IRC

BRIEFING NOTE MARCH 2024

Rural service delivery models and providers in Western Ghana

Data to inform reform

This briefing note seeks to share key findings from a mapping conducted by the Ghana Statistical Service on water infrastructure, services and stakeholders in the Western Region. The findings inform the Community Water and Sanitation Agency's change journey into the national utility for rural service provision.

Introduction

The 2030 Agenda promises access to safe and sustainable water, sanitation, and hygiene services for all. By 2022, Ghana stands at 63% household access to safely managed services in urban areas. In comparison, rural areas stand at 19% for safely managed and 55% for basic drinking water services. While progress since 2015 is evident, there's still a long way to go to fulfil the promise of Sustainable Development Goal 6.

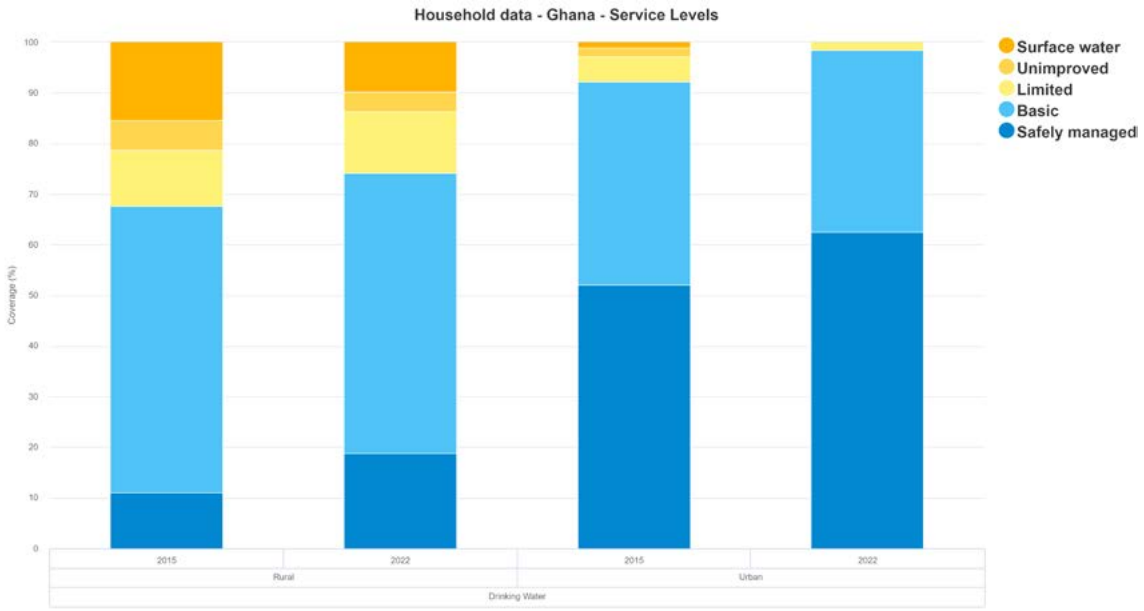

Figure 1: Progress towards the 2030 SDG 6 agenda

Since 1998, the Community Water and Sanitation Agency (CWSA) has led WASH infrastructure development in rural areas, offering technical support to communities as service providers under the community ownership and management (COM) model. Over 20 years, this model has increased water coverage from 27% (1990) to 62% (2020). However, many community-managed systems face sustainability challenges, such as breakdowns, poor water quality, and financial mismanagement.

CWSA's reform aims to expand its role to manage rural piped water systems, enhancing operational efficiency and sustained service delivery.

Globally, utilities are increasingly taking on the challenge of providing water services in rural areas. In Ghana, CWSA has been transitioning from its role as a facilitator and regulator of rural water supply to becoming the national utility for rural service provision since 2017.

The Rural 'Utilitisation' project, funded by the Conrad N. Hilton Foundation, aims to assist CWSA in this transition, focusing on equity, expanding services, and improving monitoring and reporting. Partners such as IRC, Water and Sanitation for the Urban Poor (WSUP), and Safe Water Network collaborate with CWSA to leverage local insights and advocate for sector reforms.

IRC's role involves enhancing sector learning and systems strengthening, particularly in data management, partnership building, and coordination for development. A crucial aspect of this effort is mapping water services to gather essential information on facilities, performance, and service providers, which is key for sector engagement and improvement.

This briefing note seeks to give an overview of the key findings from a mapping [1] conducted by the Ghana Statistical Service on water infrastructure, services and stakeholders in the Western Region. The note and its detailed background report aim to strengthen sector learning and inform CWSA's change journey.

