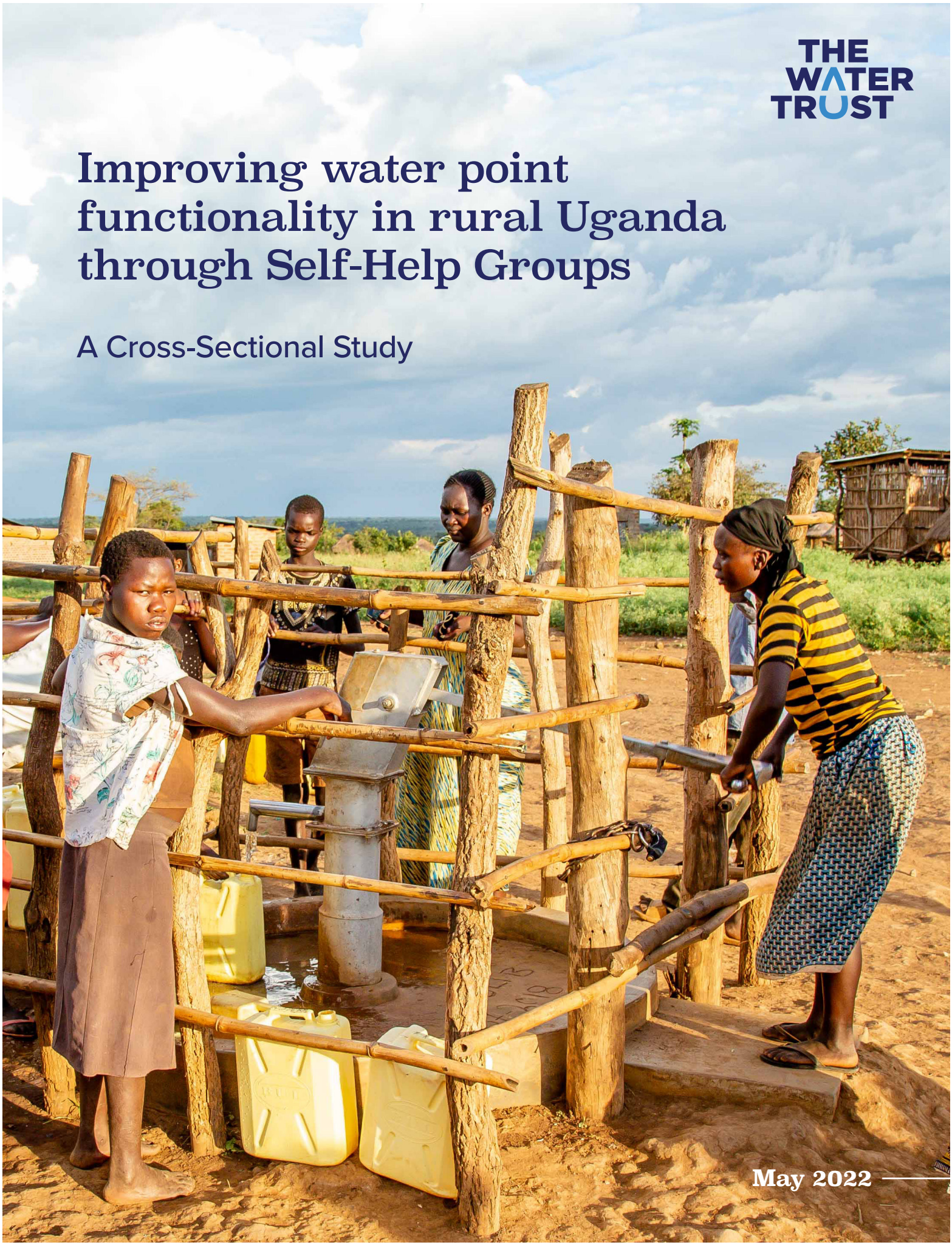
