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MANAGEMENT**

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**PROJECT: ASSESSING THE PERFORMANCE OF COMMUNITY BASED
MANAGEMENT IN THE OPERATION AND MAINTENANCE OF BOREHOLES. A
CASE STUDY OF MOYO DISTRICT**

SUPERVISOR: ENG. DR. DANS NATURINDA

**A Project Report Submitted in Partial Fulfilment of the Requirement for the Award of
Post Graduate Diploma of Construction Project Management of the College of
Engineering, Design, Art and Technology of Makerere University**

August 2024

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I ANYANZO RAYMOND ADUKU hereby declare that, this report is my own work and all the information contained in it is accurate and it has never been submitted to any other university or institution of higher learning for a similar or any other academic award.

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LIST OF ACRONYMS

ASP	AREA SERVICE PROVIDERS
CBD	Community Based Development
CBMS	Community Based Management System
CBMS +	Community Based Management System Plus
DWSSB	District Water Supply services Board
DLG	District Local Government
DWD	Directorate of Water Development
DWO	District Water Officer
GFS	Gravity Flow Scheme
GoU	Government of Uganda
HPM	Handpump Mechanics
HPMA	Handpump Mechanics Association
NDP	National Development Plan
MWE	Ministry of Water and Environment
O&M	Operations & Maintenance
PMA	Profession Management Approach
RWSSD	Rural Water Supply and Sanitation Department
SCWSSB	Sub County Water Supply services Board
SDGS	Sustainable Development Goals
UA	Umbrella Authority
WASH	Water, Sanitation and Hygiene
WUC _s	Water User Committees
WSC	Water & Sanitation Committees

EXECUTIVE SUMMARY

The Performance Assessment of the Community Based Management is as a result of the conventional wisdom in policy circles that it is inappropriate to simply respond to people's need for easy access to safe water without considering consequences to sustainability and improved health. A simple "supply driven approach" is able to meet the needs of the rural masses in a speedy manner, but the users lack a sense of responsibility for the management of the water points (DeGabriele, 2002). In addition, the authors experience with hundreds of water user groups for over two years in Moyo in regards to the management of the water points. The challenge, therefore, is to assess the models' effect on sustainability in terms of operations and maintenance. A case study from Moyo District.

The core objective of this paper is to examine the performance of Community Based Management in the Operation and Maintenance of Boreholes. A Case Study of Moyo District. The above objective was achieved through the following comprehensive performance Assessment system encompassing two levels as follows:

- Level 1 – Functionality of the existing water points.
- Level 2 – Operation and Management of Water points focusing on the roles and responsibilities of the Water User Committees. This include mainly; monthly contribution fee, regular meetings, representations and women in key positions, the surrounding environment.

The level of management as an indicator is used to communicate the assessment results. There are several unknowns, such as responsibility, commitment, good-will, how the intervention of water point affects relationships within a "community", and the effect of key individuals on management.

Based on the research, functionality and sustainability of rural water sources in Moyo District was found to be at 86.13%. This was due to the water points found operational and able to produce water at the time of the spot check. Sources which were functional (not in use) were also considered as functional if the downtime was less than 5 years or not specified. The remaining non- functionality (13.87%) of the water points was mainly attributed to the Water User Committee being non-functional (38.77%), issues with low water yield (20.02%), technology breakdown (25.3%) amongst others.

Further analysis of the water user committees, indicated 72% were functional as evidenced by their roles and responsibilities. 28 percent mainly weren't functional although the water points were functional, this was a clear indication of corrective maintenance practices.

Management, a ratio between functional water points to those with functional water user committees resulted into a 47.7% level. This clearly indicated a challenge with the Water User Committee way of management in terms of operation and maintenance.

In conclusion, functionality of rural water sources is largely dependent on functional Water User Committees carrying out effective operation and maintenance. Based on the researcher's experience, functionality and sustainability of rural water sources can only improve when the users shoulder their part of the bargain and own the water points.

CHAPTER ONE: INTRODUCTION

1.1 Background to the Performance Assessment

The Performance Assessment of the Community Based Management is as a result of the conventional wisdom in policy circles that it is inappropriate to simply respond to people's need for easy access to safe water without considering consequences to sustainability and improved health. A simple "supply driven approach" is able to meet the needs of the rural masses in a speedy manner, but the users lack a sense of responsibility for the management of the water points (DeGabriele, 2002). In addition, the authors experience with hundreds of water user groups for over two years in Moyo in regards to the management of the water points. The challenge, therefore, is to assess the models' effect on sustainability in terms of operations and maintenance. A case study from Moyo District.

The Performance Assessment used the existing data from the Water supply Database of Moyo District for point sources as a benchmark for updating the water sources inventory herein used for analysis. This database was redeveloped into a situational based database of the District.

The Performance Assessment project entailed; making physical visits to all ¹point water sources, data collection, data validation, analysis and presentation through the use tables, graphs and figures. These updates mainly comprised of in-depth information such as geo-referenced locations, year of construction, source of funding, ownership, current management and operational status of the point water sources.

1.2 Objectives to the Performance Assessment

In Uganda sustainability especially of rural water supplies is still a challenge, despite the improvement in the national functionality rate which currently stands at 88%. While there has been an increase in the number of rural water sources that are functional at the time of spot check, there is limited information on the reliability of these water sources. Operation and maintenance practices of the rural water sources remain poor and many gravity flow schemes and point water sources are not fully functional. Post construction monitoring and technical

¹ Point Water Sources are locations where people come to collect water for domestic and other uses. These include: **wells, boreholes and springs**. Rainwater harvesting is also a Point Water Source but only needs basic protection measures because the opportunity for contamination is low. wherever possible. - Ministry of Water & Environment.

support gaps exist at the district and sub-county level, with the district water offices focusing more on development and less on maintenance (SNV, 2016).

A reliable water source should provide water for a minimum of 350 days in a year with less than 14 days of breakdown. Very few water sources are able to meet this standard and a broken-down water source can take up to three months or more before it is repaired. On average, a water source functions well within the first three years, after which it starts breaking down. The majority of the current rural water sources are over 5 years old, not regularly maintained and hence at risk of regular breakdowns. While big strides have been achieved in the management of urban water supply sources, many of which are maintained by urban water boards in liaison with private operators, similar progress is yet to be registered for the rural water supply sources.

The core objective of this paper is to examine the performance of Community Based Management in the Operation and Maintenance of Boreholes. A Case Study of Moyo District. The above objective was achieved through the following comprehensive performance Assessment system encompassing two levels as follows:

- Level 1 – Functionality of the existing water points.
- Level 2 – Operation and Management of Water points focusing on the roles and responsibilities of the Water User Committees. This include mainly; monthly contribution fee, regular meetings, representations and women in key positions, the surrounding environment.

The level of management² as an indicator is used to communicate the assessment results.

There are several unknowns, such as responsibility, commitment, good-will, how the intervention of water point affects relationships within a “community”, and the effect of key individuals on management.

Government through Ministry of Water and Environment and other organisations can bear only so much responsibility for the failure (or success!) of a Programme; the users must also shoulder their part of the bargain. This Assessment focuses on the bargains of the Water User Committees in terms of operation and Maintenance that allows for the sustainability of the Water Source.

² The Management (M) indicator gives the ratio of communally managed water sources in rural areas with a functioning Water source committee to those with any Water Source Committee.

CHAPTER TWO: LITERATURE REVIEW

2.1 Legal, Policy and Institutional Framework

Operation and Maintenance in general and Community Based Management System (CBMS) of rural water facilities in Uganda is anchored in a number of international conventions mainly the Sustainable Development Goals (SDGs) 2016 – 2030, Government of Uganda (GoU) laws, policies, strategies and planning documents and the Uganda Vision 2040 operationalizes the national vision of “a transformed Ugandan Society from a peasant to a modern and prosperous country within 30 years”. Vision 2040 singles out water development as one of the opportunities that can foster socio-economic transformation (MoWE, 2010).

