet	Composting toilet is a dry toilet into which carbon-rich material (vegetable wastes, straw, grass, sawdust, ash) are added to the excreta and special conditions maintained to produce inoffensive compost. A composting latrine may or may not have a urine separation device.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Delegated management	Delegated management (DM) is built around a contractual relationship between water and sanitation utilities and small-scale private operators who have the financial incentives to increase access and improve services.	
Discharge	Discharge means spilling, leaking, pumping, pouring, emitting, emptying or dumping.	MTENR (2011). The Environmental Management Act No. 12, 2011
Drain	Drain means any drain used for the drainage of one building only, or of premises within the same curtilage and made merely for the purpose of communicating therefrom with a cesspool or other like receptacle for drainage, or with a sewer, into which the drainage of two or more buildings or premises occupied by different persons is conveyed.	The Public Health Act, 1995
Dry sanitation	The term "dry sanitation" is somewhat misleading as sanitation includes handwashing and can never be "dry". A more precise term would be "dry excreta management". When people speak of "dry sanitation" they usually mean sanitation systems with dry toilets with urine diversion, in particular the urine-diverting dry toilet (UDDT).	
Dwelling	Dwelling means any house, room, shed, hut, cave, tent, vehicle, vessel or boat or any other structure or place whatsoever, any portion whereof is used by any human being for sleeping or in which any human being dwells.	The Public Health Act, 1995

Word / description	Definition	Source
Ecological sanitation	Ecological sanitation, which is commonly abbreviated to EcoSan, is an approach, rather than a technology or a device which is characterised by a desire to "close the loop" (mainly for the nutrients and organic matter) between sanitation and agriculture in a safe manner. Put in other words: "EcoSan systems safely recycle excreta resources (plant nutrients and organic matter) to crop production in such a way that the use of non-renewable resources is minimised". When properly designed and operated, EcoSan systems provide a hygienically safe, economical, and closed-loop system to convert human excreta into nutrients to be returned to the soil, and water to be returned to the land. EcoSan is also called resource-oriented sanitation.	
Effluent	Effluent means wastewater or other fluid of domestic, agricultural, trade or industrial origin, treated or untreated, and discharged, directly or indirectly, into the aquatic environment.	MTENR (2011). The Environmental Management Act No. 12, 2011
Effluent	Effluent is the general term for liquid that has undergone some level of treatment and/or separation from solids. It originates at either a collection and storage/treatment or a (semi) centralised treatment facility. Depending on the type of treatment, the effluent may be completely sanitised or may require further treatment before it can be used or disposed of.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Environmental monitoring	Environmental monitoring means the continuous or periodic determination of actual and potential effects of any activity or phenomenon on the environment.	MTENR (2011). The Environmental Management Act No. 12, 2011
Environmental sanitation	Environmental sanitation encompasses the control of environmental factors that are connected to disease transmission. Subsets of this category are solid waste management, water and wastewater treatment, industrial waste treatment and noise and pollution control.	
Excreta	Excreta consists of urine and faeces that is not mixed with any flushing water. Excreta is small in volume, but concentrated in nutrients and pathogens. Depending on the quality of the faeces it is solid, soft or runny.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Faecal sludge	Faecal sludge comes from onsite sanitation technologies and has not been transported through a sewer. It is raw or partially digested, a slurry or semi-solid, and results from the collection, storage or treatment of combination of excreta wastewater with or without grey water.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Faecal sludge	Faecal sludge is the general term for the raw (or partially digested) slurry or solid that results from the storage of black water or excreta. The composition of faecal sludge varies significantly depending on the location, the water content, and the storage. For example, ammonium (NH4-N) can range from 300–3000 mg/L while Helminth eggs can reach up to 60,000 eggs/L. The composition will determine the type of treatment that is possible and the end-use possibilities.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Faecal sludge management	A system for safe collection, transport, treatment, disposal and/or reuse of faecal sludge.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Faeces	Faeces refers to (semi-solid) excrement without urine or water. Each person produces approximately 50 L per year of faecal matter. Of the total nutrients excreted, faeces contain about 10% N, 30% P, 12% K and have 107–109 faecal coliforms /100 ml.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland

