

CWIS CITY SNAPSHOT

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LUSAKA





LUSAKA CWIS CITY SNAPSHOT

The Citywide Inclusive Sanitation (CWIS) city snapshots are designed to provide compact summaries of initiatives that are being implemented in eight cities, namely Lusaka, Kampala, Dakar, Khulna, Trichy, Warangal, Narsapur and Wai. Each of these cities has active investments designed to achieve the CWIS goals of equitable, safe, and sustainable sanitation service delivery. These city snapshots are part of the CWIS Monitoring and Learning initiative led by Athena Infonomics with support from the Bill & Melinda Gates Foundation.

This city snapshot focuses on the city of Lusaka where the Lusaka Water Supply and Sanitation Company (LWSC) is the lead implementing partner. This city snapshot outlines the pathway that Lusaka is taking to achieve its CWIS goals and tracks the progress being made, including key shifts in institutional and service delivery models to support safe, equitable and sustainable delivery of services.

1. City Sanitation Overview

Category	Indicator	Value
Demographic	Administrative boundary	Lusaka is the capital and largest city of Zambia. It has an area of 360 sq. km and includes 30+ regulated informal settlements (locally referred to as 'Peri-Urban Areas', or PUAs). While the boundary of Lusaka Province has expanded over the years, Lusaka City boundary has not changed since the 1960s. All the information and statistics in this snapshot are based on the Lusaka City boundary.
	Population (resident)	2,526,102 ¹
	% of population living in informal settlements ²	70% ³
Geographic	Topography	Lusaka is mostly flat, with an elevation between 1,200 and 1,300m above sea level, covering an area of 360 km ² . The most vulnerable areas of the aquifer system coincide with low-income areas with a very high prevalence of unimproved on-site sanitation, leading to severe public health risks.
	Groundwater table	60% of the water supplied to consumers in Lusaka is from groundwater sources within the city, and is highly susceptible to contamination. ⁴ A third of the city has a high or extreme risk of groundwater contamination and the rest is at moderate risk. ⁵
Basic Sanitation Statistics (as of 2020)⁶	% of population covered by sewerage networks	16%
	% of population practicing open defecation	1%
	% of population relying on onsite sanitation	83%
	Treatment infrastructure (capacity) and utilization	4 Wastewater Treatment Plants (WWTPs) with 52 MLD operational capacity and 2 Fecal Sludge Treatment Plants (FSTPs) with 100 KLD operational capacity. The treatment plants are currently running over capacity.

¹ Central Statistical Office, 2013: projection for 2018, based on 2010 census

² Termed Peri-Urban Areas in Zambia. UN-HABITAT gives the operational definition of an informal settlement or slum as an area that combines to various extents the following characteristics: inadequate access to safe water; inadequate access to situation and other infrastructure; insecure residential status; poor structural quality of housing; and overcrowding.

³ 70% of the population lived in 33 PUAs in 2007 – WSUP, Towards City Wide Sanitation in Lusaka, 2018

⁴ Some accounts put groundwater contamination in urban Lusaka at 70% (WARMA)

⁵ German Federal Institute for Geosciences and Natural Resources, 2012: Lusaka Groundwater Vulnerability Map (Bäumle, & Kang'omba, 2013)

