



# Expanding Public Utility Service Delivery in Rural and Small-Town Contexts

Zambia Report



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# Headline Enablers and Barriers

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# Enabling Environment



## Enablers

- National political and regulatory endorsement, reflected in policy, legislation and regulatory frameworks, is vital for legitimising utility-led rural service delivery. Strong regulatory leadership can provide a stabilising force which supports utility transitions.
- Standardised contracting instruments are emerging as a key regulatory enabler for managing diverse rural service models. Clear and well-structured contracts are vital for clarifying roles, performance expectations, and termination rights, and give utilities leverage to enforce standards while retaining operational flexibility.
- Placing accountability for third-party performance firmly with the utility can be an effective regulatory approach, reinforcing incentives for active oversight rather than passive delegation.



## Barriers

- Rural water services are financially unviable under current tariff regimes, and uneven financial management further undermines sustainability. The absence of cost-reflective tariffs, coupled with lengthy funding approval processes and weak creditworthiness, excludes most utilities from private finance, reinforcing donor dependence.
- Unresolved ambiguities around responsibility and liability significantly constrain rural water service delivery, particularly in delegated and hybrid service models.
- The absence of predictable public funding flows to utilities inhibits growth of rural operations, and the transfer of operational responsibilities to utilities is not matched by recurrent funding.

## Operational Context



### Enablers

Larger, more experienced urban utilities are well-positioned to provide vital technical support to rural service providers through oversight, troubleshooting, and targeted assistance.

Infrastructure mapping, assessments, and identification of priority sites are vital in informing utilities about the extent and status of available infrastructure, the feasibility and desirability of direct operational takeover, and the investment required to improve and extend services.



### Barriers

Technical and operational capacity constraints — ageing infrastructure, limited field-based staff, and shortages of transport, tools, and digital systems — limit the effectiveness and reach of utility support in rural areas. These constraints are compounded by growing water resource pressures and climate variability, which are increasing the frequency and severity of service disruptions.

The poor condition of existing infrastructure, coupled with wider resource constraints, poses challenges to meeting water quality and NRW performance standards.

Multiple factors constrain the business viability of rural water service delivery, including low ability to pay, seasonality affecting demand, and insufficient tariffs to recover operating costs even under efficient management.

# Institutional Capacity



## Enablers

- The formation of business units responsible for managing district revenues strengthens accountability for serving rural areas within the utility.
- Utility oversight of third parties is enabled by building internal contract management capability, including clearly defined roles, templates, monitoring routines, and escalation pathways.
- Prepaid meters and digital vending platforms can improve revenues and lower transaction costs.
- Customer-facing tools improve utility-customer relations. The effectiveness of these tools is enhanced by close coordination across technical teams, performance management, and district operations to translate information into timely service improvements.
- External partnerships such as Global Water Operator Partnerships and targeted development partner support have enhanced staff skills and contributed to improved water quality management and NRW control.
- Community engagement and facilitation skills within utilities are a core rural service competency, including dedicated capacity for communication, partnership-building, and local engagement.



## Barriers

- Operational capacity limitations significantly restrict utilities' ability to support dispersed rural schemes. This includes shortages of transport, tools, and spare parts.
- Human resource capacity is constrained by skills, retention incentives, and the ability to deploy staff where rural oversight is most needed.
- Organisational capacity for rural service delivery is further constrained by centralised structures and nascent contract and partnership management functions.
- Internal decision-making processes around financial allocations can constrain operations, particularly where spending authority is disconnected from technical priorities. Centralising budget decisions within finance functions can limit timely access to funds for spare parts, tools, and minor repairs, delaying low-cost interventions and increasing reliance on head-office deployments for otherwise simple fixes.



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# Acronyms

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**CU** Commercial Utility

**GIZ** Deutsche Gesellschaft für Internationale Zusammenarbeit

**JMP** Joint Monitoring Programme

**LpWSC** Luapula Water Supply and Sanitation Company

**LWSC** Lusaka Water Supply and Sanitation Company

**NRW** Non-Revenue Water

**NWASCO** National Water Supply and Sanitation Council

**NWSC** Nkana Water Supply and Sanitation Company

**SWSC** Southern Water Supply and Sanitation Company

**UNICEF** United Nations Children's Fund

**ZMW** Zambian Kwacha

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# Introduction

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## 1.1. Study Background

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**In many countries, recent sector policies and regulatory revisions have led to the adoption or expansion of public utility models for rural and small-town water supply services.** This includes establishing dedicated rural-focused utilities (e.g., in Ghana, Ethiopia, Kenya, Tanzania, and Uganda) and expanding the mandate of existing urban-focused utilities to include rural areas and small towns (e.g., in Ethiopia, Kenya, Uganda, and Zambia). These developments represent a critical transition that can help accelerate progress towards national targets and drive sector professionalisation over time. However, effective service delivery in rural and small-town contexts poses a combination of challenges different from those in urban and peri-urban areas (WSUP, 2022). These include:



The often-poor state of infrastructure and the wide range of infrastructure types.



The remote and dispersed nature of rural customers, making aggregation challenging.



Seasonal demand variations and low willingness or ability of users to pay cost-reflective tariffs.



Difficulty attracting and retaining skilled staff and ensuring sufficient technical support.



The absence of sustained or sufficient funding to overcome these challenges.

**This study seeks to fill a gap in sector literature concerning the actions required to effectively support expanded utility provision in small towns and rural areas.** Several existing resources detail the ongoing and emergent processes of expanded utility provision in rural and small-town contexts (ESAWAS, 2022; REAL-Water, 2023a; IRC, 2021; USAID, 2023b; WaterAid, 2024). At the same time, several guidance materials outline factors and processes that can help utilities provide safe, sustainable, and equitable water supply services (World Bank, 2018a; World Bank, 2018b; World Bank, 2024; GWOPA, 2024a; GWOPA, 2024b). However, there is a shortage of cross-country learning and guidance explicitly focused on the actions required to support utility provision in small towns and rural areas, especially the transition processes for existing utilities taking up new mandates and new utilities establishing operations. This study, which was conducted across Ethiopia, Ghana, Kenya, Uganda, and Zambia, fills this gap through:



Detailing the status of utility provision in rural areas and small towns.



