

Enhancing Market Systems for Improved Professional Water Service Delivery in Eastern Democratic Republic of Congo



Maintenance of the NYABIREHE drinking water pipe by ASUREP KATANA's senior technician, Mr. Douglas KAHUGUBA. Photo credit: Mercy Corps/Elie Mukengere

I. CONTEXT

The Sustainable Development Goal (SDG 6), related to water and sanitation, poses a significant challenge for numerous countries worldwide, as they strive to ensure universal access to potable water and sanitation, particularly in promoting sustainable water resource management. Recent efforts to improve access to clean water have encompassed a variety of interventions ranging from individual and household behavior change initiatives to the construction of water supply infrastructure and the provision of water services through market-based approaches. It is increasingly recognized that sustainable development can only be attained through interventions that extend beyond individual households and smaller communities. Community-managed water services yet play a crucial role in providing access to water to small communities that are not connected to the main urban utility networks of developing countries. Challenges still exist in ensuring the proper maintenance of rural and peri-urban community-managed water

infrastructure as well as providing adequate and scalable service delivery in these areas. Some studies in Africa have suggested that public-private partnerships in the water sector could be an effective means of achieving better delegation and service delivery outcomes. However, the evidence base in the Democratic Republic of Congo (DRC), particularly in the conflict-ridden eastern region, is limited.

The Democratic Republic of Congo's decision to delegate public water services and liberalize the water sector, as outlined in the DRC Water Law of 2015, created an opportunity to introduce effective water service delivery models at the local level, specifically within Decentralized Territorial Entities (ETDs). As part of an activity funded by the USAID, namely the USAID's Sustainable Water and Sanitation Systems Activity (SWASSA), Mercy Corps collaborates with Tetra Tech and Sanergy to improve water and sanitation services in the Kivu region of the eastern Democratic Republic of Congo by developing the market sector. SWASSA seeks to develop sustainable performance-based business models for water service delivery in four intervention zones, including the Sake-Bweremana Axis and the city of Beni in North Kivu Province, as well as the Kavumu-Katana Axis and the city of Uvira in South Kivu Province.

The consortium conducted market studies and technical assessments in the intervention zones to gauge the success of Public-Private Partnerships (PPPs) in the sector. The aim was to ascertain whether professionalizing the delegation of services based on the current market capacity could improve service coverage and quality. Guided by SWASSA's objectives, the market studies and technical assessments were informed by the following question: Can the current water market environment support potential investments in the sector? Are the existing service delivery models financially sustainable? In the four intervention zones, the primary operators of the existing water systems are typically associations of water users (ASUREP) or other informal service providers, commonly referred to as water management committees (COGEP). However, there are exceptions to this rule, as one system in South Kivu is operated by a social enterprise (ASILI) and another system in North Kivu is operated by a private company (Yme Jibu) under a 25-year concession contract with the Municipality of Goma. In general, the private concession in North Kivu is an exception; the majority of water supply systems are poorly operated owing to unstructured organization and the lack of technical capacity among operators. This problem is further exacerbated by the fact that water-supply systems are in a state of deterioration. This can result in a cycle that is detrimental, where revenues are low, leading to insufficient resources for maintenance, which in turn reduces the level of service and ultimately leads to even less revenue.

The DRC Water Law and the Public-Private Partnerships Law delineate the specific types of PPP arrangements applicable to the water sector and outline the options of management, affermage, and concession contracts, or a hybrid contract based on these options. Each of these contract types is distinguished by its level of private sector involvement and the extent of risk assumed under the contract. Water law and PPP law served as guiding principles for market studies and technical assessments carried out in each intervention zone.

II. STUDY METHODOLOGY

The SWASSA team conducted market studies and technical assessments in the four intervention zones of the eastern DRC to identify market trends and develop suitable delegation models. The market studies were carried out using a mixed methodology approach that combined both qualitative and quantitative techniques.

- **Qualitative Market Analysis**

The qualitative method entailed conducting a desk review of pertinent sector documents, holding key informant interviews, direct observations, and facilitating focus groups with local and provincial sector authorities, as well as community leaders. The purpose of this qualitative method was also to analyze factors such as estimated water demand and supply, level of service (types and numbers), hours of supply, quality of service, and pricing, among others. The majority of operators in the examined regions did not possess mechanisms that documented and assessed water supply according to demand. To illustrate, when communities reported an inadequate water supply, operators would respond by constructing or repairing tap stands based on the complaint rather than on data gathered.