About the mapping

The mapping collected all water service delivery models (SDMs), water service providers and water service infrastructure, their service levels and performance data in the 14 districts of the Western Region. It also aimed to provide data for a database that helps collect, analyse, and store updated information for the rural and small town water sub-sectors.

Water service delivery models describe the way water services are provided. Their basic elements are the management model for providing the service, the type of assets (infrastructure) that provide the services, and the way people can access the service (through public or household facilities). See figure 2 for an overview of service delivery models, related assets and their expected service levels.

Water service delivery models were mapped in all 14 districts. Data collection happened through visiting all public water points and schemes, interviewing service providers and questionnaires focused on piped schemes, standpipes, handpumps and service providers and was conducted by Ghana Statistical Service (GSS) enumerators, who also received extensive training in preparation for the study. Data was analysed in mWater by a group of data processing experts appointed by GSS.

The sections below show the nuance in SDMs and their providers, how they are doing, and the quality of services people are receiving as a result.

Results

Service delivery models, service providers and people served

About 88% of the people in the Western Region, or 1.8 million are served by handpumps and piped schemes. In more than 11 districts in the region, half of the houses are over 500 metres away from a handpump.[2] The remaining 12% of the population are underserved or use an unimproved water source.

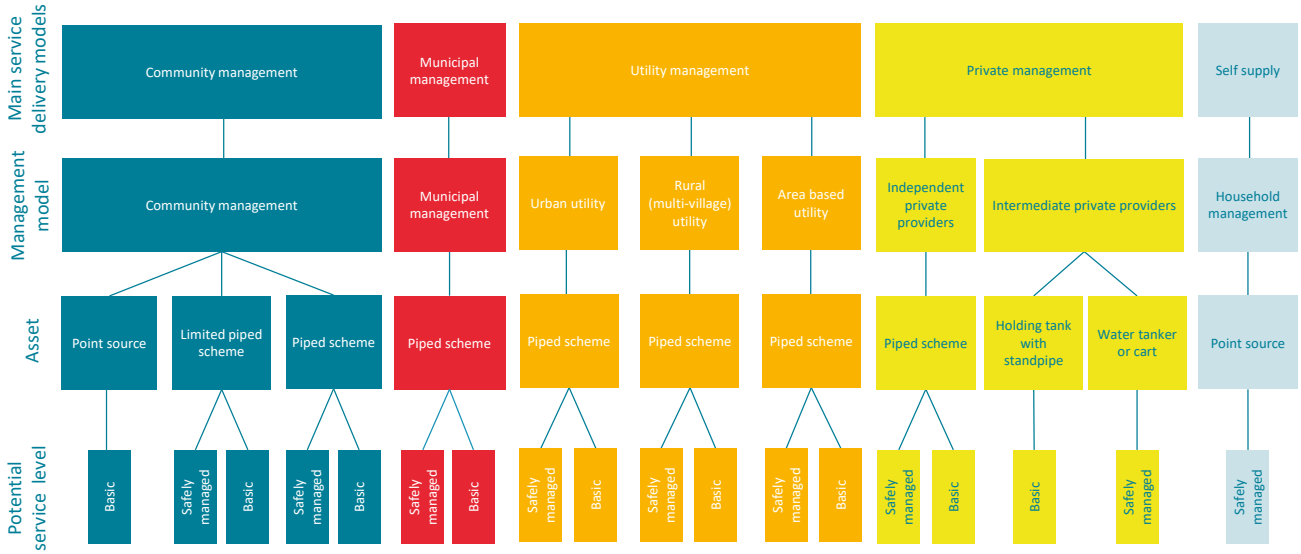

Figure 2: Broad groups of water service delivery models

1. Ghana Statistical Service, IRC, CWSA, 2023. Rural water utilisation project : state of water services in the Western Region : Ghana report, Accra, Ghana.
2. While the mapping aimed to use indicators as set by the Joint Monitoring Programme (JMP), due to limitations in available data, it was not possible to make a distinction between basic and limited services.
   The JMP identifies a 'service ladder' of five service levels for water and sanitation: no service (surface water or open defecation); unimproved; limited; basic; and, safely managed. Each level up from the bottom represents a significant improvement in the safety and security of the supply. More here: https://washdata.org