Outlining the enablers and barriers to the expansion of utility service provision.



Presenting existing good practices from the five countries.



Identifying common lessons for supporting utility expansion into small towns and rural areas.

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## 1.2. Report Overview and Structure

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**This report presents the study findings from Zambia.** It focuses on Southern (SWSC), Lusaka (LWSC), Nkana (NWSC) and Luapula (LpWSC) Water and Sanitation Companies, which are owned by local authorities and function as the primary service providers for water and sanitation services in Zambia. The report was developed based on a desk review, utility survey, focus group discussions at the utility and national levels, and a series of targeted key informant interviews. While based on insights from these four utilities, it looks to provide learnings to the sector more broadly.

The remainder of this report is structured as follows:

**Section 2** details the status of utility service provision in rural areas and small towns.

**Section 3** outlines the factors enabling and constraining expanded utility service provision.

**Section 4** presents lessons learnt for utility expansion into small-town and rural contexts.



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# Service Provision Context

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## 2.1. Country Context

Zambia is a lower-middle-income country with a population of approximately 21.3 million in 2024 (World Bank, 2024). Zambia’s water sector operates in a context of widespread poverty (World Bank, 2025), rapid urbanisation, and uneven human development, which places sustained pressure on service delivery systems, particularly in rural areas. Table 1 provides an overview of the current demographic and socio-economic situation.

**Table 1.** Key Country Context Descriptive Indicators (Data Sources: World Bank, 2024 and UNDP, 2024)

| Indicator (all 2024)                   | National       | Urban         | Rural         |
|----------------------------------------|----------------|---------------|---------------|
| Population                             | ~21.3 million  | ~10.0 million | ~11.3 million |
| Share of total population              | 100%           | ~47%          | ~53%          |
| Annual average population growth rate  | ~2.8%          |               |               |
| Population density                     | ~28 people/km² |               |               |
| Population living on less than \$3/day | ~71.7%         |               |               |
| GDP per capita (US\$)                  | ~1,290         |               |               |
| Human Development Index                | 0.569 (Medium) |               |               |

For water supply provision, Zambia’s Ministry of Water Development and Sanitation classifies small towns, rural growth centres and rural areas as follows (MWDSEP, 2019):

- Rural Settlements:** Areas with a population of less than 500
- Rural Growth Centres:** Areas with a population between 500 and 5,000
- Small towns:** Areas with a population between 5,000 and 50,000

## 2.2. Water Supply Status

**Zambia has made gradual progress in expanding access to drinking water services, but coverage remains below universal access targets and inequalities persist.** Figure 1 shows the Joint Monitoring Programme (JMP) service levels for drinking water in rural and urban areas. Between 2015 and 2024, the share of the total population using at least basic drinking water services increased modestly. However, as in many countries in the region, urban areas consistently display higher levels of service than rural areas. A significantly larger share of urban populations were accessing safe drinking water services in both 2015 and 2024. By contrast, rural areas had much lower coverage of basic services and relied more on unimproved sources

and surface water. Although rural access improved over the period, and service levels remain well below national and Sustainable Development Goal benchmarks.

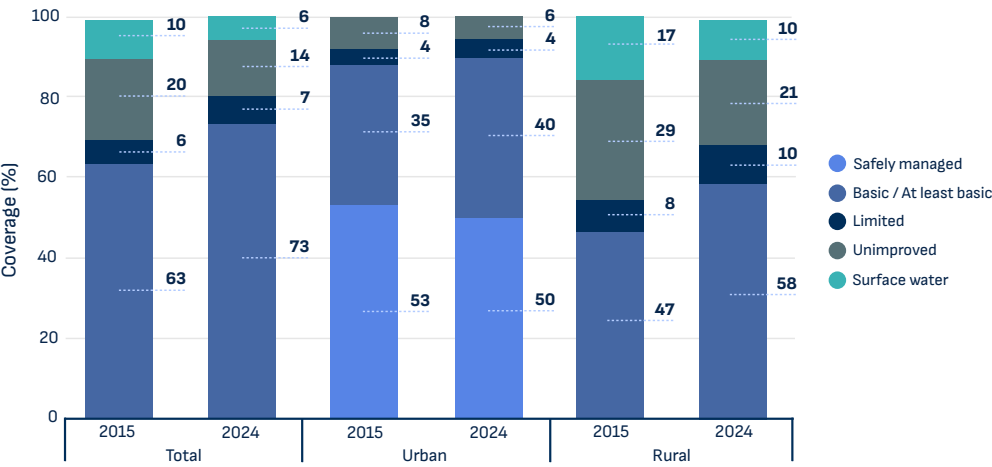


Figure 1: Joint Monitoring Programme Drinking Water Service Ladders, 2015 and 2024

## 2.3. Utility Service Provision

### 2.3.1. Expansion Pathways

**Policy and legal instruments have aimed to professionalise service delivery, strengthen regulation, and improve sustainability.** The introduction of the Water Supply and Sanitation Act, No. 28 of 1997 (Republic of Zambia, 1997) marked a shift away from direct government service provision towards a commercial utility (CU) model, separating policy, regulation, and service delivery functions. A central element of this reform was the establishment of the National Water Supply and Sanitation Council (NWASCO) in 2000 as an independent economic regulator, motivated by concerns over poor service quality, weak accountability, and limited cost recovery under earlier local authority arrangements.

The rural water service delivery framework has undergone a substantial institutional transition since the mid-2010s. Historically, local authorities primarily managed rural water services, supported by community-based management arrangements and development partner programmes. The 11 CUs, regulated by NWASCO, focused largely on urban and peri-urban service areas, with limited formal involvement in rural contexts.