Key legal documents include but not limited to the following:

The Constitution for the Republic of Uganda (1995) lays down the national objectives, the overall principles of state policy, and provides the framework for key policies relevant to WASH such as the decentralization policy. Clean and safe water as a right is enshrined in the Constitution as objective 21.

The Water Act, Cap 152(1997) provides for formation of Water User Groups /Associations who manage their respective water facilities including collecting user fees from persons using the water supply system for the maintenance of the system.

The Water Policy (1999); provides for the Water Source Committees/water boards to collect funds for preventive maintenance and repairs.

The Local Government Act (1997); defines roles for different levels of government in provision and management of water and sanitation. The provision of water and maintenance of facilities is in the act determined to be a role of District Local Councils in liaison with the Ministry responsible for national resources. The Act empowers the different levels of government to plan and implement development interventions according to identified local priorities, i.e. planning and allocation of resources towards O&M support activities, and together with extension staff monitoring and follow-up support to established community structures. The Act also empowers Local Councils to make bye-laws, subject to certification by the next higher Council or the Attorney General In this context a WUC may propose a bye-law to be adopted by the Village Council regarding the management and maintenance of their communal water facility.

The land Act (1998); vests all rights to water resources in the Government. It empowers the Minister responsible for water to regulate the management and utilization of such water. The Act allows for reasonable use by the occupier or owner of a piece of land, of water for domestic and small-scale agricultural purposes. The Land Act provides for a mutual agreement with the occupier or owner of land for execution of public works. Where agreement is not reached the Minister may compulsorily acquire the land and pay compensation to any person having an interest in the land for any damage caused to crops or buildings.

The public Health Act (2000); consolidates the laws and regulations on public health. It is relevant especially during implementation and enforcement of Hygiene and Sanitation Standards, necessary to attain any desired outcomes from WASH programs and projects.

2.2 Policy Framework

National Water Policy (1999); promotes an integrated approach to managing water sources sustainably to benefit the people of Uganda. It anchors O&M as an important component in attaining water and sanitation goals. It provides for capacity building at all levels for equitable and sustainable water supply in line with the decentralization policy. It provides for women 's involvement at all stages and ensuring equal opportunities. It provides for user ownership and management of rural point water facilities. It stipulates an expected functionality rate of 80-90%, and promotes CBMS. All point water facilities are required to have WUCs with half the membership being women, and at least two caretakers. It stipulates the roles and composition of WUCs, Sub-County Water and Sanitation Committees (SCWSCs), DWO and supports establishment of private hand pump mechanics and spare parts dealers (MoWE, 2010).

The National Gender Policy (1999) enshrines the affirmative action by GOU in support of gender equity in the national socio-economic activities and encourages women to play a major role in decision-making. With respect to water, the policy recognizes women and children as the key stakeholders in water provision and use.

National Development Plan II (2015/16 – 2019/20) is the second in a series of six-year plans aimed at achieving the Uganda Vision 2040. The Goal of the NDP II is to propel the country towards a middle-income status by 2020. The focus of the water and sanitation sector during NDP II is to increase access to safe water, sanitation and hygiene levels, functionality of

water supply systems, and promotion of catchment based integrated water resources management.

2.3 Institutional Set-Up For MWE

2.3.1 Current institutional Set-up

The Water and Environment Sector consists of three sub sectors: Water Supply and Sanitation (WSS) and Environment, Natural Resources (ENR), and Climate Change (CC). The WSS Sub sector, where this framework belongs, comprises of two directorates: Water Development and Water Resources Management. The Directorate of Water Development comprises of four departments namely; i) Rural Water Supply and Sanitation Department (RWSD), ii) Urban Water Supply and Sanitation, iii) Water for Production and iv) Water Utilities Regulation. The O&M of Rural Water Infrastructure is under the department of Rural Water Supply and Sanitation, within the Infrastructure, Operation and Maintenance Division. CBMS+ will be anchored within the existing Institutional arrangements. See below the functional organogram for the RWSD (MoWE, 2010):

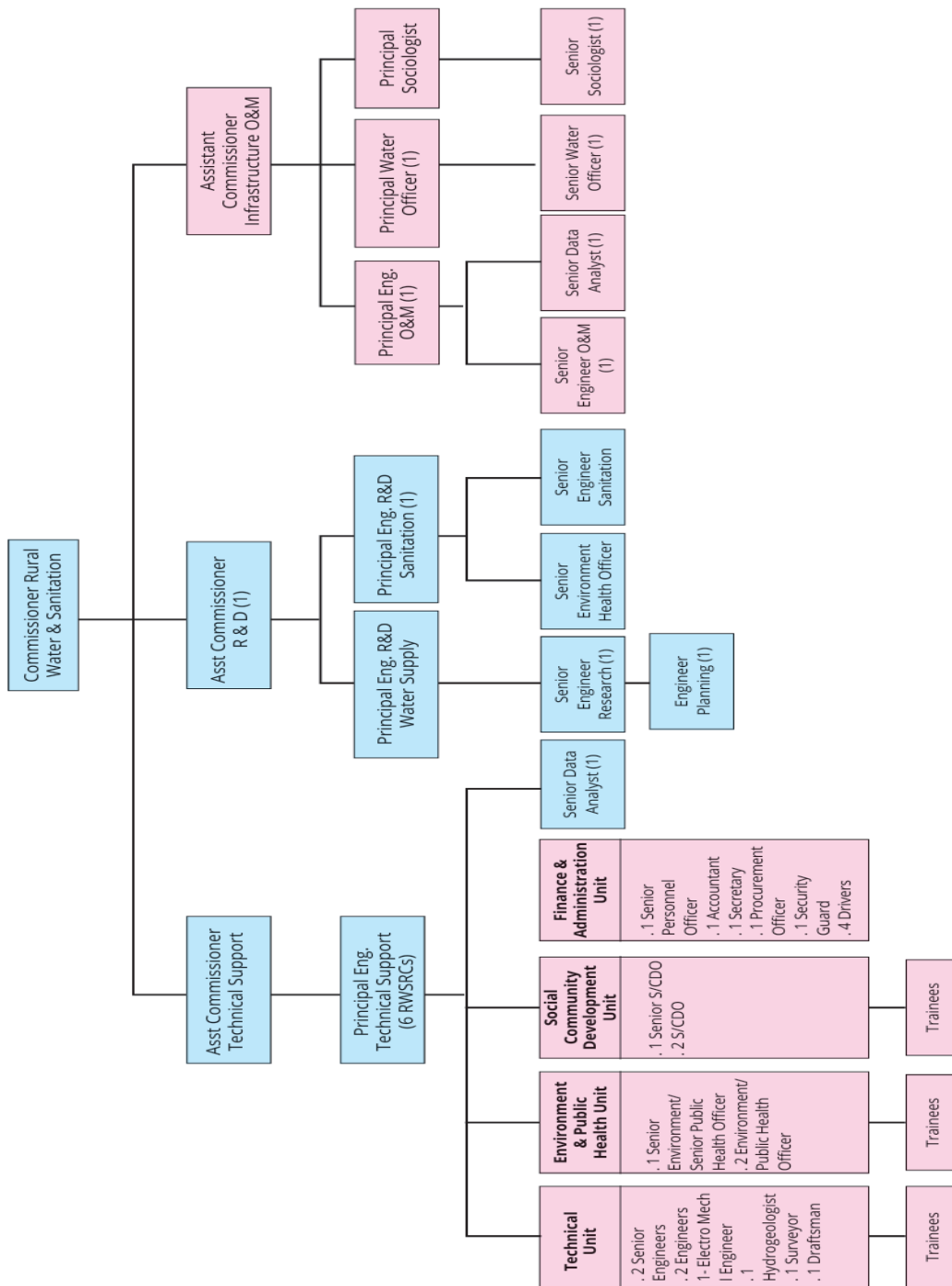


Figure 1: Functional Organogram for the RWSD

2.4 Situation Analysis

Currently there are mainly three models promoted in carrying out O&M of rural facilities; i) Community Based Management System (CBMS) for point water sources and small piped water systems outside the currently gazetted areas, ii) Umbrella Authority for small to medium & Large GFS sized piped water systems in gazetted areas and iii) National Water

Sewerage Corporation (NWSC) model in gazetted rural areas, LGFS and Rural Growth Centres (CBMS). In addition, the Private Sector (PSOs) and NGO/CBOs promote a number of approaches ranging from no management system at all, to organizationally managed O&M, to CBMS. The main technology options used for water supply improvement in rural areas include Deep borehole, shallow wells, piped water supply systems, protected springs and Rain Water Harvesting Tanks (RWHTs). The facilities have been constructed by a number of stakeholders ranging from MDA, DLGs NGOs/CBOs/FBO/PSO and Humanitarian Agencies under emergency situations. Consequently, these institutions have created and use varying O&M models (MoWE, 2010).