Word / description	Definition	Source
Flush/pour flush (to pit) latrine	Flush/pour flush to pit latrine refers to a system that flushes excreta to a hole in the ground or leaching pit (protected, covered).	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Grey water	Grey water is the total volume of water generated from washing food, clothes and dishware as well as from bathing. It may contain traces of excreta and therefore will also contain pathogens and excreta. Grey water accounts for approximately 60% of the wastewater produced in households with flush toilets. It contains few pathogens and its flow of nitrogen is only 10–20% of that in black water.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Health Inspector	Health Inspector means a Health or Sanitary Inspector in the employment of the Government or of any Local Authority, and includes any person appointed by the Director of Medical Services to act as such within the district of one or more local authorities.	The Public Health Act, 1995
Human right to sanitation	In her report on sanitation, the Special Rapporteur offered a definition of sanitation in human rights terms: "[a] system for the collection, transport, treatment and disposal or reuse of human excreta and associated hygiene." The report stresses that "[S]tates must ensure without discrimination that everyone has physical and economic access to sanitation, in all spheres of life, which is safe, hygienic, secure, socially and culturally acceptable, provides privacy and ensures dignity." According to this definition, adequate sanitation is more than just access to and use of toilets or latrines. It entails the treatment and safe disposal or re-use of faeces, urine, and associated wastewater in a way that avoids direct contact in order to minimise health risks. Such a broad understanding of sanitation is warranted as sanitation not only concerns one's own right to use a latrine or toilet, but also the rights of other people, in particular their right to health, which can be negatively impacted if excreta and wastewater are not properly managed. The human right to sanitation entitles everyone without discrimination to physical and affordable access to sanitation, in all spheres of life, which is safe, hygienic, secure, socially and culturally acceptable, which provides for privacy and ensures dignity. Sanitation is defined as a system for the collection, transport, treatment, disposal or reuse of human excreta and associated hygiene. **AVAILABILITY:** Availability requires that sanitation facilities meet people's needs now and in the future: • There must be a sufficient number of sanitation facilities to ensure that all of the needs of each person are met. Where facilities are shared, long waiting times should be avoided. In addition, the collection, transport, treatment and disposal (or reuse) of human excreta, and associated hygiene must be ensured.	http://www.righttowater.info/why-the-right-to-water-and-sanitation/ Catarina de Albuquerque (2014). *Realising the human rights to water and sanitation: A Handbook* by the UN Special Rapporteur.

Word / description	Definition	Source
Human right to sanitation (cont.)	• Facilities to meet hygiene requirements must be available wherever there are toilets and latrines, where water is stored and where food is being prepared and served, particularly for hand-washing, menstrual hygiene management and the management of children's faeces. Sanitation and hygiene facilities and services must not only be available at the household level, but in all places where people spend significant amounts of time. This includes health and educational institutions such as schools and clinics, detention centres such as prisons, and workplaces, markets and other public places. **PHYSICAL ACCESSIBILITY OF SANITATION:** Sanitation infrastructure must be located and built in such a way that it is genuinely accessible, with consideration given to people who face specific barriers, such as children, older persons, persons with disabilities and chronically ill people. The following aspects are particularly important: • Design of facilities: Sanitation facilities must be designed in such a way that users can physically access them. • The time and distance taken to reach a sanitation facility determine whether they will use sanitation facilities or resort to defecating in the open. Sanitation facilities must therefore be placed within, or in the immediate vicinity of, each household, workplace, educational and health institution, as well as any other place where people spend significant amounts of time. Access at the household level is always preferable. • The location of facilities is also crucial in ensuring the physical security of users. Sanitation facilities in particular must be easily reachable via safe paths; it is preferable that these be well lit at night. **QUALITY AND SAFETY:** The quality and safety of sanitation services must be ensured to protect the health of users and the general public. From the perspective of the human right to sanitation, the following considerations are important: • Sanitation facilities must be safe to use and must effectively prevent human, animal and insect contact with human excreta, to ensure safety and to protect the health of users and the community. Toilets must be regularly cleaned, and provide hygiene facilities for washing hands with soap and water. Women and girls also require facilities to enable menstrual hygiene management, including the disposal of menstrual products. Ensuring safe sanitation further requires hygiene promotion and education, to ensure that people use toilets in a hygienic manner. **AFFORDABILITY:** People must be able to afford to pay for their sanitation services and associated hygiene. This means that the price paid to meet all these needs must not limit people's capacity to buy other basic goods and services, including food, housing, health and education, guaranteed by other human rights. While human rights laws do not require services to be provided free of charge, states have an obligation to provide free services or put adequate subsidy mechanisms in place to ensure that services always remain affordable for the poor.	

Word / description	Definition	Source
Human right to sanitation (cont.)	**ACCEPTABILITY, DIGNITY, PRIVACY:** The acceptability of any sanitation services provided is crucial: sanitation facilities will not be used if they fail to meet the social or cultural standards of the people they are meant to serve. Acceptability has important implications for dignity and privacy, which are themselves human rights principles that permeate international human rights law and are especially relevant to the human right to sanitation and associated hygiene. • Sanitation facilities will only be acceptable to users if the design, positioning and conditions of use are sensitive to people's cultures and priorities. Sanitation facilities that are used by more than one household should always be separated by gender and constructed in such a way that they ensure privacy. Toilets for women and girls must have facilities for menstrual hygiene management and for the disposal of menstrual materials. • Particularly with respect to sanitation and associated hygiene, a number of practices exist that are unacceptable from a human rights perspective. These include manual scavenging (the manual emptying of pit latrines, which is associated with specific scheduled castes in the Indian subcontinent) and the taboos attached to women and girls during menstruation. States must ensure that these practices are eliminated, which will often require a range of measures, including changes to the physical infrastructure, concerted political leadership, awareness raising and legal and policy change.	
Hygiene	A set of practices performed for the preservation of health and cleanliness covering personal as well as environmental practices, such as frequent hand washing.	MLGH (2016). Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft)
Improved onsite sanitation facilities	Improved onsite sanitation facilities are: • Flush or pour-flush toilet connected to a septic tank • Pour-flush toilet connected to a pit latrine • Ventilated improved latrine (VIP) • Urine diversion latrine • Compost latrine • Improved single pit latrine (provided with structurally safe squatting plate and superstructure)	NUWSSP