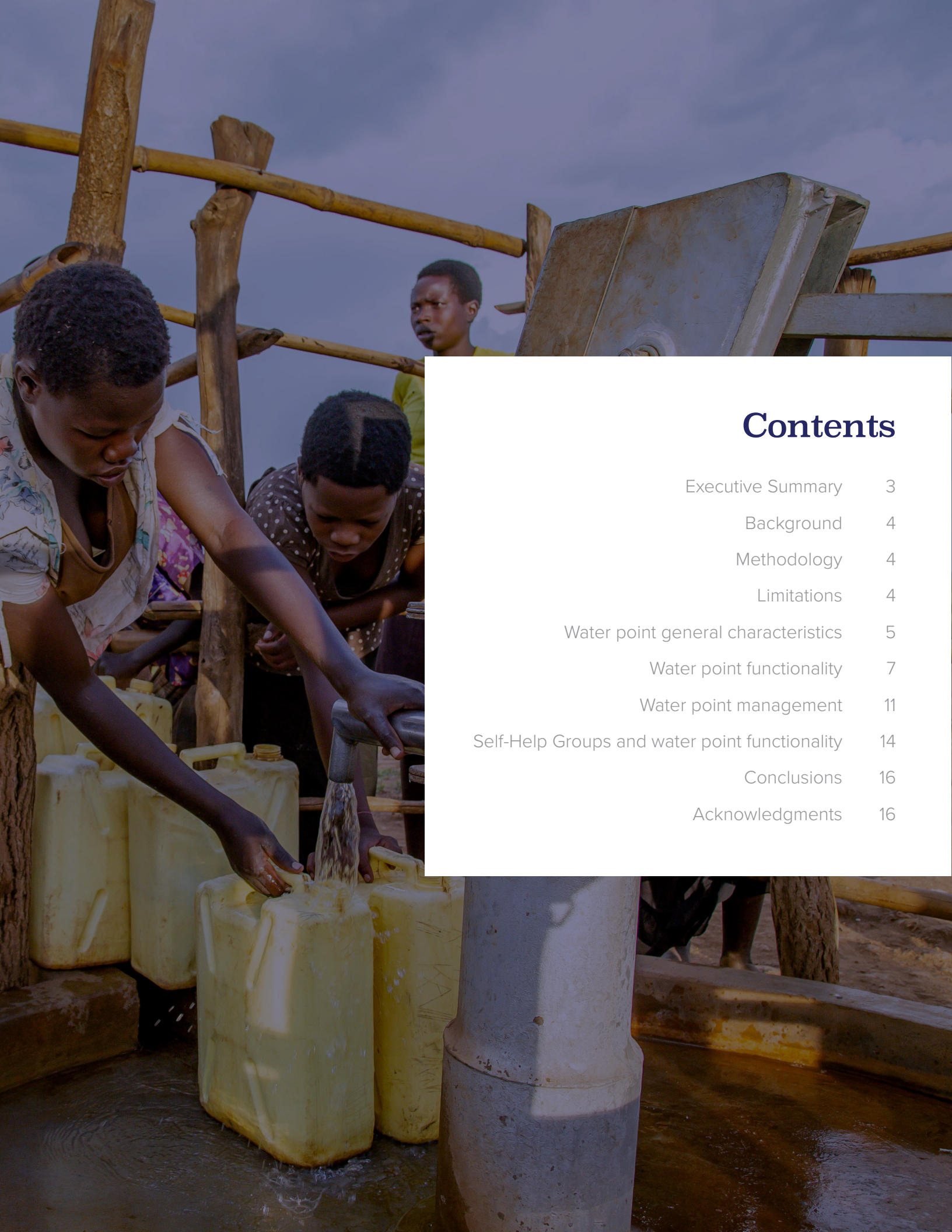
THE WATER TRUST

