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District level WASH planning and management of rural water supply

Experiences of GIZ RWSII project supporting district stakeholders in Luapula Province, Zambia

In cooperation with

Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Nwasco
NATIONAL WATER SUPPLY AND SANITATION COUNCIL



BACKGROUND

This technical brief presents the experience of the technical assistance provided by the GIZ Reform of the Water Sector, Phase II (RWS II) project to the Government of the Republic of Zambia (GRZ) from 2020 to 2022 on strengthening service provision for water supply, sanitation and hygiene in rural areas in Luapula Province of Zambia. This was done through (A) structured planning for investments in WASH at district level to improve prioritisation of investments and resource mobilisation and (B) the development of functional management models for small-piped water schemes (SPWS) in rural growth centres.

Starting point

The devolution process by the Government of the Republic of Zambia (GRZ) has adopted the “District Wide Approach” that considers the district as a service authority in all its core functions, including planning for universal and sustainable services. GIZ has supported the Ministry of Water Development and Sanitation (MWDS) with technical assistance to adopt this approach for the water and sanitation sector through the development of gender-sensitive District Water, Sanitation and Hygiene Investment Plans (DWASH IPs) in Luapula Province. A DWASH IP is meant to guide the implementation of identified WASH interventions at district level lead by the local district authority in close coordination with the commercial utility (CU) of Luapula Water and Sanitation Company (LpWSC) and other stakeholders. It also standardizes the WASH operational framework to ensure coordinated multi-sectoral and multi-stakeholder actions. A total of four DWASH IPs were developed by the 4 districts of Mansa, Mwense, Mwansabombwe and Chipili in Luapula Province in the north of the country.

PLANNING PROCESS OF DWASH IPs TO PRIORITISE INVESTMENTS AND MOBILISE RESOURCES

District WASH Investment Plans

The DWASH IP is a subsector plan developed by the local authority (LA) of the district to outline the required investments to reach national targets for water supply, sanitation and hygiene. These plans are not formalised by law but reflect the exclusive function of local authorities for district planning (*Article 147(2) of new constitution*). Other partners have used the format of master plans to achieve similar objectives (KfW & UNICEF, *Ref 17*). Subsequently the plans should be integrated into the respective Integrated Development Plan (IDP) of each district, since the IDP is the main vehicle for Local Government funding in the districts and therefore relevant for funding of WASH. Mansa district has integrated their DWASH IP into the IDP in 2023 (*Ref 7*).

Coordination and Steering

The DWASH IP is a multi-stakeholder document that requires steering and coordination for its development and implementation. GRZ has put in place coordination structures for the water sector at national, provincial and district levels as shown in *Figure 3* below. These are the District Water, Sanitation and Hygiene Education (DWASHE) Committees on district level. No parallel structures were created as it would work against ownership and institutional efforts. Measures for strengthening coordination structures were identified working with the actors.

Structuring the planning process

In the process of developing the DWASH IPs considerable attention was paid to strengthen the capacities of key stakeholders at district level. This allowed them to participate effectively in the planning process flow (see *Figure 1*) in order to fully own the subsequent implementation.

Figure 1. DWASH IP Planning Process Flow



The following steps were taken in the planning process:

- Step a)** Capacity assessment of actors and data availability (*Ref 1*)
- Step b)** Establishment of WASH Baselines (*Ref 2*)
- Step c)** Strengthening of coordination and steering structures (*Ref 4*)
- Step d)** Defining of objectives and targets by actors (Planning tools, *Ref 5*)
- Step e)** Development of investment packages for households, schools, health care facilities, public places in urban, peri-urban, rural areas
- Step f)** Development of prioritised lists of measures
- Step g)** Finalisation of DWASH Investment Plans and adoption by councils (*Ref 6*)

Picture 1. Communal water point, Mwansabombwe district (Credit: Mwape Bwalya)