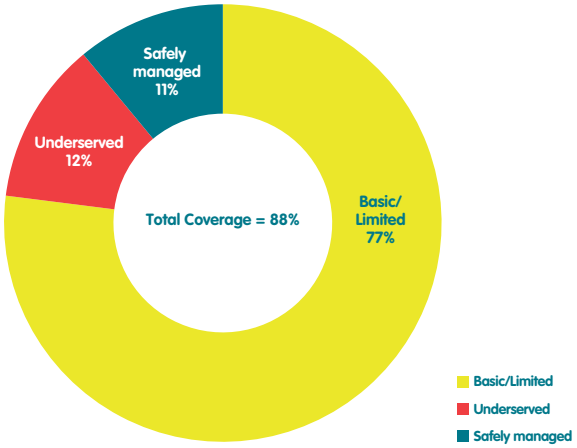

Figure 3: Percentages of people served and unserved in the Western Region

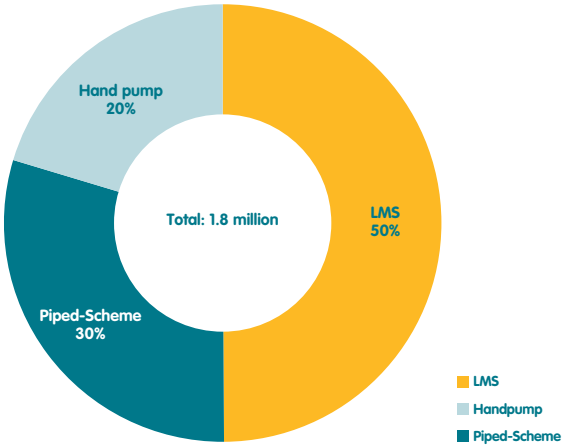

Figure 4: Percentage of people served per service delivery model

The following service delivery models characterise the region:

- Utility management: these are corporate entities directly responsible for providing water services to clients e.g. Ghana Water Company Limited (GWCL) and the Community Water and Sanitation Agency (CWSA)
- Community management: this involves the management of water facilities by a community committee or volunteers e.g. Water and Sanitation Management Teams
- Safe water enterprises: institutions that are responsible for the development, as well as professional management of water supply assets e.g. 4word, Water4
- Private management: provision of water services by private individuals, private organisations or NGOs
- Institutional management: management of water systems by institutions such as schools, health or religious institutions

Community management schemes account for 50% of water service provision in the region. The Ghana Water Company Limited (GWCL) and the Community Water and Sanitation Agency (CWSA) also provide water services in the region. However, they only serve about 15% of the population. Private organisations and NGOs too play a role in providing water services and account for 18% of the provision.

Handpumps

There are a total of 1,832 boreholes and 183 hand-dug wells with handpumps in the Western Region which serve 20% of the population, adding up to 361 thousand people.

Nine out of ten handpumps are managed by the community, with community leaders managing most of them, a total of 1,323 handpumps. WSMTs manage 409 handpumps, private sector WSMTs manage 145 hand-pumps. Forty-one handpumps are with institutions, 57 are not currently being managed by any group and 11 are under construction.