Improving water point functionality in rural Uganda through Self-Help Groups

A Cross-Sectional Study



May 2022



Contents

Executive Summary	3
Background	4
Methodology	4
Limitations	4
Water point general characteristics	5
Water point functionality	7
Water point management	11
Self-Help Groups and water point functionality	14
Conclusions	16
Acknowledgments	16

Executive Summary

The Water Trust undertook a water point census and functionality survey of 4,862 water points across Masindi, Kiryandongo and Kikuube districts from January 2022 through March 2022. This final report summarizes the results of the primary indicators of interest. The report also contrasts our findings with the functionality data in the Ugandan water supply atlas. The water supply atlas is updated on a quarterly basis through updates submitted by the local government after a nation-wide water point census and survey in 2015. Finally, the report explores the relative performance of water points with and without a savings group (called a Self-Help Group). These groups were previously established to support the water user committee in financial management of 744 water points.

The Ugandan water supply atlas reports relatively high rural water functionality rates for Masindi (87%), Kiryandongo (88%), and Kikuube (93%). As functionality can be defined in several ways, in this survey we include both simple objective measures, such as the availability of any water at the water point, to more subjective measures, such as perceived functionality of the water point. Functionality rates are considerably lower in each case. For example, the percentage of protected water points where water was available at all was lowest for Kikuube (58%), followed by Kiryandongo (59%), and Masindi (67%). Similar results were found for the subjective assessment, with the lowest rate of functional protected water points in Kikuube (57%), followed by Kiryandongo (58%), and Masindi (61%). This variance is only partly explained by the water atlas' exclusion of some abandoned water points based on the atlas's methodology. In addition to establishing low rates of water point functionality, our results suggest that traditional volunteer water user committees are largely not functioning. They lack the administrative or financial capacity to make necessary maintenance and repairs.

We also analyzed the relative functionality and management practices of water points that have an active Self-Help Group to support the water user committee. We find that the 744 water points identified as having a Self-Help Group have significantly higher rates of functionality and active management. For example, 92% to 96% of water points with Self-Help Groups have water available across two districts. This is in contrast to 58% to 67% of water points without such groups in the same two districts and the neighboring district of Kikuube. Likewise, 92% to 93% of water points with Self-Help Groups have financial records. This contrasts to rates of 13% to 25% of water points without Self-Help Groups. The percentages of groups with funds available for maintenance or repairs have similar variances. As a result, the average amount of water points savings is more than sixteen-times higher in communities with a Self-Help Group (185,364 Ugandan Shillings) than water points without such a group (11,032 Ugandan Shillings). Notably there still remains a significant number of water points that are functional but have visible mechanical problems that have not yet been addressed by the groups. Communities with Self-Help Groups are possibly more likely to fix water points when there is not water available rather than perform preventative maintenance.

Our results align with the perception of the Ministry of Water and Environment that substantive changes to the process of maintaining the water atlas would provide significantly improved visibility on water point functionality and management. We would recommend such an investment is made to guide future rural WASH planning. We would also recommend that the Self-Help Group model be replicated in other contexts in Uganda to see if it can improve the sustainability of rural water points.

Background

According to the World Bank, government funding for rural water and sanitation in Uganda has declined by 80% since its peak in 2000. The World Bank is funding the government of Uganda to arrest this decline with water sector allocations that will target localities with below-average water access and seek to improve the functionality and sustainability of existing water sources. Local governments will be evaluated on their management of facilities and their effective prioritization of high-need communities for new facilities.

Yet, at the moment, current water access and functionality is unclear. The government's last water point census was 15 years ago. The updates provided each year since then have often been incomplete and unreliable. This survey is a first step to providing the clarity needed to target investments where they are needed most. This project supports the World Bank and the government of Uganda's ambitious agenda to expand rural water access and improve the sustainability of existing water points.

This project was designed as a comprehensive survey of rural water sources, including their functionality and management. The survey's geographic scope included three districts in western Uganda. Based on available data, we estimated this would include 3,500 water sources. The project would provide the government and the World Bank with a clear, up-to-date picture on water point functionality and management. It would also enable an assessment of the extent the water atlas is adequately maintained. The Ministry of Water and Environment relies on local governments to verify and submit data. The Ministry of Water and Environment has identified challenges in the current process of maintaining the database. This project may inform additional surveys and systematic improvements to empower the government to maintain a clear picture of water point functionality and drive improvements in performance.

In addition, The Water Trust has completed the training of more than 744 Self-Help Groups to support the management of water points constructed by government, INGOs, and The Water Trust. Self-Help Groups are savings and credit cooperatives that collect user fees and maintain a reserve fund to pay for water point maintenance and repair. These groups are located in Masindi and Kiryandongo, and therefore this surveys allows for an analysis of water point functionality and management for water points with and without such trained groups, both within the same district and a neighboring district in the western region.