In June 2026, Parliament enacted the Water Supply and Sanitation Services Act, No. 13 of 2026 (the 2026 Act), which will repeal and replace the 1997 Act (Republic of Zambia, 2026). The 2026 Act will come into operation on a date set by the Minister through a statutory instrument.

**In 2018, NWASCO introduced a regulatory framework that designated CUs as accountable for water services across 11 regions, including rural areas and small-town contexts.** This marked a clear shift away from local authority-led service delivery, positioning utilities as the central, accountable body for urban and rural water and sanitation services across their entire region (NWASCO, 2018). The CUs have thus adopted a delegated coordination and quasi-regulatory role at the local level, while overall regulatory responsibility remains with NWASCO.

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**The 2018 regulatory framework explicitly enables a plurality of service delivery models, promoting utility expansion through direct or delegated service provision.** Under this approach, utilities can either deliver services directly or delegate service delivery responsibility to third parties within their service areas. A key feature of the evolving mandate is the use of contractual and partnership arrangements that enable non-utility providers to deliver services within utilities' mandated service areas, emphasising formalisation and regulation of existing service providers through contractual or supervisory arrangements. In executing their mandate, utilities may choose to:

- **Collaborate with community-based management structures** (typically with an emphasis on formalising roles, strengthening capacity, and improving long-term sustainability, including willingness to pay).
- **Contract existing public or social institutions** to operate schemes on their behalf under clearly defined terms. Utilities may also continue to work with local authorities, typically through memoranda of understanding (MoUs) rather than formal service contracts, in some cases directly operating schemes within local authority areas. The 2026 Act will classify local authorities as service providers.
- **Contract private operators** through performance-based agreements that specify service standards and accountability, reflecting a broader policy intent to enable private sector participation while maintaining regulatory oversight through the utility. Under the 2026 Act, such operators will be required to have a written agreement with the utility and to use the utility's approved tariffs.

**CUs' approaches to fulfilling their expanded rural water services mandate depend on their service areas, institutional history, and prior rural engagement.** These factors have produced nuanced differences in how CUs fulfil their rural water supply mandate. LpWSC is structurally the most advanced in executing its rural mandate, consistent with the utility operating in a predominantly rural province and having engaged with rural areas for over 10 years before the formal mandate shift. By contrast, the service areas of LWSC, NWSC and (to a lesser extent) SWSC have a greater proportion of urban and peri-urban populations.

This study conceptualises how utilities are transitioning into rural water service provision in two broad pathways (Figure 2):

**Pathway 1** : Urban-focused utilities expanding operations into small-town and rural areas.

These utilities are taking over rural systems, and / or are engaging other entities under delegated management arrangements, broadly reflecting the 11 Zambian CUs.

**Pathway 2** : Dedicated rural-focused utilities.

In these cases, separate rural focused utilities are established to take up services, either through establishing entirely new entities, aggregating smaller operators, or repurposing existing institutions that did not previously have a service provision role. This pathway does not apply to Zambia.

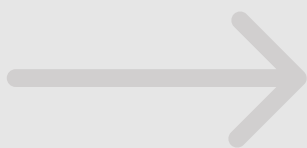
Figure 2: Overall Progress and Approach for Utility Expansion in Rural Areas and Small Towns

## The Challenge



**Limited access to safe water supply services in rural Zambia.**

Utilities with expanded mandates but most services remain poorly managed services primarily under community management. Aged infrastructure, constrained by weak systems that are unable to sustainably deliver reliable, safe, and affordable water services.



## External triggers for utility expansion



Sector reforms, specifically the 2018 Rural Water Supply and Sanitation Framework for Provision and Regulation, extended the mandate of utilities to cover rural areas and small towns



Policy objectives and the desire to expand piped water supplies



Increased demand for improved services



Urbanisation and small-town growth

## Internal triggers for utility expansion



Drive to increase coverage in predominantly rural settings

## PATHWAY 1

**The 11 Commercial Utilities are historically urban-focused and recently mandated to expand services into rural areas and small towns**

- **LpWSC represents the most advanced utility in the expansion process.** It has over a decade of experience in rural service provision and has steadily expanded small piped schemes across its predominantly rural province. Establishing decentralised district-level operations and partnerships with private rural service providers. Operates in 5 out of the 12 small towns in its service area.
- **SWSC is in the preliminary phases of the expansion process, prioritising structured rural engagement through MoUs with local authorities.** This includes comprehensive mapping of rural water services and a focus on growth centres and public institutions such as schools and health facilities. Has operations in all 15 small towns in its service area, primarily through piped connections.
- **LWSC has made limited progress and operates four schemes.** Expansion is being phased, with priority given to growth centres and economically active areas, underpinned by comprehensive rural mapping to assess infrastructure condition and takeover feasibility. Predominantly operates in urban areas, with operations in 5 out of the 6 small towns in its service area.
- **NWSC has also made limited progress.** Building on established peri-urban experience, NWSC is framing rural expansion as a natural progression of its work in low-income and unplanned settlements, using its structured school WASH programme as an early rural entry point, with a comprehensive mapping study planned to guide the next phase. Serves 2 out of the three small towns in its service area.

## PATHWAY 2

**Dedicated rural focused utilities**

- Not Applicable

## The Desired Situation



Utilities contribute to achieving the **Vision 2030** target of **100% access to clean and safe water in Zambia.**

Commercial utilities that are well-managed, adaptive to rural conditions, and operate within a strong enabling environment to incrementally and sustainably deliver safe, reliable and affordable water services.

