



The Water Operator Partnership between Lukanga Water & Sanitation Company (Zambia) and Gelsenwasser AG (Germany): Reducing Water Losses through a Hands-On Approach



Background and objective

Lukanga Water Supply and Sanitation Company Limited (LgWSC), located in Kabwe, Zambia's Central Province, is one of eleven commercial utilities in the country and serves around half a million people. LgWSC has forged a strategic partnership with German cooperating partners in the provision of water and sanitation services. The Water Operator Partnership (WOP) is jointly managed by LgWSC and Gelsenwasser AG as German lead partner in collaboration with Emscher Genossenschaft/Lippeverband and supported by the ["Utility Platform for Strengthening Partnerships of Municipal Utilities worldwide"](#) and the ["Experts Fund for Municipal Partnerships worldwide"](#). Both projects are cooperation projects between the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Service Agency Communities in One World (SKEW) of Engagement Global. Guided by the principles of peer support, the aim is to enhance capacity on a non-profit basis for improved service delivery. An expert, financed by the above-mentioned experts fund, supported the implementation of this goal until March 2024.

LgWSC faces significant challenges, including aging assets nearing the end of their lifespan, a lack of resilience and water losses amounting to 58%. Staff often lack the necessary training at the technical levels, and the need to expand infrastructure is high to accommodate the rapidly growing population. The utility partnership with LgWSC began in 2021 with a joint performance improvement plan, identifying Asset Management and Data Quality Management as key gaps. This good practice offers insights into the Water Supply group's endeavors to meet the utility's objectives of reducing water losses (NRW – Non-Revenue Water) up to 40% by 2025 and enhancing resilience, reliability, and efficiency.



Methodological approach

As a first step, the partnership developed a concept to reduce physical water losses in one selected pilot area (Pollen) in Kabwe. The expert, a female engineer, accompanied and drove the process. This pilot project was used to gain insights into how LgWSC can successfully reduce NRW across the entire water supply network over the next two years. After successful implementation, the utility can copy the concept across all other districts. The partners identified leakages in the pilot area, repaired them and mapped out the status of the pipeline system in a Geographical Information System (GIS) application. At the start of the project, they created a hydraulically isolated and completely metered section of the complete water network, called a District Metered Area (DMA) at pilot area Pollen.



A network audit was conducted. Four of five bulk meters are installed on the boundaries of the DMA. To enhance the reduction of water losses, new positions in the Zambian utility were created: a NRW coordinator and students to support the data management team were hired. Templates for documentation and working procedures for the repair team were developed.

Measures that have led to positive changes include various training courses on occupational safety, surveying data and working safely with asbestos pipes. The project also aimed to enhance the company's GIS data management and sewer network monitoring. The partners reviewed outdated analogue planning documents to integrate relevant information into the GIS. An outstanding initiative was the development of a plan to digitally provide pipe network information through QGIS, an open source geodata information system, to all employees via smartphone or tablet. In 2023, the partnership launched the app, conducting training sessions for utilization and data management. The NRW pilot project remains ongoing. Once NRW will be reduced, LgWSC income will be increased and can be reinvested in the company.

Implementation and challenges

At the start of the pilot, the partners identified a lack of basic equipment for the maintenance and repair workforce and a slow procurement process as obstacles to progress in NRW reduction. The financial support for material procurement by the Utility Partnership was crucial for initiating the project. Additionally, funds from the partnership were allocated for a repair team vehicle during the project. The increased workload overwhelmed the Zambian utility at the beginning. For this reason, the partners changed the weekly to bi-weekly meetings during project implementation.

Outcomes for the target group and the involved stakeholders

LgWSC observes increased staff confidence in handling tasks and new subjects. At the individual level the utility reported that 15 staff members had improved their knowledge and skills regarding NRW reduction and are applying the new knowledge. Completion of the bulk meter installation and DMA establishment is necessary for result evaluation. Lessons learned, as network mapping, DMA setup, damage repair, understanding consumption behavior, and establishing work routines, are already reflected in the companywide NRW strategy. The reduction from 41% to 19% of NRW in the pilot area entails an operational saving that has not been quantified.

Learnings and conclusions

Customer engagement and communication play crucial roles in the project's success. The focus will be on interventions requiring customer awareness, such as meter replacements, infrastructure vandalism, and changes to payment systems.

A lesson learnt suggests conducting a comprehensive assessment of procurement rules at the project's outset for smoother processes and for avoiding procurement delays.

The partnership has fostered a high level of motivation and responsibility among LgWSC employees, driven by initial results and personal development opportunities.

In the future, the utility will share its experiences and lessons learned with other utilities in Zambia, particularly through the Zambian Utility Platform. This platform is a key aspect of the collaboration with GIZ Zambia under "Strengthening Institutions for Sustainable Water Supply and Sanitation in Zambia", a GIZ project which finances 4 utility partnerships in Zambia, starting in 2024.