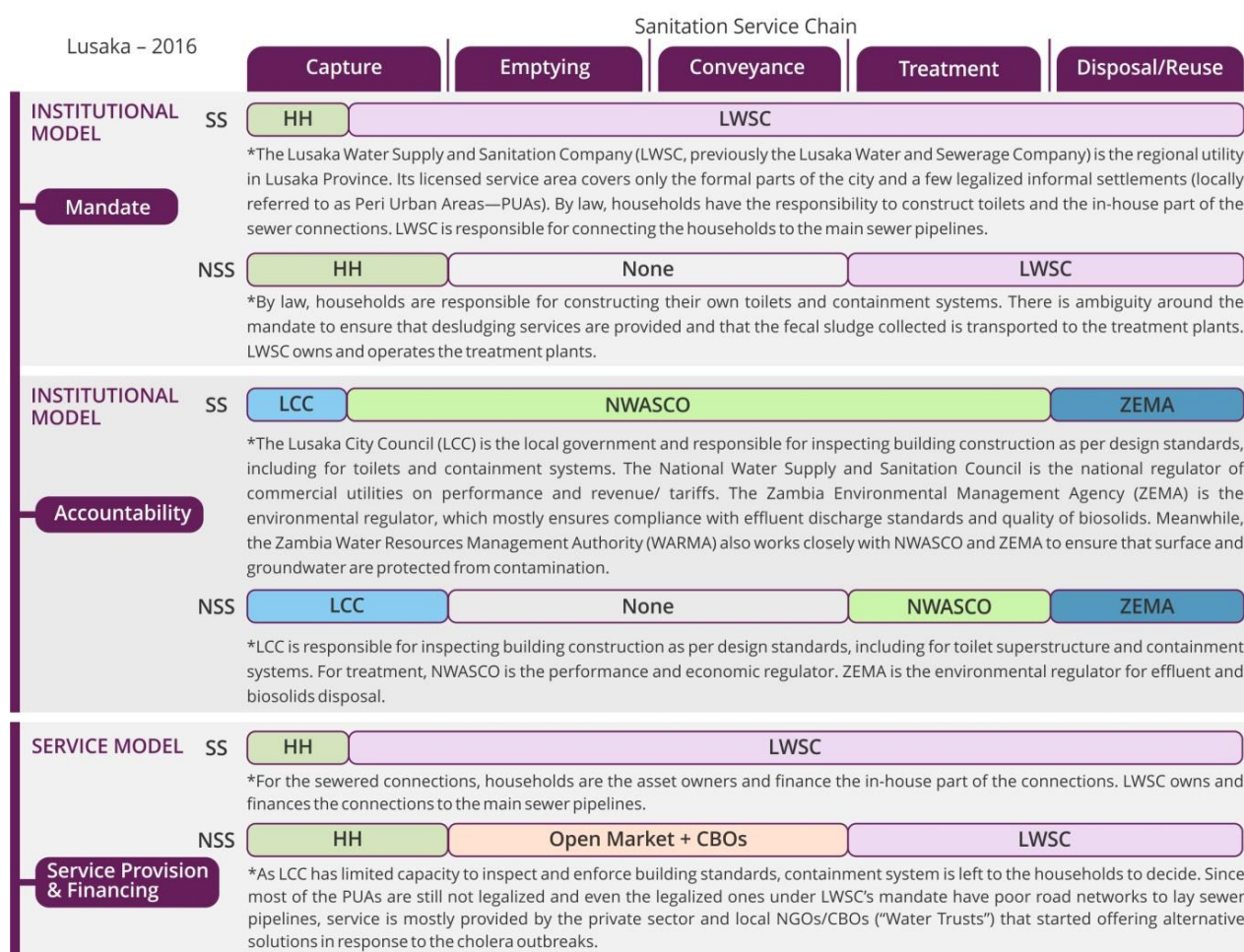
⁶ Data is for Lusaka City Boundaries.

2. Institutional and Governance Framework of City Sanitation Service Delivery

The graphics below show the institutional mandate, accountability and service provision models for Lusaka before the CWIS program started and the current scenario as of 2020. The full institutional model of urban sanitation service delivery covers all three of the systems functions under CWIS—Responsibility⁷, Accountability⁸, and Resource Planning/ Management (financing framework)⁹. The illustration in this section presents only responsibility and accountability, as financing framework is complex and varies widely across cities. The section on service model illustrates how sanitation services are being delivered. The service model includes a wide range of options such as direct provision by the mandated service authority, public private partnerships, and direct provision by the private sector but with oversight/regulation by the service authority or through open markets with limited oversight/regulation.

In Lusaka, a top down reform has significantly changed the institutional and service models for Non-Sewered Sanitation (NSS). This national reform has given clear mandate where it was ambiguous earlier, and simultaneously putting in place the accountability mechanisms for NSS service provision.