- **Quantitative Market Analysis**

The quantitative method employed survey questionnaires to gather information from ordinary consumers grouped into households, as well as large consumers referred to as "structures" (which include restaurants, hotels, religious institutions, hospitals, and so on), and water service providers. The survey questionnaires were developed to evaluate various aspects, such as predominant methods of water service delivery, preferred method of service delivery, typical time for water collection, average monthly household income, current price of water, perception of the price of water, potential competition, willingness, and ability to pay for water, presence of public-private partnerships, and existing community management models. These last three factors were considered key systemic constraints for the adoption of efficient water service delivery models.

To determine the sample size and implement the survey in each intervention zone, the team utilized the Yamane simple proportion estimation formula for Beni and Lynch formula for random sampling in the other three intervention zones. A total of 600 households were randomly selected in the city of Beni, 553 households on the Sake-Bweremana axis (both in North Kivu Province), 638 households in the city of Uvira, and 356 households on the Kavumu-Katana axis (South Kivu Province). The following data provided the total population for each intervention zone: 160,823 individuals on the Sake-Bweremana axis, 218,269 people on the Kavumu-Katana axis, 1,010,871 residents in Beni, and 600,000 individuals in Uvira. Notably, for Beni and Uvira, the total population in the study area comprises the entire population, not just the areas in which the project is intervening.

- **Comparative analysis**

Upon completion of the household surveys in each intervention zone, the team proceeded to perform a comparative analysis aimed at identifying the most critical data that required

immediate attention. Rather than attempting to address multiple issues simultaneously, the team focused on the most significant opportunities to improve service delegation. By applying pattern analysis, the team successfully detected patterns and trends that emerged across the datasets from each zone.

- **Public-Private Partnership technical assessment**

Following the preliminary results of market studies, a technical assessment was conducted in two phases. The first phase involved the Public-Private Partnership (PPP) assessment, which aimed to develop a range of PPP options for local authorities (ETDs) to consider, as well as support the preparation of tender documents to engage water operators and develop sample contracts for the engagement of water operators by ETDs. Additionally, the PPP assessment involved preparing specific contract documents for the selected water operators and supporting the engagement and capacity building processes with ETDs. The second phase of the technical assessment involved financial feasibility studies to gauge the viability of the proposed service delivery models, financial modeling for each water system in the intervention zone and forecasting the future financial performance of these systems or projects over various timeframes of up to 20 years.

The technical assessment methodology for selecting a Public-Private Partnership (PPP) involved four dimensions: the type of PPP contractual option, institutional setting in which the PPP option will be implemented, PPP transaction structure, size of the service area to which the PPP option will apply, and duration of the PPP contract. The selection process comprised five steps: diagnosing stakeholder objectives, assessing PPP contractual options, evaluating PPP transaction scenarios, financially evaluating the PPP scenarios for various sizes of service area and contract durations, and finally, assessing the PPP scenarios.

- **Financial feasibility assessment**

To determine the financial feasibility, 192 scenarios were simulated using various variables, including PPP contract types, PPP transaction structures, service area size, and contract terms. Currently, the financial feasibility of the intervention zones is limited to the data obtained from market analyses of only two zones, namely, the Sake-Bweremana axis and the Kavumu-Katana axis. The evaluation criteria for the different scenarios were based on the cost price of water for the consumer, considering both capital and operating costs. The costs associated with the project include equipment, civil work, operation and maintenance (O&M) costs, staff salaries, fees to be paid to the Contracting Authority (ETDs), office expenses, running costs, taxes, and contingencies.

III. STUDY FINDINGS

- **Actual water demand and supply, and consumer characteristics**

The findings revealed that the average household size in Sake-Bweremana (Zone 1) was 6.5, whereas Kavumu-Katana (Zone 2) reported an average of 7 individuals per household. Similarly, Beni (Zone 3) and Uvira (Zone 4) reported an average of 7 individuals per household. The average

daily consumption per household in Zone 1 was 5 jerricans, which was lower than the 7 jerricans reported in Zone 2. Zone 3 reported 6 jerricans, while Zone 4 had the highest daily consumption rate of 12 jerricans per household. The time taken for individuals from Zone 1 to collect water was 54 min, which includes the waiting time. In Kavumu-Katana, the time taken to collect water was 50 min, whereas it was more than 60 min in Beni. The communities across the study area perceived the water quality to be good but reported that the quantity of water was insufficient.

According to the data, the public tap stand was the most commonly used method for water service delivery in Zone 1, comprising 79% of the responses in that region. It also accounted for 72% of the responses in Zone 2 and 56% in Zone 3. In Uvira (zone 4), the most common delivery method was connection in a private compound. However, in Beni (Zone 3), although the public tap stand was the most commonly reported method, respondents expressed a preference for private connections in their compounds at a rate of 64%. Across the intervention zones, respondents consistently reported that early morning and evening hours were the most common times for water collection.