CBMS is the most common O&M model for rural water supply facilities that has been implemented since 1986. At its core is a strong emphasis on community responsibility and authority over the development and management of rural water supplies. While over the years CBMS has registered visible success in O&M of rural water facilities, the current rural development agenda necessitates a move beyond CBMS towards a Professional Management Arrangement (PMA) for long-term functionality and financial sustainability for all rural water systems in Uganda.

2.5 Definition Of CBMS, Its Key Features, Success and Challenge

2.5.1 Community Based Management System (CBMS)

The Community Based Management System (CBMS) is the process in which community members are empowered to take the lead role in decision making right from planning, implementation, operations & maintenance of rural water facilities. The CBMS model provides for a voluntary Water and Sanitation Committee (WSC)³, composed of 3-9 elected members. The WSC is responsible for the management of the rural water systems in the community. The caretaker executes day to day O&M activities at the respective water sources. In a particular sub-county there are trained Hand Pump Mechanics (HPMs) who execute repairs on demand. In design HPMs are also expected to execute preventive maintenance but in practice this function is not common due the intermittent payment of user fees.

Community-Based Management systems emerges as a revolutionary approach, capable of fostering inclusive water access through the following key strategies:

³ The WSC is comprised of a Chair person, Secretary and Treasurer, Caretaker, 3 -4 Committee members, LC1 chairperson is an ex-official.

1. Placing the community at the centre

CBD prioritizes community engagement and participation, replacing prescribed solutions with collaborative endeavours that embrace local wisdom in managing water resources. By involving communities in decision-making, CBD ensures water solutions are not only practical but also culturally and socially appropriate.

2. Sustainable and targeted solutions

CBD embraces the uniqueness of each region's resources and challenges, advocating for water solutions tailored to the specific needs and environmental contexts of communities. Rainwater harvesting, water conservation, and watershed management are among the projects aligned with community needs to ensure long-term sustainability.

3. Ownership and responsibility

Active community participation instils a sense of ownership and responsibility towards water resources. By empowering communities in planning and implementation, accountability is heightened, ensuring maintenance and continuity of water systems even when external support wanes.

4. Knowledge transfer and capacity building:

CBMS's emphasis on knowledge transfer and capacity building to empower local communities in operating and maintaining water infrastructure. Not only providing operational skills to confront future challenges, this approach is also fostering a sense of pride and accomplishment.

Community-Based Development heralds the transformative potential to revolutionize global water access. Empowering communities becomes instrumental in effectively addressing water supply challenges.

2.5.2 Key Features of Community-Based Management Systems

- i. **Local Participation:** Community members are actively involved in the planning, implementation, and monitoring of projects or programs. Their local knowledge and experience are integral to decision-making.
- ii. **Decentralized Decision-Making:** Decisions are made at the community level rather than by external authorities, allowing for more relevant and tailored solutions to local challenges.

- iii. **Sustainability:** By involving the community, CBMS aims to create sustainable solutions that are maintained and managed by the people who benefit from them.
- iv. **Capacity Building:** CBMS often includes training and education to build the capacity of community members, equipping them with the skills needed to manage resources effectively.
- v. **Resource Management:** Common applications include natural resource management (forests, water, fisheries), health, education, and community services.
- vi. **Monitoring and Evaluation:** The community is involved in the ongoing monitoring and evaluation of the system, ensuring that it remains effective and relevant.

2.5.3 Current Rural Water O&M Challenges

In spite of the achievements registered over the years in using CBMS, as water systems increase in technical complexities and changes in social dynamics where rural communities have shifted to a cash-based society, the CBMS in its current form is faced with a number of challenges.

CBMS challenges

Shortcomings in O&M⁴ management models ranging from management structures that are weak, lines of responsibility that are at times unclear, declining spirit of volunteerism which leads to lack of participation, high turnover of the WSC members, inadequate and uncoordinated messages on O&M from the stakeholders.

- i. **Financial and social challenges** ranging from irregular contributions towards O&M, varying community contribution in same geographical areas, misuse of funds, lack of accountability, mistrust between the WSC and the users, lack of financial institutions within close vicinity to communities for safe custody of O&M funds, political interference/intervention etc.
- ii. **Poor planning for O&M;** currently communities collect money after a breakdown of facilities consequently leading to long down time. Coupled with inability/unwillingness to pay or charge for O&M by the users has impacted CBMS.
- iii. **Lack of technical capacity** to manage the complex water systems under CBMS especially the motorized systems such as the electro mechanical components in technologies in solar systems.

⁴ Operation and maintenance means the function, duties and labour associated with the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve an asset so that it continues to provide acceptable services and achieves its expected life.

- iv. **The spare parts supply chain** has been limited in reach and the quality of the spare parts has been poor. Often spare parts are available only in major towns and this has often led to delays in access and subsequently leads to the long down time of the non-functioning water facilities

2.5.4 Factors That Mitigate Against Community Based Management of Boreholes

General concerns about the poor performance of the system have been highlighted. There are enough examples of unsuccessful water supply programmes to draw some conclusions. These characteristics can be classified roughly into “attitudes” shaped by poor thinking, lack of information, or self interest, and “practice” which can be motivated by these attitudes, as well as a lack of commitment, or fear of upsetting powerful interest groups.

The Ministry of Water and Environment Development can play a crucial role in ensuring that the required standards are enforced.

- **Ideological entrapment.** In trying to construct theoretical models, policy makers try to shape practice to fit theory, rather than the other way around. Too many assumptions are made and terminology is often used in an uncritical way, such as the use of overly general concepts such as community, participation, sustainability, ownership, cost recovery, demand driven, willingness to pay, etc. This can lead to lip service, with Donors, Government, NGOs and other service suppliers deploying the language for appearance rather than results.
- **Politicisation of water issues.** There is a pattern of boreholes being used by political parties as vote winners, by NGOs to legitimise their existence, to solicit funds and raise their profile, and by religious groups as a means of proselytising²⁸. Decisions on sites for new boreholes are sometimes left in the hands of the local Member of Parliament or religious leaders without recourse to people’s needs. Consequently, people’s perception that water sources should be provided free of charge and subsequently maintained for them is reinforced. When boreholes are used as bait, the approach is more supply driven than demand driven. A frequent consequence is poor installation and poor maintenance. Another consequence is that there is little emphasis on sanitation and education. If the MoWE and the Districts are empowered in their coordinating role, there is the possibility to curb this abuse.