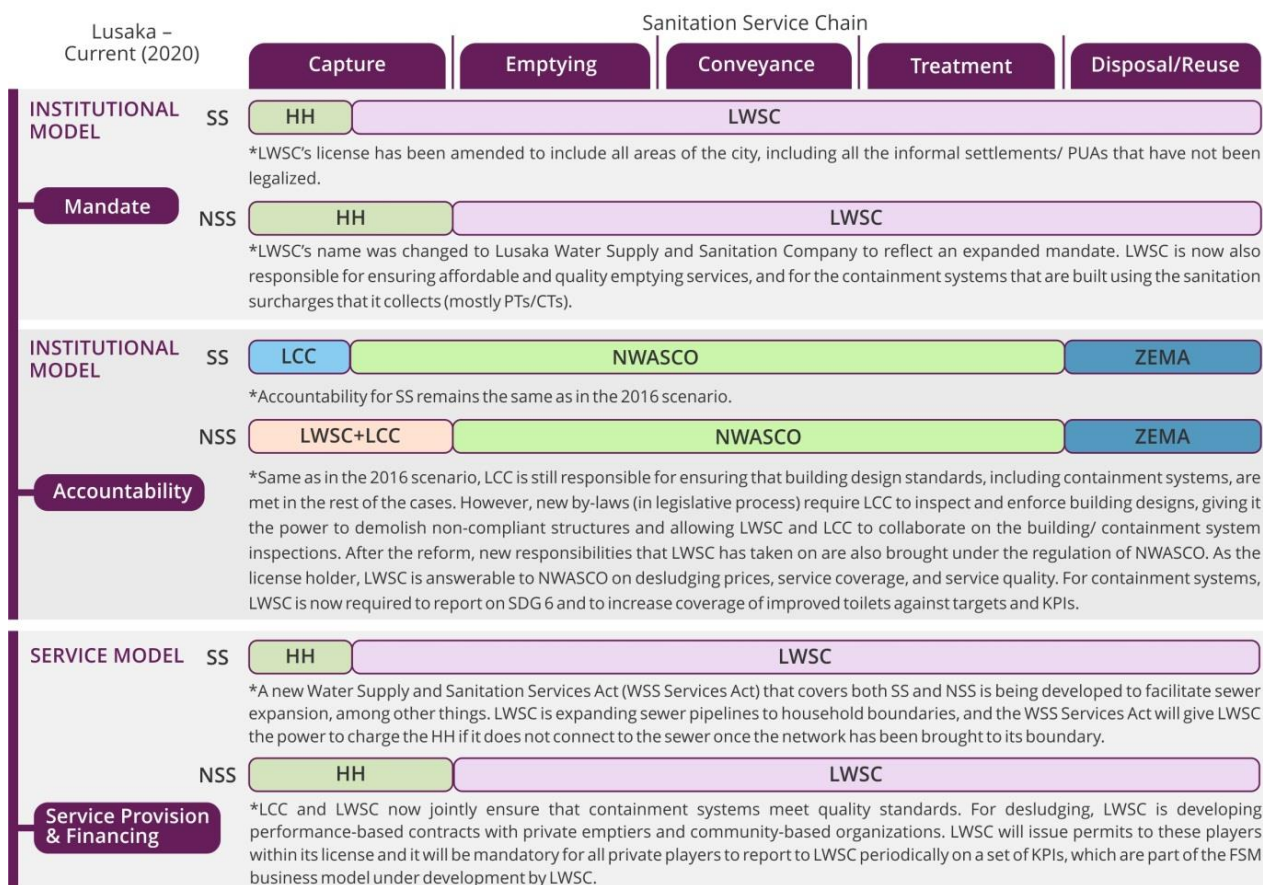
Legends: SS - Sewered Sanitation; NSS - Non-Sewered Sanitation



⁷ Responsibility means that authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.

⁸ Accountability means that authorities' performance against their mandate is monitored and managed with data, transparency and incentives.

⁹ Resource Planning/ Management means that resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.



3. List of CWIS Interventions

This section seeks to capture Lusaka's path to CWIS goals of equity, safety and sustainability and its performance on key functions such as clarity of mandate/responsibility, accountability and resource planning/ management. The table below is a list of Key Performance Indicators (KPIs)¹⁰ used to gauge changes towards CWIS, followed by another table detailing the scenario in Lusaka. The KPIs EQ-1 and SF-1 specifically follow the definitions as laid out in the Shit Flow Diagram (SFD) manual¹¹.