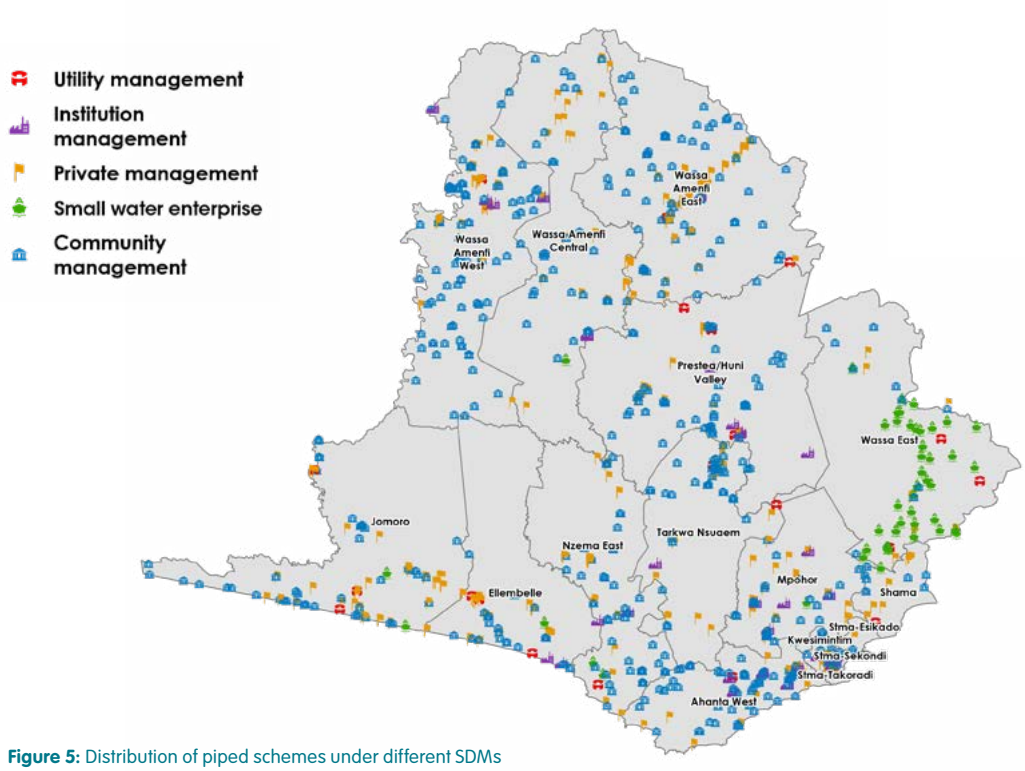

Figure 5: Distribution of piped schemes under different SDMs

Standpipes and piped schemes

Eighty percent, or 1.4 million people, are served by piped schemes. Piped schemes include limited mechanised systems (LMS), which typically serve a population of 2000 people or less. Small town piped schemes typically serve a population of more than 2000 people.

There are a high number of small and limited mechanised piped systems serving people. Out of the 999 piped schemes in the region, 68 are piped schemes and 931 are LMS. So LMS is the predominant piped water system. It accounts for over 90% of the piped water systems in 12 out of the 14 districts in the region. Interestingly, over 95% of piped schemes in the region take their water from one borehole. Household connections from these LMS are few and mostly operated from public standpipes. Standpipes connected to piped schemes provide a reliable and convenient water source for drinking, cooking, and other domestic uses.

Piped schemes under utility management have the highest number of connections per scheme, with GWCL having 6,258 connections and CWSA having 312. This is closely followed by piped schemes managed by the community, with WSMTs having 69 connections.

Functionality and reliability of water systems

Handpumps

Out of a total of 2,027 handpumps in the region, only 1229 (60.6%) are **functional**, which aligns with the global average of over one-third of handpumps not working at any given time. Handpumps managed by WSMTs and private individuals have the highest functionality levels, while more than 80% of handpumps managed by schools, health centres, religious institutions, and other organisations are not functional. In over 50% of the cases, the reason is infrastructure failure, the handpumps are broken. Other reasons include abandoned handpumps, water tables that are too low, ongoing repairs and more.

The availability of mechanic services is essential for the continued functionality of handpumps. However, for the majority (50%) of WSMT members, it takes longer than three days to get the services of a mechanic. This trend is visible in six out of the 11 districts. More than two-thirds (68%) of WSMT members do not carry out routine maintenance on handpumps.

Nearly all WSMTs in the region (88%) do not keep operational records of handpumps.

Standpipes and piped schemes

More than three-quarters (75%) of the standpipes are **functional** in 12 out of 14 districts. Of the standpipes that were not functional at the time of the visit, 27.8% were due to the non-functionality of the piped schemes they are connected to, and 26.1% were due to the rotation of water turns. Other reasons included standpipes being broken down, no vendor present, and water not reaching the standpipe.

The **reliability** of piped schemes is a measure of how often the water supply is available and how consistent the water quality is. Piped schemes managed by utilities, such as GWCL (100%) and CWSA (73.3%), and piped schemes managed by Small Water Enterprises (84.0%) have the highest reliability status. Piped schemes under school (62.5%) and health care facility (100%) management are highly unreliable in terms of supplying water to consumers. Piped schemes under community management also show higher unreliability levels, with WSMTs (48.7%) and community leaders (45.8%) having the lowest reliability status.

Table 1: Results on key service provider performance indicators

Key Performance Indicator	GWCL	CWSA	WSMT	Small Water Enterprise
Average of KPI: NRW	36%	34%	23%	33%
Average of KPI: Energy expenditure ratio	28%	52%	61%	80%
Average of KPI: Billing collection efficiency	73%	71%	65%	-
Average of KPI: Consumption per person served (lpc)	75	54	32	28
Average of KPI: Water quality testing	100	40	24	42
Average of KPI: Operating cost coverage	38.5	3.02	2.61	3.62
Average of KPI: Water production cost per cubic meter (GHC/m^3)	900.4	1.49	3.5	0.3
Average of KPI: Number of staff members per 1000 connections	0.8	71.7	6.4	495.1

Performance of service providers and their service delivery models

Non-revenue water (NRW) refers to the volume of water that is lost or unaccounted for in the distribution system. It includes both physical losses (leakage) and commercial losses (unauthorised consumption or metering inaccuracies). NRW is typically expressed as a percentage of the total water input into the distribution system. The industry target for NRW ranges from 22% to 30%, which is only met by the WSMTs.