- **Dispersal of funds.** Unfortunately, some donors and agencies are more concerned about end of year balances than impact. As boreholes are expensive, they are a quick way of dispersing funds.
- **Little or no real importance** attached to sanitation and health education. As a result, the impact on health is not as good as it could be, yet investments in sanitation and education are less capital intensive.
- **Vested interests.** Public officers have direct or indirect interests in borehole drilling and construction companies.
- **Poor quality drilling** (depth and construction), poor civil works, poor quality hand-pumps, Poor supervision during construction. Verification exercises that a borehole has been constructed to specified standards are not enforced and indicators to evaluate long-term impact are not developed.
- **Little or no meaningful consultation** with the potential users.
- **No training or poor-quality training.** Although training in CBM is recommended, it is not enforced, and the standards are not monitored.
- **Unavailability of spare parts.**
- **Centralisation of repairs.** If the users are unable to repair their hand pump, they are referred to the District Maintenance team who often take a very long time to respond.

2.5.5 General O&M challenges

In addition to the challenges faced specifically through implementation of the CBMS model, there are various general challenges rural O&M faces.

- i. **Multiple O&M approaches** currently implemented by the various stakeholders involved in rural water supply services creating challenges especially if the approaches are promoted in the same community.
- ii. **Overlapping modalities (NWSC/UA/CBMS/PPP/NGO/Refugees):** This is mainly caused by overlap in mandates and roles & responsibilities of the various stakeholders involved in implementation of rural water supply services.

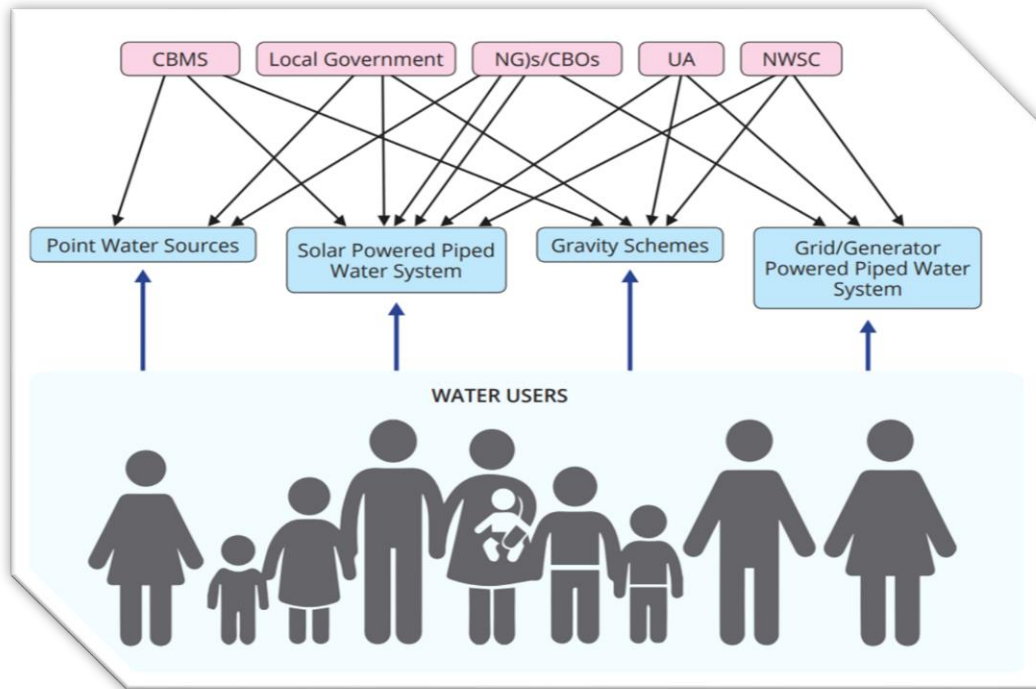


Figure 2: Multiple approaches & overlaps in rural O&M

- iii. Within the refugee settlements, there are **varying solutions** utilised to provide water ranging from hauling untreated water, shallow wells, and boreholes which are either manual or motorized through solar energy or diesel pumping. Currently the water is provided free of charge and the O&M costs are borne by the implementing agency or subsidized by UNHCR in some cases.
- iv. Development challenges ranging from, in some cases, **poor quality of design, construction, or installation supervision** of the water infrastructure resulting in potentially low quality or inferior **construction materials or system efficiency** leading to lower quality systems that break down easily and regularly.
- v. Water quality and quantity emanating from poor **Water Resources management** practices which render some sources unusable. Water quantity is supposed to be regulated through issuance of abstraction permits, however very few developers have applied for permits. On the other hand, the water quality monitoring is supposed to be undertaken by a number of stakeholders ranging from the operator/developer, DLG, RWSRCs/ WMZ/DWRM but due to limited funding this activity is done irregularly.
- vi. **Asset management** arrangements (UPMIS) do not include the rural water facilities, thus there is no central inventory for the rural water facilities. The information about

the facilities is scattered in various documents kept by the various sector players who utilize varying data asset management methodologies thus making it difficult to benchmark or promote shared learning among the respective stakeholders

- vii. **Regulation** is a critical function in ensuring adherence to sector standards, however currently there is weak regulation of water supply services in general and none existent for the rural water supply sub –subsector.
- viii. **Monitoring** is a crucial function to keep track on progress on implementation and also to guide realistic planning and timely remedial action. Currently the monitoring function is carried out at MWE, Regional/TSU and districts. It is inadequately funded. MIS does not at present fulfil the role of streamlining, collecting and organizing social and technical data at all levels for meaningful use.
- ix. The current lack of a **single operation and maintenance framework** results in a confusing array of management systems including no management or maintenance at all, leading to lack of operational efficiency or functionality.
- x. **Gender issues** are incorporated in all the relevant sector documents including the Sector Measurement Framework with clear indicators to monitor and report progress. However, the effectiveness of women involvement in management has been minimal due to underlying issues such as household chores, cultural norms and dynamics.

As a result of these challenges, it has become apparent that the CBMS O&M model is ill-suited for more complex systems, does not provide for long-term sustainability due to the lack of a financial model, and needs to be restructured for reliability and functionality into a Professional Management Approach (PMA). This is the basis for the Research outlined in this document, and to see if it's level of performance in Moyo District Local Government.

2.6 Key Stakeholders, Roles and Responsibilities

The proposed roles and responsibilities of the various stakeholders in O&M are explained in details below (MoWE, 2010);

Table 1: O&M stakeholders and their roles & responsibilities

Entity	Stakeholders	Roles and responsibilities
MWE	Minister, Permanent Secretary, Director Assistant Commissioner IOM, Principal Sociologist, Principal Engineers, Senior Sociologists, Senior Engineers and O&M expert	<ul style="list-style-type: none"> • Policy and strategy on O&M development. • Strategic planning for O&M issues. • Mobilization of resources for O&M. • Capacity building of stakeholders. • Carry out Technical assistance in O&M. • Coordination and collaboration with different actors (Development partners, NGOs and private sector) • Spearhead Research and Development of O&M issues. • Spearhead development of the spare parts supply chain policy. • Develop a functional O&M Management Information System (MIS) including as asset registry. • Technical back stopping to RWSRCs. • Support access to technicians and other specialized support that is required • Continued awareness creation of national level stakeholders for O&M i.e. DPs, Private sector, NGOs, the Academia/Researchers. • Ensure that transparency and accountability are embedded within the established management structures. • Put in place an asset analysis and management policy. • Approve the members of the District & Regional level water boards. • Approve the tariff structures. • Document experiences in the use of national O&M framework to inform updating the next version of the National framework
Regional Water Supply Centres (formerly TSUs)	Principal Engineer (Team Leader) All technical staff (as indicated in the Organogram). One of the senior technical staff members will be given a	<ul style="list-style-type: none"> • Carry out continuous engagement of regional and DLG stakeholders, • Provide the capacity building necessary for DLG stakeholders in O&M & to regional/district level stakeholders,