### 2.3.2. Scale and Coverage

**The four utilities differ markedly in scale, with population served closely reflected in staffing levels and annual billing volumes.** Table 2 presents various indicators on the scale and coverage of the utilities. LWSC operates at a significantly larger scale than the other utilities, reflecting its metropolitan service area and extensive customer base. NWSC and SWSC operate at an intermediate scale, with broadly comparable staffing. By contrast, LpWSC operates at a much smaller scale. This stark difference in scale has important implications for financial capacity, staffing structures, and the ability to absorb additional responsibilities, particularly in predominantly rural service areas.

**Table 2.** Utility Scale and Coverage (Data Source: NWASCO, 2024)

| Utility                                                                                   | Year established | Scale and Coverage                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  LWSC   | 1989             | <ul style="list-style-type: none"><li>• Serves about 2,835,531 of its total population of 3,003,730 (94% served), predominantly in urban areas, through 146,360 connections.</li><li>• Has 745 members of staff, and annual billing for water is about ZMW 420 million.</li></ul> |
|  NWSC  | 2000             | <ul style="list-style-type: none"><li>• Serves about 791,205 of its total population of 806,922 (98% served), predominantly in urban, low-income and peri-urban areas.</li><li>• Has 460 members of staff with annual water billing of ZMW 132 million.</li></ul>                 |
|  SWSC  | 2000             | <ul style="list-style-type: none"><li>• Serves about 600,532 of its total population of 633,374 (95% served), predominantly in more urban settings in small towns.</li><li>• Has 442 members of staff and annual billing of about ZMW 109 million.</li></ul>                      |
|  LpWSC | 2009             | <ul style="list-style-type: none"><li>• Serves about 182,339 of its total population of about 574,575 (32% served), predominantly in rural areas.</li><li>• Has 88 members of staff and about ZMW 13 million of annual billing.</li></ul>                                         |

### 2.3.3. Operational and Financial Performance

**Operational performance across the utilities is mixed and diverges from sector benchmarks in key areas.** Table 3 below contains a variety of performance-related indicators. Water service coverage is high for LWSC, NWSC and SWSC, exceeding the sector average, while LpWSC lags substantially, reflecting its large unserved rural population. Non-revenue water remains a significant challenge across all four utilities, with only SWSC performing notably better than the sector average and none coming close to the regulatory benchmark. Overall, operational performance does not necessarily align neatly with a utility's scale of operation.

**Table 3.** Utility Operational Performance (Data Source: NWASCO, 2024)

| Utility        | NRW (%) | Water service coverage (%) | Hours of supply/day | Collection efficiency (%) | Full cost coverage by total revenue (%) | Staff efficiency (staff per 1,000 connections) |
|----------------|---------|----------------------------|---------------------|---------------------------|-----------------------------------------|------------------------------------------------|
| LWSC           | 54.7    | 94.4                       | 12                  | 89                        | 80                                      | 0.64                                           |
| NWSC           | 59.5    | 98.1                       | 13                  | 67                        | 54                                      | 1.16                                           |
| SWSC           | 39.1    | 94.8                       | 18                  | 94                        | 86                                      | 0.70                                           |
| LpWSC          | 61.1    | 54.3                       | 17                  | 93                        | 59                                      | 1.36                                           |
| Sector average | 54.9    | 86.0                       | 14.1                | 83.8                      | 73                                      | 0.77                                           |
| Benchmark      | 25      | 95                         | 18                  | 90                        | 100                                     | 0.4                                            |

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# Enabling and Constraining Factors

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## 3.1. Operational Context

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### 3.1.1. Infrastructure and Water Resources

- Ageing, poorly designed, and non-functional infrastructure remains a dominant technical constraint across utilities. Water resource pressures and climate variability are increasingly impacting rural service delivery.
- Utilities have focused on mapping rural infrastructure and assessing asset status and location to support implementation of their expanded mandates.
- Utilities face persistent challenges in meeting water quality and NRW performance standards, driven primarily by infrastructure condition and resource constraints.

**Ageing, poorly designed, and non-functional infrastructure remains a dominant technical constraint across utilities.** SWSC reported widespread groundwater stress and high failure rates among rural boreholes and schemes, while LWSC highlighted that the poor condition of many inherited systems limits their suitability for operational takeover. Infrastructure originally designed for smaller populations or installed without adequate hydrogeological assessment continues to impose high maintenance burdens and undermine system reliability. The extensive investments required for utilities to adopt this infrastructure are prohibitive, and utilities already operating under significant financial strain in urban areas are reluctant to absorb the additional shocks associated with these poorly performing schemes.

**Water resource pressures and climate variability are increasingly impacting rural service delivery.** CUs face major challenges related to climate change and depleting water resources. LpWSC described repeated service disruptions linked to declining lake and groundwater levels, requiring emergency operational measures during drought periods. NWSC identified dependence on surface water infrastructure developed by other agencies as both an opportunity and a vulnerability. Utilities more broadly noted that groundwater depletion is reducing the reliability of rural schemes, with SWSC citing water stress as the number one issue facing the utility in its rural operations.

**Within this context, utilities have focused on mapping rural infrastructure and assessing asset status and location to support implementation of their expanded mandates.** In the initial phases of the expansion process, SWSC, LWSC and NWSC have prioritised mapping rural schemes, populations, and infrastructure condition as a foundation for fulfilling their mandate, with early engagement concentrated in growth centres and public institutions such as schools, clinics, and markets. In these contexts, utilities typically only intervene when major technical failures occur, while local actors handle routine operations. These assessments are an essential phase of the transition, informing utilities on the extent and status of available infrastructure, the feasibility and desirability of direct operational takeover, and the investment required to improve and extend services.

**Utilities face persistent challenges in meeting water quality and NRW performance standards, driven primarily by infrastructure condition and resource constraints.** SWSC has maintained high overall water quality compliance, but highlighted risks associated with ageing infrastructure, intermittent supply, power outages, and logistical challenges in remote

areas. NRW challenges across utilities largely stem from dilapidated networks, limited metering coverage, weak data systems, and constrained capacity for proactive loss management. LpWSC also noted vandalism, theft, and rapid population growth as emerging pressures.