The average monthly household income on the Sake-Bweremana, Kavumu-Katana, and Uvira axes was below US\$100 for 79%, 62.5%, and 68% of respondents, respectively. In contrast, Beni had an average monthly household income of US \$ 323. The cost of water per jerrican varied across the different zones, with zone 1 paying 100 CDF/jerrican, Zone 2 paying between 200 and 500 CDF/jerrican, Zone 3 paying between 50 and 100 CDF/jerrican, and Zone 4 paying between 200 and 500 CDF/jerrican¹. The main competitor for service providers in the study area remains the public water utility, REGIDESO.

- **Limited public–private partnership-based water service delivery.**

In the study area, the comparative analysis revealed that only a limited portion of the Sake-Bweremana axis in the Mugunga and Lac Vert districts had an existing Public-Private Partnership (PPP) model, with a single private operator. Meanwhile, other intervention zones in North Kivu and South Kivu did not have any PPP models in place. Instead, the analysis showed that Community-Based Management (CBM) models were prevalent across all intervention zones. These were typically Community Water Committees (locally called COGEPs), which occasionally referred to themselves as Water User Associations (ASUREPs) despite not having the legal status required for ASUREPs. Existing community-managed services provide water despite the lack of profit and overall decline due to non-investment in water infrastructure (mainly inherited from humanitarian interventions) and poor managerial and technical capacity. If the actors presently using CBM models are legalized, clustered, and professionalized, combining these models with the service delegation framework provided under the water law can support the effective implementation of the service delegation approach.

¹ During the course of the study, the exchange rate between the Congolese franc (CDF) and the US dollar (USD) was fixed at 1 USD being equivalent to 2500 CDF.

- **Low willingness to pay for water.**

One of the main obstacles hindering the implementation of effective water service delivery models is the ability and willingness of customers to pay for water. Most households in the study area perceived themselves as poor. A culture of "free water" has emerged over the past few decades because of humanitarian responses providing water infrastructure and services for free. Despite the perception that the price of water ranges from affordable to expensive, on average, 60% of households indicated their willingness to pay more for improved water services.

- **Limited knowledge and understanding of water law.**

Findings from key interviews and evaluations in the water sector indicated that there was limited awareness and comprehension of water law, which was promulgated in 2015. Despite this, local authorities did not possess sufficient institutional capabilities to enforce its provisions. CBM water operators were unable to cater to the needs of an expanding population because of limited knowledge of the law and insufficient infrastructure that was operating at a suboptimal level. Additionally, they were reliant on donor funding to support the maintenance of their infrastructure.

- **The duration of contracts and larger service areas are crucial for achieving economies of scale and affordable tariff.**

The financial modeling of the proposed delegation arrangements enabled SWASSA to identify the costs associated with water service delivery. The results of the modeling indicate that long-term performance-based contracts that leverage larger service areas result in reduced water tariffs, making the service more affordable for the population. Smaller sub-sites cannot support contracts with professional managers because of high tariffs and low population density. Consolidating them into larger and more practical units is an important step towards achieving economies of scale and reducing tariffs.

- **Ensuring uninterrupted water services requires financial support from subsidies and grants.**

Financial modeling demonstrated that subsidies could help offset negative cash flows during the initial years of operation and contribute to the success of service providers. Grants could also offer valuable start-up financing. Consequently, SWASSA is planning to conduct an impact evaluation to assess the effect of targeted subsidies on both the quality of water service delivery and the willingness of communities to pay for such services. To guarantee the success of this evaluation, SWASSA intends to collaborate closely with local governments from the outset, sharing pertinent insights and knowledge that can be applied to the work of contracting authorities. This collaboration is essential for achieving the desired outcomes.

- **Raising public awareness and understanding the consequences of water legislation and maintaining communication is crucial.**

The cost that communities are willing to pay for water services is subject to various factors including context, demographics, and socioeconomic status, which can fluctuate over time. It is crucial to move away from solely depending on humanitarian efforts to guarantee access to water, and instead implement sustainable, market-oriented water service delivery models that prioritize economic inclusivity. To guarantee the effective deployment of these models, it has been determined that it is vital that communities are informed about water law and actively involve themselves in the process of model development. As a result of an exchange visit between service providers and governing entities from North Kivu and South Kivu, increased awareness and mutual learning led to additional initiatives being led by stakeholders. Specifically, stakeholders in North Kivu, particularly those from the Mugunga/Lac Vert sub-site, have made significant progress in implementing consumption-based tariff structures.