	<p>full-time assignment as the O&M specialist.</p>	<ul style="list-style-type: none"> • Conduct asset analysis, • Carry out assessment of O&M costs for the rural WSS facilities in the respective DLGs enforce compliance of O&M guidelines, • Support DLG in planning, budgeting and reporting on O&M, • Monitoring and supervision of rural WASH facilities, • Carry out coordination of regional and district level stakeholders, • Support the development of Ordinances and By-laws at the District and S/County respectively, • Carry out Monitoring and Evaluation of O&M, • Disseminate of policies, strategies and research and new technologies • Organize Regional Rural Water Coordination Committee meetings, • Review of O&M management structures and financial processes for viability, • Technical back stopping, • Water quality surveillance and monitoring, & Quality assurance. • Participate in evaluation of bids for procurement of ASPs • O&M of equipment at regional centres.
<p>DLG</p>	<p>District Council & DEC CAO, DWO, ADWOs, Environment Officer, DEO, Technicians (BMT).</p>	<ul style="list-style-type: none"> • Nominate names of the members to the DWSSB • Mobilise resources for the activities of the DWSSB & ASP • Formulate ordinances & policies • The DLG, under the department of water and sanitation, is responsible for planning and budgeting for O&M. • Provide capacity building to lower local government staff (at SC Level) in planning and O&M of WASH activities. • Provide GoU procurement services to DWSSB for ASP procurement. • Continued sensitization and mobilization of S/Cs and communities for O&M. • Train, guide and monitor HPMAs/ HPMs. • Technical support to SCs and the established structures for O&M namely; HPMs, Water Technicians, SO, and the

		<p>SCWSSB, WSC, etc.</p> <ul style="list-style-type: none"> • Resource allocation for O&M. • Monitoring and regulation of all water and sanitation activities in the district. • Support and regulation to the O&M management structures. • Water quality surveillance and monitoring. • Enacting and enforcement of ordinances & other relevant laws.
District Water Supply Board (DWSSB)	<p>District WSSB is between 5-7 members comprised of the following:</p> <p>2-3 nominated members from SCWSSBs.</p> <p>1 – nominated by CAO from district staff</p> <p>1 - Representative of the director of DWD.</p> <p>1 - Representative of Institutions (schools, health facilities, prisons or businesses)</p> <p>1 NGO and I MP & RDC will be ex officials to the DWSSB.</p> <p>NB: The members of the DWSSB nominated by the council and approved District Council and approved by the Director DWD. NB: The Chair Person and Secretary shall be elected from within the DWSSB or RWSSB by themselves.</p> <p>The NGO ex official will be nominated by the DWSCC & the MP will be nominated by the DEC.</p>	<ul style="list-style-type: none"> • Procures an Area Service Provider (ASP) to carry out O&M for all the Water sources using the GoU procurement guidelines. • Contract the ASP on a performance-based contract. • Approves workplans and reports submitted by the ASP • Monitor and oversee activities of the ASP. • Recruit the Liaison Office. • Convene and hold annual review meetings (forum) • Appoint external auditors. • Review and approve or comment upon all reports submitted by the ASP. • Submitting reports to the district Local council and to District water & sanitation forum.
Board Coordination Office	<p>Liaison Officer</p> <p>NB: The Liaison Officer is employed by the DWSSB, is a graduate, a minimum of 5 years of experience in WASH, knowledgeable in Local Government operations, possessing coordination, management and people skills.</p>	<ul style="list-style-type: none"> • Liaison between DLG, DWSSB, S/C and SCWSSBs. • Provide technical oversight/support to the DWSSB and SCWSSBs. • Ensure constant communication and feedback/information among the stakeholders. • Coordination and communication on the activities of the WSSB.

		<ul style="list-style-type: none"> • Organize and convene annual performance review meetings. • Compile monthly reports.
Area Service Provider (ASP)	Local expert entities that manage rural water systems professionally under a performance contract with the DWSSB or RWSSBs. Trained and sufficiently experienced Local Firms (PSOs), NGOs, or HPMA.	<ul style="list-style-type: none"> • Collect user fees and bank it on the Collection Account. • Hire staff to operate and manage water facilities. • Carry out preventive maintenance and repairs. • Use control and safe guard system installations. • Ensure adherence to the performance indicators as set out in the management contract & the performance contract. • Maintain technical records. • Responsible for submitting periodic reports as stated in the contract • Maintain accurate and systematic accounts and records in respect of the Services in such form and detail enabling clear identification of all relevant charges and costs incurred and the basis thereof as well as proper and timely Technical and Financial Audits. Such accounts shall be audited by External Auditors. • Pay for Technical and Financial Audits from Project Funds as long as the Project is effective. After such date, Technical and Financial Audits shall be payable from the Revenue Collection Account. • Financial facilitation of the activities of the board.
Technician	HPMs/motorized scheme Technicians. Employed or contracted by the ASP.	<ul style="list-style-type: none"> • To carry out curative maintenance and repairs of the water systems. • Liaises, coordinates and collaborates with stakeholders of the regulation system. • Reports to the ASP
NGO/CBO	NGOs/CBOs operating in the area.	<ul style="list-style-type: none"> • Operation and Maintenance through contracts with SCWSSB/DWSSB. • Advocacy • Capacity building • Resource mobilization
Sub-county Local Government	The SAS/S/C chief and extension staff have a mandate to monitor WASH activities.	<ul style="list-style-type: none"> • Plan for and pass necessary budgets for WASH activities. • Sensitization and training to the water users/WSCs/ SWSSBs.

		<ul style="list-style-type: none"> • Monitoring/Follow up for WASH services provided at community level. • Approve local bye-laws of each water source when they are submitted. • Technical back stopping to established management structure. • Continued sensitization and mobilization of communities. <p>NB: The Sub-County Chief's/SAS's annual performance contract should have functionality as one of the parameters for assessment to ensure adequate follow up.</p>
Sub-county Water and Sanitation Board (SWSSBs)	The SCWSSB which is a representation of the WSCs, is comprised of 5 members, elected by the users (represented by WSCs) and vetted by S/C council: 1 - Representative of Institutions 1 - Representative of S/C 1 - Secretary for Works 2 - Representatives of Community.	<ul style="list-style-type: none"> • Monitor and oversee activities of the ASP and ASP staff i.e. HPMs/SO. • Coordinate with the Liaison Officer. • Attend quarterly review meetings/ forum. • Disburses allowances for the respective WSCs (on a quarterly basis) • Oversees all Water and Sanitation Committees (WSCs). • Provide for security of the assets, • Facilitate conflict resolution & management and resolve issues which are not resolved at WSC levels.
Water User	Community Institution etc.	<ul style="list-style-type: none"> • Pay for water for water services. • Protect the infrastructure. • Take active part in community meetings. • Observe and monitor the proper functioning of the water point and report to caretaker and/or WSC member(s). • Discuss and approve the local bye-laws proposed by the WSC in community meetings
WSC	A 3-person Water and Sanitation committee (WSC) comprised of: Chairperson, Secretary, Treasurer	<ul style="list-style-type: none"> • Mobilise the users to pay for the monthly user fees/ unit of water. • Mobilise for hygiene and sanitation.
Caretaker/ Scheme Operator	An employee or contractor of the ASP	<ul style="list-style-type: none"> • Carry out the functions of the ASP including collecting the user fees. • Keeping the water source clean, maintain the fence & security of the facility. • Carry out preventative maintenance

2.7 Coordination, Collaboration and Networking For O&M

Coordination will be crucial in the operationalization of the National O&M framework, mainly due to the multi stakeholder nature of O&M activities. In addition, the varying approaches in O&M require close coordination and networking of stakeholders to ensure adherence to use of the National O&M framework by all stakeholders involved in rural water infrastructure.

The MWE is responsible for coordinating national level agencies, the RWSRCs responsible for regional and DLGs stakeholders and the DLGs responsible for their respective district and sub-county levels stakeholders. Funding to facilitate coordination activities is critical in ensuring timely and effectiveness of coordination activities.