Word / description	Definition	Source
Improved pit latrine	A simple improved pit latrine has all of the following features: • Latrine floor should be raised, smooth and impervious for it to be easily cleaned. It should leave no cracks. Where there's no slab the floor should slope towards the squat hole to facilitate effective draining of water during cleaning • The slab should be cleanable, raised and impervious • There should be a well-fitting lid that does not allow flies into the pit • Superstructure should offer maximum privacy with a roof to prevent rain from damaging the latrine floor • The latrine should be at a distance of at least 40 m from water sources and pit depth should be a minimum of 2m above the highest groundwater levels In urban/peri-urban areas, the facility should be embedded in a functioning sanitation system, where the excreta from the toilet is properly stored, transported, treated, disposed or reused in a manner which is not hazardous to human health and not detrimental to the environment and should not contaminate water sources.	
Improved sanitation	Improved sanitation refers to the *use of an improved sanitation facility.* An improved sanitation facility is one that hygienically separates human excreta from human contact, thus creating barriers to prevent the transmission of diseases. To be effective the facility must be correctly constructed and properly maintained in a way that confers maximum health benefits to the user. Improved sanitation facilities are: • Flush or pour-flush toilet connected to (a) piped sewer system, (b) septic tank or (c) pit latrine • Ventilated improved latrine (VIP) • Pit latrine with slab • Composting toilet	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Latrine	Toilet facility (public or private) comprising of a superstructure around it.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Latrine	A latrine includes privy, urinal, earth closet and water closet.	The Public Health Act, 1995
Latrine	A toilet or a simpler facility which is used as a toilet within a sanitation system. It can be a communal trench in the earth in a camp, a hole in the ground (pit), or more advanced designs, including pour-flush systems. The word "latrine" is derived from the Latin *lavatrina*, meaning bath. It is nowadays still commonly used in the term "pit latrine". For most people, it has the connotation of something being less advanced and less hygienic than a standard toilet.	Wikipedia

Word / description	Definition	Source
Latrine	An outdoor toilet that is usually a hole dug in the ground.	Merriam-Webster's Learner's Dictionary
Local authority	Local authority means a city council, municipal council or district council as established under the Local Government Act.	
Nightsoil	Nightsoil is human excreta, with or without anal cleansing material, which are deposited in a bucket or other receptacle for manual removal.	Franceys, R.; J. Pickford; R. Reed, 1992, *A guide to the development of onsite sanitation,* 237p. World Health Organisation
Offsite disposal	In areas with high population densities sewerage systems are frequently used to transport wastes offsite where they can be treated and disposed. Conventional centralised sewerage systems require an elaborate infrastructure and sufficient amounts of water to carry the wastes away. The cost of a sewerage system can be as much as 70 times more expensive than onsite alternatives and its requirement of a piped water supply preclude its adoption in many developing countries. In specific circumstances, cost-effective alternatives to conventional sewerage systems have been developed including small diameter gravity sewers, vacuum and pressure sewers.	Wikipedia
Offsite sanitation	Offsite sanitation refers to sanitation systems in which excreta are collected from individual houses, commerce, institutions, industry and public toilet facilities and carried away for disposal and treatment through pipes. Two main types are used: • Sewer networks with a treatment plant • Sewer networks with a communal septic tank, which has to be emptied when full	NUWSSP
Offsite sanitation	Components of the sanitation chain that are located away from the immediate vicinity of the toilet	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Onsite disposal	In many places, particularly in areas with low population densities, it is common to store and treat wastes where they are produced – on site. There are a number of technical options for onsite waste management which if designed, constructed, operated and maintained correctly will provide adequate service and health benefits when combined with good hygiene. Onsite systems include: ventilated improved pit (VIP) latrines, double vault composting latrines, pour-flush toilets and septic tanks. Dry sanitation or eco-sanitation is an onsite disposal method that requires the separation of urine and faeces. Building and operating these systems is often much less expensive than offsite alternatives. Some onsite systems (e.g. septic tanks or latrines in densely packed urban areas) require sludge to be pumped out and treated offsite. Composting latrines allow waste to be used as a fertiliser after it has been stored under suitable conditions to kill worm eggs and other pathogens.	
Onsite sanitation	Non-sewered sanitation is also commonly referred to as onsite sanitation because the containment facilities are situated within the plot occupied by a dwelling or its immediate surroundings. Onsite sanitation, also called decentralised sanitation, is a system where the treatment of excreta or sewage takes place at the same location where it is generated.	

