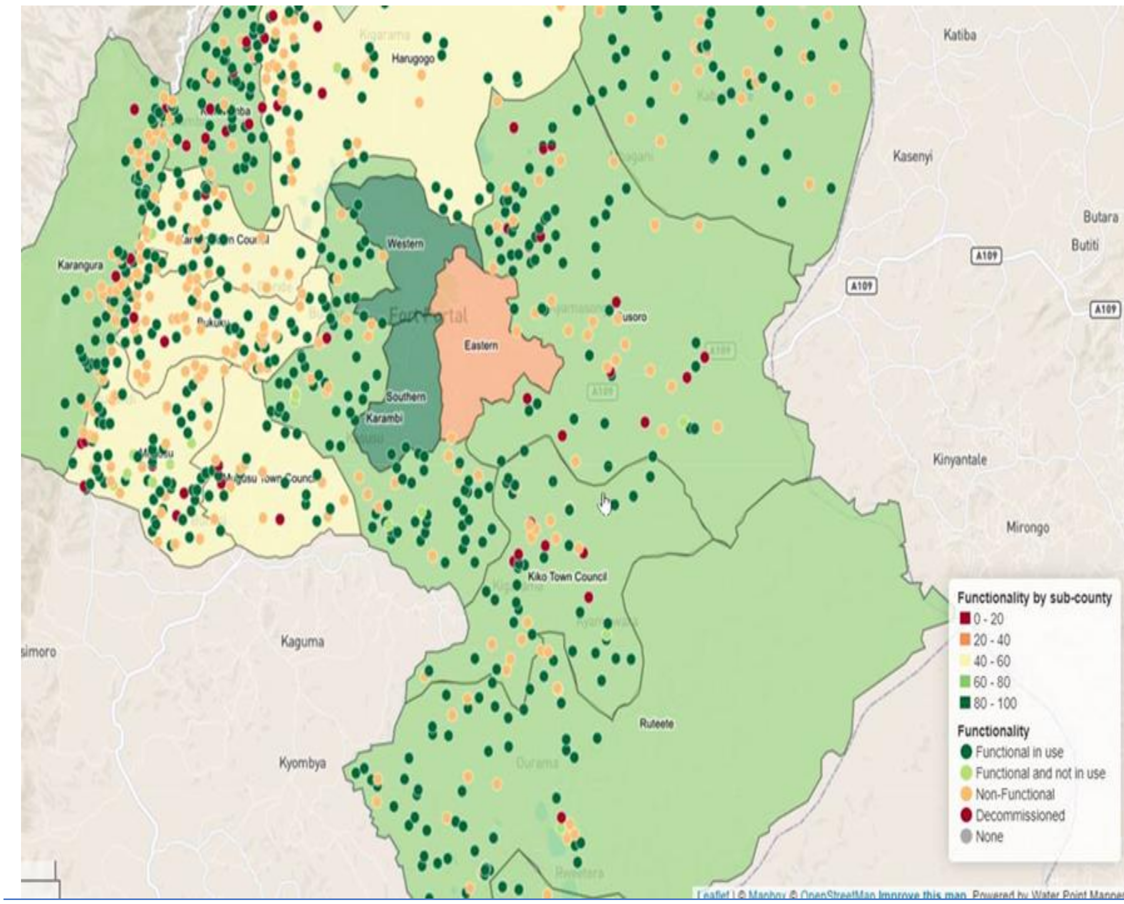
Kabarole District WASH Asset and Service Level Analysis Report 2019



September, 2020

IRC- UGANDA

The Conrad N. Hilton Foundation 2017-2021 Safe Water Strategy[1], embraces the safe water challenge by driving impact at the district level in the six countries of Burkina Faso, Ethiopia, Ghana, Mali, Niger and Uganda. These impact labs provide the space to explore new solutions and expand approaches that already work well as a precursor to national and global implementation. Through this strategy, the CNHF and our partners bring the ambitions of SDG 6 within reach for households, health facilities and schools. ***Similarly, the Watershed program*** *is focused on advocacy for improved WASH service access and Integrated Water Resource Management (IWRM). Both programs are keen on the availability of accurate and reliable WASH data availability for WASH service level and IWRM.*

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[1] The Safe Water Strategy can be found at https://www.hiltonfoundation.org/learning/2017-2021-safe-water-strategy.

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Acronyms/ Abbreviations

CNHF	Conrad Hilton Foundation
IWRM	Integrated Water Resources Management
LG	Local Governement
MHM	Menstrual Hygiene Management
MWE	Ministry of Water and Environment
NDP II	National Development Plan II
PH	Phosphate
SPR	Sector Performance Report
SDG	Sustainable development Goals
WASH	Water, Sanitation and Hygiene
WSC	Water Source Committee
EC	Ecoli

Executive Summary

The Kabarole District WASH Master Plan sets ambitious targets for achieving universal access to water, sanitation, and hygiene services by 2030. The plan was launched in 2017, providing a baseline on service levels and WASH assets in the District. This study provides an update on the service levels and an overview of drinking water assets in the district, and WASH assets in schools and a sample of households.

IRC Uganda is committed to supporting Kabarole District to reach universal WASH coverage by 2030 through strengthening the District level capacity for coordination and planning towards rural WASH service improvement. A major component of this is building the capacity for WASH service level and asset monitoring to track progress towards WASH targets. With funding from the Conrad Hilton Foundation (CNHF) and Watershed Programs, IRC Uganda supported Kabarole District Local Government to undertake WASH asset and service level analysis in July and August 2019, done in a participatory manner aimed to build capacity and momentum for Master Plan implemenation. This work is also supportive of a third programme in Kabarole, the Sustainable WASH Systems Learning Partnership, underwhich a learning alliance is being supported to motivate collective action and build capacity in the district.

The study adopted a mixed approach of qualitative and quantitative techniques in order to provide more comprehensive findings. This involved a census of all water sources in the District and WASH assets in schools. A representative set of household surveys were used to obtain information about the use and access of services by residents. Key Informant discussions were held with Local Government stakeholders and communities, including a village survey to identify unserved villages and interviews with caretakers at all water points. Biological and physio-chemical water quality tests were undertaken on 80 water sources.

Key Results:

A total of 1100 water points in Kabarole District were surveyed; 62% (685) were functional and in use at the time of inspection compared to a functionality rate of 59% in 2017. There was an increase in use of safely managed water services (household connections) and a reduction in the number of households using unimproved services. Sanitation coverage shows, 79% of the surveyed households with limited access (use traditional pit latrines), 15% have basic access with shared VIP latrines and 6% with no access to a sanitation facility.

Still, and alarmingly high number of households are using unimproved water sources, particularly in the dry season. A total of 342 (93%) of mapped villages reported having access to an improved drinking water source, compared to 23 (6%) villages (an estimated 3308 HHs) with no access to an improved source of water (18 of these

villages are in Kasenda subcounty). During the dry season, only 72 (21%) villages had access to an improved drinking water source while 250 (73%) villages that did not.
Community based management of both point sources and piped schemes was weak. Only 13% of water points had an active Water Souce Committee, and none of the new piped schemes constructed by the District in the past 3 years had established a functioning Water Supply and Sanitaiton Board for management at the time of this study. An increased presence of utilities – the National Water and Sewerage Corporation and the Midwestern Umbrella for Water and Sanitation, was observed to be having a positive influence on service levels in the Kabarole.

Asset age analysis indicates that 44% (484) of the water sources have outlived their useful age and 24% will do so in the coming five years. This supports our understanding of the importance of life cycle costing and planning at the district level, and Kabarole henceforth requires more detailed planning and budgeting for rehabillitaiton, replacement, and new construction.

Water quality, though not a representative sample, provided cause for concern, with 41% (especially the shallow wells, protected springs, and tapstands) testing above WHO limits for E.coli. A limited number of sources had levels of nitrates (1.3%), turbidity (5.1%), and fluoride (5.1%) above WHO recommended levels. The biological water quality was especially low in shallow wells, which make up majority of sources in Kabarole (compared to deep boreholes which tested negative for E. coli). Water from piped networks, sampled from standpipes, had contamination rates similar to those of shallow groundwater sources despite some degree of sedimentation and physical treatment, and additional protection, at the source.

Analysis of the mapped 255 school WASH assets show that 40% of the schools have their own improved water source, 44% share with communities and 15% have no access to an improved water source.

Conclusion and recommendations
Kabarole District Local Government has the will and abilities to manage the WASH system in Kabarole, but the District will need to continue to build its human resource and operational capacity in order to support a higher level of decentralised service provision. Resource mobilisation to implement the Kabarole District Master will be critical.

The dissemination and roll out of the new MWE Operation and Maintenance framework for rural water supply during mid to late 2020 is expected to help improve coordination of the subcounty water boards and water user communities. The recommendations in the new O&M framework, viewed together with the recommendations and findings from this report, could provide an excellent opportunity to mobilise and coordinate stakeholders and improve performance.

The disproportionate distribution of the water technologies should worry policy makers, in particular a strong reliance on shallow wells which have proven less safe and reliable. Key stakeholders in the District have already called for further studies and actions to understand and address the risks encountered by communities relying on water sources of questionable quality. The high rates of E.coli contamination levels in piped schemes and protected springs and will also need to be managed to help establish causes and recommend appropriate interventions. Futhermore, water treatment should be considered as part of the rural water service provision when considering service delivery models and operational (and financing) arrangments.

WASH data access and retrieval is still a challenge in Kabarole District, there is need to turn the data from this report, together with pre-existing data sets from Kabarole including 2017, into a database for the district that can be used to improve monitoring, planning and coordination of WASH services. These efforts are already underway in partnership with the District Planning Office and are in line with wider MWE ambitions to improve asset monitoring and management. There is also a need to make more detailed considerations for increased staffing and continous capacity development to enable existing staff to be able to undertake WASH Asset analysis independantly, in order to influence planning and budget allocations.

Planning for routine WASH asset monitoring will be critical to keep up-to-date data and enable targeted WASH asset budget prioritisation and implementation. The Kabarole Hand Pump Mechanics Association has a strong competenacy for asset monitoring and smart-phone enabled tools provides an opportunity to empower a larger number of stakeholders to regularly update data when carrying-out maintenace activities.

These results suggest a need to review and potentially update the WASH Master Plan, including a review of the road map for addressing the urgent issues identified to enable WASH service access for all by 2030. There is a need to comprehensively assess progress since 2017 toward the 2021 targets for the end of Masterp Plan Phase 1, including qualititaive progress on objectives and quantitative progress toward finance and infrastructure targets. This may lead to a need to adjust the planning and cost estimates.

1.0 INTRODUCTION

Kabarole District stakeholders developed a WASH Master Plan 2018-2030, with the support of IRC Uganda. A service level baseline from 2017 was used to inform planning and targets-setting. The Master Plan was adopted by Kabarole District Local government and launched on 28 February 2019.

The District WASH Task Team was instrumental in the processes that led to the approval and adoption of the WASH Master Plan. The Task Team is a Learning Alliance that was created in March 2016 after a series of district Stakeholder forums. Its major purpose is to provide strategic direction to the District towards achieving universal access to sustainable WASH by 2030 (SDG6).

With funding from the Conrad N. Hilton Foundation (CNHF) and Watershed programs, IRC Uganda supported Kabarole District Local government to undertake a service level assessment and an asset analysis in Kabarole District during July-August 2019.

The CNHF has since 2017 funded WASH service provision in Uganda and other African countries through their 2017-2021 Safe Water Strategy[2]. The strategy embraces this challenge by driving impact in Kabarole and Bunyangabu Districts in Uganda. These impact labs provide the space to explore new solutions and expand approaches that already work well as a precursor to national and global implementation. Through this strategy, the CNHF and IRC partners are working towards bringing the ambitions of SDG 6 within reach for households, health facilities and schools.

Similarly, another project called the Watershed partnership is implemented in the Rwenzori region (Kabarole and Ntoroko Districts) with an objective of increased advocacy for improved WASH service access and Integrated Water Resource Management (IWRM). The project is equally keen on the availability of accurate and reliable WASH data for WASH service level and IWRM in the supported districts. The project is working closely with AKVO.org a core Watershed partner with expertise in use of the FLOW software for data collection, analysis and storage to improve data management, analysis and visualization. IRC utilized this expertise to strengthen District capacities in water quality testing and service level monitoring.

[2] The Safe Water Strategy can be found at https://www.hiltonfoundation.org/learning/2017-2021-safe-water-strategy.