IV. ACTION BASED ON EVIDENCE FROM THE FINDINGS

The insights derived from the market analysis and subsequent evaluations informed the realignment of intervention strategies in the provision of water services at the identified locations. The results endorse the backing of SWASSA efforts towards the official recognition and consolidation of small COGEPs, as well as a comprehensive examination of delegation alternatives and their economic viability.

1. Enhancing knowledge and skills in water law and legalization-clustering of COGEPs.

USAID's Sustainable Water and Sanitation Systems Activity (SWASSA) utilized findings from market studies and technical assessments to generate economically viable market-based models for water service delegation to Decentralized Territorial Entities (ETDs). Additionally, DRC's Water Law (2015) was used to align the modeling options with the local context. The water law has brought about reforms in the sector and opened the door to liberalization, which includes the separation of policy and regulation, the creation of a new water regulatory authority at the local level, and the recognition of legal community-based water user associations.

Service providers who were community-based and operated on a small scale without legal recognition faced limited financial and technical resources. SWASSA is working to legalize and group these operators, with the aim of increasing their scale of operation and making them more efficient, which is likely to lead to a reduction in water tariffs. In two intervention zones (on the Sake-Bweremana axis and the Kavumu-Katana axis), 13 Community Water Committees (COGEPs) were grouped together to form six Water User Associations (ASUREPs), four of which have already completed the legalization process at the provincial level. This makes them eligible to be contracted by ETDs as legally recognized water service providers.

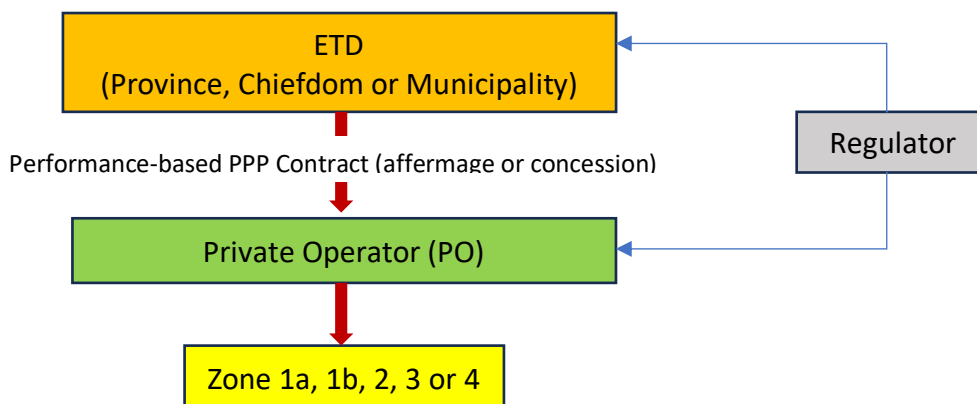
2. Delegation options and financial modeling

The decision regarding the most appropriate delegation model for each intervention zone was informed by data from the Public-Private Partnership assessment and the financial simulations conducted. In the Mugunga-Lac Vert area, where a public-private partnership (PPP) concession model exists between the Town Hall of Goma and the private company Yme Jibu, SWASSA has

continued to support the implementation of a direct performance-based PPP contract between the contracting authority and the private operator. This operator expanded its services beyond the initial service area. In other intervention zones, SWASSA supports the implementation of hybrid contracting, which may take the form of a performance-based PPP contract between the contracting authority and a legalized community-based water association (which can then contract a professional manager) or a three-partite performance-based PPP contract between the contracting authority, a legalized community-based water association, and a private operator or professional manager. This hybrid contract is one of the options developed under SWASSA framework and is a variation/combination of aspects of water service delegation, as defined in the water law, tailored to the local context. These options were subjected to financial assessments utilizing a model that considered various aspects of water service delegation, such as service area and contract length. The SWASSA team will further evaluate the impact of these delegation modeling options during the fourth year of implementation.

Legalized ASUREPs, according to DRC water law, have the right to contract with ETDs for system operations under a delegation contract. The contract type of each PPP transaction scenario varies in terms of private sector involvement and risk assumptions. The Water Law and PPP Law dictate PPP arrangements that can be utilized, such as management, affermage, and concession contracts, or a hybrid contract based on these options. These scenarios may involve different Contracting Authorities, including provinces, local decentralized entities (ETDs), and ASUREPs. Two of these scenarios involve community operating structures, resulting in a Public-Private-Community Partnership (PPCP). In these cases, legalized ASUREPs, according to the DRC water law, have the right to contract with ETDs for system operation under a delegation contract. After a multi-criteria analysis, Scenario 1, a direct PPP between the ETD, and a private operator (PO), and Scenario 2, a PPCP tri-partite between the ETD, PO, and ASUREP, both with performance-based affermage contracts, were determined to be the most promising options for achieving the project's objectives.