Word / description	Definition	Source
Onsite sanitation facilities	These facilities are associated with individual household latrines, but also include facilities shared by several households living together on the same plot or in the immediate vicinity of the toilet.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Open defecation	Open defecation is the practice of people defecating outside and not into a designated toilet.	The term is widely used in literature about water, sanitation, and hygiene (WASH) issues in developing countries
Open Defecation Free	In order for a village to be verified ODF, it must meet the following criteria: 1. No evidence of faeces in or around household compounds 2. Every household has an 'adequate' toilet, meaning one that effectively separates excreta from human contact and has: • a smooth, cleanable floor (not necessarily a concrete slab) • a cover for the drop hole • a superstructure providing privacy 3. Every household has a hand washing facility near the latrine, with water and soap or ash	MLGH guidelines MLGH (2016). Zambia National ODF Strategy 2016-2020, Final Draft: 4th February 2016
Organics	Organics refers here to biodegradable organic material that could also be called biomass or green organic waste. This term refers to undigested plant material. Organics must be added to some sanitation technologies in order for them to function properly (e.g. composting chambers). Organic degradable material can include but is not limited to leaves, grass and market waste.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Peri-urban area	Informal or formal settlements within the area of jurisdiction of a local authority, with high population density and high-density low-cost housing having inadequate or lacking basic services such as water supply, sewerage, roads, storm water drainage and solid waste disposal.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Piped sewer system	Piped sewer system is a system of sewer pipes, also called sewerage, that is designed to collect human excreta (faeces and urine) and wastewater and remove them from the household environment. Sewerage systems consist of facilities for collection, pumping, treating and disposing of human excreta and wastewater.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Pollutant	Pollutant includes any substance whether liquid, solid or gaseous, which a. may, directly or indirectly, alter the quality of any element of the receiving environment; or b. is hazardous or potentially hazardous to human health or the environment; and includes objectionable odours, radio-activity, noise, temperature change or physical, chemical or biological change to any segment or element of the environment	MTENR (2011). The Environmental Management Act No. 12, 2011
Polluter	Polluter means an individual, partnership, corporation or association who contributes to or creates a condition of pollution.	The Environmental Protection and Pollution Control Act, 1990

Word / description	Definition	Source
Pollution	Pollution in relation to water means a. any direct or indirect contamination or alteration of the biological, chemical or physical properties of water including changes in colour, odour, taste, temperature or turbidity; or b. any discharge of any gaseous, liquid, solid or other substance into any water resource; as will, or is likely to, create a nuisance or render the water detrimental, harmful or injurious to, or potentially harmful or injurious to, the health, safety or welfare of any human being, bird, fish or other aquatic ecosystem, livestock, wildlife or the environment.	The Water Resources Management Act, 2011
Pollution	Pollution means the presence in the environment of one or more contaminants in such qualities and for such duration and under such conditions as may cause discomfort to or endanger the health, safety and welfare of persons, or which may cause injury or damage to plant or animal life or property, or which may interfere unreasonably with the normal enjoyment of life or use of property or conduct of business.	The Environmental Protection and Pollution Control Act, 1990
(Pour) flush toilet	A flush toilet uses a cistern or holding tank for flushing water, and a water seal (which is a U-shaped pipe below the seat or squatting pan) that prevents the passage of flies and odours. A pour flush toilet uses a water seal, but unlike a flush toilet, a pour flush toilet uses water poured by hand for flushing (no cistern is used).	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Pit latrine with slab	Pit latrine with slab is a dry pit latrine whereby the pit is fully covered by a slab or platform that is fitted either with a squatting hole or seat. The platform should be solid and can be made of any type of material (concrete, logs with earth or mud, cement, etc.) as long as it adequately covers the pit without exposing the pit content other than through the squatting hole or seat.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Polluter Pays Principle (PPP)	The Polluter Pays Principle (PPP) means the principle that the person or institution responsible for pollution or any other damage to the environment shall bear the cost of restoration and clean-up of the affected area to its natural or acceptable state. The polluter pays principle is the commonly accepted practice that the costs of pollution should be borne by those who cause it. It is recognised as a principle of international environmental law and is a fundamental policy of the Organisation for Economic Co-operation and Development and the European Union, and their member states. United Nations Rio Declaration on Environment and Development 1992 Principle 16: “National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.”	MTENR (2011). The Environmental Management Act No.12, 2011
Public latrine	Public latrine means any latrine to which the public are admitted on payment or otherwise.	The Public Health Act, 1995

Word / description	Definition	Source
Safe (sanitation system)	The function of a system creating barriers between humans and excreta to reduce the incidence of water- and vector-borne diseases and parasitic infestations. A safe sanitation system: a. Effectively prevents human, animal and insect contact with human excreta and wastewater, and b. Ensures a long term clean and healthy environment (not polluting ground and surface water bodies, soil and air) both at home and in the neighbourhood of users; the concept of safe sanitation comprises treatment/discharge points that are part of the sanitation chain. To be considered safe the sanitation facility must provide a handwashing facility.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Sanitation	The process of keeping places free from dirt, infection, disease, etc., by removing waste, trash and garbage, by cleaning streets, etc.	Merriam-Webster's Learner's Dictionary
Sanitation	The collection, transport, treatment and disposal or reuse of human excreta, domestic wastewater and solid waste, and associated hygiene promotion.	Water Supply and Sanitation Collaborative Council Evans, B., van der Voorden, C., Peal, A. (2009). *Public Funding for Sanitation – The many faces of sanitation subsidies.* Water Supply and Sanitation Collaborative Council (WSSCC), Geneva, Switzerland, p. 35
Sanitation	Sanitation generally refers to the provision of facilities and services for the safe disposal of human urine and faeces. The word 'sanitation' also refers to the maintenance of hygienic conditions, through services such as garbage collection and wastewater disposal.	WHO http://www.who.int/topics/sanitation/en/
Sanitation	Sanitation involves interventions to reduce people's exposure to diseases by providing a clean environment in which to live and work, with measures to break the cycle of disease. This usually includes hygienic management of human and animal excreta, refuse and wastewater, the control of disease vectors and the provision of washing facilities for personal and domestic hygiene. It also involves both behaviours and facilities which work together to form a hygienic environment. For the purpose of this policy, sanitation is understood to be the safe collection, transportation, treatment and disposal or reuse of human excreta, domestic liquid waste, industrial effluents and municipal solid waste.	MLGH (2016). Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft)
Sanitation	Safe collection, containment, transportation, treatment and disposal or reuse of human excreta, domestic liquid waste and industrial effluents.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)
Sanitation chain	Incorporates the various steps required to sanitise excreta and wastewater, between the user interface (household or public, industrial and commercial excreta and wastewater production sites) and final sites for disposal or reuse of sanitised material.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030)