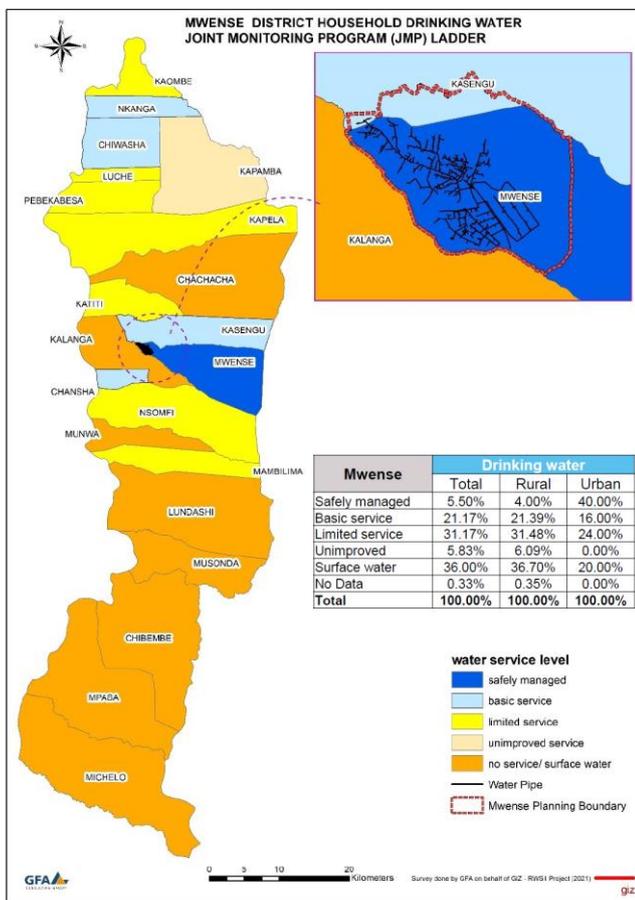


KEY STEPS IN THE PLANNING

Step a) Undertake capacity and data assessment

The initial capacity and data availability assessment showed that technical capacities at the district need to be strengthened in planning and implementation of interventions e.g., re-vitalising the District WASH committees to provide coordination and improving data availability to enable evidence-based planning and implementation. This ensures streamlined coordination of interventions and projects, including monitoring, evaluation and reporting of progress which is critical for the realisation of universal coverage and not leaving anyone behind in the entire district.

Figure 2: Baseline results for drinking water in Mwense district (Ref 2, 3)



Step b) Data collection / WASH Baselines

In response to the lack of WASH data and information for planning, WASH Baselines were established in the four districts for households, schools, health care facilities, public places and non-domestic places.

The data is available on the mwater platform (Ref2) to allow for its accessibility in the absence of a reliable digital Management Information System (MIS) at district level. The gathered information was also presented on maps in A2 format with indication of the international service levels of the Joint Monitoring Programme/JMP to aid the planning and decision-making process by the stakeholder (Ref 3). For example, in Mwense district (see

Figure 2) the access to an improved source of drinking water for households stands at 58% (basic service level as per JMP), so 42% of the population still rely on a limited and unimproved service as well as no service at all e.g., with access to surface water only. Similar figures have been published by the MWDS in the Statistical Bulletin (2020; Ref 19), where 50% of the population have access to an improved source of drinking water, which is similar to a basic service level. NWASCO also reports similar figures for the commercial utility of Luapula Water and Sanitation Company (LpWSC) with around 50% of households in urban areas having house connections (safely managed service) and communal water points, such as kiosks (basic service) (Ref13).

This indicates a significant need for investments and services, especially for rural areas, in order to achieve all targets outlined in the Vision 2030. The investment gap is even larger when targeting JMP service level of 'safely managed water', which is the goal for SDG 6.

Step c) Strengthen coordination and ownership

The planning and implementation of the investment plans utilises existing Government created coordination structures such as the District Water Sanitation and Hygiene Education (DWASHE) committee and the District Development Coordination Committee (DDCC), with the aim of strengthening coordination, improving information sharing, reporting, and thereby improving transparency and accountability in WASH interventions (see Figure 3). Further, it is anchored within the management framework of the local authorities of city, municipal, town or district councils through DWASHE reporting arrangements. As part of preparation for the DWASH IP planning, existing coordination structures were reviewed through consultation of national level (MWDS), provincial level (Provincial Water Supply and Sanitation Officer/PWSSO, Provincial Local Government Officers, Provincial Planning Units/PLGO and LpWSC staff at head office) and district level (LAs staff responsible for socioeconomic planning, public health, housing & social services and rural WASH; LpWSC staff at district level; District Education Boards Secretary/DEBS and District Health Office/DHO). Key outcomes were to revitalise the DWASHE committee and adjust their TORs as the key coordination structure for WASH with the following suggested amendments:

- DWASHE to be chaired by Local Authority, secretariat is co-lead by the (1) District coordinator for rural WASH and the (2) LpWSC district officer for urban and peri-urban water supply and sanitation service provision.
- Reporting templates to be created or updated to facilitate reporting and monitoring of progress interventions established in DWASH IP investment packages.
- Regular holding of meetings and adequate participation & representation, based on schedules.
- Integrating measures identified in the DWASH IPs into individual actor's annual work plans (LAs,

LpWSC, DEBS and DHOs)

- Governance and accountability to ensure actors hold each other accountable for individual responsibilities and actions to the realisation of goals and objectives of the DWASH IP. This aims at improving information sharing, reporting and thereby improving transparency and accountability in WASH interventions.

- iii) To enhance planning & coordination under LAs
- iv) To improve Rural WASH, & Nutrition under LAs
- v) To improve School WASH and Nutrition under DEBS
- vi) To improve WASH in Health Care Facilities and Nutrition under DHO
- vii) Improve WSS service delivery in Urban and Peri-urban areas, including growth centres under LpWSC

Step d) Actors defined objectives and targets

The districts developed the investment plans (Ref 6) with extensive consultations and input from district actors and provincial structures of Government, comprising of the District Education Boards Secretary (DEBS), the District Health Office (DHO), the Luapula Water and Sanitation Company (LpWSC), as well as Cooperating Partners (e.g. GIZ, UNICEF, AfDB) and NGOs (e.g. WaterAid, World Vision).