Billing collection efficiency is the percentage of the total billed revenue that is successfully collected by the water utility. It reflects the utility's ability to manage customer billing, invoicing, and payment collection processes effectively. The benchmark is 80% to ensure financial stability. None of the service providers meets this target.

Consumption per person served (lpc) a key performance indicator in the water sector that quantifies the average amount of water consumed by each individual who is served by a water supply system over a defined period. This KPI is measured in litres per capita (lpc) and the benchmark is set at 85%. Only GWCL is close to meeting this target.

Water quality index (WQI) is a numerical scale that indicates the overall quality of water based on several water quality parameters, such as pH, dissolved oxygen, turbidity, and the presence of pollutants. It provides a way to assess the safety and suitability of water for various uses.[3]

GWCL regularly conducts water quality tests and results meet all the standards across the systems assessed in the Western Region. For CWSA and the Small Water Enterprises, 40% of their systems meet the standards. In the case of WSMTs, testing is irregular, and the results generally do not meet the standards.

The data on **handpump water quality** is based on self-assessment by service providers. 27.4% of handpumps managed by community leaders were perceived to have water that is not acceptable in terms of quality. This is equivalent to 324 handpumps. Additionally, 143 (36.9%) of handpumps managed by WSMTs were found to be producing water below acceptable levels.

The frequency of water quality testing of **piped schemes** in rural areas varies and depends on the source of the water and the risks of contamination. 40.2% of piped schemes in the Western Region only test their water during construction, while 16.9% test yearly and 12.7% test monthly. For instance, water from piped schemes managed by GWCL is tested daily, while CWSA-managed schemes are usually tested yearly (62.5%). Most piped schemes under private, institutional, and community management are only tested during construction, which is contrary to the standard of testing water at least once a year.

Water quality is typically tested by Ghana Water Company Limited (GWCL), the Water Research Institute (WRI), Ghana Standards Authority, Kwame Nkrumah University of Science and Technology (KNUST), SGS Ghana, World Vision Ghana - Water Quality Laboratories and others. Over 70% of the testing is done by certified institutions.

The water quality of 93.7% of the piped schemes is within acceptable levels as defined by JMP/WHO standards. However, 25% of the schemes operated by CWSA did not fall within the acceptable water quality levels.

Operating cost coverage is a financial metric used to assess the extent to which an entity's operating revenues will cover its operating costs. It is often expressed as a ratio and provides insights into the financial health and sustainability of an organisation or project. None of the service providers analysed can fully cover their operational costs with generated revenues. GWCL manages to cover one-third of its operating expenses, while the others cover less than 5%. This suggests potential financial instability within the systems.

Water production cost per cubic metre is a financial metric used to evaluate the cost efficiency of producing a cubic metre of water within a water supply system. This metric is particularly relevant for water utilities, treatment plants, and organisations responsible for water distribution and management.

The **staffing ratio**, or staff productivity, is measured by the number of staff per 1,000 connections. The international standard for water utilities is fewer than six staff per 1,000 connections. However, this benchmark is more suitable for utilities serving households directly, not systems like those in Ghana where many customers use standpipes. Data indicates that GWCL and WSMT have appropriate staffing levels. Small Water Enterprises and CWSA seem to have excessive staff compared to industry norms.

3. World Bank Utility Turnaround Framework - World Bank Document. Source - Soppe, Gerard, Nils Janson, and Scarlett Piantini. 2018. "Water Utility Turnaround Framework: A Guide for Improving Performance." World Bank, Washington, DC.

Paying for services

Paying for services can help keep management going and the water flowing.

Handpumps

Where people pay for using handpumps, the functionality percentage is 81, whereas where people don't pay, the percentage drops to 58%. Overall, only about 20% of handpump users in the Western Region pay for their use.