1.1 Background

The Development Agenda in Uganda is guided by the Uganda Vision 2040 and the National Development Plan (NDP). Over the NDP II implementation period (FY2015/16 - FY2019/20) the WASH sector focus has been on the following priority areas; 1) increasing access to safe water in rural and urban areas; increasing the functionality of water supply systems; 2) increasing the sanitation and hygiene levels in rural and urban areas; 3) incorporating gender concerns and 5) implementing water resources management reforms and promoting catchment based integrated water resources management.

Despite being considered as one of the most developed WASH sectors in sub-Saharan Africa, Uganda's coverage and quality of service delivery has stagnated over the last 10 years, in part due to population growth, but also largely due to poor maintenance of WASH assets (SPR 2018). Over 10 million Ugandans still live without safe water; 65% are not practicing improved hygiene behaviour; and an average of 8% of the total population practice open defecation (World Bank Report, 2018). The National Planning Authority in 2018 observed that the achievement of NDP II targets on access to water and sanitation in rural and urban areas is unlikely mainly because of low funding of operations and maintenance of WASH facilities.

Sector budget support is declining sharply[3] and funding modalities are gradually changing from grants to loans using the project approach. Over the last five years, the sector budget has stagnated between 2.8% and 3% of the total national budget. It is estimated that delivery of SDG 6 will require an average annual funding requirement of 7 trillion UGX over the next 13 years[4] (equivalent to 1.8 billion USD) or 6% of the national budget – in simple terms a doubling of current allocations.

1.2 Study Objectives

The multi-faceted study had several linked objectives. The main objective of the service level assessment was to estimate the quality and type of services used by households/residents in Kabarole, and to see if the situation has changed since the last assessment in 2017 and assess progress on the Masterplan. Hence, the study used an Asset analysis to identify, catalogue and classify all water facilities within the district according to their type, age, condition and performance, which also provided insight into the timeline for eventual repair and/or replacement of significant components so as to support investment decisions.

[3] End of DANIDA fund in June 2018 will leave a funding gap of over UGX 15 bn.
[4] Draft Final Report, Strategic Investment Plan for the Water and Environment Sector, Uganda (2018-2030)

Specific Objectives

(i) Service Level Analysis
  a) To establish the level (type, quality, and access) of WASH service provision at households and in schools
  b) To analyse WASH service satisfaction at household level.

(ii) Asset Analysis
  a) To establish a water supply asset inventory to inform District planning.
  b) To assess the number and status of WASH infrastructure in Kabarole District (water supply district-wide, and WASH assets in schools).

2.0 STUDY METHODOLOGY

The study design employed both quantitative and qualitative methods. Survey were conducted at household level, village level, water point level, and with operators/managers of piped schemes. Data collection was undertaken using the Akvo Flow, Akvo Caddisfly, and Akvo Lumen applications. Survey instraments were developed and pre-tested working with Kabarole District stakeholders and enumerators representing knowledgable groups: Kabarole Hand Pump Mechanics Association and Community Health Extension workers, to ensure alignment of survey to local language and definitions.

2.1 Data Collection and Analysis

A total of 14 Research Assistants attended a 4-day training seesion on question interpretation, surveys administration including ethical considerations and consent, and translation of questions into Lutooro, the local language most respondent are comfortable with.

They were also trainied on use of Akvo flow software, and on how to use a Compartment Bag Test (CBT) and Akvo Caddisfly for water quality monitoring. The training was conducted in collaboration with the Kabarole District Water Office and Akvo team through the Watershed partnership.

The survey data was collected using the Akvo-flow on smartphones held by each enumerator. Data was exported from Akvo into Microsoft Excel for cleaning and analysis. Although, some analysis was done using Akvo Lumen, most of the analysis was done using microsoft excel. The water quality test results were recorded in Akvo Caddisfly and compared with WHO guidelines.

2.2 Scope of the Study

To meet the objectives, six surveys tools were developed in AKVO:

- Service level assessment:
    - o Household survey : a representative sample of households
    - o School WASH suvey: census of all schools with interviews and obersvational questions on WASH services
- Asset inventory:
    - o Waterpoint survey : census of all improved drinking water points
    - o Village survey: census of all villages to identify water points and ensure identification of villages without a single improved water point
    - o Piped water schemes : inventory of main piped water system
    - o Components and management arrangement analysis is ongoing.
- Water Quality survey : physical/chemical, and biological tests: sample of 80 water points representiing each source type (not statistically representative sample due to resource limitations)

2.2.1 Sampling and survey of household and schools : Service level assessment

A total of 719 household surveys were conducted against the targeted 900 household interviews. Sixty villages out of a total of 509 villages were selected using three stage stratified random selection (first by urban town council/sub county; then by parish; then village[5]). In each selected village, 15 households were randomly selected by enumerators by first noting the boundaries of the village, then using a zig-zag technique intended to select households at varying distances from main roads and footpaths. The survey response rate was at 79.8% (719) respondents. The average number of households in each village in Kabarole is 160.

Interviews were conducted with a series of questions on household demographics, water, sanitaiton, hygiene sources and habits, preferences and perceptions of service quality, management, and costs.

Main dimensions assessed through household service level surveys;

a) Overall: Data on number of people (or proportion) with access to water through communal options (public tap stands or protected sources); Household connections and unimproved sources.
b) Overall: Data on proportion of users within 30 min (for communal sources and taps.
c) For each household, data about the primary source of drinking water, time taken to access improved water points, access to improved sources during the dry season, and water service satisfaction

[5] According to 2014 UBOS data and most up to date village list available at the Kabarole District Planning office.

Analysis of household survey data was carried out to reveal the different water service ladder as per the MWE standard WASH indicators and the Joint Monitoring Program (JMP) classification.

For schools, a census of all 255 schools comprising 69 nursery, 169 primary, 12 secondary and 5 tertiary both government and private schools was completed, based on the available registry of all schools in Kabarole District. The survey focused on ascertaining the availability of an improved water, source on premises, hand washing facilities, pupil latrine ratios and menstrual hygiene space provision.

2.2.2 Asset Analysis samping and survey

Point Water Sources:
A census of all improved point water sources in Kabarole was carried out to establish whether the water sources were functional or non-functioning or decomissioned. An additional set of questions assessed type and condition of component, as well as infromation about the year of construction, seasonailty, tariff model, and usage. Interviews were conducted with water user committee representatives present at the time of data collection and technical staff at the district water office.

The AkvoFLOW survey was prelaoded with data from 2017 so the 2019 data was mapped directly onto the 2017 points. The AkvoFLOW survey tool was updated to include new indicators and a monitoring screen to allow for indicator adjustments from 2017 to 2019, while also maintaining the possibility for trend analysis of other indicators. Where water points were identified in 2019 that had no record from 2017, the enumerators made a new entry, thus adding the water pointss to the inventory. A total of 591 water points from the 2017 registry were again surveyed in 2019, and an additional 509 sources were identified; a total of 1100 unique water points were registered in Kabarole altogether.

As a precaution to avoid missing out on any water point, the enumerators moved systematically from village to village. Upon arrival in each village, the enumerators first contacted the local council one chair person and conducted a short key informant interview on the number and location of water points in that particular village.

The mapped point water sources comprised; protected springs, shallow wells, deep boreholes, kiosks/public stands posts and rainwater harvesting tanks. Each point was assessed for functionality, physical condition, age, management, and use;

a) Age of Water System Components: The survey considered the current age and projected lifespan, or “useful life,” of key water system components to assess when certain components would be at risk of failure given their age.

b) Functionality/Level of service provided by Water System: The study collected and evaluated information about water quantity and reliability of water services from the user perspective.
c) Physical State of Water System Components: included an evaluation by physical observation of each key water system component.
d) Management: Obtained information on who constructed the water source, its management, and several questions about the performance of the Water Source Committee (WSC), if applicable.

Piped Water Systems:
A separate team of enumerators mapped the 11 piped schemes in the district in collaboration with the responsible service providers: National Water and Sewerage Corporation (NWSC), The MidWestern Umbrella Authority for Water and Sanitation (MWUWS), and Community Water Supply and Sanitation Boards (WSSBs). The main components of piped water sytem surveyed included the water source, intake, water transmission pipeline, water storage reserviour, water treatment units, distribution pipelines, dispensation points and the ancilliary masonry components. Within the Municipality of Fort Portal Town, not all components were mapped since NWSC already has a live record.

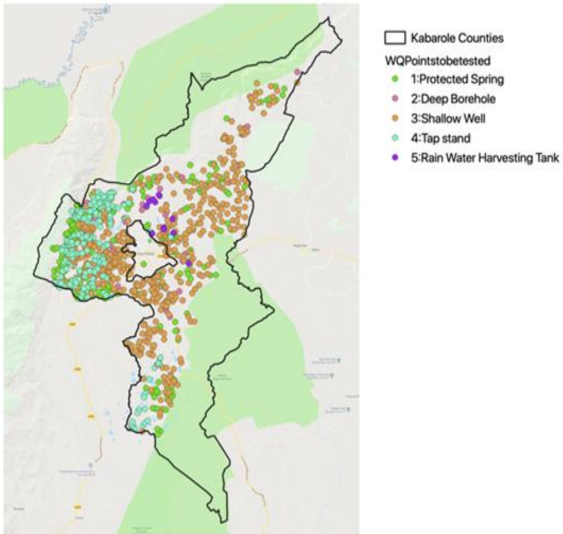
The study focussed on functionality and age of the piped water system components and management system in place, water quality, and reliability of service from the users persepectives.

2.3 Water Quality Testing

Water samples from 80 water sources were collected during the survey and tested for selected physio- chemical and bacteriological parameters. A sanitary inspection of each of the water quality testing sites was done.

The eighty water points tested were a sample proportional to the types of different water sources in Kabarole district, according to the water points census data from 2017. Water points by type included; shallow wells, protected springs, boreholes, and public tap stands. physical parameters tested were PH, EC and Turbidity; While bacterial parameter tested was E- Coli. Chemical parameters tested were – Nitrates, Fluorides, Arsenic and Phosphates with confidence level of 95%.The choice of eighty was made based on available resources.

Figure 1: All water points in the Kabarole District distinguished by type of point, water points chosen for testing distinguished by day to be tested



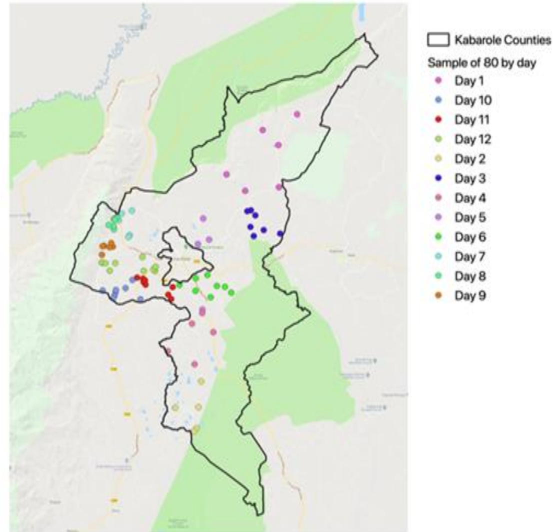


Table 1: Number of points to be tested were based on percentage of overall improved water points

Source Type	Total Number of Points	Percentage of total points	Number sampled and tested
1. Protected Spring	259	23.5%	20
2. Deep Borehole	44	4.0%	3
3. Shallow Well	502	45.6%	39
4. Tap stand	289	26.3%	18
5. Rain Water Harvesting Tank	6	0.5%	0
	1100	100%	80

2.4 Limitations of the Study

In the household survey, a high non-response rate to questions on user satisfaction, limited observations on sanitation levels, limited response to tariff sturctures/payment and water point management, constrained the analysis. Additionally Fortportal Municipality was not sampled due to limited resources. Nonetheless, despite the limitations, the criteria and data that were available were sufficient for the targeted lines of analysis.

3.0 RESULTS

This chapter provides a description of the study results focused on Household WASH, Village level water services, drinking water asset analysis, School WASH, and water quality.

3.1 Household Water and sanitation analysis

3.1.1 Household characteristics

The 719 respondents were drawn from 30 parishes and 365 villages/ cells within 15 sub counties. 57% (412) of respondents were women and 43% (307) men. The average household size was found to be 5 persons, this confirms with the UBOS 2014 average household size for the district.

3.1.2 Household Access to Water

Just over half (54% (385)) of households reported using improved communal water points as the primary source of drinking water. Of these shared communal points, 49% (189) were said to be handpumps (deep and shallow wells), 34% (132) protected springs, 12% (47) indicated tap stands and 4% piped system from the neighbours.