The plans have identified the following investment objectives to achieve the set targets:

- i) To enhance Inspections and Enforcement of Public Health Act under LAs
- ii) To improve WASH in Public Places and Markets under LAs

The district set:

1. Targets for WASH for households
2. Targets for WASH in schools
3. Targets for WASH in health care facilities
4. Targets for WASH in public places and markets
5. Targets for Planning, Coordination and legal Enforcement for Public Health Protection

These targets were linked to the National Urban Water Supply and Sanitation Programme (NUWSSP) and National Rural Water Supply and Sanitation Programme (NRWSSP), which in turn, are aligned to Vision 2030, the 8th National Development Plan (NDP) and the Sustainable Development Goals (SDGs).

Figure 3: Oversight, supervision, reporting & coordination arrangements (source: DWASH Ips, Ref 6)

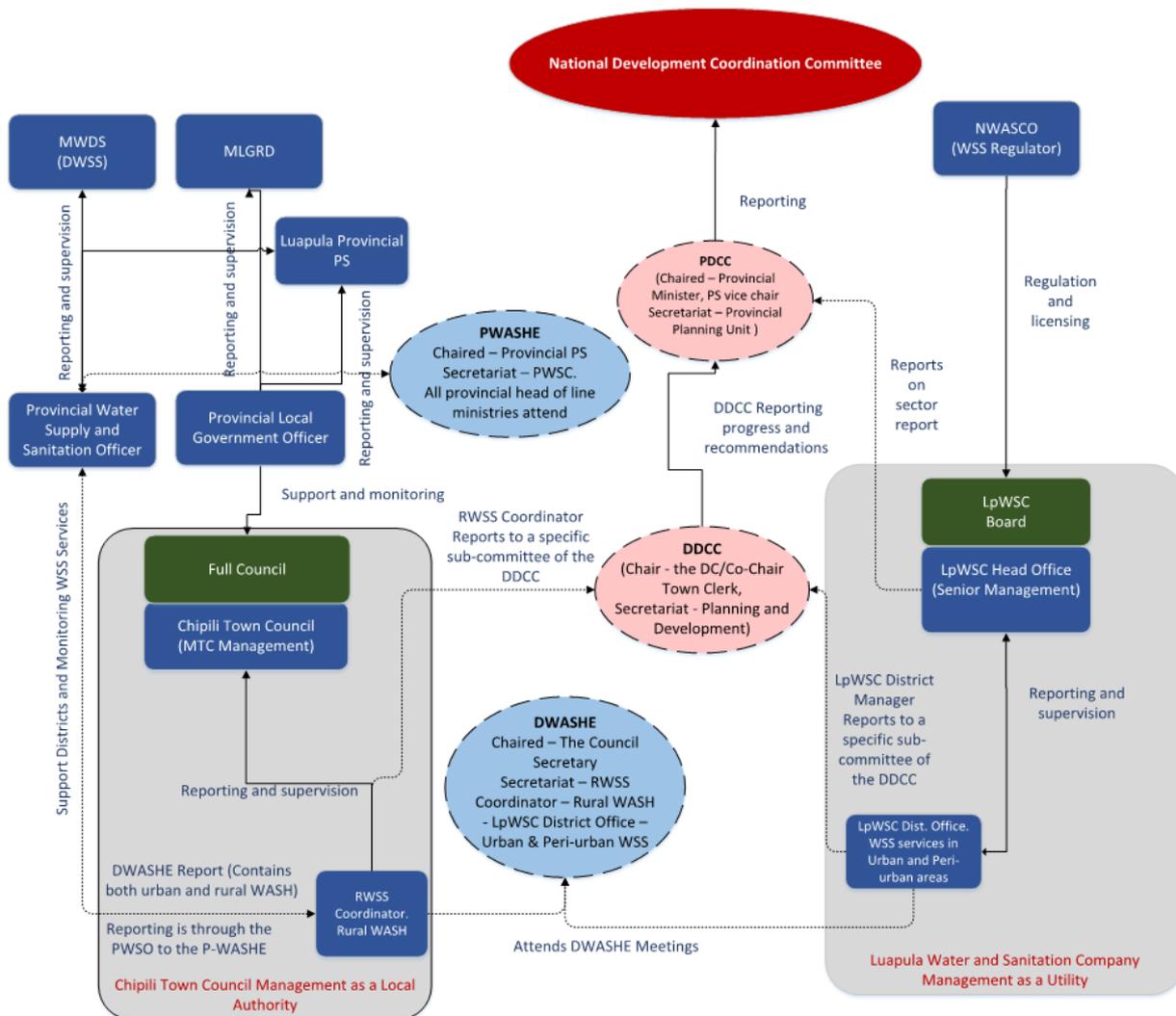
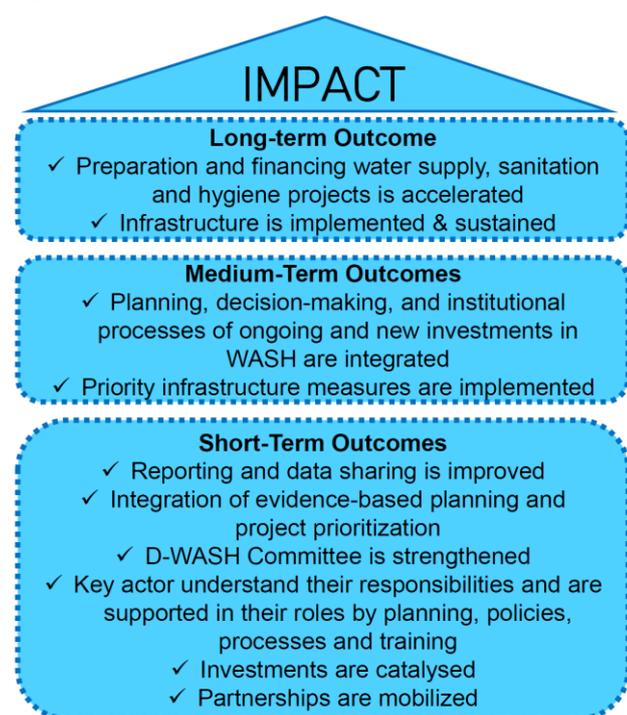