Standpipes

The following payment practices exist for the use of standpipes:

- 50% of standpipes under the management of community leaders do not require payment for water.
- 93.8% of standpipes under the management of schools do not require payment for water.
- 22.2% of standpipes under the management of small town piped scheme WSMTs do not require payment for water.
- More than 75% of standpipes for schemes under private or Small Water Enterprise management require payment for water.
- All standpipes under the management of GWCL and CWSA require payment for water (pay as you fetch).

Funding sources

Handpumps

The Central Government is the primary supporter of handpumps in the Western Region, funding roughly half of them. NGOs and private companies also contribute significantly, providing 19% and 15% of funding. For handpumps managed by communities, 51% receive government funding. NGOs and private individuals are the main backers for handpumps under private management, funding over a quarter of them. NGOs and faith-based groups are the primary funders of handpumps under institutional management, funding 26% and 29% of them, respectively.

Piped schemes

Funding for water facilities in the Western Region comes from various sources including government, development partners, NGOs, private sector, and individuals. Private individuals (36%), development partners (DPs) (19%), and NGOs/companies (12%) are the primary funders of piped schemes, with government contributing only 7%. Utility-managed piped schemes are mainly funded by DPs (55%) and government (45%). Across districts, private individuals are major contributors, with more than 40% in eight out of 14 districts and around 40% in the rest. DPs are the second-largest funders, providing over 15% in most districts, while government funding is generally low, with the highest in Jomoro district at 15%.

Correlations between management models and service providers

The results reveal that various organisations are involved in delivering water services in the Western Region. The most common type is community management schemes, overseen by locals, covering half of the region's water provision. The Ghana Water Company Limited (GWCL) and the Community Water and Sanitation Agency (CWSA) also operate in the region but serve only 15% of the population. Private organisations and NGOs contribute as well, making up 18% of the provision. However, many private and community-managed schemes lack clear governance structures, posing challenges with accountability and regulation.

Key insights

People Served: About 88% of the population, equivalent to 1,804,345 people, are served with handpumps and piped schemes. Water coverage in the region stands at 88%, with 11% access to safely managed services, 77% of the population have basic or limited services, and 12% are being underserved.

Service Providers: Various organisations provide water services in the Western Region, including community leaders, the Ghana Water Company Limited (GWCL), the Community Water and Sanitation Agency (CWSA), as well as private organisations and NGOs.

Service Delivery Models and Infrastructure: Community management is the primary model for water service management. The region has 2,027 handpumps, 1,832 boreholes, and 83 hand-dug wells. 931 out of 999 piped schemes are limited mechanised systems (93%).

Functionality: Around 803 handpumps are non-functional, while approximately 78% of standpipes are operational. Payment for handpumps significantly affects their functionality, and over two-thirds of WSMT members do not conduct routine maintenance on handpumps.

Water Quality: Most piped schemes (40.2%) conduct water testing only during construction, typically by certified testing institutions. Generally, the water quality is perceived to be acceptable (93.7%).

Funding Sources: The Central Government is the primary funder of handpumps in the Western Region. Private individuals (36%), development partners (DPs) (19%), NGOs, and companies (12%) are the leading financiers of piped schemes.

Recommendations

Findings of this study were shared during a dissemination event convened by IRC Ghana in collaboration with the Community Water and Sanitation Agency (CWSA), Western Regional Co-ordinating Council (WRCC) and Ghana Statistical Service (GSS). Participants included representatives of the 14 Municipal and District Assemblies, water service providers, mainly community Water and Sanitation Management Teams (WSMTs), WASH team officers from District Assemblies, Service Providers from Small Water Enterprises (SWEs) that were part of the research. Key points for improvements were:

For handpumps

- Create clear governance structures for private and community-managed water schemes. The current lack of these structures can lead to problems with accountability and regulation.
- Payment for the use of handpumps creates a sense of ownership and responsibility and improves the availability of mechanics and spare parts to fix the handpumps when needed.
- Professionalising service providers: WSMT members need training before they can assume their roles. WSMTs have 141 non-functional handpumps, representing 34.4% of handpumps managed by such teams. However, handpumps managed by institutions still show lower levels of functionality than those managed by WSMTs.
- Critical assessment of quality of infrastructure is key: the type of handpump also plays a role in functionality.

For piped water schemes

- Professionalising services: Piped schemes managed by utilities, such as GWCL (100%) and CWSA (73.3%), and piped schemes managed by Small Water Enterprises (84.0%) have the highest reliability status. While institutional and community management show high numbers of unreliability.
- Water quality testing should be conducted at least once a year in rural areas for both handpumps and piped water schemes. More frequent testing may be necessary in areas with a higher risk of contamination.

Acknowledgements

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