### 3.1.2. Business Viability, Affordability, and Accessibility

- The business viability of rural water service delivery is constrained by multiple factors, including low ability to pay, seasonal demand fluctuations, and tariffs too low to recover operating costs even with efficient management.
- Low ability to pay and seasonality are exacerbated by tariffs being set well below the cost of production, prioritising political considerations and affordability constraints over economic viability.

**Business viability is constrained by low ability to pay, seasonal demand, and tariffs too low to recover operating costs.** Many residents in rural areas live on less than US\$ 1 per day and cannot afford a piped household connection. Targeted subsidies are required, and LpWSC has provided these with development partner support. LpWSC also cited that seasonality impacts sales in rural areas, with households defaulting to rainwater harvesting in the rainy season (December – March). Lower ability to pay and smaller customer bases in rural areas pose fundamental barriers to cost recovery. In the view of one utility, providing piped water supply to rural areas is “driven by political expedience and pressure rather than economic studies,” lending a corporate social responsibility dimension to the initiative.

**Low ability to pay and seasonality are exacerbated by tariffs being set well below the cost of production.** Table 4 provides an overview of NWASCO’s approved rising block tariffs for domestic water consumption. These tariffs have not been revised since 2019, despite increased input costs such as electricity, chemicals, fuel and labour, leading to a decline in the financial viability of CUs (NWASCO, 2024). This is primarily because political considerations, affordability constraints and regulatory processes are prioritised over economic viability. The 2026 Act will make full cost recovery, including capital costs, a guiding principle for water supply and sanitation services, with tariff approval by NWASCO. This is a significant shift that is intended to address this challenge. NWSC and LpWSC both highlighted the difficulty of balancing affordability in low-income rural areas with the need to finance operations, particularly in sparsely populated areas with high capital investment costs per capita. LpWSC reported average tariffs of 8–9 ZMW/m<sup>3</sup> against production costs of approximately 18–19 ZMW/m<sup>3</sup>, leaving a substantial deficit that cannot be closed through efficiency gains alone. SWSC similarly reported that current tariffs are not cost-reflective and that revenues from rural schemes are insufficient to cover even basic operating costs.

**Table 4.** Computation of Bill Using Rising Block Tariffs for Domestic Customer Water Consumption Only (NWASCO, 2024)

| Utility           | Water Bill of 6 m <sup>3</sup><br>(Low consumption)<br>(ZMW) | Water Bill of 30 m <sup>3</sup><br>(Medium<br>consumption) (ZMW) | Water Bill of 60 m <sup>3</sup><br>(High consumption)<br>(ZMW) |
|-------------------|--------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------|
| LWSC              | 35                                                           | 206                                                              | 449                                                            |
| NWSC              | 27                                                           | 169                                                              | 385                                                            |
| SWSC              | 31                                                           | 227                                                              | 510                                                            |
| LpWSC             | 32                                                           | 249                                                              | 525                                                            |
| Sector<br>average | 34                                                           | 237                                                              | 539                                                            |

NWASCO's sector report notes that the estimated average cost of providing water is ZMW18 (approx. US\$ 0.9) per cubic metre, while services are being sold at an estimated average price of ZMW7.9 (approx. US\$ 0.4) per cubic metre (NWASCO, 2024). This means that even for medium- and high-consumption customers, utilities generally charge well below the cost of production, making cross-subsidies at the level required to support expansion into small towns and rural areas unviable. This results in full cost coverage by total revenue below 100% in all CUs (Table 3). Notwithstanding these constraints, some utilities are continuing to provide services at social tariffs at their own financial cost. For example, LWSC has adopted pro-poor pricing for communal water points (ZMW 5 / approx. US\$ 0.25 per cubic metre).

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## 3.2. Institutional Capacity

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### 3.2.1. Human Resources and Organisational Structure and Supply Chain Management

- Utilities exhibit varying levels of strategic clarity in rural water service delivery and are at different stages of translating their mandate into operational priorities.
- CUs are adapting their organisational structures, but a key tension remains between head-office-centred models and devolved district operating arrangements. Human resource capacity is constrained by skills, retention incentives, and the ability to deploy staff where rural oversight is most needed.
- Contracting and partnership management capacity is becoming a distinct organisational function, but utilities are only beginning to institutionalise it.

**Utilities exhibit varying levels of strategic clarity in rural water service delivery and are at different stages of translating their mandate into operational priorities.** LWSC has rapidly developed a rural water and sanitation services strategy, assigning internal responsibilities and maintaining active board oversight through quarterly reviews, which enable accountability. LpWSC similarly reports alignment from the board, through senior leadership, and down to operational staff, as reflected in a standalone rural document and incorporation of unserved districts into its forthcoming 2026–2030 strategic plan. SWSC's strategic alignment is more operationally anchored in early implementation (roles, contracts and MoUs) than in a fully embedded, long-term rural service strategy.

**CUs are adapting their institutional structures, but a key tension remains between head-office-centred models and devolved district operating arrangements.** SWSC's current structure remains heavily centred at head office, while district staffing and attention remain oriented towards urban services despite the geographic scale of rural responsibilities. LWSC has a model where technical departments can be mobilised across schemes, and district offices operate with a degree of autonomy, allowing cross-functional teams to be assembled as rural demands emerge. LpWSC has gone furthest, establishing district-level business units that manage their own revenues, and devolving financial accountability to the districts where its unserved rural population is concentrated.

**Human resource capacity is constrained by skills, retention incentives, and the ability to deploy staff where most needed.** SWSC flagged the difficulty of retaining trained staff in rural areas, with personnel gravitating toward urban postings for better pay and conditions. In some cases, there is reliance on rural health officers for important monitoring functions. LWSC describes rural organisational capacity as still in "infancy", with limited dedicated rural staffing and an incremental approach to building a rural team. LpWSC reports active upskilling and internal capacity building, with Water Operator Partnership support and plans to strengthen human resource management for productivity.