Methodology

The Water Trust developed a survey of water point functionality and management practices. Data was collected by smartphone through the Open Data Kit application. The Water Trust staff trained 14 contracted enumerators. They collected data from January 2022 through March 2022. Water points were identified by soliciting lists from the District Water Offices, as well as then meeting with the Local Chief of each village to confirm the number and location of water points used by the community. The Local Chief was paid a small stipend (5,000 Ugandan Shillings) for their time as guide. The enumerator would then seek to interview the senior most person associated with the water point (i.e., water user committee chair person). If there was no such committee or no one available, the enumerator would consult with the Local Chief to speak with whoever would be most knowledgeable about the water point. For quality assurance purposes, photographic evidence and GPS coordinates were collected at the time of survey completion, and survey data and corresponding evidence were reviewed remotely. Spot checks were then performed by phone and in person for each enumerator. Surveys were rejected and resubmitted, or corrected if the staff member could correct the erroneous data.

Limitations

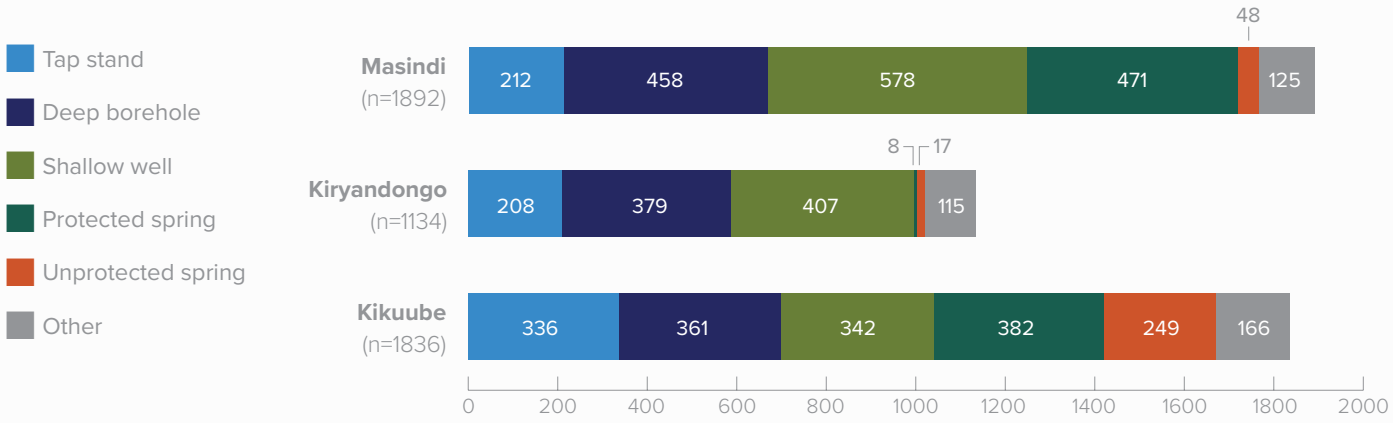
This survey relied on contracted enumerators trained to observe functionality issues. These enumerators are not mechanics nor are they engineers. They also did not open up and inspect water point parts to evaluate functionality and condition. In this context, we have found many water points that appear fully or partially functional yet have significant internal problems that will require a major rehabilitation to be viable. While the survey aims to identify visible water point functionality risks, this is a limitation of the study. To mitigate the risk of errors due to lack of technical expertise by the enumerator or survey respondent, objective measures on water availability, such as time taken to fill a jerrican, and number of strokes required to draw water, have been included.

Finally, this is a descriptive study of water point functionality and management. We analyze and report findings on variances in water point functionality and management of water points with and without self-help groups. However, this is not an experimental study designed to test the impact of such groups, and there are a variety of unobservable and observable factors that might also affect the functionality and management of the observed water points.