The second most used primary source of drinking water was unimproved surface water at 33% (238) of the households surveyed, then private taps in houses/yards was 12% (83) and reliance on rainwater harvesting tanks at 2% (11) of the households. The sub counties with more households drawing drinking water from unimproved water points include Hakibaale, Kasenda and Kabende.

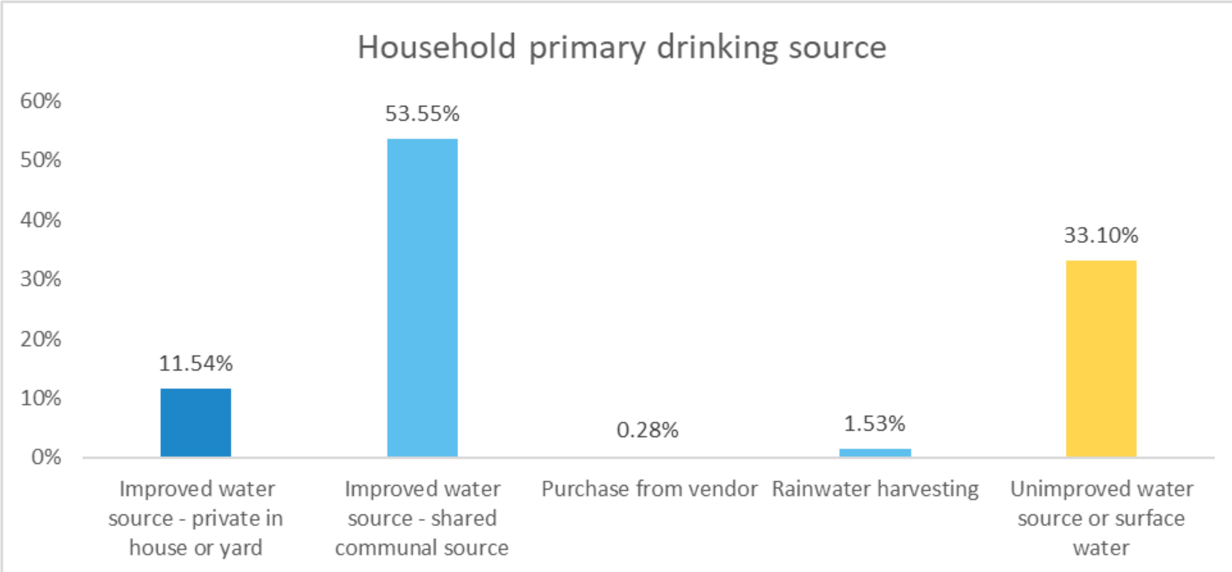


Figure 1: Household primary source of Drinking Water

Asked of how much time spent collecting water from a water point, including walking and queueing, 24% (170) of the respondents said they spent less than 30 minutes and 28% (203) took more than 30 minutes. The sub counties with longest distance to water points were Busoro, Kicwamba, Hakibaale and Karangura. This question had a low response rate as 48% (346) households not providing a response.

3.2.1 Analysis according to the JMP water service ladder

The service level of a household or a school is a composite indicator that is calculated based on several criteria accounting for type, quality, and accessability. The household survey data were used to assign each household to a specific service level according to the definitions by the UN/UNICEF Joint Monitoring Programme. The ensemble of results represent an estimate of the proportion of households in Kabarole with each level of services, as shown below.

While JMP 2017 data averages safely managed water at 7%, Basic 42%, limited 32% with 12% and 7% for unimproved and surface water access.

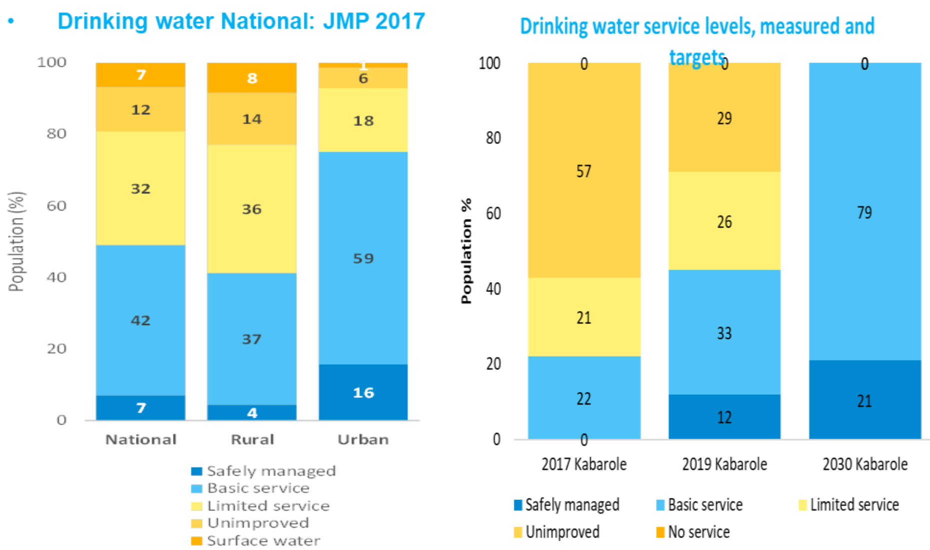


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Figure 2: Left: Service levels in Uganda at national level, according to JMP 2017. Right: Kabarole District service levels (measured in 2017, 2019, and the target for 2030).

3.1.3 Satisfaction with WASH service

Interviewees were asked about satisfaction in terms of distance as well as overall satisfaction. They were asked about satisfaction with hours per day of availability.

Thirty-five percent (250) of households reported satisfaction with distance to the water point: 88% (220) of these draw water from improved communal water points, while 12% (30) of these from unimproved water points. In contrast, 42% (303) households were not satisfied with the distance to the water point: 47% (141) of these households drawing water from an improved communal point (largely hand pumps and protected springs) and 53% (162) from surface water (lakes and rivers).

Further analysis shows that private improved water source gives, as expected, the highest satisfaction with 60% satisfaction. As well as rainwater harvesting, which is used by very few – but has the highest satisfaction in distance. The unimproved wells provide relatively low satisfaction overall according to other criteria, even when satisfaction with distance was high – which demonstrates that close proximity is not a motivation for people to use unsafe source in Kabarole.

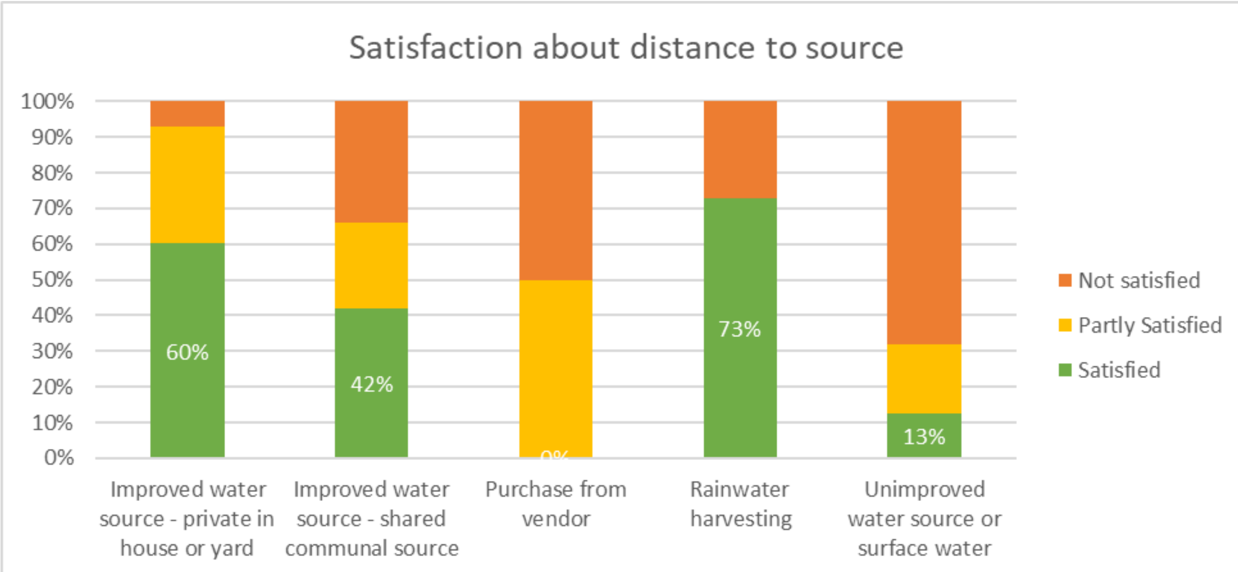

Figure 3: HH satisfaction about distance to source

Findings on satisfaction with hours of water availability shows that 34% (242) of the households were satisfied with hours of water availability, while 39% (284) households were not satisfied with the hours of water availability. An additional 27% (193) respondents were partially satisfied with the hours of access, with majority (125) accessing water for less than 8 hours a day.

The responses indicated that 78% (189) of households had access to their water source for less than 8 hours a day. Most of the satisfied clients had home connections or accessed tap stands. Most 45% (128) of the households that accessed water for less than 8 hours a day were using handpumps. Sub counties that expressed most satisfaction were Karambi, Hakibale and Mugusu.

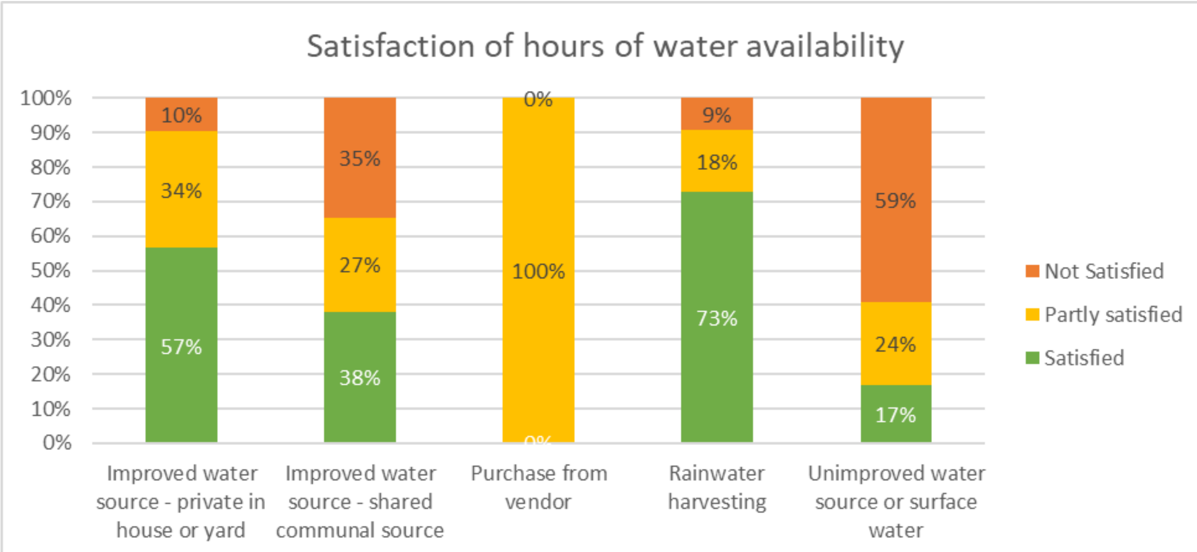

Figure 4: HH satisfaction about hours of water availability.

3.1.1 Use and Payment for Water

A total of 64% (704) households said their water points were usually functional. Most (93%) of the households used the water for drinking and domestic chores.

For sustainability of the community managed water facilities, users are expected to pay the service providers for operation and maintenance services. Finances are supposed to be well recorded and kept for this purpose. Maintenance of financial records is one of the primary responsibilities of the Water User Committees, or Water Supply and Sanitation Boards for community managed piped scheme. Users were asked if they pay for water and only 93 (13%) water points reported that users pay for water. This question was only asked on functional (704) water points.