KPIs for Interventions

	Equity <i>Services reflect fairness in distribution and prioritization of service quality, prices, and deployment of public finance/ subsidies</i>	Safety <i>Services safeguard customers, workers, and communities from safety and health risks—reaching everyone with safe sanitation</i>	Sustainability <i>Services are reliably and continually delivered based on effective management of human, financial and natural resources</i>
Service Outcomes	<ul style="list-style-type: none"> ● EQ-1: % safely managed sanitation in low income areas <ul style="list-style-type: none"> ○ % wastewater (WW) contained ○ % supernatant (SN) contained ○ % FS contained ○ % FS emptied ● EQ-2: Women's participation in sanitation related matters ● EQ-3: Gender friendly PT/CT design ● EQ-4: % of sanitation workers covered by social security and health insurance 	<ul style="list-style-type: none"> ● SF-1: % safely managed sanitation <ul style="list-style-type: none"> ○ % WW contained ○ % WW contained delivered to treatment ○ % SN contained ○ % FS contained ○ % FS emptied (contained + not contained) ○ % wastewater treated ○ % FS treated ● SF-2: Health and safety standards and SOPs exist to protect sanitation workers from occupational hazards, and compliance is monitored 	<ul style="list-style-type: none"> ● SS-1: % of treated wastewater that is reused ● SS-2: % of treated biosolids that is reused ● SS-3: % of utility capital investments covered by budget line/ government transfers ● SS-4: % of O&M cost recovered for sanitation infrastructure (STPs/WWTPs, FSTPs, CT/PTs, desludging trucks, etc.)
System Functions	<p>Responsibility <i>Authority (ies) executes a clear public mandate to ensure safe, equitable, and sustainable sanitation for all.</i></p> <ul style="list-style-type: none"> ● RS-1: Policy mandate for service delivery covers both sewered and non-sewered sanitation across the entire sanitation service chain <ul style="list-style-type: none"> ○ Mandate has no exclusions ○ Mandate is explicitly pro-poor ○ Mandate is gender intentional and inclusive of vulnerable groups 	<p>Accountability <i>Authorities' performance against their mandate is monitored and managed with data, transparency and incentives.</i></p> <ul style="list-style-type: none"> ● AC-1: Service authority performance is monitored externally with clear KPIs and targets ● AC-2: Performance data is sufficiently collected and reported, representative, and transparent ● AC-3: Incentives and/or penalties tied to performance exist for sanitation service authority 	<p>Resource Planning/ Management <i>Resources – human, financial, natural, assets – are effectively managed to support execution of mandate across time / space.</i></p> <ul style="list-style-type: none"> ● RPM-1: Clear financing framework ● RPM-2: Staff are in place and capable to execute mandate ● RPM-3: Quality of investment decision-making ● RPM-4: Integrated citywide sanitation plan

¹⁰ The KPIs are based on the list of CWIS indicators, which are more detailed and intended to offer comprehensive insights into a city's progress towards CWIS. This KPI list focuses on a subset of CWIS indicators and seeks to highlight interventions that can contribute to improved outcomes, as most cities are still in early stages of investment maturity. For example, the CWIS indicators measure women's usage of PT/CTs as quantitative outcomes, while the KPI EQ-3 focus on gender friendly PT/CTs as an intermediate outcome that can lead to more women using PT/CTs.

¹¹ Definitions as per the *SFD Manual* i.e., %SN contained = 0.5 * %Septic tank/ fully lined tank (sealed)/ lined tank with impermeable walls and open bottom connected to a centralized/decentralized combined sewer or foul/separate sewer; %WW contained = %Toilet discharges directly to a centralized/decentralized combined sewer or foul/separate sewer; %FS contained (all conditions when there is 'low risk' of groundwater pollution) = %Toilet discharges directly to soak pit + %Septic tank/ fully lined tank (sealed)/ lined tank with impermeable walls and open bottom connected to soak pit or no outlet + % Lined/ unlined pit, no outlet or overflow + % Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow + %SN contained.

Lusaka Scenario

The table below presents the scenario in Lusaka before the CWIS program was initiated, the target that needs to be achieved and the reforms and interventions made to reach this target. The table seeks to cover key interventions, both those completed over the past few years and those under planning, by all stakeholders that contribute to goals aligned with the CWIS idea. The table is not restricted to interventions that are part of the BMGF funded CWIS program or the CWIS grantee.

*NOTE: Acronyms are available at the end of the section.

Service Outcomes	Starting Scenario (2017)	Equity	Safety	Sustainability
		<ul style="list-style-type: none"> • EQ-1: 1% safely managed sanitation in LICs/PUAs. <ul style="list-style-type: none"> ○ 0% WW contained (no HH connected to sewers) • EQ-2: Limited women's participation in sanitation related matters. • EQ-3: Existing PT/CTs are not gender friendly. • EQ-4: Private sanitation workers are not covered by social security and health insurance. 	<ul style="list-style-type: none"> • SF-1: 17% safely managed sanitation.¹² <ul style="list-style-type: none"> ○ 14% of WW safely contained; ○ 10% of WW contained delivered to treatment ○ 22% of FS contained; ○ 36% of FS emptied (11% contained emptied + 25% not contained emptied); ○ 4% of wastewater treated; ○ 1% of FS treated. • SF-2: Health and safety standards and SOPs for FSM do not exist. 	<ul style="list-style-type: none"> • SS-1: 0% of treated effluent is reused. • SS-2: 100% of treated biosolids are reused; biosolids are sold at below market prices due to not meeting quality standards set by ZEMA. • SS-3: 5% of capital investments is covered by budget line/ government transfers.¹³ • SS-4: 67% of O&M cost is recovered for STPs.¹⁴ Most of the PTs (run by LCC) are able to fully recover O&M from user charges.