Water point general characteristics

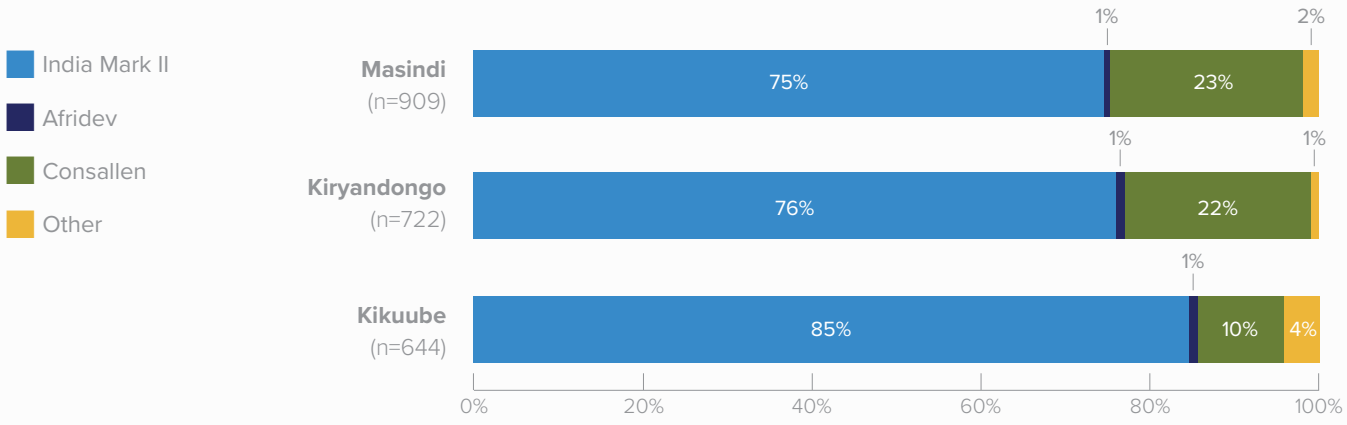
This section provides information on the water points surveyed. The chart details the type of water point of the 1,892, 1,134, and 1,836 water points in Masindi, Kiryandongo, and Kikuube, respectively. Unprotected springs were only surveyed if they were identified by the local chief as a water source in use by the community. They are included in the water point census below but omitted from the subsequent analyses as they are not a protected water source.[1]

Water points by type



The chart below details the handpumps reportedly installed in water points with handpumps. India Mark II is the most common handpump in this region, as it is in much of Uganda. The high rate of Consallen pumps is due to this technology being deployed in shallow hand dug wells in Masindi and Kiryandongo in the past. Related to the study limitations above, this question may be answered erroneously due to limited knowledge on pump types and poor records kept for older water points.