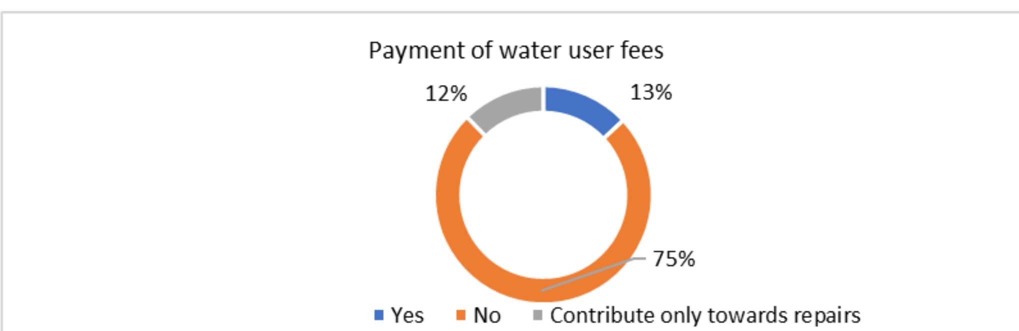

Figure 5: Payment of water user fees

Of the 93 households who pay for water, common method of payment was asked. 42% (39) said they pay monthly fee per household, while 31% (29) use pay as you fetch method. While 27%(25) did not respond to the question. Financial records for those who pay for water were only found among those who use pay as you fetch. A recent Pay as you fetch study, points to community attitude and political interference as critical factors for payment of water user fees in Kabarole District.

3.1.4 Household Sanitation

Ninety-four percent (678) of the households surveyed have sanitation facilities, while 6% (41) do not have sanitation facilities. Traditional pit latrines make up 95% (642) of 678 households, while ventilated improved pit latrines 5% (36). With regard to ownership of the latrines, 88% (600) were privately owned whilst 12% (77) shared by multiple households.

Figure 6: Left: A Privately owned VIP at Ntezi village, Kahangi parish, Hakibale S/c. Right a traditional pit latrine in Rwensenene village, Adiaga parish, Kabende both communities exhibit an understanding of basic sanitation.

Through observations, the conditions of the sanitation facilities were recorded regarding safety, separation of users from feces, privacy, and ability to be cleaned. In addition to evidence of open defecation (OD) around the sanitation facility and compound. Results indicate that 15% of household sanitation facilities had evidence of open defecation with Harugongo presenting the highest (33%) incidence of OD.

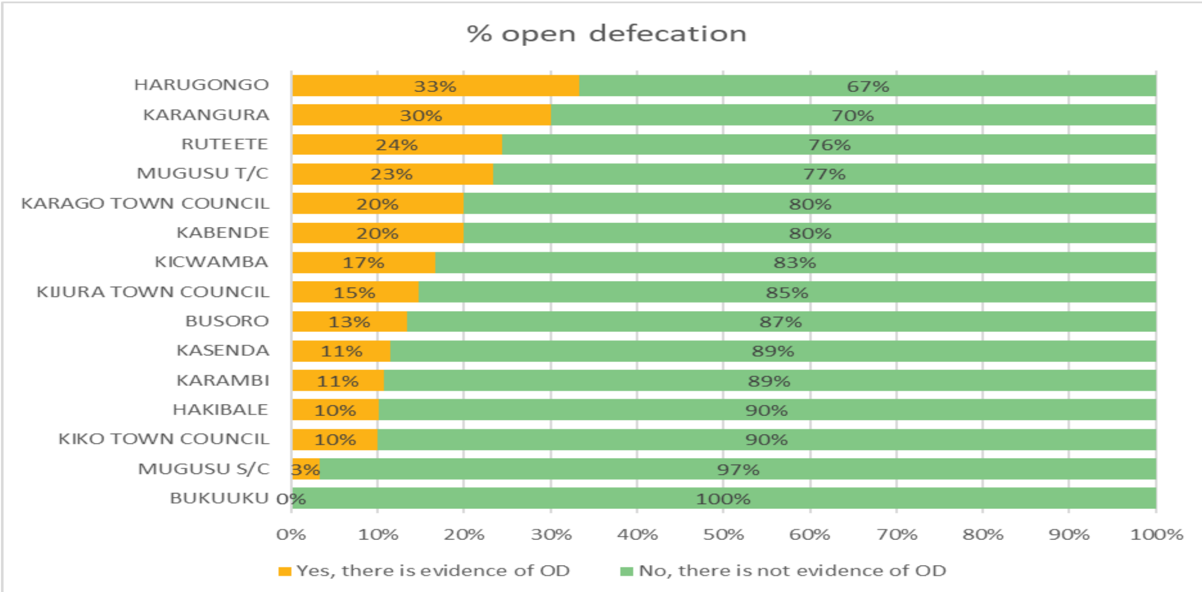

Figure 7: Evidence of open defecation by sub county

The household sanitation levels were calculated according to the JMP definitions. The sanitation improvement campaigns with engagement of local leaders appear to have influenced the leap from 28% basic access in 2017 to sanitation to 63% in 2019. Most households now have own VIP latrines. Further analysis on the changes, and prospects to maintain the progress made, will be critical.

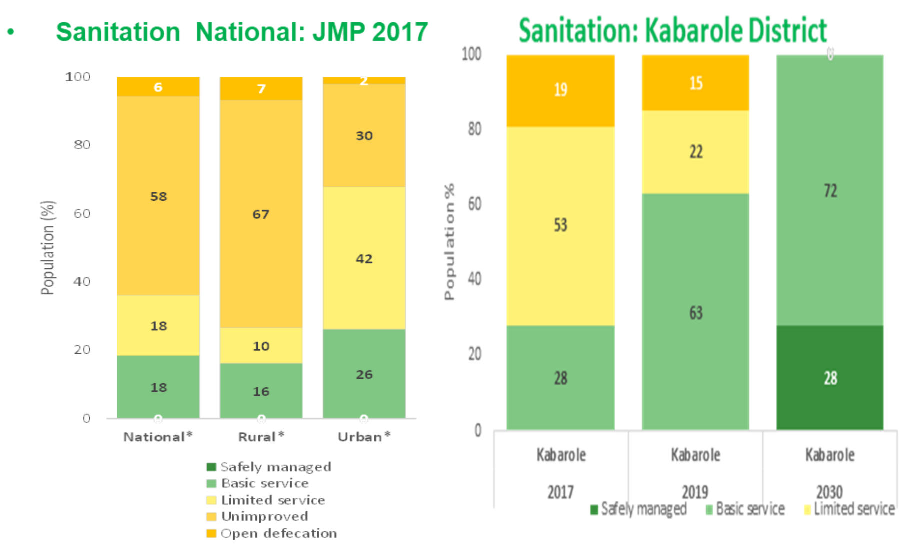

Figure 8: Left: Sanitation service levels in Uganda according to JMP 207. Right: Sanitation service levels in Kabarole as measured in 2017, 2019, and projected (target) for 2030

Presence of handwashing facility:

Observation of the presence of a hand washing facility shows that 23% of the households had hand washing facilities at their sanitation facilities, 77% (460) did not have a hand washing facility. Note that 119 households have been excluded as they did not have data. There was no data provided on evidence of hand washing with soap and water.

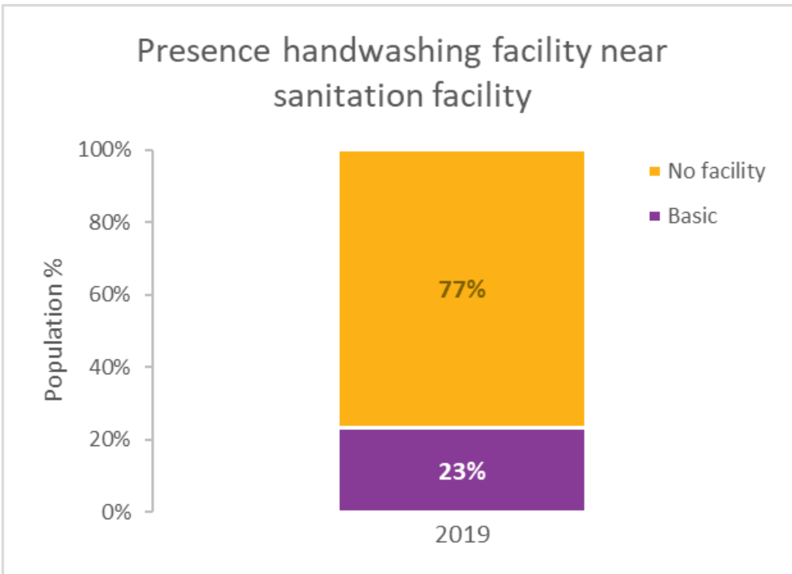

Figure 9: Presence of handwashing facility near sanitation point

3.1.5 Village Access to Water

A total of 365 villages were visited and surveyed. This aimed to be a census of all villiages, but due to discrepancies in the official registered village list, it is unclear as to whether a full census was achieved. The 342(93%) of mapped villages have access to an improved sources of drinking water compared to 23 (6%) villages (an estimated 3308 HHs) with no access to an improved source of water with 18 villages of these being in Kasenda subcounty. The sampled respondents indicated that during dry season, only 72 (21%) villages have access to an improved drinking water source while 250 (73%) villages do not have access to improved drinking water sources. The access to drinking water sources during the dry season is attributed to the majority (65.8%) sources comprising protected springs (21.5%), shallow wells 43.8%, water tanks 0.5 % of which majority donot provide sustainable supply during the dry season. Other sources also register low quantity or increased down time inthe dry seasons coupled with technical issues.

3.2 School WASH [Water and Sanitation]

Schools in all sub counties and town councils were surveyed about access to WASH facilities. A total of 255 schools were surveyed. These comprised pre-primary, primary and secondary schools.

3.2.1.1 Access to Water in Schools

Analysis of 255 school access to improved drinking water sources reflect that 35% (88) schools have improved water points within the school compound and majority (95%) are tap stands; 13% (33) have no improved water point. This pattern was most recurrent in Kasenda, Kicwamba and Karangura subcounty. Yet 38% (96) of the schools share improved water points with communities. The shared points largely comprise of shallow wells, a situation primarily found in Kijura, Kabende, Kasenda and Rutete sub counties.

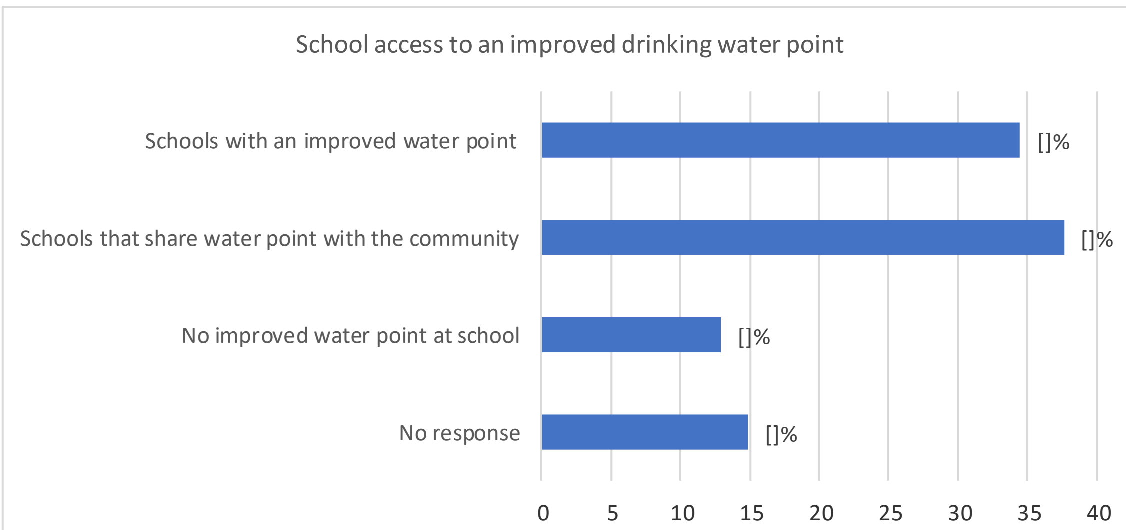

Figure 10: School access to an improved drinking water point

3.2.1.2 Sanitation in Schools

All the schools surveyed had a sanitation facility. The majority schools (63%/136) had ventilated improved latrines, while 35% (76) had traditional latrines and only 2% (4) had flush toilets. Pupil to stance ratio was within the recommended national ratio of 40:1 with girls stance ratio reported as 36:1 and boys as 30:1 for the surveyed schools. There were a limited number of schools (44/20%) with sanitation facilities for disabled learners and 79% (172) schools did not have sanitation facilities for learners.

In regard to menstrual hygiene management (MHM), only 10% (18) of the primary (12), secondary(4) and public institutions (2) surveyed had facilities available for safe disposal of materials. The nature and type of these facilities were however not assessed. In contrast, 90% (168) did not have menstrual hygiene facilities. These findings call for targeted interventions for MHM to improve the facilities in a learning environment.