Table 1. Example of Summary of investment packages for Chipili district, Luapula Province (DWASH IP, 2022, Ref 6)

	Categories of Investment packages	Measures (specific objective)	Budget up to 2030 (in ZMW)
1	Enhance Inspections and Enforcement of Public Health Act	(1) To enact by-laws for the protection and conservation of WASH facilities, (2) To provide waste management services	13,987,545
2	Improve WASH in Public Places and Markets	(1) To provide access to safe water supply, (2) To provide improved sanitation services, (3) To achieve access to adequate hygiene services for all, (4) To increase access to MHM services, (5) Sustainable operation and maintenance of WASH infrastructures	3,032,513
3	Enhance Planning and Coordination	(1) To have an active, effective and well-integrated DWASHE Committee, (2) To create gender inclusive community structures for WASH Management, (3) To have adequate and effective public-private and civil society partnerships in WASH programs, (4) To encourage more partners to come on board and support WASH activities, (5) To have WASH mainstreamed in all sector planning and budgeting processes, (6) To have an adequate and effective public-private and civil society involvement and coordination, (7) To have harmonized reporting system at all levels, (8) To ensure reporting tools are aligned to the IDP/National Development Plans, (9) To ensure integration, effective and timely planning, implementation, monitoring and evaluation of plans	2,256,371
4	To improve access to clean and safe drinking water supply	(1) To improve access to clean and safe drinking water supply, (2) Sustainable operation and maintenance of all water point sources, (3) Ensure the hydrological sensitive areas are protected - avoid pollution and contamination of water sources, (4) To safeguard water points from all sources of contamination - reduce cases of diarrhoeal, waterborne & water related diseases, (5) To improved access to safely managed sanitation services, (6) To implement the ODF Strategy, (7) To ensure integrated water and sanitation services management, (8) To promote behavioral change and compliance to the hygiene - reduction of faecal-oral transmission, (9) To ensure access to menstrual hygiene management (MHM) service at district	16,407,975
5	Improve School WASH & Nutrition	(1) To create awareness amongst pupils on WASH related issues, (2) All schools have access to safe drinking water services, (3) All schools to have advanced sanitation facilities, (4) To ensure the surroundings are clean and personal hygiene in schools, (5) To manage menstruation hygienically and with dignity	86,855,782
6	To Improve WASH in Health Care Facilities and Nutrition	(1) To ensure all HCFs have access to safe running water (improved water supply), (2) To ensure all facilities have access to improved sanitation facilities, (3) To ensure all health facilities have access to hygiene services, (4) To ensure construction of shower rooms and repair those that exist but are not functional at all facilities, (5) To ensure all Health facilities have MHM friendly services, (6) To ensure access to Health Care Waste Management - All 19 HCFs have advanced waste management practices, (7) To ensure access to environmental cleaning - all 19 facilities have cleaning materials, workers are trained and protocols are followed	43,977,901
7	To Improve WSS service delivery in Urban and Peri-urban areas	(1) To achieve access to safe and affordable drinking water (improved water source), (2) To increase access to safe sanitation (improved sanitation), (3) To reduce the lack of access to safe sanitation (unimproved sanitation), (4) To operationalize management of water supply and sanitation systems	147,632,100
	Grand Total	(approx. US\$13-16 Mio)	311,893,815

Figure 4. Theory of change for DWASH IPs



Step e) and f) Development of investment packages for households, schools, health care facilities and public places in urban, peri-urban and rural areas & develop prioritised lists of measures

Based on what the district wants to see in improved WASH service provision, investment packages were identified by the stakeholders working individually as institutions along the 7 investment objectives. This approach is following the district sanitation planning guidelines, developed by the MWDS in 2019 (Ref 15). The investment packages were consolidated and list of measures prioritised by the district actors (Municipal councils, DEBS, DHO and LpWSC). This process of consolidation and prioritisation also involved detailed consultations with provincial stakeholders like the Provincial Water Supply and Sanitation Officer, the Provincial Local Government Office and Provincial Planning Unit. After that, these activities were jointly validated by actors and stakeholders, and presented as packages of measures, which are summarised in Table 1.

Step g) Finalisation of DWASH IP and adoption by councils

Finally, the agreed upon final draft DWASH IPs with the prioritised investment packages were handed to the council for adoption at the Senior Management Meeting of devolved functions.