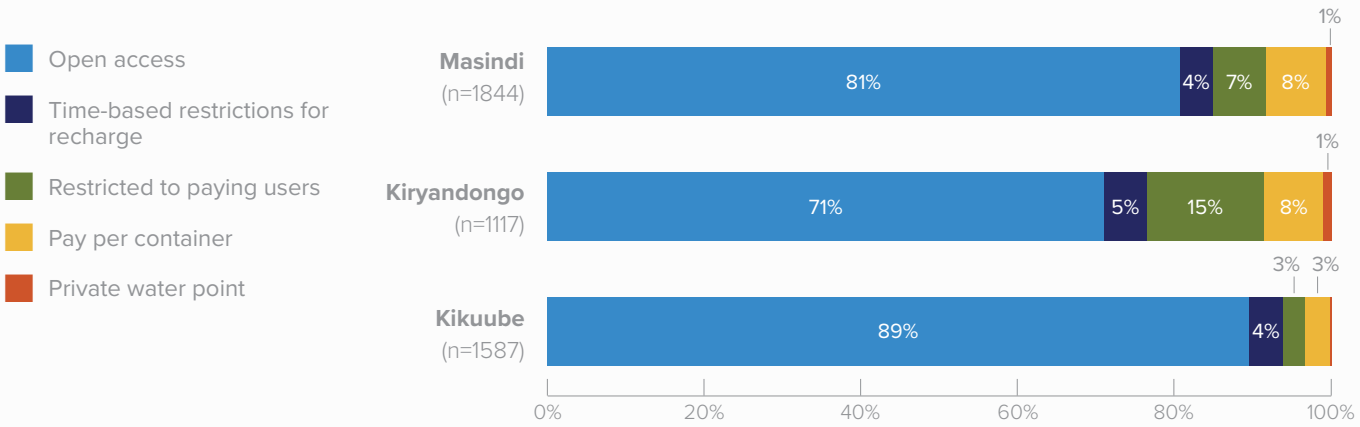
Handpump technology mix by district



1 Unprotected sources had high water availability and low water point management.

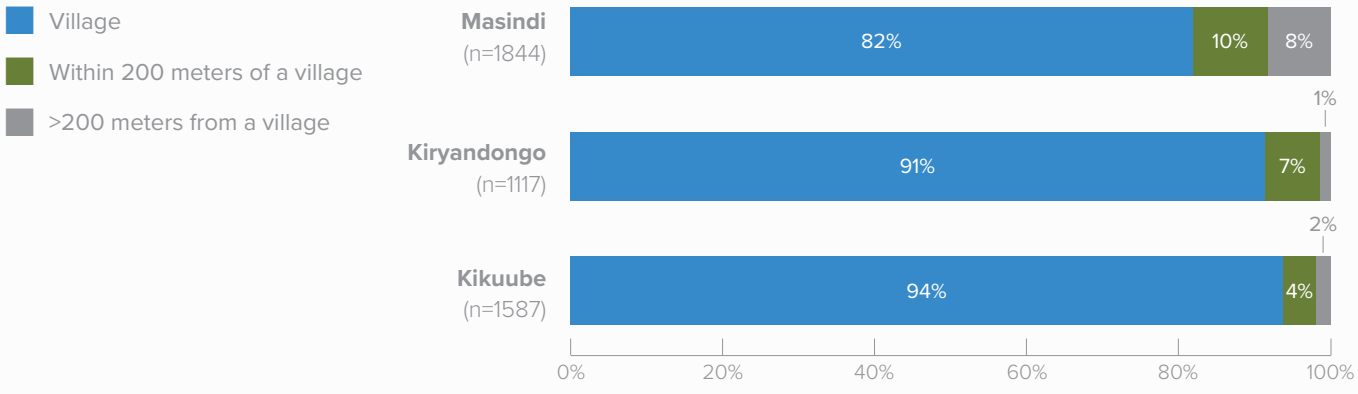
The chart below details what percentage of water points in each district restrict access, and the type of restriction. Generally, access is not restricted, through in Masindi and Kiryandongo districts there are higher rates of restriction to paying users.

Water point access by district



The vast majority of water points surveyed are either directly within, or adjacent to, a rural village. Water points outside of 200 meters from a village are likely to be serving a rural trading center or health facility.

Water point location



WATER POINT FUNCTIONALITY

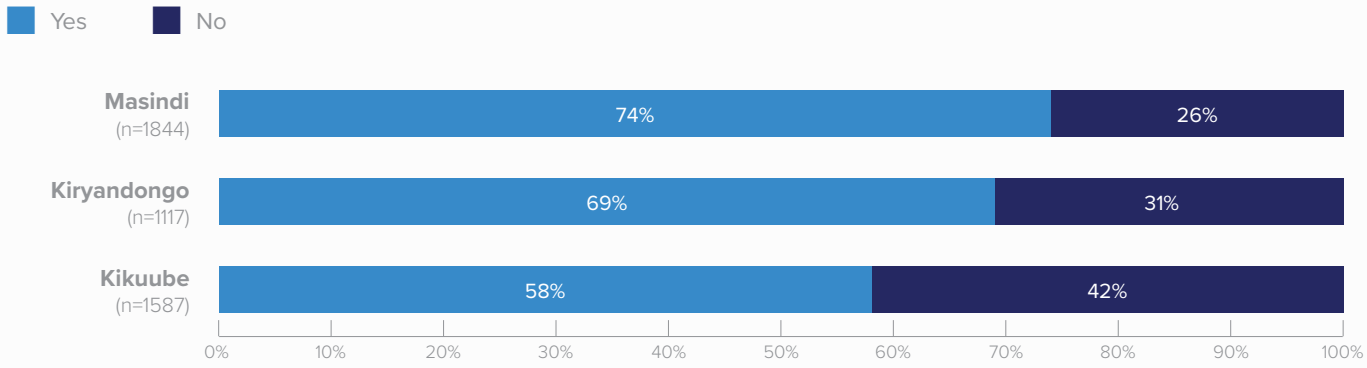
To measure water point functionality, this survey included several measures: a) water available at water point on day of survey, b) pump strokes required to draw water, c) time taken to fill a 20 liter jerrican, and d) subjective assessments of water point functionality and water quality.