Table 1: The Availability of disposal facilities for menstrual hygiene in primary, secondary, and other institutions of learning

Schools by category	No MHM facility	HMH facility available	Total schools
Primary	157	12	169
Secondary	8	4	12
Tertiary/ others	3	2	5
TOTAL	168	18	186

Of the 217 schools which had data reported for handwashing facilities; 53% (116) had hand washing facilities while 47% (101) did not have hand washing facilities. A total of 96 (83%) of the schools with hand washing facilities had water available at the time of survey, but only 63 (54% of 116) had soap available at the hand washing facility.

3.3 Water Supply Asset Analysis

The asset analysis focused on water supply technology, types of lifting device, functionality of water sources, age of water systems components, water quality, and sanitatry conditions around the site (notable sources of pollution). It too looked at the reliability of these water sources according to interviews with the operators, and use of source and fee payment by users.

3.3.1 Water Supply Technology

Throughout the entire Kabarole District, 1100 (23 more) water sources were surveyed during the 2019 Asset analysis exercise compared to 1,077 sources in 2017. All these water sources are categorized as improved water sources.

Table 3: Water Supply Technology Type

Category	Count	Percentage
Deep Borehole	43	3.9%
Protected Spring	237	21.5%
Kiosks	4	0.4%
Shallow well	482	43.8%
Public Tap stand	269	24.5%
Rainwater harvesting	6	0.5%
Decommissioned Water sources	59	5.4%

Total	1100	

The majority of the water sources were shallow wells with 42.5% (482). Deep boreholes were 43 (3.9%), Protected springs were 21.5% (237), Kiosks 0.4% (4). Rainwater harvesting were only 6 in number constituting 0.5% of the sources. Piped water systems are dispensed through taps stand and kiosks (as well as household connection); they altogether constitute 24.9% of the communal water sources in Kabarole.

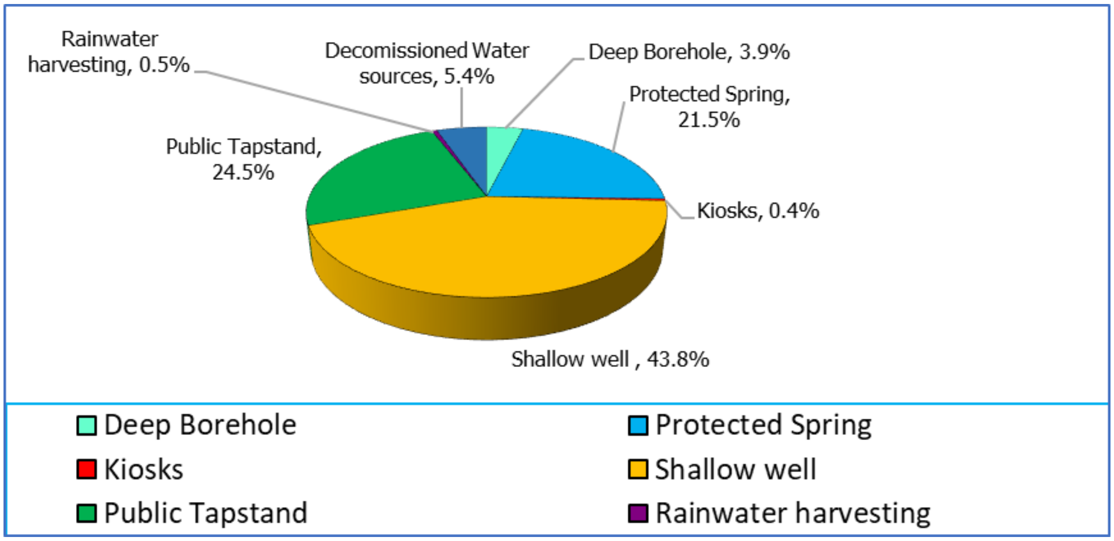

Figure 11: Category of Water Sources in Kabarole by Technology Option

3.3.2 Type of Hand Pumps in Deep Boreholes

In all the 43 deep boreholes in Kabarole, 35 boreholes are fitted with India Mark II (35) and 8 are fitted with India Mark 3 hand pumps. The only difference between India Mark II (U2) and India Mark III(U3) hand pumps is the size of the pipe and the cylinders. U3 hand pumps have 63mm diameter pipes and cylinders while U2 pumps have 40mm diameter pipes and cylinders indicated thus:

Table 4: Types of Hand Pumps in deep boreholes in Kabarole District

Type of Source	Number	U2	U3
Deep Borehole	43	35	8

Figure 12: Kigumba Deep Borehole fitted with U2 hand pump in Kirangara village, Kicwamba Subcounty.

3.3.3 Type of Hand Pumps in Shallow Wells in Kabarole District

Four types of hand pumps were found installed in shallow well: - Nira Pumps, Tara Pumps and India Mark 2 Hand Pumps and India Mark 3. Majority of the shallow wells were recorded to have India Mark 2 and India Mark 3 hand pumps.

Table 5: Types of Hand Pumps in shallow wells Kabarole District

Category	Count	Nira Hand Pump	Tara Hand Pump	India Mark 2 or 3
Shallow wells	482	152	4	326

Figure 13: Shallow wells fitted with Nira pump (left) and India Mark 2 hand pump (right) in Karambi Village, Karambi Sub County

3.3.4 Functionality of Water Sources

These water points were updated based on the 2017 water point information and a monitoring form filled with additional data collected in 2019.

First and foremost, 59 water sources were recorded as decommissioned. Technically, these are sources that are abandoned or beyond restoration for use. Functional sources were 685 (62.3%), while 337 (30.6%) water sources were recorded as non-functional, 19 (1.7%) water sources were recorded as functional and not in use.

Functionality was further categorized by technology types in order to understand those technology types which appear to have more issues with funcitonality (at the time of survey). This type of analysis also requires understanding the various causes of non-functionality, including seasonality (as opposed to mechanical issues) which is discussed in the subsequent sections.

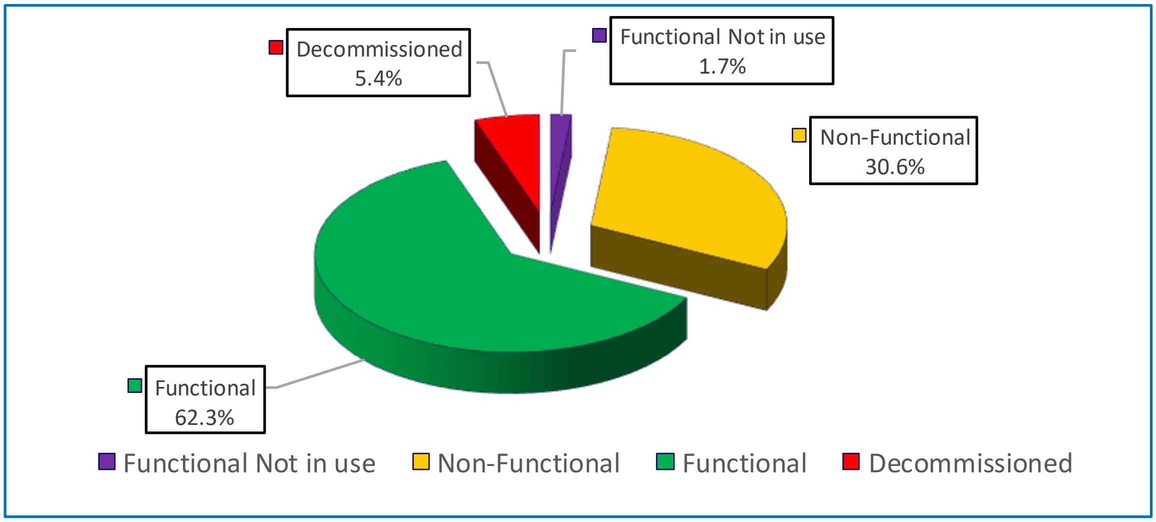

Figure 14: Functionality of Water sources in Kabarole District

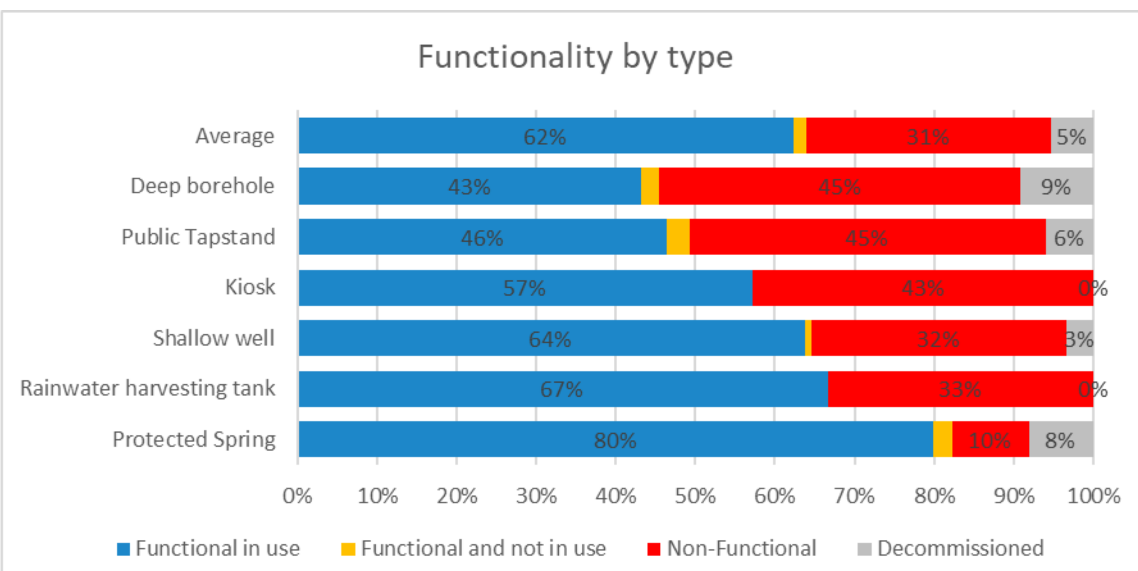

Figure 15: Functionality by technology type.

Of the sources reported as functional, 424 water sources were functioning at 100%, while 272 water sources were partially functioning. Eight (8) sources were barely functional.

Tap stands were found to be most non-functional(51.3%) followed by deep boreholes (48.8%). This could be attributed to lack of skilled labour to repair these facilities, another possible reseason could be the high cost reqiured to maintain these facilities. Shallow wells and protected springs on the other hand were found to be more funtional , 65.8% and 87.3% respectively. This is likely attributed to the lows cost of repairs.

Figure 16: Left is a decommissioned protected spring in Burongo Village, Kihondo Parish, Kichwamba Sub County. Right is a decommissioned Shallow well in Bukoni, Rungwajo, Busoro Sub CountyOut of the 337 non-functional sources, the primary reason reported for non-functionality was technical failure which was recorded for 84.6% of the non-functional sources. Dry wells or low yield accounted for 13.9% of the non-functional sources.

Out of the 47 water sources that were reported to by dry or low yield, a majority (63.8% (30)) were public tap stands, followed by shallow wells (17% (8)), then protected springs (14.9% (7)). Only two boreholes were reported to be having low yield. Low yield of the public tap stand is likely due to poor flow characteristics in the pipe network.