Implementation of the plans

The implementation of the measures in the investment packages of a DWASH IP as illustrated in table 1 is done primarily through the Planning and Development Department of the council, utilising the Councils Management Meeting platform in which the devolved

line ministries of the MoE and MoH operate. At coordination and operational level, the District Water Sanitation and Hygiene Education (DWASH) Committee is utilised for detailed discussions and project activities coordination. The chair of the DWASHE is the Town Clerk, or whomever it is delegated to, and the Secretariat are the District Rural Water and Sanitation Coordinator (RWSS) and the LpWSC District Manager for urban and peri-urban WASH (revision of TOR for DWASH needed, Ref 4). The expected outcomes of the planning and implementation process including the actual infrastructure measures, are outlined in Figure 4, the theory of change.

Outlook: District investment plans should inform national investment prioritisation

In addition to the planning at district level, central government with the line Ministry of Water Development and Sanitation (MWDS) as well as Ministry of Local Government and Rural Development (MLGRD) can use such investment plans to prioritise resource allocation in line with national programmes like the National Rural and Urban Water Supply and Sanitation Programmes (NRWSSP and NUWSSP). MWDS has also set up a digital Investment Optimisation Tool (Ref 12) to enable allocation of funding based on the investment deficit by population, coverage and ongoing and planned investment projects, which can be further informed by the identified investment needs on district level.

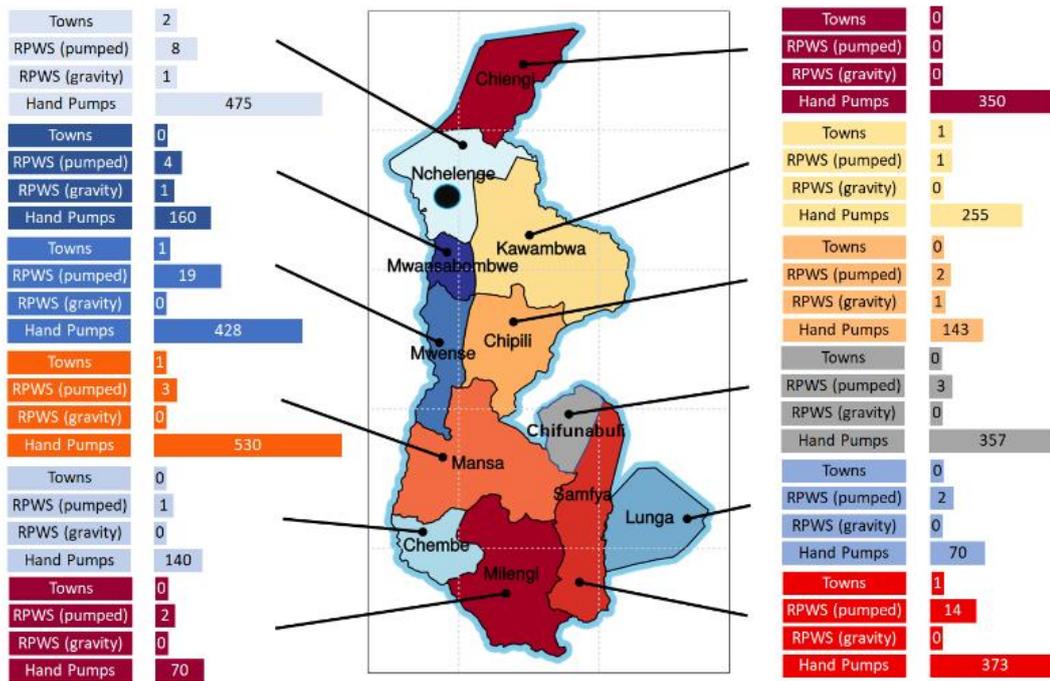
MANAGEMENT MODELS FOR SMALL- PIPED SCHEMES IN RURAL GROWTH CENTERS

In the framework of the investment planning and identified investments in rural water supply in the districts, the GIZ RWSII also supported the district actors on how to improve operation and maintenance of small-piped water schemes. One of the key objectives stated in the investment plans is to increase access to both safely managed and basic drinking water supply in rural areas including growth centres through using small-piped water schemes/systems among other options like handpumps. This requires sufficient infrastructure investments on one hand, and sustainable management for operation and maintenance of the infrastructure on the other hand.

Challenges

Besides the overarching sector challenge of having insufficient finances for investments, which can be partly addressed through improved planning for investments as described above, the sector has been witnessing challenges with the management of existing small-piped water schemes (SPWS), especially with sustaining common service standards and maintaining assets that are fully functional during their full life cycle. Therefore, GIZ has supported the Local Authorities, Commercial Utilities (CUs) and communities in selected rural growth centres to develop practical arrangements for an

Figure 5. Water supply infrastructure in Luapula Province, 2021 (Ref 10)



improved management approach, which addresses the issues of operation and maintenance (see Ref 9).

Compared to handpumps, small-piped water schemes are technically more complex, thus require more regular maintenance and consequently need sufficient user fees to finance operations. Such systems are mostly managed by community-based organisations (CBOs), with considerable support from LAs, and do often fail to deliver reliable services. A primary challenge are the relatively low user fees, coupled with the inadequacy of the collection of user fees (tariffs) in covering the cost of operation and maintenance, in addition to the general shortcomings of Community Based Management with lack of technical and managerial skills, logistical challenges and limited finances. Other challenges were identified, but to a large extent could be related back to the lack of financial resources for operation and maintenance. The challenge is compounded by the inability of the CU, which is mandated to extend services to rural areas, to provide oversight in the management of the SPWSs.