Word / description	Definition	Source
Sanitation coverage	In most urban and rural areas in Zambia, a certain service level concerning sanitation exists. However, there is a need for specific guidelines allowing assessing if a person has access to sanitation and if the service level is sufficient or not. This clearly requires defining 'access to sanitation' from the user as well as the provider perspective. The definition of 'access to safe water and sanitation' needs to reflect the minimum service level a person living in Zambia should be entitled to. A distinction between urban and rural areas can be useful to take the different framework conditions into account. Based on that, infrastructure financed through any intervention/project carried out in Zambia should align with the minimum standard. Interventions/projects which do not respect the minimum standard should not be implemented. The same applies for the introduction of sanitation services. The indicator used to measure 'access to sanitation' is sanitation coverage. Sanitation coverage quantifies which percentage of the total population (in an area, country) is adequately covered with sanitation (facilities and services).	
Sanitation coverage **(First-level service – "basic WASH")**	Percentage of population not practicing open defecation. Percentage of population using a basic private sanitation facility (flush/pour flush to piped sewer system, septic tank or pit latrine, ventilated improved pit latrine, composting toilet or pit latrine with slab not shared with other households).	Sustainable Development Goal (SDG) 6
Sanitation coverage **(Higher-level service – "safely managed")**	Percentage of population using safely managed sanitation services. The JMP defines 'the population using safely managed sanitation services' as population using a basic sanitation facility ('improved' sanitation facilities used for MDG monitoring i.e. flush or pour flush toilets to sewer systems, septic tanks or pit latrines, ventilated improved pit latrines, pit latrines with a slab, and composting toilets) which is not shared with other households and where excreta is safely disposed *in situ* or treated offsite. Data on disposal of excreta are not yet available but can be estimated based on faecal flows associated with different types of facility. **Target 6.2: By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations:** ***Access*** Implies facilities close to home that can be easily reached and used when needed to ***adequate*** Implies a system which hygienically separates excreta from human contact as well as safe reuse/treatment of excreta in situ, or safe transport and treatment offsite and ***equitable*** Implies progressive reduction and elimination of inequalities between population sub-groups ***sanitation*** Sanitation is the provision of facilities and services for safe management and disposal of human urine and faeces and ***hygiene*** Hygiene is the conditions and practices that help maintain health and prevent spread of disease including handwashing, menstrual hygiene management and food hygiene ***for all*** Suitable for use by men, women, girls and boys of all ages including people living with disabilities	Sustainable Development Goal (SDG) 6

Word / description	Definition		Source
	End ***open defecation***	Excreta of adults or children are deposited (directly or after being covered by a layer of earth) in the bush, a field, a beach, or other open area; discharged directly into a drainage channel, river, sea, or other water body, or are wrapped in temporary material and discarded	Sustainable Development Goal (SDG) 6
	paying special attention to ***the needs of women and girls***	Implies reducing the burden of water collection and enabling women and girls to manage sanitation and hygiene needs with dignity. Special attention should be given to the needs of women and girls in 'high use' settings such as schools and workplaces, and 'high risk' settings such as health care facilities and detention centres	
	and ***those in vulnerable situations***	Implies attention to specific WASH needs found in 'special cases' including refugee camps, detention centres, mass gatherings and pilgrimages	
	for all	Suitable for use by men, women, girls and boys of all ages including people living with disabilities	
	Target 6.3: By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally:		
	halving the proportion of untreated wastewater	Implies halving the proportion of population for whom domestic wastewater (sewage and faecal sludge) is not treated to adequate standards	
Sanitation coverage	Proportion of the population with access to basic sanitation. Measuring 'basic sanitation' is complicated. Ideally, the definition of this term would encompass critical components of what sanitation services should aim for: privacy, dignity, cleanliness and a healthy environment. From a monitoring point of view, however, such characteristics are difficult to measure. To resolve these issues, the JMP classifies sanitation facilities as either 'improved' or 'unimproved'. Improved sanitation facilities are: • Flush or pour flush toilet connected to (a) piped sewer system, (b) septic tank or (c) pit latrine • Ventilated improved latrine (VIP) • Pit latrine with slab • Composting toilet Unimproved sanitation facilities: • Public or shared latrine • Open pit latrine • Bucket latrine Not all people who have access to improved facilities actually use them. Consequently, the JMP has adopted 'use' as the primary indicator for monitoring progress. Current coverage estimates from the JMP are expressed as the *percentage of the population using improved sanitation facilities.*		WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)