At the National level:

- i. Re- establish and strengthen the functionality thematic working group and ensure that it is reinvigorated.
- ii. An annual consultative meeting on O&M with the implementing agencies/DPs, NGOs to share lessons, bench mark and share strategic direction on O&M issues.
- iii. National learning forums which used to be funded by NGOs but now will be hosted by MWE/RWSD.
- iv. The UWASNET NGOs O&M working group which brings together NGOs to discuss O&M issues.
- v. Participate and ensure that the annual Joint Sector Reviews/Joint Technical Reviews fora incorporate O&M strategic issues,
- vi. The annual Water officers' meeting: O&M will form part of the agenda items.

At the regional level the RWSRCs will carry out the following;

- i. Hold Regional Rural Water Coordination Committee which will take-place bi-annually to review progress, coordination and guidance.
- ii. Facilitate learning forums to share experiences as well as receiving feedback on O&M activities.

Option of Management of Water Infrastructure by Regional Water Boards

Article 178 of The Constitution provides that 2 or more districts may cooperate to form a regional government which shall be a cooperate body (with powers to sue or be sued) having political, legislative, executive, administrative and cultural functions in the region. The article

guides that with a) approval of majority of two-thirds of members of the district council and, b) at least two-thirds of the sub-counties in the district having ratified the decision of the council, a district can enter into agreement with other districts to form a regional government. Among others, such a government would;

- i. Develop and manage regional infrastructure for instance roads and hospitals but not those managed by national institutions.
- ii. Coordinate, monitor and supervise activities related to agriculture, forests (but not in national parks and wildlife reserves managed by government), cultural and traditional lands.
- iii. Promote water and sanitation.
- iv. Perform functions and services surrendered voluntarily by district councils, however such government can impose tax only with approval of central government.

At the District Local Governments:

O&M should become an agenda item in the fora for water boards at different levels.

2.8 Cross-Cutting Issues

Cross cutting issues have the potential to enhance or impede service delivery if not taken into consideration in the planning, implementation as well as O&M phase. Thus, the National O&M framework for rural water infrastructure will ensure their integration in order to register good progress in sustainability of installed water infrastructure. Within the MWE, the cross-cutting issues include i) Gender, ii) environment and iii) HIV/AIDs.

Gender

Within the water sector, gender equality and women empowerment are considered both a human right and a pre-condition for sustainability of the WASH interventions. Gender refers to the percentage of women on the WSC. The Gender performance indicator is the % of Water user committee with at least one woman holding a key position. The key positions include the Chairperson, Treasurer and Secretary. To this end, a performance indicator on gender mainstreaming is part of the Sector Measurement Framework (SMF) and thus, reported upon annually. SPR 2019 indicates that 85% of all the WSCs have women holding key positions. However, it has stagnated at 85% for 3 years. It is expected that at least 1 woman will hold one of the three positions on the WSC, 2 for the DWSSBs and SCWSSBs.

Environment

In Uganda has experienced poor environment and natural resources management and yet water supply facilities depend on the natural resources to ensure adequate water quality and quantity for all users. Thus, environment mainstreaming is meant to ensure that the water catchments are protected and safe guarded from pollution as well as ensure water availability throughout. Operationalization of environment protection is through implementation of Water Source protection at the source level and catchment planning and management at a bigger scale. The National O&M framework will work in tandem with other sector strategies such as the Water Source Protection and the Catchment Management guidelines of 2013.

HIV/AIDS

The Uganda National Development Plan 11(2015-2020) recognizes HIV/AIDS as a crosscutting issue in Uganda's development process. The fight against HIV/AIDS requires a multisectoral approach and has to be part of each Sector's efforts in poverty eradication and development. Mitigations measures against HIV/AIDS are among the basic interventions designed for the achievement of the Uganda vision 2040

Activities of O&M expose MWE staff, DLG staff and communities to the risk of HIV transmission. It is therefore, important that HIV/AIDS prevention and impact mitigation strategies are mainstreamed in the sector activities to reduce the vulnerabilities of the actors at all level. HIV/AIDS mainstreaming activities in the water sector includes capacity building of stakeholders at the national, regional, DLGs and S/Cs in mainstreaming, inclusion of HIV/AIDS mainstreaming in the Bills of Quantities (BoQs) for construction of works and this should include water facility rehabilitation activities. In addition, appropriate partnerships are developed to facilitate awareness creation/sensitization, voluntary HIV/ AIDS testing, counselling and treatment. The RWSRCs will monitor and guide stakeholders at regional level to plan and allocate budget for the implementation of the cross-cutting issues. They will also spearhead capacity building of stakeholders in situations where the capacity is inadequate.

CHAPTER THREE: MATERIALS AND METHODS

3.1 Introduction

The Performance Assessment used the existing data from the Water supply Database of Moyo District for point sources as a benchmark for updating the water sources inventory herein used for analysis. This database was redeveloped into a situational based database of the District.

The Performance Assessment project entailed; making physical visits to all point water sources, data collection, data validation, analysis and presentation through the use of tables, graphs and figures. These updates mainly comprised of in-depth information such as geo-referenced locations, year of construction, source of funding, ownership, current management and operational status of the point water sources.

The objective of the assessment was achieved through the following comprehensive performance Assessment system encompassing two levels as follows:

- Level 1 – Functionality of the existing water points.
- Level 2 – Operation and Management of Water points focusing on the roles and responsibilities of the Water User Committees. This include mainly; monthly contribution fee, regular meetings, representations and women in key positions, the surrounding environment.

The level of management as an indicator is used to communicate the assessment results.

3.2 Presentation and Interpretation of Results

3.2.1 Functionality of the Existing Water Points

Functionality is the number of functioning improved water sources divided by the total number of improved water sources. Functional water sources are those found operational and able to produce water at the time of the spot check. Sources which are functional (not in use) are considered as functional if the downtime is less than 5 years or not specified. Sources not operating for 5 or more years are assumed to be abandoned, and hence are not included in the calculation. Functionality (F) is calculated as (MWE, 2017):

$$F = \frac{\text{Functional water points}}{\text{Total Number of water points}}$$

Table 2: Summary of water points in Moyo District

LIST OF EXISTING WATER POINTS IN MOYO DISTRICT				
Sub- Counties	Total No. of B/H	Functional B/H	Non- Functional B/H	Decommission
Moyo TC	21	11	5	5
Moyo SC	88	73	6	9
Otce SC	31	15	9	7
Metu SC	48	22	13	13
Aluru SC	52	39	6	7
Dufile S/C	38	32	3	3
Laropi TC	14	12	0	2
Laropi SC	26	20	3	3
Lefori TC	8	8	0	0
Lefori SC	56	40	12	4
Total	382	272	57	53
Functionality		86.12565445		

The functionality of the water points stands at 86.13% with the remaining 14% of the water points being non-functional.