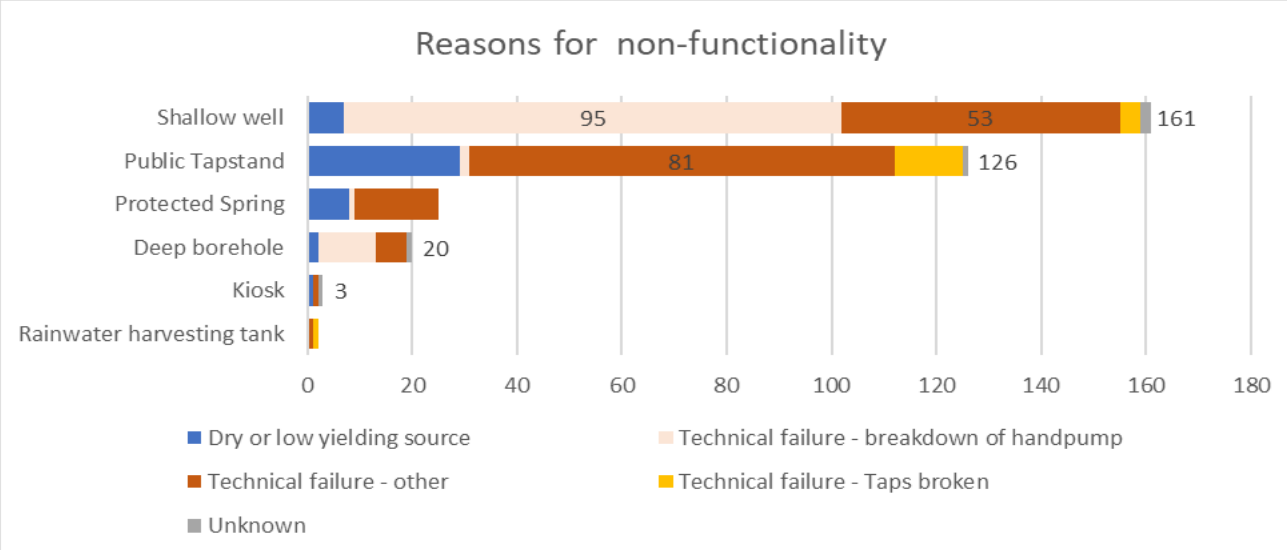

Figure 17: Main reason for non-functionality, per technology type

3.3.5 Age and age-based risk of failure of Water Systems Components

Out of the 1100 water points, 484 were constructed before the year 2004. Assuming a useful design life of a well of 20 years (according to MWE guidance), analysis of remaining useful life was used to determine the risk score. In Kabarole, 44% (484) of the water sources have either outlived their useful age and thus at high risk (0-5 years) with an additional 263 (24%) within 6-10 years of age that require planning for new infrastructure construction (medium risk). The 350 (32%) water points that where constructed after 2011 are considered low risk according to age. Further analysis shows that 121 (25%) of water points in the high-risk category were non- functional at time of spot check due to technical failure.

Table 2: Analysis of Age of Water System Component and risk

Year of construction	No. of water sources	Age of the water sources	Remaining life (Years)	Risk Level
1945-2004	484	15 equals to/ greater than 19	0-5	High Risk
2005-2010	263	Sep-14	06-10	Medium Risk
2011-2019	350	0-8	12-20	Low Risk
Unknown	3			

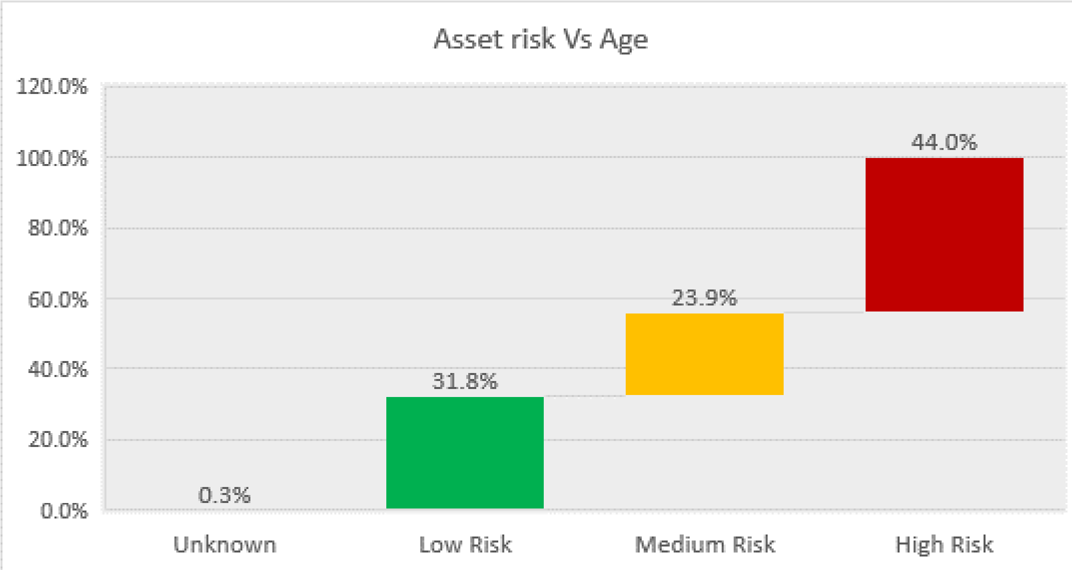

Figure 18: WASH asset by risk due to age of water sources

Age analysis by technology type

Age analysis by technology indicates that 57% (277) shallow wells, 33% (160) protected springs, 6% (29) deep wells and 4% (17) tap stands are at high risk of breakdown due to age. An additional 48% (125) shallow wells, 27% (72) tap stands, 21% (56) protected springs and 2% (6) deep wells with medium risk will within 6-10 years require planning for new construction.

Sub-counties with the largest number of high and medium risk water points, and therefor those most in need of replacement planning, are : Hakibale (84 high risk), Karambi (44 high risk), Rutete (44 high risk), Bukuku (39 high risk and 24 medium risk), Kasenda (36 high risks), Kicwamba (45 medium risk), Busoro (27 medium risk), Karangura (25 medium risk).

Changes in technology over time

An analysis of the dominant technology over time showed several trends. Protected springs were the predominant choice for new construction during the early 1990s, but by the mid 200s these were less frequently constructed as compared to other types. Since 2010, construction of piped schemes (shown as public tapstands) have increased significantly. Recalling that this data is from wider Kabarole District (outside of Fort Portal Town), this marks an expansion of piped networks into more rural areas.

These trends in Figure 18 may also be associated with policy changes, such as increased focus on improved and even safely-managed sources over time. The drop-off of shallow wells in recent years can be associated with a chance in national policy in which the

Ministry of Water and Environment ceased funding of shallow wells due to concerns over water quality and seasonail unreliability.

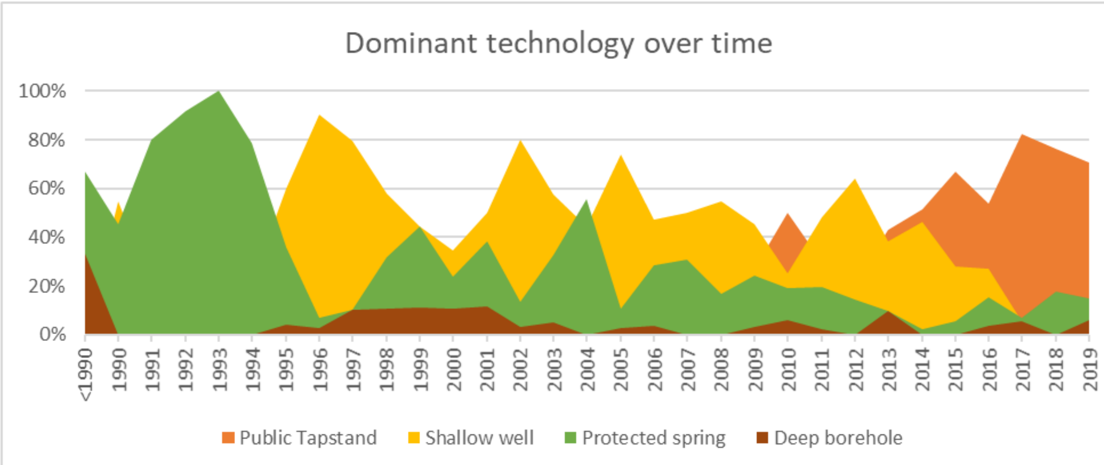

Figure 19: Asset type by year of construction

3.3.6 Cost of Repair / Replacement of Water Infrastructure

A detailed life cycle cost analysis of this data for planning purposes will be undertaken in 2021 with support from Ministry of Water and Environment- Rural Water Supply Regional Centre.

3.3.7 Reliablity of the Water Sources

Reported down-time for each water point, according to the recall of the attendant and key informants at the water source, was used as proxy variable for reliability of water services. It was found that 79.6% (438) of water points out of 550 that had broken down at least oncein the last year. The sub counties reporting a high number of water points breakdown include; Kicwamba (81 points), Karambi (97), Bukuku (57), Busoro (50) and Mugusu S/c (56). It is important to note that all 15 sub counties reported at least one breakdown of about a week.

Interviewees were also asked if the water point more commonly fails during the dry season. A total of 153 water points were reported as seasonal that dry in the dry season. The most affected sub counties with water points drying due to seasonality were; Bukuku (10 water points), Hakibale (8), Mugusu (8), Karago TC (7) and Kasenda (5).

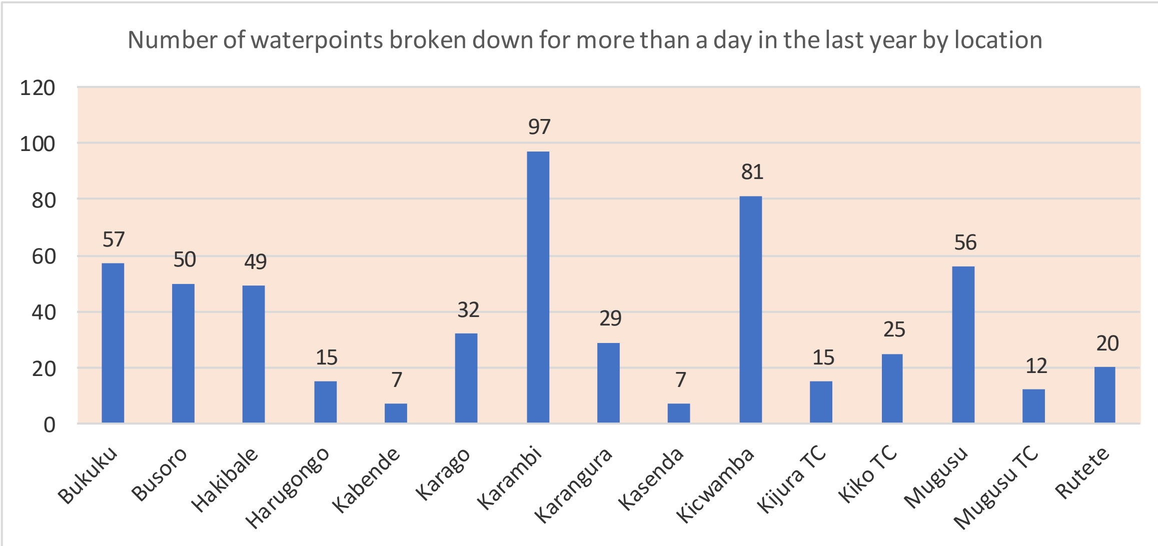

Figure 20: Number of water points out of service for more than one day

Key informants at each water points were also asked how many hours per day that customers and people can collect water from the source. Just 5% (54) indicated the water point could be accessess less than 8 hours each day while 59% (650) reported that over 8 hours of access to the water point were available daily. The hours per day of collecting could be reliant on service delivery model, or operational choices of the caretaker responsible.

An analysis of time taken to fill a 20-liter jerrican showed that; 3% (37) spent less than a minute, 39% (433) reported between 1 to 3 minutes, while 21% (234) water points recorded more than 3 minutes for filling a 20 litre jerrican. The flow rate has implications for queuing and the total amount of time that will be required for round trip collection of water from households.

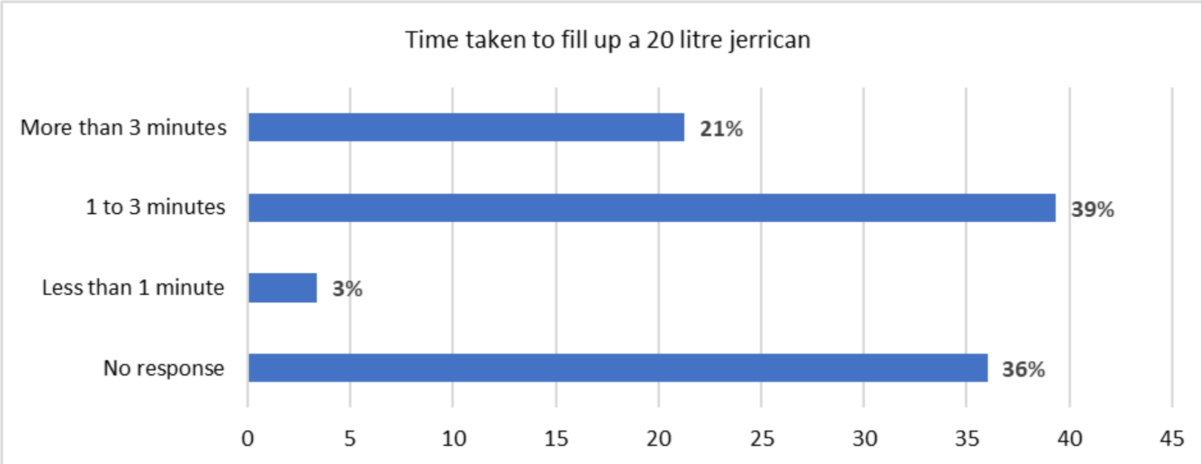

Figure 21: Analysis of time taken to fill up a 20litre water container

3.3.8 Water Point Management

Only 17% (191) of the communial water points had a water source committee (WSC) with 74% (146) of these committees reported as active (having met within the last year). Others had different persons responsible for operations ranging from local council representatives, landowners to private operators. Only 6% (8) of the 139 caretakers were reportedly paid. Women held 35% of the key positions on the water user committees.