**Contracting and partnership management capacity is becoming a distinct organisational function, but utilities are only beginning to institutionalise it.** The delegated oversight model – with guidelines from NWASCO – will depend on building internal contract management

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capability that includes roles, templates, monitoring routines, and escalation modalities, rather than treating agreements as one-off administrative outputs. SWSC provides a clear example of formalising a rural contracting role early, with a dedicated rural water supply and sanitation marketing officer responsible for contracts and MoUs. However, progress remains limited, with two MoUs signed out of 13 town councils and no private provider contracts signed.

**LpWSC benefits from greater rural experience and external partnerships that have strengthened its technical capacity to serve rural areas relative to other utilities.** Through a Global Water Operator Partnerships and development partner support (UNICEF, GIZ), LpWSC has enhanced staff skills, laboratory capacity, and access to network repair materials, improving water quality management and NRW control. These technical enablers have allowed LpWSC to pilot and adapt approaches in small piped water schemes that are now informing its wider rural engagement. LpWSC's experience of partnering with 4ward Development and other actors sits within a broader district-level operational structure, implying more embedded partnership management, although the effectiveness of this approach depends on the consistency of reporting and accountability across business units (Box 1).

**Operational capacity limitations significantly restrict utilities' ability to support dispersed rural schemes.** Utilities consistently cited shortages of transport, tools, spare parts, and field-based technical staff as major barriers. SWSC reported that its rural water unit lacks both transport and basic equipment, while NWSC and LpWSC highlighted the difficulty of providing timely backstopping where skilled staff are not based at the district level. Limited use of digital systems for network monitoring, leakage detection, and NRW management further constrains systematic technical oversight in small schemes.

### **Box 1** : Utility-Operator Partnership Expanding Rural Water Service Delivery in Luapula Province

LpWSC partners with 4ward Development to expand and strengthen rural water service delivery in Luapula Province. Before the extension of the utility mandate, the operator was active at a very small scale, managing two rural water schemes across two districts, with limited coordination with the utility. The mandate shift created the basis for closer collaboration, bringing the operator's activities under a more coordinated and regulated service delivery framework.

Under the partnership, 4ward Development delivers services in vulnerable rural communities that are difficult for the utility to reach directly. Service provision is complemented by behaviour change programmes aimed at strengthening community understanding of, and engagement in, sustainable services. LpWSC provides oversight and coordination, helping to align operations with regulatory requirements and provincial service delivery objectives.

The partnership has increased service coverage in Luapula Province by combining the operator's local presence and flexibility with utility oversight and technical support. It illustrates the potential role of structured utility-operator partnerships in extending rural water services in predominantly rural and resource-constrained contexts.

### 3.2.2. Financial Management, Information and Communication Technology, Procurement Systems and Resilience

- Internal decision-making processes around financial allocations can constrain operations, particularly where spending authority is disconnected from technical priorities.
- Financial management capacity is improving in some utilities but remains uneven and closely linked to the adoption of digital billing and payment systems.
- Across the utilities, customer-facing digital tools are advancing faster than internal operational and performance management systems. Rapid uptake of digital systems has also had negative consequences when not adequately prepared for.

**Internal decision-making processes around financial allocations can constrain operations, particularly where spending authority is disconnected from technical priorities.** LpWSC noted that budget decisions are highly centralised within finance functions, limiting timely access to funds for spare parts, tools, and minor repairs that technicians identify as critical for maintaining rural services. This internal bureaucracy delays low-cost interventions, increases reliance on head-office deployments for otherwise simple fixes, and undermines service reliability in rural areas.

**Financial management capacity is improving in some utilities but remains uneven and closely linked to the adoption of digital billing and payment systems.** LWSC reported significant financial gains from using prepaid meters and digital vending platforms in urban and rural contexts, improving revenue and lowering transaction costs. These systems allow water vendors to earn small commissions while maintaining scheme functionality, creating aligned incentives at the local level. Other utilities reported more limited progress, with rural schemes still relying on manual billing, fragmented accounting, or weak financial planning processes. LpWSC's recent shift to digital billing systems has been done hastily, resulting in compromised revenue generation (Box 2).

**Customer-facing digital tools are advancing faster than internal operational and performance management systems.** LWSC reports relatively strong information and communication technology readiness, including assessments supported by geographic information systems, use of mWater, prepaid meters for kiosks, and internally-funded billing modules (with some development partner support for specific modules such as asset management). LpWSC has also strengthened customer-facing digitalised systems, enabling complaints to be lodged and tracked through WATSAN – an online and mobile system that customers can access directly – but reports that performance management remains manual and that systems are poorly integrated across functions. The organisational implication is that digitalisation is not simply a technology gap – it is a coordination challenge, requiring integration between customer service, maintenance teams, stores/spares, and management reporting to translate digital signals into service improvements.

**Customer responsiveness is strongest where utilities have established resolution systems, but different approaches have proven effective.** LWSC currently relies on community committees as a first line of issue resolution at rural schemes, escalating to the utility when problems cannot be addressed locally. LpWSC's WATSAN platform offers a more formalised, trackable mechanism, including daily monitoring of whether complaints

are routed and addressed, with identified needs to improve turnaround time through better linkage with internal systems (e.g., stores for pipes and fittings). Community-mediated issue handling and utility-managed case handling each place different demands on staffing, logistics, and system integration.

## **Box 2** : Digital Billing Rollout Highlights the Risks of Rapid System Transitions in Rural Contexts

LpWSC's recent transition to a fully digital billing and payment system illustrates the operational and financial risks of introducing new systems without sufficient adaptation to rural contexts. Within two months of rollout, only around 500 rural customers were actively paying through the online system, compared to an estimated customer base of 4,000. The shift replaced hard-copy billing with digital transmission across the entire utility, including rural areas, where literacy levels, phone ownership, and access to digital payment platforms are uneven.