In general, it is widely recognised that achieving full cost recovery for rural water supply in Africa is a largely rare accomplishment, if not completely unfeasible in many contexts. Hence rural water supply often does not attain a commercially viable service level but is rather considered as a social service which requires a realistic and sustainable compensation plan by the state through taxes and transfers for the cost that cannot be covered with revenues from tariffs/ user fees. This means only few SPWS are or can be commercially viable based on existing framework conditions on the ground.

Regulatory framework for SPWS and the impact on CUs

In 2018 the sector developed administrative and social regulations for rural water supply and sanitation, the ‘Regulatory Framework for Rural Water Supply and Sanitation’ by NWASCO (see Ref 14). The purpose of developing the regulations was to effectively govern the practical functioning of the public and private sectors in rural areas and to protect the safety and health of society. In relation to SPWS the regulatory framework states that such schemes ‘*should progressively be taken over by CUs as prescribed by NWASCO when new districts are formed*’.

In 2020 NWASCO accordingly changed the licenses of all CUs to cover the entire province, with the added responsibilities for rural areas. It is prudent, that the awarding of province wide licenses to the CUs, and the consequent responsibility for O&M that follows must be supplemented by adequate support and resourcing by GRZ and other partners.

Therefore, NWASCO has outlined that the ‘expanded’ mandate of CUs in rural areas shall not compromise the CUs performance and commercial nature of full-cost recovery. This means that effectively very few schemes can be directly managed by the CUs. In the case, that SPWS cannot cover their operating and maintenance costs (aligned to sector principle of ‘full cost recovery’), the CU needs to delegate management to other partners with sufficient financing resources.

Consequently, the CU needs to develop concepts of how they will monitor and support the various management modalities of water supply from SPWSs, and how this may impact on the CUs long-term business model since additional costs will be incurred, and limited revenue will be realised. Between 2020 and 2022 the GIZ RWSII

programme assisted the Luapula Water and Sanitation Company (LpWSC) in developing concepts and tools to take up this expanded mandate, in particular regarding the management of small-piped water schemes. The scale of the rural water supply mandate for Luapula Province is shown in *Figure 5*. At the time in 2021 in total 6 schemes were operated directly by LpWSC in urban and peri-urban areas, then 59 piped water schemes and 3 rural gravity schemes in rural areas were operated by CBOs, LA, NGOS and private sector and 3,351 handpumps by CBOs.

Since the launch of the regulatory framework in 2019, NWASCO has rolled out the regulatory framework to several Provinces via the Joint Implementation Teams (JIT) that create awareness and provide feedback on the framework by all relevant partners, builds consensus and collects RWSS data.

Hybrid Management Model

Important considerations in the formulation of possible management models for SPWS by direct or delegated management of a utility in Luapula Province are the protracted operational costs deficits that Luapula Water and Sanitation Company faces and the fact that the existing rural water supply schemes are not able to produce a financial surplus or cover O&M costs. This means most SPWS won't be directly managed by the CU as operating such schemes would undermine CU performance.

Recognition of this fundamentally weak financial position of LpWSC was a significant consideration in the formulation of possible management models in Luapula Province. The difference in context of service provision in rural areas has profound implications for the resources required for CUs. Additional staff with different skills will be needed, the wide geographical area to be serviced will require a significant increase in the transport costs, existing business systems will have to be improved, and new methods will have to be developed to accommodate new operational aspects such as engaging with Community-Based Service Providers.

The local partners in Luapula province, primarily the district local governments, the commercial utility and

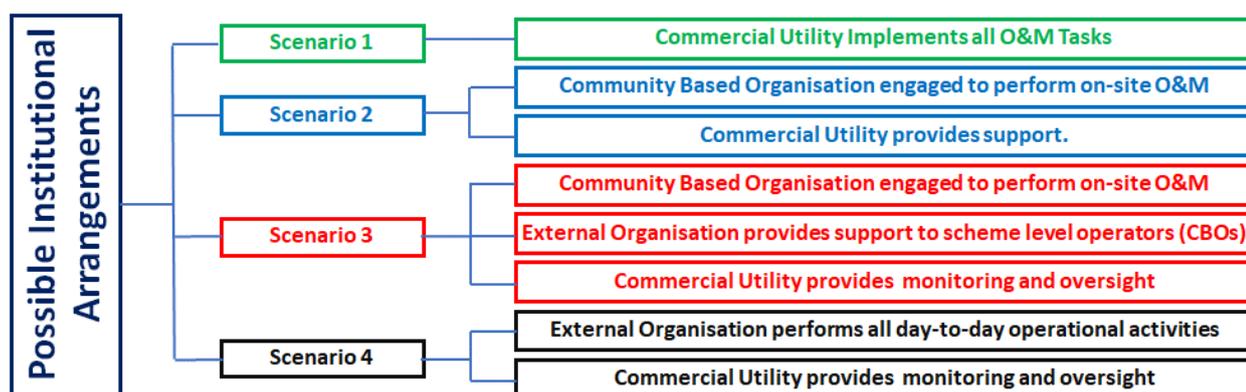
discussed their roles and responsibilities to improve the management of SPWSs. As a result, a range of management models were identified and termed under a model called 'Hybrid Management Model'. In line with the current legal and regulatory framework the Hybrid Management Model reflects an agreement between the key stakeholders, being the CU, Local Authorities, Private Sector Operators, and Communities, in four districts of Luapula province. It can take different forms in various scenarios as illustrated in *Figure 6*, depending on the skills and resources of local stakeholders.