These measures can be contrasted with the rural functionality reported for each district in the Ugandan Water Supply Atlas:

- Masindi: 87%
- Kiryandongo: 88%
- Kikuubee: 93%

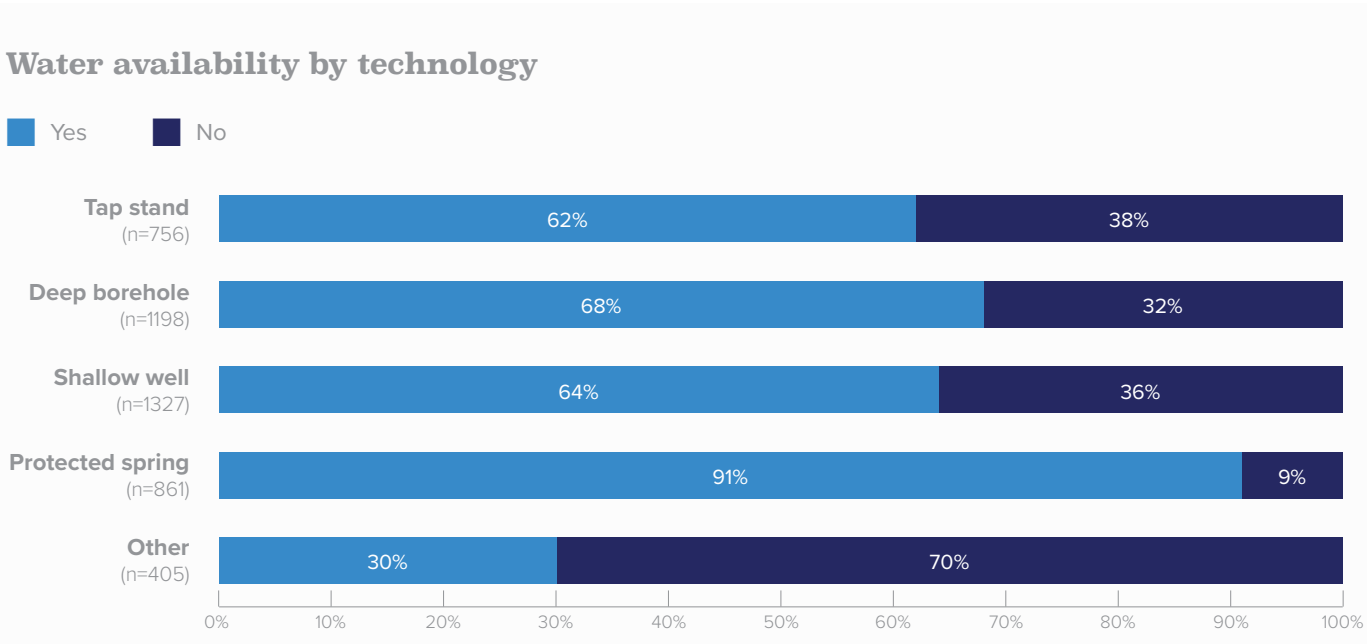
The indicator calculations above differ from those below in that the former exclude water points that have been non-functional five years or more. Water was available at a much lower rate at rural water sources in our survey then the water atlas figures would suggest. The largest variation is in Kikuube district, which reports 93% rural functionality in the water atlas, while 58% of water points have water available at the time of survey.

Water available at water point



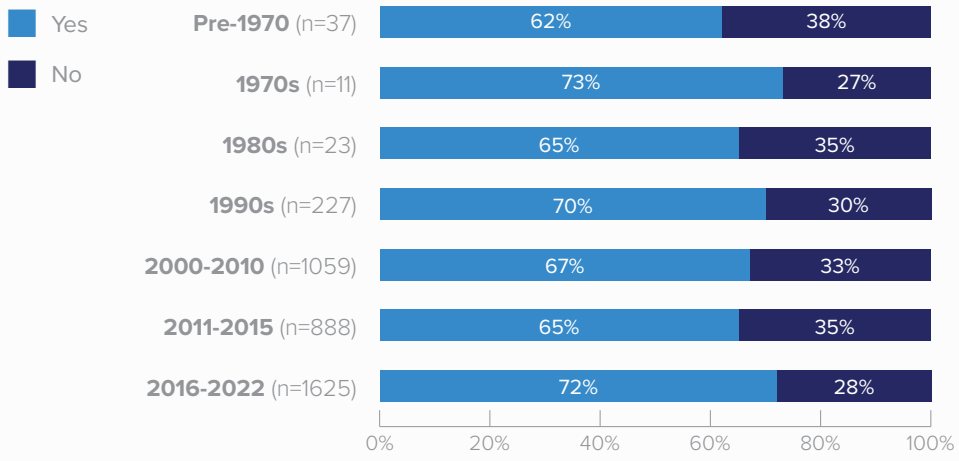
A contrast of functionality by water point technology finds that springs have the highest water availability rates. This is likely due to the little maintenance required to sustain their water availability. Shallow wells, deep boreholes, and tap stands have similar rates of functionality (62% to 68%), and other types, such as rain water harvesting tanks, perform poorly.