Word / description	Definition	Source
Sanitation coverage	A person is counted as having access to sanitation in terms of QVZ if he or she uses a toilet that: 1. is shared by family members (usually about 6 persons per household) or is a shared toilet within or nearby the plot (usually shared by no more than 5 families or up to 30 persons), or is a community toilet in high density low-income areas serving approx. 25 users per cubicle (and is less than 300 meters away from the household) and takes less than 20 minutes to use (round trip); 2. is accessible at all times, i.e. 7 days per week and 24 hours per day; 3. is embedded in a functioning sanitation system, whereby the excreta from the toilet is collected, stored (if applicable) as well as transported (if needed), treated and disposed or reused in a manner which minimises contact between human excreta and humans or animals, is not hazardous to human health and not detrimental to the environment; 4. is regulated and monitored in terms of quality, minimum technical standards and tariff; 5. is combined with access to hand-washing facilities in case of community toilets; 6. together with costs for water are preferably not exceeding 5% of monthly household income; 7. is providing privacy and is culturally acceptable in terms of separation of males and females (for community toilets), and provision of anal washing if required. Although a comprehensive regulatory framework is rarely fully implemented, sanitation service provision should at least be within formal (regulated) structures that guarantee the exercise of state supervision as a duty bearer. The service provider should e.g. at least have a clear legal mandate and possess a license or permit (ideally containing rules and standards for service provision to comply with) obligating the service provider to a minimum of accountability. The state reserves the right to intervene in case of non-compliance with the established rules and standards. The design of (...) facilities (...) should take into consideration the accessibility for people with disabilities and of different age groups.	German Development Cooperation access targets (QVZ) for Sub-Saharan Africa
Sanitation coverage	The percentage or proportion of the population with household access to adequate sanitation.	MLGH (2016). Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft)
(National urban) Sanitation coverage	The ratio of urban population with access to adequate sanitation.	NWASCO Urban and Peri-Urban Water Supply and Sanitation Sector Report 2015
Sanitation coverage (urban)	Percentage of population with access to sanitation services provided by the commercial utilities.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) refers to the Act
Sanitation coverage	Percentage of population using any kind of toilet facility.	Central Statistics Office (CSO)

Word / description	Definition	Source
Sanitation delivery options (urban)	The following service levels have been identified: Level 1: Conventional wastewater system (best level of sanitation) Level 2: Decentralised sewerage systems connected to DEWATS Level 3: Onsite sanitation/pour flush Level 4: Onsite sanitation/dry toilet (minimum level of sanitation)	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) refers to the Act
Sanitation delivery standards (urban)	Sanitation providers must ensure efficient, affordable and sustainable sanitation services within their service areas. This implies that the service providers must guarantee a certain and defined level of services to the customer for a specified price ensuring value for money. The regulator has developed service indicators with time-bound benchmarks able to be adhered to by the licensed providers. The following service indicators apply: • **SLI 1** Coverage of the Service Area: % of population with adequate sanitation facilities (connected to sewer and individual installations) 75–90% • **SLI 6** Interruption of Water Supply and Blockage of Sewer: % of connected properties subject to an unannounced supply interruption of 20–36 hours in the reporting time <15, 36–48 hours <8% and >48 hours <3% • **SLI 9** Sewer Flooding: Maximum of 0.5% of total connections • **SLI 10** Quality of Discharged Sewer: No. of tests carried out and tests results within the standards of Environmental Council of Zambia (ECZ)* for effluent. Considering the universal and fundamental right of people to have access to adequate (water supply and) sanitation services, the coverage of the service area by a provider constitutes the main indicator for the service level offered. The Water and Sanitation Act obliges the providers to acquire a licence for a specific area and offer their water and sanitation services to everyone who is willing to pay for it. The indicator is calculated as a percentage by dividing the population served through sewer connections (no. of connections multiplied by average household size) by the total population living in the service areas multiplied by 100.	NUWSSP NWASCO (2000). Guidelines on Required Minimum Service Level
Sanitation minimum service level (urban)	The following minimum service levels have been defined: • High-cost housing: Septic tank and percolation or sewer connection (if available) • Medium-cost housing: Septic tank and percolation or communal septic tank • Low-cost housing: Ventilated improved pit (VIP) latrine or communal septic tank • Peri-urban areas: Improved traditional or communal latrine	NUWSSP
Sanitation products	Products are materials that are also called ‘wastes’ or ‘resources’. Some products are generated directly by humans (e.g. urine and faeces), others are required in the functioning of technologies (e.g. flush water to move excreta through sewers) and some are generated as a function or storage or treatment (e.g. faecal sludge). For the design of a robust sanitation system, it is necessary to define all of the products that are flowing into (Inputs) and out (Outputs) of each of the sanitation technologies in the system.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland

* *The Zambia Environmental Management Agency (ZEMA) is the principal environmental regulator in the country. ZEMA was formerly known as the Environmental Council of Zambia (ECZ), and was established in 1992. The ECZ was renamed ZEMA after the adoption of the Environmental Management Act in 2011.*