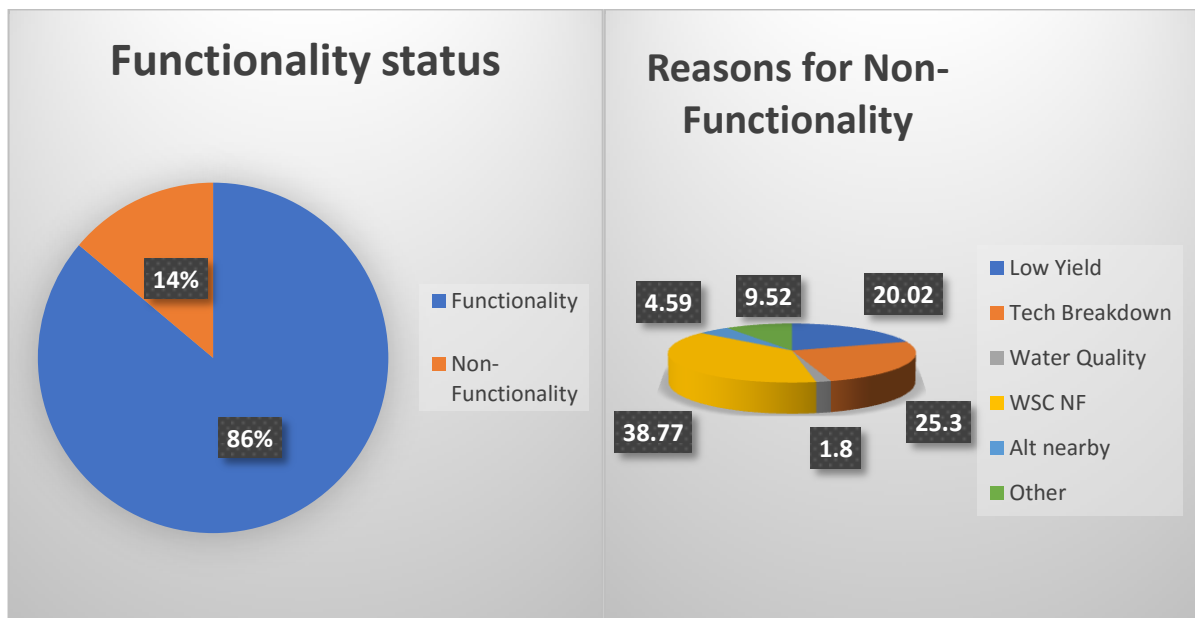


Figure 3: Pie Chart showing functionality status of water points

The Urban functionality of water points stands at 83.72%, the remaining 16.28 is as result of the following.

- **Vandalism:** mainly acquisitive vandalism - damage inflicted to public property in order to acquire a resource, often to be sold on for a profit. This includes removal of Borehole heads and handles by scrap dealers.



Figure 4: Acquisitive vandalism

- **Alternatives Nearby**, especially since the urban areas have been gazetted under NWSC or the umbrella group
- **Water User Committees-** Non-functional
- **Technology breakdown;** as a result of not routine maintenance rather than preventive maintenance.

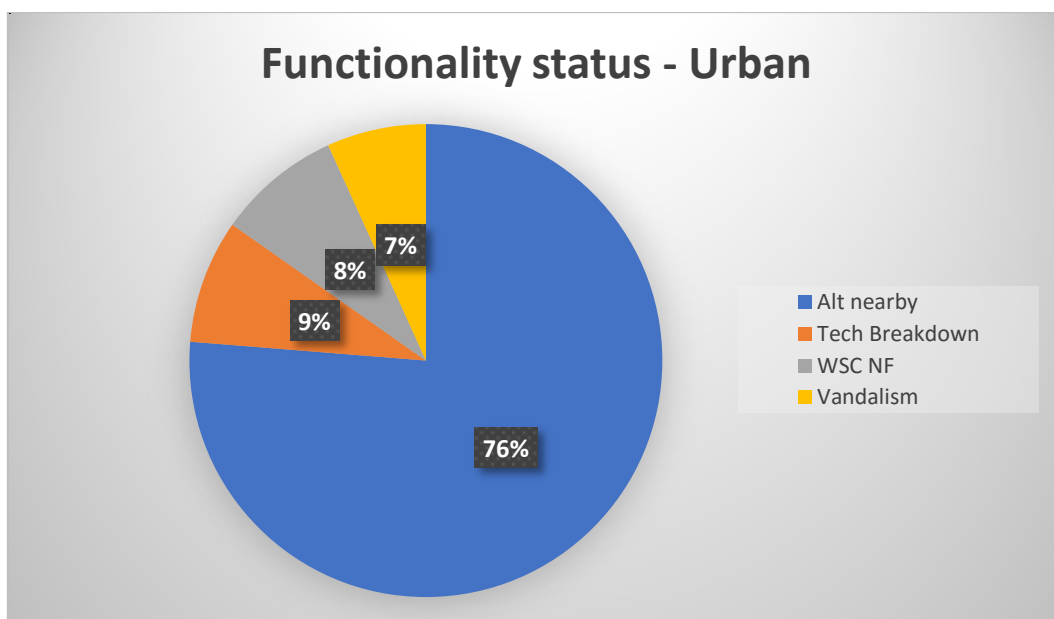


Figure 5: Pie Chart Showing Urban- functionality of water points

The Rural functionality of water points stands at 86.43%, the remaining 13.57 is as result of the following.

- **Vandalism:** mainly **Play vandalism** - damage resulting from children's or youth's games where the property destruction is secondary to the players' skill or display of strength and **Malicious vandalism** - a violent outpouring of diffuse frustration and rage that often occurs in public settings. The act is enjoyed for its own sake: it may be viewed as amusing by the perpetrator, and/or express malice and anger.



Figure 6: Malicious vandalism

- **Alternatives Nearby**, especially since the rural areas are surrounded by unprotected streams and springs.
- **Water User Committees- Non-functional.** This is very common in the Rural setting. There are several unknowns, such as responsibility, commitment, good-will, how the intervention of water point affects relationships within a “community”, and the effect of key individuals on management.
- **Technology breakdown;** This includes wearing out of pipes and other parts which may be unaffordable to the community of users. This comes as a result of practicing corrective maintenance rather than preventive maintenance. There is also the issue of ageing water pipes and rods.

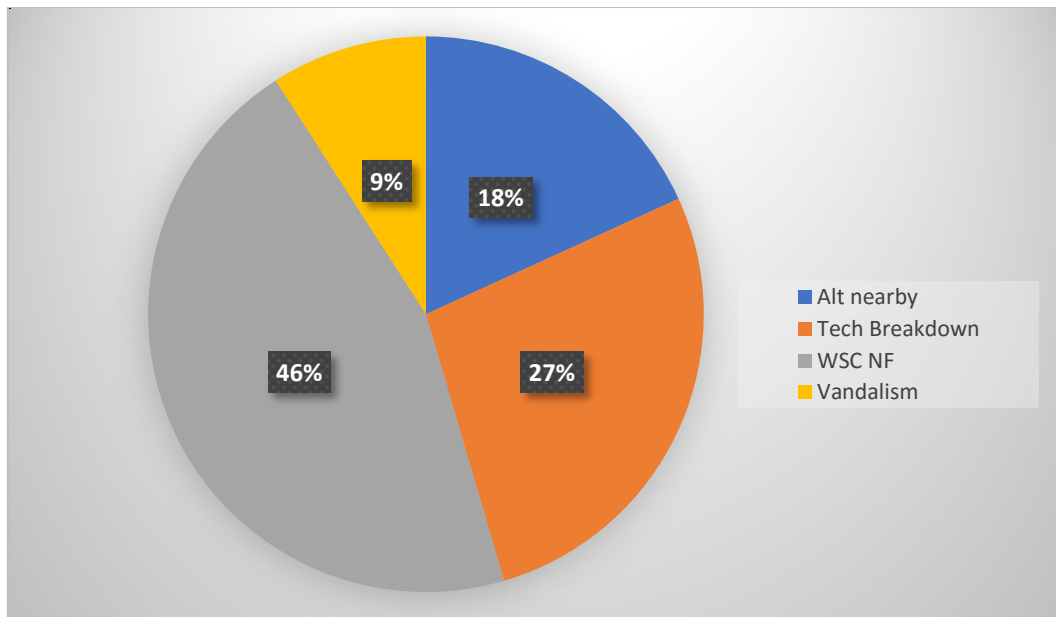


Figure 7: Rural- functionality of water points

3.2.2 Operation and Management of Water points

Functionality of the Water User Committees

$${}^5Fwucs = \frac{\text{Functional WUCs}}{\text{Total WUCs}} * 100$$

$${}^6Non - Fwucs = \frac{\text{Non - Functional WUCs}}{\text{Total WUCs}} * 100$$

The functionality of Water User Committee in Moyo District for the Water point stands at 72.06 % while, the remaining percentage of 27.94 is non- functional.