3.3.9 Piped supply schemes and management in Kabarole

A total of 13 piped schemes exist in Kabarole: eight (8) under the community based management systems, and five (5) under utility management.

None of the three piped schemes (which we classify as micro-schemes) constructed by the District between 2017 and 2019 had an established Water Supply and Sanitation Boards (WSSBs) by the time of this survey in August 2019. Two of these gravity flow schemes (GFS) had not yet been commissioned due to disagreements between the District and the Subcounty over design specifications (dissatisfaction by the Sub County), leaving the schemes unmanaged. The third was a pumped scheme that had operated one week before being shut down due to the costs and permitting for the power source (generator)which is intended to be replaced by a solar power scheme in 2020 to reduce daily opearting costs. A fourth scheme, a GFS constructed by an NGO in 2017 was being managed *ad hoc* by the community in the absence of a formalized WSSB.

Three other GFS constructed by the District in 2000, 2000, and 2002 (Mugusu, Bukuuku, Kasenda) had operational WSSBs at the time of this study, as did a fourth solar powered scheme (Rwaihamba) constructed by Unicef in 2017. However, three of these had been gazetted for utility management leaving the former WSSB with a limited role (these schemes are listed in Table 2 as utility managed. A fifth scheme (Bukuuku) had an WSSB that had newly been established in 2018 with IRC support and training of all members, as a pilot for an improved model of Sub-county Water Supply and Sanitation Board.

Both the Midwestern Umbrella for Water and Sanitaiton (MWUWS) and the National Water and Sewerage Corporation (NWSC) are increasingly present throughout Kabarole. Under the Ministry's SCAP100 project (2017-2020), 294 villages in greater Kabarole District Sub-Counties and Town Councils were targeted for NWSC service by 2020. Three NWSC branch offices had been established to manage and operate new extensions and customers in Kabarole.

The MWUWS was formed newly in 2017 and has taken over management of 61 schemes in 15 districts which it manages through branch offices. In Kabarole the MWUWS now manages three formerly community- managed schemes: two large gravity flow schemes (Kasenda and Kicwamba) that were constructed over 15 years prior to MWUWS management and are ungoing rehabilitation, and a third solar powered scheme (Rwaihamba) constructed less than three years prior to this study.

Table 3 : An overview of piped schemes in Kabarole

Scheme name	Type	Year of construction / last major rehab.	Number of public connections: Total and (functional)	Est. private connections : Total and (functional)	Management	Is WSSB active?	Status of scheme
CBMS							
Bukuuku	GFS-two sources	2000 / 2010 /2017 (second source)	49 (14)	No data	SWSSB	Yes	New SWSSB in training
Mugusu	GFS	2000 / 2017	42 (24) (+/-)	No data	WSSB	Yes	In transition to NWSC
Bisonde-Kbagha	GFS	2017	6 (0)	No data	'Community'	No	Non-functional
Rweitera	Pumped	2017	5 (2)	No data	CBMS / WSSB	No	No power source (non-functional)
Bitabu	GFS-microscheme	2010	6 (0)	No data	WSSB	No	Abandoned
Buhikira	GFS-microshceme	2018	9 (5)	No data	SWSSB only	No	Partially functional
Nyakiriba	GFS-microsch	?	10 (1)	No data	SWSSB	No	Non-functional

	eme						
Nyakitokoli	GFS-microscheme	2019	7 (6)	No data	SWSSB	No	Functional
Utility							
Kasenda	Solar (pumped)	2002 /2018	18 (12)	90	MWUWS since 2018	Yes	Active (expanding)
Kicwamba	GFS	2005	66 (29)	320	MWUWS	No	Partially functional (improving)
Rwaihamba	Pumped	2017	9 (7)	10	MWUWS since 2018	Yes	Functional (expanding)
Mugusu-NWSC	GFS	2000 /2017	4 (3)	400	NWSC since X	Yes	Phasing out WSSB scheme
FP-Town (including Kiko, Kijura branches)	Hybrid		92 (81)	1072	NWSC	No	Functional (expanding)

3.3.10 Water Quality Analysis

At all water points, Caretakers and water user commitees were asked when water quality testing had last been carried out. Response to when water quality testing was done was responded in 540 water sources by source care takers or members of the water user committees.

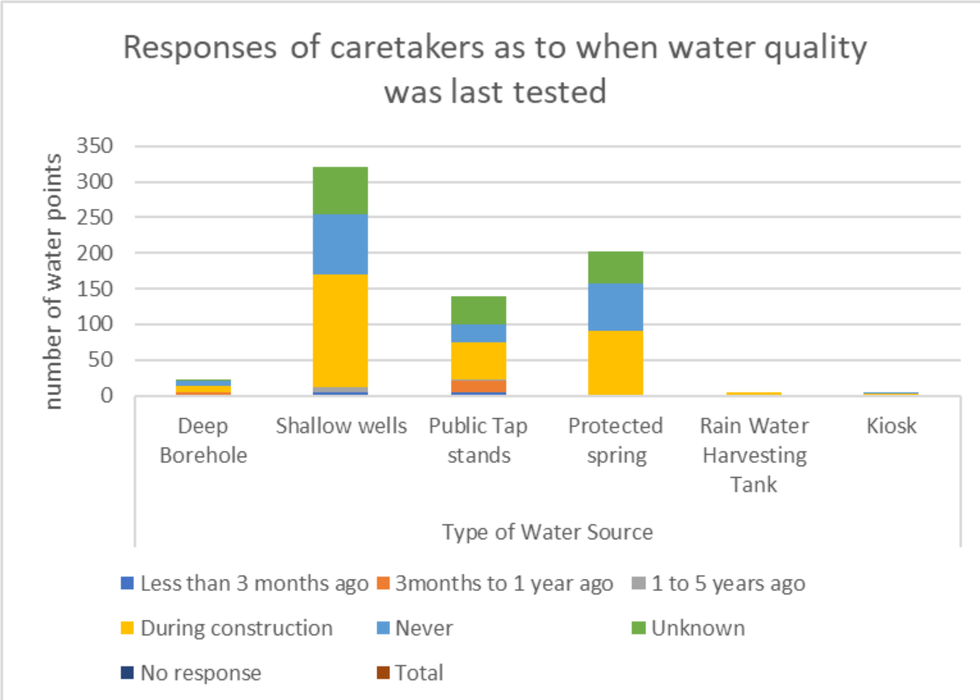

Figure 22: When the last water quality test was done by technology type

Though the sample size was modest (138 sites for physio-chemical testing, 80 points for biological water quality), the results from the water quality study provide notable insights into potential water quality concerns in Kabarole District.

3.3.11 Biological water quality

Forty-seven percent (47%) of the water sources were found to be of high risk and possibly unsafe with regards to biological water quality using E. coli as an indicator. Water sources were considered to be high risk if they were above 30 MPN (MPN/100ml). An additional 21 % of the water sources were of intermediate risk with 1-9 MPN/100ml. Only 32% of the water sources were found with zero count MNP/100ml.

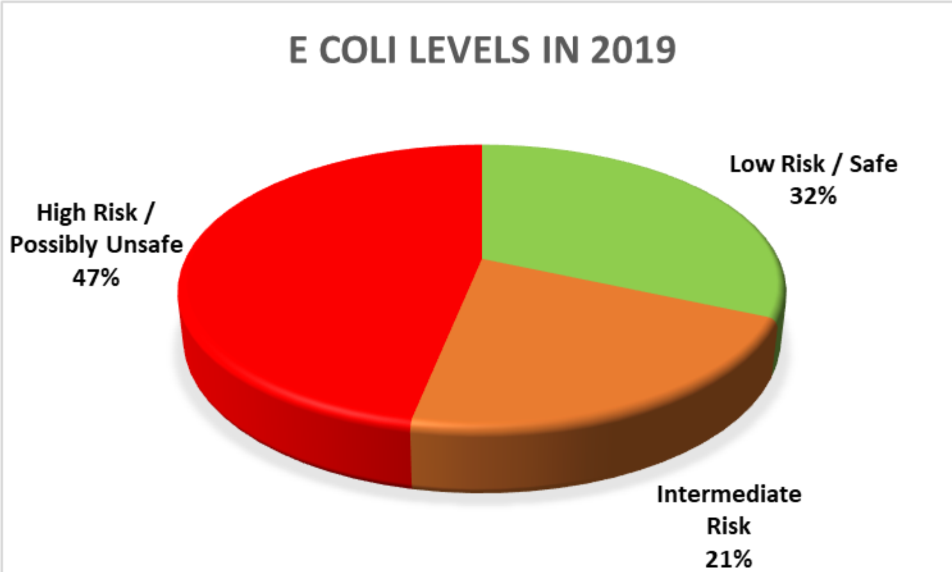

Figure 23: Risk of water points according to E Coli levels

Because of the limited sample size, it is is difficult to conclude whether certain technologies are overall likely to be more at risk for contamination by E coli than others. However, all the Deep boreholes tested negative for E coli. Tap stands on gravity flow schemes, shallow wells and protected springs all seemed to have equal share of E coli burden. Of the 22 Protected springs 12 were of low risk, 6 were of intermediate risk while 4 were of high risk/ possibly unsafe.

For Public Tap stands connected to the gravity flow schemes, the situation is alarming. Out of 17 that were tested only 1 was of Low risk/possibly safe. Three (3) were of intermediate risk and 13 were of high risk/possibly unsafe. The only tap stand that was safe on the day of testing was up in the mountains and fed by unique source (Kanyantmbwe), although the point is connected to the larger Bukuku GFS. For the shallow wells, 8 out of 36 that were tested were of low risk/probablysafe. Eight (8) were of intermediate risk/possibly safe but the majority (20 out of 36) were of high risk/unsafe.

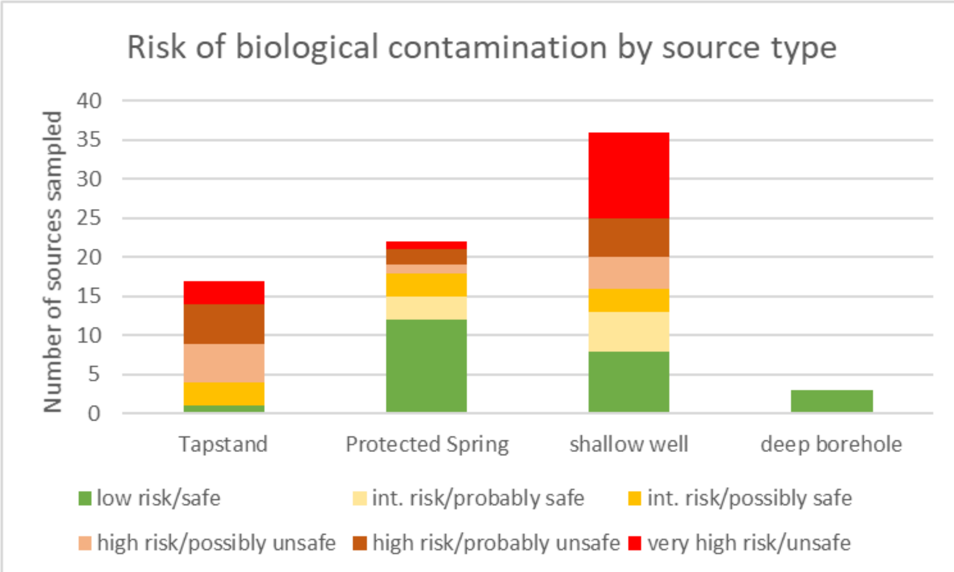

Figure 24: Risk of biological contamination using E coli as an indicator, according to source type. Sample size per source type is proportional to total prevalence of that source type in Kabarole, i.e. shallow wells are the predominant source type.