The hybrid management model provides for three distinct roles and respective players in the operations and maintenance of SPWS, these being the

1. **Operator:** Carry out day-to-day tasks and cover local costs by Community Based Organisations (CBO), in some instances also directly carried out by the support service providers like NGOs, LAs, private companies or the CUs.
2. **Support Service Provider (SSP):** Provide adequate technical and administrative support to the operator. These being either Local Authorities, Non-Government Organisations, Private Sector Companies and other organisations that may already be active in the area.
3. **License holder:** the Commercial Utility to provide permission and to contract an SSP to operate under their license to oversee, monitor and evaluate the operations of the SSP and its operator e.g., CBO with a view to ensuring safe water supply services. The CU will also offer technical support as well as support the replacement of capital-intensive equipment, i.e., pumps, motors, etc., particularly to SPWS operated and managed by CBOs.

It is clear that, on their own, CBOs are unlikely to be able to provide water supply services at the level and standards the CU has agreed to with NWASCO (service level agreements and guarantees). It is therefore imperative that the capacity of CUs be developed to play the support role to the CBOs and SSPs.

Figure 6. Current scenarios of operation and maintenance institutional arrangements



the private sector operator 'Access Water4 Zambia'

Preparing tools for O&M

The institutional arrangement for the Commercial Utility LpWSC to play its role as the license holder in the hybrid model is detailed in the 'LpWSC - Guide to Implementing Operation and Maintenance for Rural Water Supply Schemes', which provides practical advice and tools to the CU for management of O&M of SPWSs (Ref 8)

Memorandum of Understanding

Based on the partners agreement regarding the hybrid management model for the SPWSs that are in operation, the LAs and CUs drafted and then signed three (3) MoUs (Ref 11). These are for a 3-year piloting period of the operations of the SPWS, namely:

- Mulundu SPWS (in Mwense district)
- New Kazembe SPWS (in Mwanabombwe district)
- 62 SPWS by 'Access Water4 Zambia (in Chifunabuli, Samfya, Mansa and Mwanabombwe districts).

The partners agreed that the arrangement needs to:

1. Make maximum use of the positive aspects of a community-based approach, such as local people doing local work.
2. Ensure support for the CBOs that would carry out day to day O&M.
3. Allow various organizations to play a role as a Support Service Provider (SSP).
4. Limit the financial demands on LpWSC.

Limits to the model

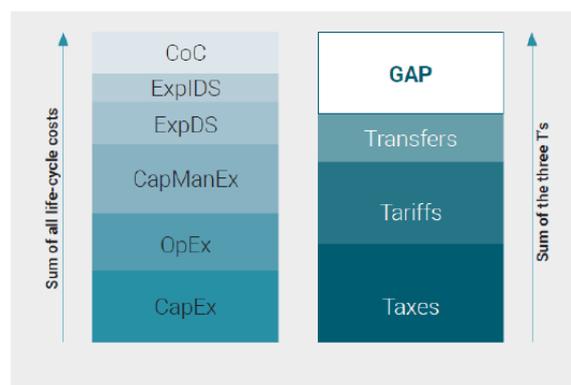
While the model places a large part of the operational burden on organisations such as CBOs and SSPs, there are still many tasks that must be undertaken by The CU to ensure adequate monitoring, management and support for all the organisations that may become involved. Importantly, in each circumstance there could be varying combinations of capacity within the local community (CBO) and the organisations providing technical and management support (SSPs). It will be an important task of LpWSC to ensure that each of the MoUs is correctly administered and that the water service outcome is compliant within the regulatory requirements. In some cases, this may require simple monitoring and reporting, but in others active support, and perhaps even contractual discipline may be necessary. This will require LpWSC to develop organisational structures, systems, and procedures to fulfil roles of contract administration, monitoring and reporting, technical, administrative and management support to Community based Organisations and Support Service Providers.

Opportunities to address the financial gaps

One of the key challenges for rural water supply services is that most schemes are not commercially viable. Therefore, the question is on how to close the potential financial gap between the revenue generated by

acceptable user fees and the actual operation and maintenance costs of small-piped water schemes. There are innovative examples from private sector participation under the uptime initiative which provide professional services with a subsidy model based on results-based contracting. The private service provider 'Access Water4 Zambia' is also working with this model. Some private sector initiatives try to achieve cost coverage for SPWS and handpumps on a larger scale (without CAPEX), e.g. UDUMA in Ivory coast, Benin, Burkina Faso and Mali. Such examples seem to rely on professionalisation of services based on business models that use economies of scale and cost-reflective tariffs within a defined area of service (clusters of schemes and water points). On the contrary the current practices in Zambia work mostly on individual schemes level and most of the time do not apply cost-reflective tariffs, leading to the financial gaps as indicated in the following figure.

Figure 7. Costing and financing of small-scale water and



sanitation services (Smits and Fonseca) WHO et al.