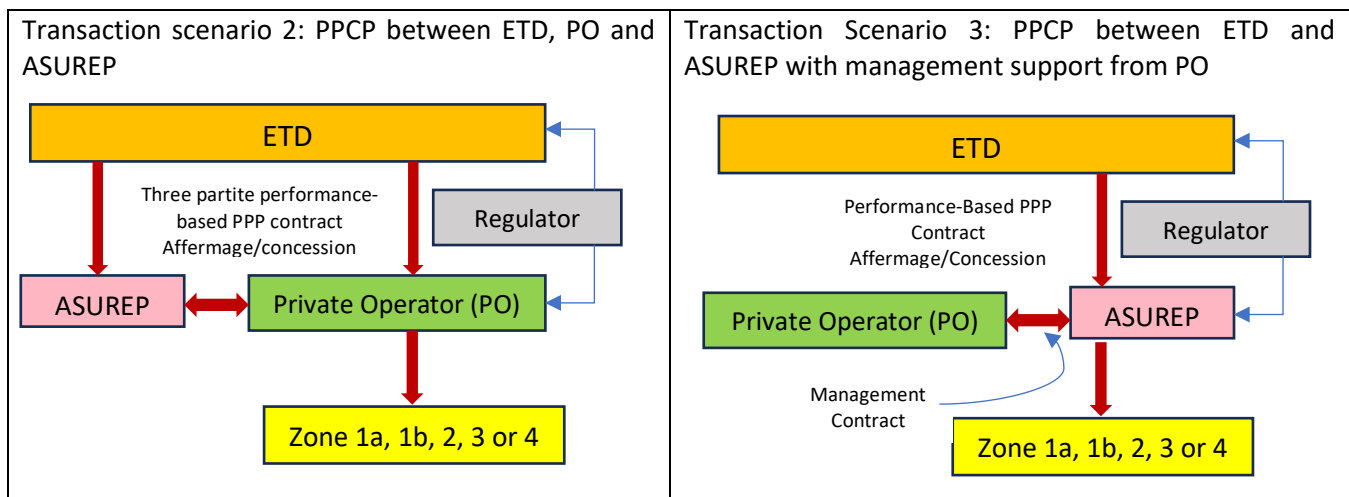
Transaction scenario 1: Direct PPP between ETD and PO



Currently, various risks are associated with implementing public-private partnership (PPP) arrangements, including institutional, technical, social, and financial risks. Some zones are too small to implement PPP arrangements due to costs, and merging with other zones or obtaining

initial financial support from SWASSA could be potential solutions. The Sake-Bweremana axis was divided into two subzones: Zone 1a, which comprises the Mugunga and Lac Vert districts, and Zone 1b, which comprises Sake city and Bweremana village.

The effective management of water systems comes with certain costs, and substantial guidance is necessary to convey this idea to sector stakeholders. However, extending affermage contracts and increasing service areas can reduce water expenses for the general public. An initial financial assessment of the Sake-Bweremana and Kavumu-Katana axes revealed that the concession contract costs for local communities were excessively high. However, financial simulations demonstrated that extending the duration of water contracts and expanding the scope of water services to cover larger areas led to a reduction in water costs for the general public.



V. NEXT STEPS

The following actions will be taken by the SWASSA during the subsequent implementation phases:

- The subsequent stage is the transaction preparation phase, which comprises a comprehensive analysis to address data gaps, particularly in the financial assessment of Beni and Uvira, and reconcile discrepancies in key data. Moreover, this phase will include a public relations campaign to inform and educate stakeholders and the public about the PPP programme's realities and potential benefits. Additionally, market sounding will be conducted to gauge the level and type of prospective private sector interest in PPPs in intervention zones. Ultimately, a final transaction document will be issued at the end of this phase, and the implementation phase will commence with recording transactions in the market based on the approved transaction document.
- SWASSA, in collaboration with relevant stakeholders in each intervention zone, will decide and adopt the most suitable performance-based delegation management models that align with their respective contexts.

- The SWASSA will assist Decentralized Territorial Entities (through its water regulator) in undertaking the procurement and contracting of certified water service providers. This process considers current service delivery models and incorporates the private sector's role in accordance with the DRC's water law.
- The team will also proceed to enhance engagement with stakeholders at different levels to facilitate their ability to effectively fulfill their respective responsibilities and contribute to the sustainability of the impact of water service delivery.