⁵ Fwuc_s - Functional Water User Committee

⁶ Non - Fwuc_s - Non- Functional Water User Committee

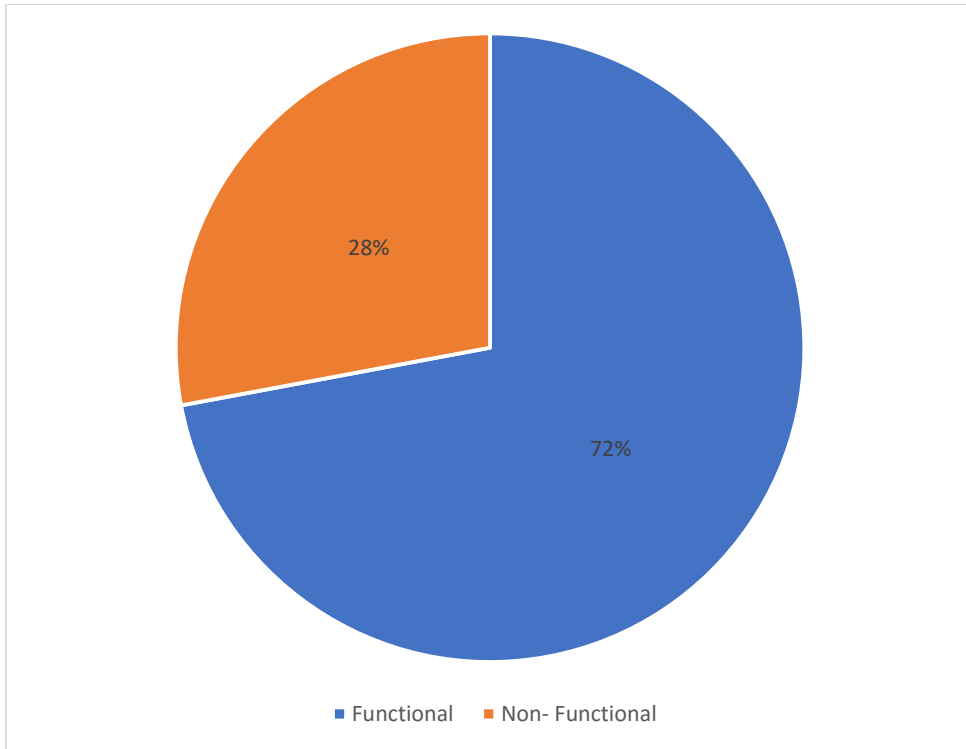


Figure 8: Functionality of WUCs

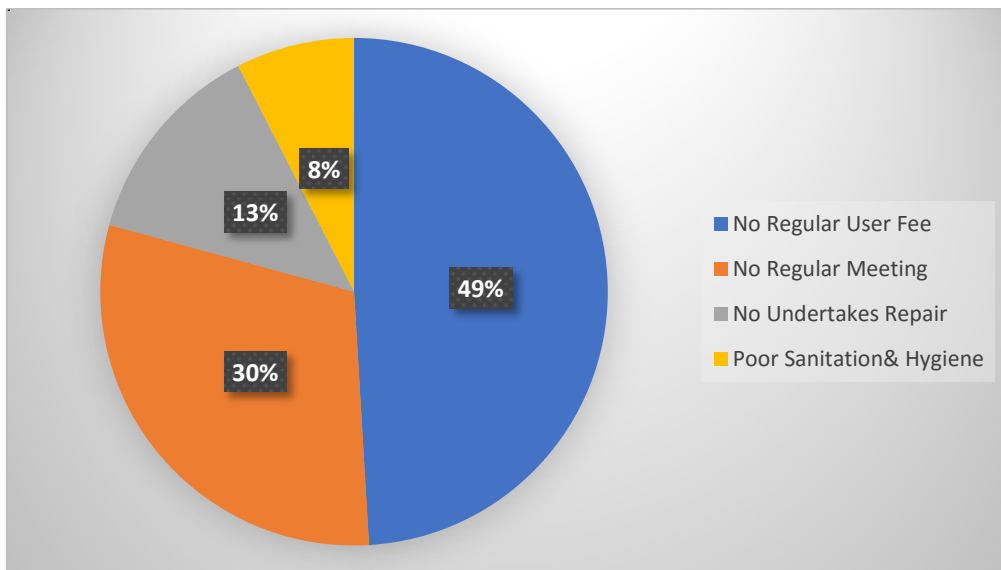


Figure 9: Reasons for Non- Functionality

3.2.3 Management

The Management (M) indicator gives the ratio of communally managed water sources in rural areas with a functioning Water source committee to those without any Water Source Committee. A water source Committee is defined to be functional if it collects fees and at least undertakes repairs or hold meetings around the source. This data is collected through the District Form⁷ (MWE, 2017).

$$= \frac{\text{water points with a functioning WUCs}}{\text{water points without a functioning WUCs}} = \frac{272}{57} = 4.77$$

Management of Water points stand at 47.7% in Moyo District which clearly indicates a challenge with the operation mechanism.

3.3 Discussion of results

Functionality of rural water sources is largely dependent on functional professional systems in this case the Water User Committees.

Based on the research, functionality and sustainability of rural water sources in Moyo District was found to be at 86.13%. This was due to the water points found operational and able to produce water at the time of the spot check. Sources which were functional (not in use) were also considered as functional if the downtime was less than 5 years or not specified.

The remaining non- functionality (13.87%) of the water points was mainly attributed to the Water User Committee being non-functional (38.77%), issues with low water yield (20.02%), technology breakdown (25.3%) amongst others.

Further analysis of the water user committees, indicated 72% were functional as evidenced by their roles and responsibilities. 28 percent mainly weren't functional although the water points were functional, this was a clear indication of corrective maintenance practices.

Management, a ratio between functional water points to those with functional water user committees resulted into a 47.7% level. This clearly indicated a challenge with the Water User Committee way of management in terms of operation and maintenance.

⁷ All records of communally managed sources with information filled in the fields on the District Form (Annex 2) are considered for the denominator.

CHAPTER FOUR: CONCLUSION AND RECOMMENDATION

4.1 Conclusion

Functionality of rural water sources is largely dependent on functional professional systems in this case the Water User Committees (SNV, 2016).

Based on the researcher's experience, functionality and sustainability of rural water sources can only improve when the following structural issues are addressed and the users shoulder their part of the bargain and own the water points:

- Preventive maintenance and repair support from professional and business-oriented Hand Pump Mechanics Associations (HPMAs).
- Security of operation and maintenance funds using financial institutions such as village saving and loan association schemes at the community level.
- Strong post-construction support at the district, sub-county and private sector level to operationalise, strengthen and monitor the operation and maintenance system structures.

4.2 Recommendations

In order to improve functionality and sustainability of rural water supply by addressing the systemic challenges identified above at the community, sub-county, district and private sector level by:

- Building the capacity of HPMAs to operate as private entrepreneurs, so that they are more professional and business oriented and can proactively operate and maintain rural water sources. The project is also linking HPMAs to the sub-county water supply and sanitation boards (SWSSBs) and the water and sanitation committees for regular routine maintenance works, as well as to the Umbrella of Water and Sanitation for easy access to genuine and fairly priced spare parts.
- Establishing and building capacity of the SWSSBs to oversee all the water sources in the sub-county. SWSSBs are being encouraged to employ a technician to solely support operation and maintenance on a day to day basis.
- Ensuring that the district and sub-county political leadership are aware of their roles and proactively support improvement in functionality of rural water

- Building the capacity of the district and sub-county technical staff to operationalise, strengthen and monitor the operation and maintenance system structures.
- Strengthening O&M structures at the community level, incorporating the saving and loans schemes as security for user fees and linking the Water and Sanitation Committee to Sub-County Water Supply and Sanitation Boards/Hand Pump Mechanics. This will address the wariness and perceived insecurities by water users about water user committees mismanaging their operation and maintenance funds and also provide clear transparency and accountability mechanisms for the water user committees.

When well organised water sources management structures, with mechanisms to ensure security and accountability of the user fees, are supported by professional post construction institutional support from the sub-county and private sector, this will lead to more reliable and sustainable rural water supply systems (MoWE, 2010).

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