A notable exception is the example of Access Water4 Zambia, who apply principles of professionalism, economies of scale and cost coverage, which is shown by the efforts to install pre-paid meters for household customers (see Picture 2) in order to improve collection efficiency of water bills.



Picture 2. Pre-paid water meter in Fimpulu by Access Water4 Zambia (Credit: Mwape Bwalya)

Investment packages for SPWSs

In addition to the support by GIZ in developing management models for O&M of SPWS, an assessment of selected existing small-piped water schemes in the rural growth centres revealed the additional need to rehabilitate and extend existing schemes to make them fully operational and ready for professionalised management. Therefore, the LAs were supported to develop technical investment packages for 4 existing small-piped water schemes (one per district, three operational, one not operational) and one package for new solar water kiosks (see picture 3). These packages address all technical and engineering aspects of the water services from source of supply, abstraction and treatment through to transmission, distribution and supply to consumers; and are proposals for attracting public and private investments (see Ref 9 and 10).

Key lessons from the development of the packages of measures for SPWS included:

- 1) Mapping the water supply system is critical for the effective management of the system;
- 2) Modelling the water pipe hydraulics of the water supply system is fundamental to guaranteeing the long term sustainability of the water supply services;
- 3) Effective O&M plan relies on the understanding of all parts and components of the water supply system;
- 4) Poorly designed water distribution network results in pressure losses and ultimately poor delivery of service, and
- 5) Modelling the water supply system aids the standardization of water supply infrastructure and improves the efficiency of service delivery.

Way forward

In relation to the implementation of the DWASH IPs the districts, who own the plans, should ensure allocation of budgets for each activity, adherence to reporting and data sharing protocols, strengthening the DWASHE committees as a powerful coordination platform and striving for attracting additional investments.

On national level the Ministry of Water Development and Sanitation has the opportunity to incorporate district level investment planning into national programmes like the NUWSSP and NRWSSP. Moreover, the development of DWASH IPs can be promoted in other provinces to facilitate prioritisation and optimisation of WASH investments in the country.

With regard to implementing the MoUs for operation and maintenance of the small-piped water schemes (SPWS) in line with the developed guidelines, there is a need to complement this with a detailed and realistic business plan for each or a cluster of schemes that identifies the objectives, activities and resources required to fulfil the set commitments of the MoUs and perhaps long-term goals of LpWSC over time. There must be careful consideration of the context that prevails in each

of the districts where rural water supply schemes will be incorporated into the LpWSC management model. It is only once the practical implications of objectives, activities and resources is fully understood that the necessary support mechanisms and instruments can be identified, developed and put in place.



Picture 3. Solar powered water kiosk in Mwansabombwe district (credit: Natasha Mumba)

Resources

Most references are available on <https://www.giz.de/de/weltweit/140352.html>, and should be uploaded to partners webpages to ensure long-term accessibility and sharing of knowledge. More documents are available internally on <https://dms.giz.de/dms/llisapi.dll/app/nodes/413857635>

1. Capacity and data assessment (methodology and results)
2. WASH Baselines Report 2021 for [Mwansa](#), [Mwense](#), [Mwansabombwe](#), [Chipili](#) districts, data available on www.mwater.org (login with username: luapulabaseline, password: luapula2021) To view the surveys, go to "manage" pick the "organisations" 'Luapula baseline' on the dropdown menu. Then pick the branch you want and select deployments.
3. Maps in A2 format for each districts for [households](#), [schools](#) and [health care facilities](#)
4. [Strengthen coordination structures](#) in Mansa, Mwense, Mwansabombwe and Chipili
5. DWASH IP Planning tools ([Basis goals and targets](#), vision determination, consolidation of target and measures)
6. DWASH IPs for [Mwansa](#), [Mwense](#), [Mwansabombwe](#), [Chipili](#) districts
7. [IDP \(Integrated Development Plan\) Mansa](#)
8. [Guide to Implementing Operation and Maintenance for Rural Water Supply Schemes](#)
9. Investment packages for 4 small-piped water schemes (SPWS), i) Mwenda SPWS, Chipili ii) Fimpulu SPWS, Mansa iii) New Kazembe SPWS, Mwansabombwe iv) [Mulundu SPWS, Mwense](#)
10. [Investment package for solar water kiosk](#), based on case study in Mwansabombwe district
11. Signed MoUs for [New Kazembe SPWS](#), for [Mulundu SPWS](#) and [Access Water4 Zambia SPWS](#) in Mansa and Samfya district
12. Investment Optimisation Tool (iom.rwsii-support.work/dashboard-additional-people, log-in CPs: user name:CPS, password: password)
13. NWASCO Water Supply and Sanitation Sector Report 2022 / [Water Supply and Sanitation Sector Reports \(nwasco.org.zm\)](#)
14. [2018 NWASCO Regulatory framework for rural water supply and sanitation](#)
15. [MWDS Guidelines for the Development of District Sanitation Plans](#), 2019
16. [Final report on development of O&M management models](#) for selected rural piped water schemes in Luapula Province, GIZ 2022
17. District WASH Masterplan, Sustainability Plan and Capacity Building Plan for Kwaambwa District, KfW/UNICEF, 2022
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19. Statistical bulletin, MWDS, 2022

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