Several challenges emerged during implementation. In rural areas, customer mobility and tenancy changes made it difficult to track bill recipients, while older customers and those without mobile phones struggled to access or understand digital bills. Utility staff reported having to visit customers in person to facilitate transactions using their own phones, increasing staff time and operational costs. These issues were compounded by the absence of local offices in rural districts and limited skilled staff based outside head office, meaning even minor billing or technical issues required central intervention.

This case underscores the importance of rural sensitivities to internal utility changes in operational procedures, and the need for phased implementation, community sensitisation, and impact assessment when introducing digital systems in rural service areas.

**Ongoing maintenance of departmental risk registers, complemented by organisation-wide internal audits, is central to utility resilience.** LpWSC has established risk assessment processes that cover commercial risks, seasonal revenue reductions, and water quality related risks through water safety planning and water source protection. These risk registers are maintained at the departmental level and compiled quarterly by the internal audit department.

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## 3.3. Enabling Environment

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### 3.3.1. Policy, Legislation and Institutional Frameworks

- Strong national political endorsement built momentum for utility-led rural service delivery. At the local level, however, political interests can disrupt systematic planning and technical prioritisation.
- Policy and legal frameworks broadly enable rural utility engagement, but unresolved ambiguities in actors' mandates remain a key constraint. Questions of legal accountability persist, particularly in delegated and hybrid service arrangements.
- Overlapping roles between CUs and local authorities continue to complicate implementation.

**Strong national political endorsement built momentum for utility-led rural service delivery, but local political interests often disrupt progress.** Utilities consistently reported clear national-level political backing for extending CU mandates into rural areas, reinforced by recent government pronouncements and rural investment initiatives. This support has helped legitimise utility engagement beyond urban areas. At the local level, however, political interests can disrupt systematic planning and technical prioritisation. NWSC noted that government pressure can steer investment decisions toward politically visible schemes rather than those identified through technical or economic assessment. In Luapula, LpWSC described resistance from traditional leaders and local elites who retain control over schemes installed by non-governmental organisations and frame water provision as a source of political authority, often delaying integration into formal utility oversight until systems begin to fail. The 2026 Act will require anyone building a new water or sanitation facility in an area with inadequate or no services to obtain the utility's approval first. This may help avoid similar situations with new schemes, though it does not address existing ones.

**Policy and legal frameworks broadly enable rural utility engagement, but unresolved ambiguities in actors' mandates remain a key constraint.** Utilities generally viewed the 1997 Act (Republic of Zambia, 1997) and associated policy instruments as permissive rather than restrictive, with the expanded mandate clarifying utilities' authority to oversee rural services. SWSC, for example, emphasised that the 2018 mandate shift removed earlier institutional barriers to action. However, questions of legal accountability persist, particularly in delegated and hybrid service arrangements. Utilities must ensure service standards even where infrastructure is operated by third parties, creating uncertainty around liability when failures occur. The CUs and NWASCO acknowledged that while recent national policy developments address these issues in principle, further refinement of legal instruments — especially to clarify responsibility in third-party provision models — is still needed. The 2026 Act will partly address this. It will require third-party operators to hold a written agreement with the utility and require utilities to inspect their operations for compliance with that agreement. Where an operator breaches the Act, NWASCO will be able to issue corrective directions through a notice served on the utility, and failure to comply will be an offence. However, the Act does not explicitly specify how responsibility is divided between the utility and the operator when services fail.

**Overlapping roles between CUs and local authorities complicate implementation.** SWSC described ongoing confusion in reporting lines, with ministries and sector stakeholders still requesting data directly from local authorities rather than CUs. This could be exacerbated by the mandate overlap between the Ministry of Water Development and Sanitation and the Ministry of Local Government and Rural Development, which is yet to be fully streamlined. However, the relationship between CUs and local authorities is important. For example, LWSC noted that the absence of district-level utility offices creates reliance on local authorities for day-to-day coordination. While partnerships with local authorities help utilities operate in newly mandated areas, they also delay full institutional consolidation, weaken data ownership, and complicate accountability – particularly for dispersed rural waterpoints.

### 3.3.2. Regulation

- NWASCO's regulatory leadership is a stabilising force, with NWASCO taking a very proactive approach. At the same time, the regulatory framework is still adapting to rural realities.
- Standardised contracting instruments are emerging as a key regulatory enabler for managing diverse rural service models.

**NWASCO's regulatory leadership is a stabilising force, with NWASCO taking a very proactive approach while adapting the regulatory framework to rural realities.** Utilities consistently pointed to NWASCO's procedural guidance during scheme takeovers and partnership negotiations as critical. LWSC and SWSC both noted that NWASCO and the Ministry of Water Development and Sanitation actively mediate when utilities encounter institutional or political barriers. However, NWSC highlighted that many rural and small water systems remain partially outside formal regulatory oversight, limiting consistency and stakeholder confidence. NWASCO itself acknowledged that the 2018 regulatory framework was conceptualised before widespread rural implementation and now requires revision. GIZ and NWASCO both emphasised the need to update water quality, tariff, and permitting guidelines based on early implementation experience.

**Standardised contracting instruments are emerging as a key regulatory enabler for diverse rural service models, with utilities remaining accountable for third-party performance.** NWASCO has developed standard contracts and MoUs for use between utilities and third-party operators, embedding regulatory requirements and clarifying roles, performance expectations, and termination rights. This approach gives utilities leverage to enforce standards while retaining operational flexibility. NWASCO has made clear that utilities are responsible for third-party performance, reinforcing incentives for active oversight rather than passive delegation. A national Joint Implementation Team, spearheaded by NWASCO, has become an important platform for building confidence, sharing examples of functioning hybrid models, and supporting negotiations with reluctant stakeholders.

### 3.3.3. Technical and Financial Support

- Limited financing undercuts otherwise supportive political and regulatory conditions.
- Limited cost recovery and restricted access to finance continue to undermine the enabling environment.