¹² All numbers are from the 2018 Lusaka SFD. <https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/3468>

¹³ Estimate provided by LWSC staff in interviews.

¹⁴ STP opex is from LWSC Sewerage Department budget for 2017. This does not include staff salaries, which likely constitute a significant portion of operational cost.

Reforms & Interventions	<ul style="list-style-type: none"> ● LSP is providing subsidy of 80% towards the cost to construct 5500 safe onsite sanitation facilities. ● LWSC has built 86 out of planned 100 public toilets. ● LWSC held trainings targeting 500 community representatives and 200 LWSC staff to deal with identified social and gender issues. LWSC plans to have follow up training targeting an additional 400 LWSC staff by the end of 2020. ● LWSC has signed six performance based contracts with Private Operators to provide safe and affordable emptying and transportation service in PUAs; LWSC will provide a subsidy of about \$10/m³ of fecal sludge emptied; the contracts cover social security and health insurance for their sanitation workers. 	<ul style="list-style-type: none"> ● The Public Health Act (1997) requires all properties within 60.96m of a sewer pipeline to connect to sewers, although no penalties apply if the owner fails to do so; MWDSEP is developing a new Water and Sanitation Services Act which, among other things, facilitates sewer expansion by giving LWSC the power to charge the HH if it does not connect to the sewer once the network has been brought to its boundary. ● NWASCO, LCC and ZABS are developing design standards for OSS; LCC plans to pass Lusaka City by-laws to ensure adherence to these standards. ● LWSC has divided the city into 3 zones for private operators to render services in specific zones at standardized zone wise charges. LWSC plans to implement scheduled desludging in the zoned areas to ensure that Non-Sewered Sanitation (NSS) services are affordable for the poor. ● LWSC is developing performance based contracts with private emptiers and community-based organizations. Under NWASCO's new regulatory reforms, LWSC will issue permits to these players within its license and it will be mandatory for all private players to report to LWSC periodically on a set of KPIs. ● LWSC has constructed two FSTPs totaling 100KLD and plans to construct two additional FSTPs totaling 56KLD. ● LWSC will embark on the rehabilitation and expansion of sewer network by an additional 520km; LWSC also plans to upgrade the Ngerere ponds into a conventional treatment facility, and rehabilitate and upgrade the Chunga WWTP. ● LWSC developed SOP for SS and NSS to establish health and safety standards. 	<ul style="list-style-type: none"> ● LWSC plans to build a reuse plant through a PPP to ensure that the final FS by-products are compliant with ZEMA standards and can be sold at market value. ● NWASCO is developing a pricing strategy for NSS to ensure affordable and cost reflective charges that will improve cost recovery.
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	Target Scenario (2021 & beyond)	<ul style="list-style-type: none"> • EQ-1: 14% safely managed sanitation in LIC/PUAs. • EQ-2: All sanitation workers covered by social security and health insurance as required by law. 	<ul style="list-style-type: none"> • SF-1: 42% safely managed sanitation. <ul style="list-style-type: none"> ○ 23% WW contained; ○ 22% WW contained delivered to treatment; ○ 33% FS contained; ○ 25% FS emptied; ○ 21% WW treated; ○ 14% FS treated. • SF-2: Health and safety standards and SOP exist to protect sanitation workers, and compliance is monitored through permits to private emptiers. 	<ul style="list-style-type: none"> • SS-1: 80% of treated effluent is reused. • SS-2: All biosolids meet ZEMA quality standards and are sold at market prices. • SS-3: At least 10% of capital investments covered by budget line/ government transfers. • SS-4: 100% of O&M cost recovered for STPs/WWTPs and FSTPs.
System Functions	Starting Scenario (2017)	Responsibility	Accountability	Resource Planning/ Management
		<ul style="list-style-type: none"> • RS-1: LWSC's mandate for service delivery only covers the sewered areas of the city. <ul style="list-style-type: none"> ○ Customers relying on OSS are excluded from service; ○ No pro-poor mandate, interventions mostly done haphazardly in response to emergencies (e.g. disease outbreaks) using NWASCO's Devolution Trust Fund; ○ Mandate does not explicitly mention the needs of women or other vulnerable groups. 	<ul style="list-style-type: none"> • AC-1: NWASCO (independent & autonomous national regulator) is the performance and economic regulator of all commercial utilities incl. LWSC on sewered sanitation, with clear KPIs. No regulatory framework exists for non-sewered sanitation. • AC-2: The NWASCO Information System (NIS) is the main national level database for water and sanitation (mostly sewered) data; all commercial utilities are required to enter data into NIS on an annual basis. No citywide baseline data has been collected and very limited data is available for onsite sanitation. • AC-3: NWASCO utilizes a set of incentives and penalties from financial reward and certificate of recognition to tariff embargo and cancellation of utility operating license. 	<ul style="list-style-type: none"> • RPM-1: Budget allocation is based on needs. LWSC's sanitation levy is ring fenced but not the other sanitation revenue sources. • RPM-2: No dedicated staff for NSS. • RPM-3: Investment decisions heavily lean towards sewered technology options with high CAPEX, while residents benefiting from the investment have been relatively small in number. • RPM-4: A multi-stakeholder sanitation master plan exists, but does not adequately cover NSS.