These results further indicate that shallow wells in Kabarole are highly susceptible to contamination using E coli as an indicator. It is unfortunate that it is the predominant technology in the district . This therefore points to the need for disinfection or source micro- catchment protection. Furthermore, the results suggest that gravity flow schemes, the majority of which do not have disinfection systems, may not be safer that point sources. This has implications for whether households assumed to have safely managed household connections may indeed be consuming water with a high risk of contamination that is not consistent with the JMP definition of safely managed.

3.3.12 Physio-chemical water quality

Of the 138 water points tested, several water sources tested above the WHO limits for numerous parameters. The table below shows that; 7.7% sources had iron detected above WHO limits, 22.8% presented pH levels above the WHO limits, with the majority being boreholes and shallow wells. A relatively small number, 1.3% tested for nitrate levels above WHO guidelines, all of which were protected springs. While 5.1% tested for fluoride were shallow wells and protected springs; 5.1 % sources comprising shallow wells and tap stands present with turbidity. An alarming 41% of the water sources presented E.coli levels above WHO detection limits, sources comprised shallow wells, protected springs and tap stands.

Parameter	WHO Acceptable Limit [mg/l]	Instrument Limit	% out of instrument's detection limit	% Above WHO limit total	% in between detection limit and WHO limit	% Above WHO limit Shallow Wells	% Above WHO limit Protected Springs	% Above WHO limit Tap stand	% Above WHO limit Borehole
Iron	0.3*	.02 to 1	50.0%	7.7%	42.3%	8.3%	4.5%	0.0%	66.7%
Sulfate Turbidity	500*	5 to 100	60.3%	0.0%	-	0.0%	0.0%	0.0%	0.0%
Chloride	250*	0.5 to 25	6.4%	0.0%	-	0.0%	0.0%	0.0%	0.0%
pH	6.5-8.5	6.5 to 8.5	22.8%	22.8%	77.2%	33.3%	18.2%	0.0%	66.7%
Nitrate	10	1 to 30	38.5%	1.3%	37.2%	0.0%	4.5%	0.0%	0.0%
Fluoride	1.5	0.5 to 2	24.4%	5.1%	19.2%	5.6%	9.1%	0.0%	0.0%
Turbidity	5 NTU	>5	-	5.1%	-	8.3%	0.0%	0.0%	33.3%

Table 4: Summary findings of the Physio-chemical Assessment

3.3.13 Source of Pollution

A sanitary inspection of each of the 138 water quality testing site observed and noted potential sources of contamination or threats to water safety around each water point. At 82 water points (59%), animal extreta was found within 10 meters of the water sources; these were shallow wells (65), deep boreholes (2), and public tap stands (15). Pesticides were recorded as likely to be present within the 10m at 27 water sources (1 deep borehold and 26 shallow wells), according to spot checks and interviews with key informants at the sites. Latrines were recorded to be present within 10m of 23 of the 138 water sources (15 shallow wells, 4 deep boreholes and 4 public tap stands).

4.0 DISCUSSION OF MAIN FINDINGS:

4.1 Service levels

Significant strides have been made in increasing access to safely managed water services in Kabarole since 2017, with a notable increase in household piped connections and a reduction in the number of households using unimproved services. It is also notable that a significant gain in household access to basic sanitaiton services has been made in recent years.

Still, it is cause for concern that 33% of households still lack access to a basic water services, and 37% lack basic sanitation services. This calls for the district local government and partners to refocus planning and budgeting towards providing first time access to at least basic services, targetted at reaching the underserved communities in the district. This is already a focus area within the Kabarole District WASH masterplan 2030, however further efforts are needed to mobilse additional resources and ensure stakeholder coordination towards these efforts.

The data from the asset inventory and village level survey in this study provide valuable insights as to where underserved people are primarily located with regards to water supply, which can be used for targeted planning. This study identified 23 villages that lack a single improved water point, and additional 250 that lack an improved supply during the rainy season. Findings from the user satisfaction study also suggest that there is still a need for increased community sensitization on the risks of accessing unimproved water sources for improved health and wellbeing through integrated WASH programing in communities and institutions.

The seasonal unavailability of drinking water sources is another major concern in Kabarole. With 73% (250) of villages reporting dry drinking water sources (and thus no locally available improved source) in the dry seasons, it implies that communities revert to unimproved water sources for domestic consumption durning several months of the year. The most affected water points are shallow wells and protected springs.

Addressing seasonality at scale likely implies a rethink of technology choices, to favour those technologies that are more resilient in dry seasons, and possibly during dry spells spanning a year or more. In general, deeper water sources that access deeper groundwater sources are more likely to be producitve all year. Furthermore, increasing the storage capacity of water systems by adding reservoirs can help. Another possibily to explore, is to increasingly build larger piped networks that supply water from multiple sources to increase redundancy and buffer short term failure of one or more of the sources. IRC in partnership with Kabarole district local governement and National water and Sewerage Cooperation has made progress towards extension of piped water to some communities of Kabende subcounty to improve basic access to water.

In a recent development, the Ministry of Water and Environment made a directive on construction of communal water systems placing a restriction on new construction of shallow wells due to their susceptibility to contamination, poor siting and construction; as well as low water quantity/yield and drying up in the dry seasons. This came with a call for long-term planning for replacement of the low yield wells to increase sustained access to drinking water sources is an action through multi-stakeholder coordination and partnerships. It also has major implications on the cost of water supply, since deep boreholes can easily cost more than five times that of a single shallow well.

4.2 Water supply technology and service quality management

Asset analysis of 1100 water points showed majority (42.5%) of the water sources were shallow wells; protected springs 21.5% and deep wells 3.9% with the rest as public tap stands, kiosks and rainwater harvest tanks. This poses a threat to achieving the 2030 targets for univeral access, given the high prevalence of contamination and seasonal failure of these sources. This implies that in addition to providing new and first time access to still unserved people, there is a need to replace and upgrade a significant portion of water points. Water quality interventions at the point of colleciton or point of use, as well as better storage options, could be part of the solution.

Asset age analysis indicates that 44% (484) of the water sources have either outlived their useful age henceforth require planning and budgeting for new construction. This is a large proportion of the water points constructed between 1945 and 2004. Up to 121 (25%) of water points in the high age-related risk category were non- functional at the time of spot check due to technical failure.

Responsible operation and routine minor maintenance is also critical for optimising the performance of water systems during their usable life span, and even extending it. Water points in Kabarole almost ubiquitously managed under the Community Based Management Systems, which has been institutionalised as the approach to rural water supply in Uganda since the late 1980s. Despite widespread understanding of the model by stakeholders at all levels, this study found that only 17% (191) of the communal water points had a water source committee (WSC) in existence, and only 13% had a WSC that had met within the last year (the threshold for being considered active).

This means that most water points in the district are operating under other *ad hoc* or non-standard arrangements. It also shows that despite pockets of success, the efforts by local government and other actors including IRC Uganda to improve the performance of the community based management model during the past decade appear to have had little sustainable impact at scale in Kabarole.

While the district WASH master plan underlines the need for prioritization of drinking water sources to the unserved; there is urgent need to consider the villages/ communities with water sources at the brick of a breakdown due to age. However, investment in new WASH asset and major repairs is costly and will require joint planning and budgeting with WASH stakeholders in the district. The life cycle cost analysis, based on this study, is still ongoing and will ensure these results are taken up and considered during upcoming planning and budgeting cycles in Kabarole.

4.3 Water Quality Assessment

Despite not being statistically representative, the water quality findings from this study provide important insights to conside in water quality and asset planning. All water technology types, with the exception of deep boreholes of which there are few, had instances of contamination. Water points found to be high risk and unsafe include shallow wells (20/36) and public tap stands (13/17) connected to the gravity flow schemes. There is a need to further study the causes of E.coli contamination in the public tap stands connected to the gravity flow schemes to establish causes and recommend appropriate interventions.

Shallow wells were found to be extremely susceptable to contamination, which presents a health risk to the many communities using these sources. This finding resonates with the decision from the Ministry of Water and Environment (MWE) to stop investing in construction of shallow wells in all districts and focus infrastructure development to more hybrid water systems or deep well. The study also found that in some instance a safe distance between latrines and shallow well was not in line with sector guidelines, nor did all meet the hygienic design standards of the MWE.

5.0 CONCLUSION AND RECOMMENDATION

Kabarole District Local Government has the will and abilities to manage the WASH system in Kabarole, but the District will need to continue to build its human resource and operational capacity in order to support a higher level of decentralised service provision. The high political will to achieve universal coverage in Kabarole by 2030 is a major asset, but the district will require additional budgetary resources and some structural support from the from the central government in order to achieve this.

Improving operation and maintenance and protecting water quality

The dissemination and roll out of the new MWE Operation and Maintenance framework for rural water supply during mid to late 2020 is expected to help improve coordination of the subcounty water boards and water user communities. The recommendations in the new O&M framework, viewed together with the recommendations and findings from this report, could provide an excellent opportunity to mobilise and coordinate stakeholders and improve performance.

Supply-side interventions to provide better options for improved services need to be coupled with efforts to increase stakeholder awareness and sentisation on the risks of accessing unimproved water sources on the health. These messages need to be reinforced at multiple levels through integrated WASH programing in communities and institutions. There is also a need for sensitisation of leaders at the subcounty level to establish water and sanitation committees and promote community collection of water user fees for sustainable management of water facilities.

To prevent further threats to water quality, a multi- stakeholder approach to increase community sensitization on observance of safe distance between latrines and water point is needed. These efforts should include building capacity and awareness about maintenance of water point hygiene and observance of MWE WASH infrastructure guidelines on construction designs. There is a critical need to implement water source micro-catchment protection on all water source plus disinfection of the gravity water supply schemes.

There is also a need for strengthening Water Source Committees/Water User Committees on documentation of O&M and tariff management. This committess can also have a role in organizing routine community meetings to increase awareness, sensitization and mobilization of local leaders and communities to embrace collection of water point user fees.

The disproportionate distribution of the water technologies should worry policy makers, in particular a strong reliance on shallow wells which have proven less safe and reliable. Key stakeholders in the District have already called for further studies and actions to understand and address the risks encountered by communities relying on water sources of questionable quality. The strickingly high rates of E.coli contamination levels in piped schemes and protected springs and will also need to be managed to help establish causes and recommend appropriate interventions. Futhermore, water treatment should be considered as part of the rural water service provision.

Strengthening monitoring

WASH data access and retrieval is still a challenge in Kabarole District, there is need to turn the data from this report, together with pre-existing data sets from Kabarole including 2017, into a database for the district that can be used to improve monitoring, planning and coordination of WASH services. These efforts are already underway in partnership with the District Planning Office and are in line with wider MWE ambitions to improve asset monitoring and management. There is a need to focus on the infrastructure age, as well as condition, to inform planning and budgeting processes at District and National levels.

There is also a need to make more detailed considerations for increased staffing and continous capacity development to enable existing staff to be able to undertake WASH Asset analysis independantly, in order to influence planning and budget allocations. This is particularly important for looking at distribution ratios (water points to the population in a given area), and prioritisation of maintenance and construction/ extension of new systems to the underserved communities.

Planning for routine WASH asset monitoring will be critical to keep up-to-date data and enable targeted WASH asset budget prioritisation and implementation. The Kabarole Hand Pump Mechanics Association has a strong competenacy for asset monitoring and smart-phone enabled tools provides an opportunity to empower a larger number of stakeholders to regularly update data when carrying-out maintenace activities.

For water quality, there is need for a followup study to determine the causes of E coli contamination in the public tap stands connected to the gravity flow schemes to establish causes and recommend appropriate interventions. A regular and more frequent water quality testing/surveliance framework needs to be developed and implemented to ensure that the required water safety standards are maintained.

The Kabarole District WASH Masterplan 2030

These results suggest a need to review and potentially update the WASH Master Plan, including a review of the road map for addressing the urgent issues identified to enable WASH service access for all by 2030. There is a need to assess progress since 2017 toward the 2021 targets for the end of Masterp Plan Phase 1, and to adjust the planning and cost estimates on the basis of the additional information obtained in this study.

While the District WASH Master Plan 2030 underlines the need to prioritise developing new drinking water sources for the unserved; in addition to this, this study suggests an urgent need to consider the villages/ communities with water sources at the brink of a breakdown due to age and condition of the water system. There is need for continued lobbying and engagement with strategic policy makers and stakeholders at national and district level to increase committments to implementing the Master Plan.

The Master Plan presents an enormous opportunity to mobilise resources and stakeholders toward improving service delivery. A significant increase in resources will be needed to implement the plan. Political committements needs to respond to the specific issues identified which includes not only new construciton but better planning, monitroing, and a rethink of the implementaiton of community management.

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Appendix A