**Limited financing undercuts otherwise supportive political and regulatory conditions.** Rural infrastructure expansion relies heavily on development partners and public funds, with utilities assuming long-term operation and maintenance responsibilities once assets are constructed. While decentralised mechanisms – such as the government’s Constituency Development Fund – offer new entry points, utilities questioned whether reductions in funding to local authorities have been matched by equivalent transfers to utilities.

**Limited cost recovery and restricted access to finance continue to undermine the enabling environment.** The absence of cost-reflective tariffs, lengthy funding approval processes, and weak creditworthiness exclude most utilities from private finance, reinforcing donor dependence. Although national planning tools such as the Zambian Water Investment Programme help articulate sector-wide investment needs, utilities emphasised that these frameworks do not yet translate into predictable or adequate funding for rural operations.



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# Conclusions and Lessons Learned

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**Zambia's rural water services sub-sector is undergoing a significant transformation.**

This primarily follows the introduction of a new regulatory framework in 2018 that redefined service provision responsibilities, designating CUs as the entities accountable for water services across 11 regions, including rural areas and small-town contexts. The reforms positioned utilities as the central, accountable body for both urban and rural water and sanitation services in their service areas.

**A key feature of the evolving mandate is the use of contractual and partnership arrangements** that enable non-utility providers to deliver services within utilities' mandated service areas, emphasising formalisation and regulation of existing service providers through contractual or supervisory arrangements. This reflects a policy intent to enable private sector participation while maintaining local oversight through the utility.

**Most utilities are still in the early stages of this transition** and have only recently completed initial infrastructure assessments, established partnerships with local providers, and, in some cases, completed initial scheme takeovers. LpWSC is structurally the most advanced in its rural operations out of the four focus utilities in this report, having established decentralised business units in rural districts. This aligns with the utility operating in a predominantly rural province and engaging with rural areas for over 10 years before the formal mandate shift. Utilities now face wide-ranging challenges in completing the transition, a process with vast human resource, structural, logistical and financial implications.

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## 4.1. Lessons Learned

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Analysis of the four utilities identifies the following main barriers and enablers, clustered according to the enabling environment, operational context and institutional capacity.

### 4.1.1.

## Enabling Environment



### Enablers

- National political and regulatory endorsement, reflected in policy, legislation and regulatory frameworks, is vital for legitimising utility-led rural service delivery. Strong regulatory leadership can provide a stabilising force which supports utility transitions.
- Standardised contracting instruments are emerging as a key regulatory enabler for managing diverse rural service models. Clear and well-structured contracts are vital for clarifying roles, performance expectations, and termination rights, and give utilities leverage to enforce standards while retaining operational flexibility.
- Placing accountability for third-party performance firmly with the utility can be an effective regulatory approach, reinforcing incentives for active oversight rather than passive delegation.



### Barriers

- Rural water services are financially unviable under current tariff regimes, and uneven financial management further undermines sustainability. The absence of cost-reflective tariffs, coupled with lengthy funding approval processes and weak creditworthiness, excludes most utilities from private finance, reinforcing donor dependence.
- Unresolved ambiguities around responsibility and liability significantly constrain rural water service delivery, particularly in delegated and hybrid service models.
- The absence of predictable public funding flows to utilities inhibits growth of rural operations, and the transfer of operational responsibilities to utilities is not matched by recurrent funding.

## 4.1.2. Operational Context



### Enablers

- Larger, more experienced urban utilities are well-positioned to provide vital technical support to rural service providers through oversight, troubleshooting, and targeted assistance.
- Infrastructure mapping, assessments, and identification of priority sites are vital in informing utilities about the extent and status of available infrastructure, the feasibility and desirability of direct operational takeover, and the investment required to improve and extend services.



### Barriers

- Technical and operational capacity constraints – ageing infrastructure, limited field-based staff, and shortages of transport, tools, and digital systems – limit the effectiveness and reach of utility support in rural areas. These constraints are compounded by growing water resource pressures and climate variability, which are increasing the frequency and severity of service disruptions.
- The poor condition of existing infrastructure, coupled with wider resource constraints, poses challenges to meeting water quality and NRW performance standards.
- Multiple factors constrain the business viability of rural water service delivery, including low ability to pay, seasonality affecting demand, and insufficient tariffs to recover operating costs even under efficient management.

### 4.1.3.

## Institutional Capacity



### Enablers

- The formation of business units responsible for managing district revenues strengthens accountability for serving rural areas within the utility.
- Utility oversight of third parties is enabled by building internal contract management capability, including clearly defined roles, templates, monitoring routines, and escalation pathways.
- Prepaid meters and digital vending platforms can improve revenues and lower transaction costs.
- Customer-facing tools improve utility-customer relations. The effectiveness of these tools is enhanced by close coordination across technical teams, performance management, and district operations to translate information into timely service improvements.
- External partnerships such as Global Water Operator Partnerships and targeted development partner support have enhanced staff skills and contributed to improved water quality management and NRW control.
- Community engagement and facilitation skills within utilities are a core rural service competency, including dedicated capacity for communication, partnership-building, and local engagement.



### Barriers

- Operational capacity limitations significantly restrict utilities' ability to support dispersed rural schemes. This includes shortages of transport, tools, and spare parts.
- Human resource capacity is constrained by skills, retention incentives, and the ability to deploy staff where rural oversight is most needed.
- Organisational capacity for rural service delivery is further constrained by centralised structures and nascent contract and partnership management functions.
- Internal decision-making processes around financial allocations can constrain operations, particularly where spending authority is disconnected from technical priorities. Centralising budget decisions within finance functions can limit timely access to funds for spare parts, tools, and minor repairs, delaying low-cost interventions and increasing reliance on head-office deployments for otherwise simple fixes.



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# Expanding Public Utility Service Delivery in Rural and Small-Town Contexts

Zambia Report