Word / description	Definition	Source
Sanitation services	Sanitation service means: a. the disposal, onsite or offsite, of human excreta; b. the collection of sewerage, excluding untreated toxic waste and storm water, from residential, commercial or industrial sources; or c. the treatment and disposal of wastewater in accordance with this Act and the standards established under the Standards Act, the Public Health Act, Environmental Protection and Pollution Control Act or any other written law. The commercial utilities have the overall responsibility to provide sanitation services and (public) asset management, but may adopt alternative arrangements by delegating sanitation service delivery.	Water Supply and Sanitation Act, No. 28 of 1997 MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) refers to the Act
Sanitation service area	The area defined in the CUs operator's licence approved by NWASCO.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Sanitation surcharge	Surcharge on the monthly water bill collected from each water consumer (apart from those served by public water points) to finance sanitation projects.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Sanitation surcharge	A charge on water consumption calculated as a proportion of the monthly water bill (up to 3%) for every customer apart from those serviced by public water points such as kiosks. The surcharge was introduced in 2007 to assist CUs to improve and extend sanitation services.	NWASCO
Sanitation surcharge	A charge of a reasonable amount for the development and use of sanitation facilities ensuring that it supports the infrastructure development and the effective management of the sanitation systems so that its utilisation is suitable and equitable.	NUWSSP
Sanitation tax	Additional tax imposed by national/local government to support provision of services to the poor.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Septic tank	A septic tank is an excreta collection device consisting of a water-tight settling tank, which is normally located underground, away from the house or toilet. The treated effluent of a septic tank usually seeps into the ground through a leaching pit. It can also be discharged into a sewerage system.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Service cluster	To achieve service efficiency and effectiveness, as well as environmental sustainability, different sanitation technologies will be developed and promoted for different setups (urban, rural and public places). Sanitation technologies will be selected based on appropriate cost (investment) and environmental benefits.	MLGH (2016). Draft National Water Supply, Sanitation and Solid Waste Management Policy and Implementation Plan (Final Draft)

Word / description	Definition	Source
	The different setups are called “service clusters”. The service cluster approach aims to provide cluster specific solutions for rural settlements, rural growth centres, towns and public institutions and creates a basis for having differentiated service cluster specific WSS standards. It also provides additional WSS specific guiding principles to guide the implementation of activities surrounding WSS. Service clusters comprise of: • **Rural** - Rural settlements with populations of 50 (10 households) to 500 (100 households); and - Rural growth centres with populations of 501 (101 households) to 5,000 (1,000 households) • **Urban** - Small towns with populations 5,001 (1,001 households) to 50,000 (10,000 households) - Towns with populations in excess of 50,000 (more than 10,001 households) - Peri-urban areas that started as unplanned and informal settlements Public places and institutions such as schools, markets (including shopping malls) and health centres are required to have facilities that meet the foregoing criteria in line with the public health and building requirements.	
Service provider	Service provider means any person who provides water supply or sanitation services.	Water Supply and Sanitation Act, No. 28 of 1997
Service provider	Providers of water supply and sanitation services are those persons that: • hold and/or operate (i.e. collect and/or treat and/or store and/or distribute) infrastructure for: - collecting ground or surface or rain water, - and/or for treatment of water - and/or for storage of treated or untreated water - and/or for distribution of treated or untreated water by means of pipes or by other means than pipes and/or • hold and/or operate infrastructure for such sanitation services as defined by the Act, whether or not such activities give rise to any form of remuneration.	NWASCO brochure on licensing
Sewage	Sewage means soil water, waste water or manufacturing or trade effluent.	Water Supply and Sanitation Act, No. 28 of 1997
Sewage	Sewage means waste water generated by residential, industrial and commercial establishments.	MTENR (2011). The Environmental Management Act, 2011

Word / description	Definition	Source
Sewerage	Sewerage includes sewage treatment plants.	MTENR (2011). The Environmental Management Act, 2011
Shared sanitation	Shared sanitation refers to sanitation facilities, although of an improved kind, but shared between two or more households, and all public facilities.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Simplified sewerage	A reticulated sewerage system that adopts less stringent design and construction standards that are appropriate for areas where water consumption is lower and residents are low-income. Types of simplified sewerage include small-bore and settled sewerage.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Small scale finance	Financing below approximately USD 100,000 for small and medium enterprises (SMEs) and micro enterprises (meso finance) and micro-finance services (including small loans below a few thousand USD)	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Small scale providers	Provision on small scale is defined to be: • Providing water supply and sanitation services to less than 50 connections or to less than 500 individuals • Not selling the water nor giving water as fringe benefits Small scale providers must *not* hold a licence (issued by NWASCO)	NWASCO brochure on licensing
Statutory Instrument	A statutory instrument is a regulation made by a minister. *Please refer to Local Government Act 84ff.*	
Storm water	Storm water is the general term for the rainfall runoff collected from roofs, roads and other surfaces before flowing towards low-lying land. It is the portion of rainfall that does not infiltrate into the soil.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Sustainable sanitation	Sustainable sanitation considers the entire "sanitation value chain", from the experience of the user, excreta and wastewater collection methods, transportation or conveyance of waste, treatment, and reuse or disposal. The term is widely used since about 2009. In 2007 the Sustainable Sanitation Alliance had defined five criteria to compare the sustainability of sanitation systems. In order to be sustainable, a sanitation system has to be not only (i) economically viable, (ii) socially acceptable, and (iii) technically and (iv) institutionally appropriate, it should also (v) protect the environment and the natural resources.	Tilley, E., Ulrich, L., Lüthi, C., Reymond, Ph. and Zurbrügg, C. (2014). *Compendium of Sanitation Systems and Technologies.* 2nd Revised Edition. Swiss Federal Institute of Aquatic Science and Technology (Eawag), Duebendorf, Switzerland SuSanA (2008). *Towards more sustainable sanitation solutions* - SuSanA Vision Document. Sustainable Sanitation Alliance (SuSanA)