	Reforms & Interventions	<ul style="list-style-type: none"> NWASCO has revised LWSC's license terms to make non-sewered sanitation an explicit component of the utility's mandate; LWSC's name was changed to Lusaka Water Supply and Sanitation Company to reflect the mandate expansion. As one of the license terms, LWSC signed a Service Level Agreement with NWASCO to lead service provision in LICs/PUAs and "rural" areas of the city. NWASCO is developing guidelines for LWSC to engage private desludging operators in SLAs. 	<ul style="list-style-type: none"> NWASCO developed a regulatory and M&E framework for NSS, by-laws to operationalize FSM regulations, and guidelines and standards for NSS. NWASCO is developing pricing/financing guidelines for NSS. LWSC is conducting a baseline assessment of the entire city. LWSC, LCC, and the Ministry of Health jointly developed a GIS MIS with spatial data showing sanitation facilities in the entire city. 	<ul style="list-style-type: none"> LWSC plans to use sanitation levy for NSS services. NWASCO is creating a revolving fund for sanitation in LIC/PUAs, using the sanitation levy/ surcharge that is ringfenced. LWSC formed an FSM unit and employed a dedicated team for managing OSS/ FSM. LWSC streamlined the procurement process to reduce bureaucracies and facilitate acceptance of innovative technologies, such as new toilet designs for the poor. LWSC has identified planning gaps in the Lusaka Sanitation Master Plan and plans to update it through a multi-stakeholder approach. This involves developing an NSS strategy with an investment framework.
	Target Scenario (2021 & beyond)	<ul style="list-style-type: none"> RS-1: Service delivery for both sewerred and non-sewerred sanitation across the service chain is within the mandate of a single service authority/ LWSC. <ul style="list-style-type: none"> Mandate covers service provision to everyone within Lusaka City boundaries. All areas, both rural and urban, are included; Pro-poor focus is incorporated into the legal and regulatory documents that define LWSC's mandate. 	<ul style="list-style-type: none"> AC-1: NWASCO regulates the performance and tariffs of LWSC for both sewerred and non-sewerred sanitation with clear KPIs on both sanitation coverage and service quality. AC-2: Sanitation related data is comprehensively collected and captured in an MIS based on spatial GIS data for the entire city. 	<ul style="list-style-type: none"> RPM-2: Dedicated and sufficient staff for LWSC to run NSS service delivery in the city. RPM-3: Investment decisions are based on considerations of service coverage and life-cycle costs. RPM-4: Lusaka Sanitation Master Plan updated to adequately cover NSS.

Acronyms:

CT/ PT - Community Toilet/ Public Toilet

IHHL - Individual Household Latrine

LCC - Lusaka City Corporation

LIC - Low Income Community

LSP - Lusaka Sanitation Program

LWSC - Lusaka Water Supply and Sanitation Company, previously Lusaka Water and Sewerage Company

NWASCO - National Water Supply and Sanitation Council

MWDSEP - Ministry of Water Development, Sanitation and Environmental Protection

PUA - Peri-Urban Area, local term used to refer to LIC

OSS - Onsite Sanitation Systems

SLA - Service Level Agreement

WSUP - Water and Sanitation for the Urban Poor

ZABS - Zambia Bureau of Standards

ZEMA - Zambia Environmental Management Agency