Word / description	Definition	Source
Toilet (often referred to as a "user interface")	Consists of a water closet (WC), pour-flush or latrine.	MLGH (2015). National Urban and Peri-Urban Sanitation Strategy (2015–2030) adopts the JMP definition
Universal access (to safe drinking water, sanitation and hygiene)	By 2030: • to eliminate open defecation; • to achieve universal access to basic drinking water, sanitation and hygiene for households, schools and health facilities; • to halve the proportion of the population without access at home to safely managed drinking water and sanitation services; and • to progressively eliminate inequalities in access.	SDGs
Urine	Urine is the liquid waste produced by the body to rid itself of urea and other waste products. In this context, the urine product refers to pure urine that is not mixed with faeces or water. Depending on diet, human urine collected during one year (ca. 500 L) contains 2–4 kg nitrogen. With the exception of some rare cases, urine is sterile when it leaves the body.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Use and/or disposal	Use and/or disposal refers to the methods by which sanitation products are ultimately returned to the environment, as either useful resources or reduced-risk materials. Furthermore, sanitation products can also be cycled back into a system (e.g. the use of treated greywater for flushing).	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
User interface	User interface describes the type of toilet, pedestal, pan, or urinal that the user comes in contact with; it is the way that the user accesses the sanitation system. In many cases, the choice of user interface will depend on the availability of water. Note that greywater and storm water do not originate at the user interface, but may be treated along with the sanitation products that originate at the user interface.	Tilley, Elizabeth et al, 2008. *Compendium of Sanitation Systems and Technologies.* Swiss Federal Institute of Aquatic Science and Technology (Eawag). Dübendorf, Switzerland
Utility	Utility means a water supply and sanitation utility established by a local authority in accordance with Section 9 of the Water Supply and Sanitation Act, No. 28 of 1997.	Water Supply and Sanitation Act, No. 28 of 1997
Ventilated improved pit (VIP) latrine	Ventilated improved pit (VIP) latrine is a dry pit latrine ventilated by a pipe that extends above the latrine roof. The open end of the vent pipe is covered with gauze mesh or fly-proof netting and the inside of the superstructure is kept dark.	WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP)
Wetland	Wetland means a transitional area of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salty, including areas of marine water, the depth of which at low tide does not exceed six metres.	MTENR (2011). The Environmental Management Act No. 12, 2011

Word / description	Definition	Source
Waste	Waste means any matter whether liquid, solid, gaseous or radio-active, which is discharged, emitted or deposited in the environment in such volume, composition or manner as to cause an adverse effect to the environment, and includes such waste as may be prescribed under the Environmental Management Act. Under the aspect of waste management, waste means garbage, refuse, sludge and other discarded substances resulting from industrial and commercial operations and domestic and community activities, but does not include waste water (which falls under the definition of “effluent”).	MTENR (2011). The Environmental Management Act No. 12, 2011
Waste water	Waste water means water which has been used for domestic, commercial, agricultural, trading or industrial purposes and as a result of such use may cause pollution of the aquatic environment when discharged into the aquatic environment.	MTENR (2011). The Environmental Management Act No.12, 2011
Zambia Bureau of Standards	Zambia Bureau of Standards means the Bureau of Standards established under the Standards Act.	

Published by:
National Water Supply and Sanitation Council
164 Mulombwa Close, Fairview
Lusaka
PO Box 34358
T. +260 211 226941/2, 0977790138
F. +260 211 226904
E. mails@nwasco.org.zm
I. www.nwasco.org.zm

Editing:
GFA Consulting Group GmbH
Eulenkrugstraße 82, 22359 Hamburg
T. +49 (40) 60306-253
F. +49 (40) 60306-259
I. www.gfa-group.de
E. info@gfa-group.de

Photographs by:
Georgina Goodwin
Documentary Photographer based in Nairobi, Kenya
www.georginagoodwin.com
T. +254 722 805087
Skype-Instagram-Twitter: ggkenya
https://about.me/georginagoodwin

Design and Layout:
Peta Meyer
Editorial Support Services
Tara Consultants Ltd, Kenya
T. +254 738 126077
E. info@taraconsult.com

Printed by:
NAME OF PRINTERS (To be inserted by the printer)
Replace these lines of text in Arial Regular 7pt, 10pt leading
Text should be in black like the rest of this page

Published April 2018 by National Water Supply and Sanitation Council.

With the kind assistance of
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
Reform of the Water Sector Programme
on behalf of the
Federal Ministry of Economic Cooperation and Development in Germany

NATIONAL WATER SUPPLY AND SANITATION COUNCIL

National Water Supply and Sanitation Council (NWASCO)
164 Mulombwa Close, Fairview
Lusaka
P.O. Box 34358
T. +260 211 226941/2
F. +260 211 226904
M. +260 977 790138
E. mails@nwasco.org.zm
www.nwasco.org.zm