Water availability by technology



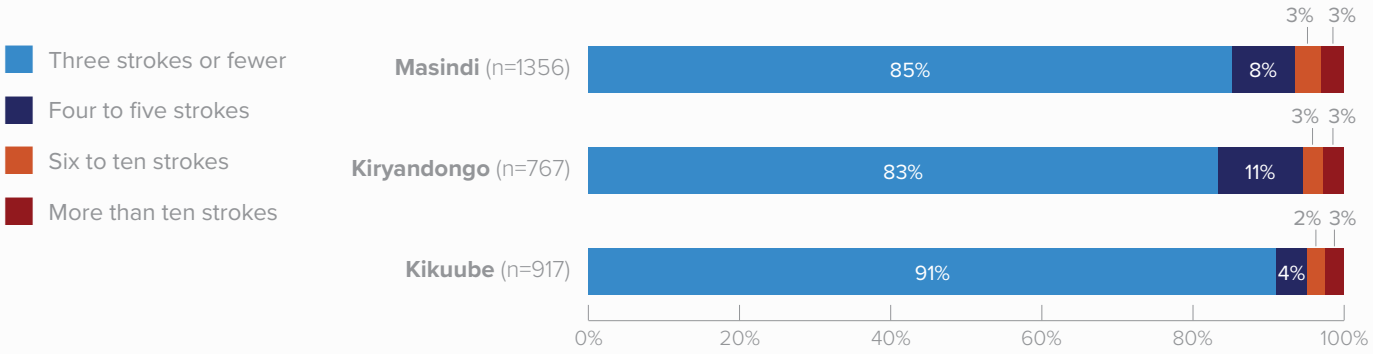
Besides the technology, water point functionality can vary with age. While construction date data was incomplete, and more likely to be missing for older water points (e.g., due to plaques and records no longer existing), we analyzed water availability by period, and found similar rates by age. However, due to record-keeping issues, we anticipate there are more historical water points that are non-functional and abandoned that were not known or identified by the local chiefs or district governments.

Water availability by construction year



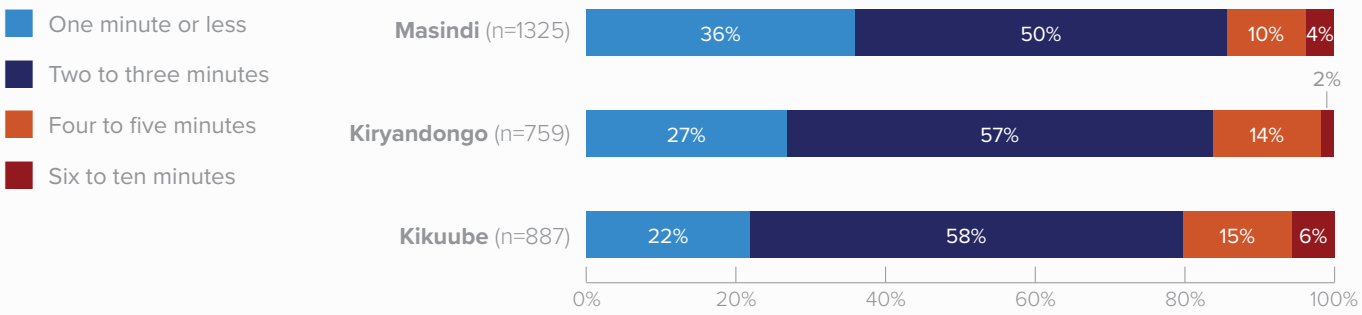
Beyond availability of water, we collected data on water flow and yield to more fully capture water point functionality. Of water points with available water and a handpump, the vast majority had water that began to flow within three pump strokes. Water points that took longer for water to flow are at higher risk of a functionality issue that may lead to or represent partial functionality or non-functionality.

Pump strokes required for water to flow



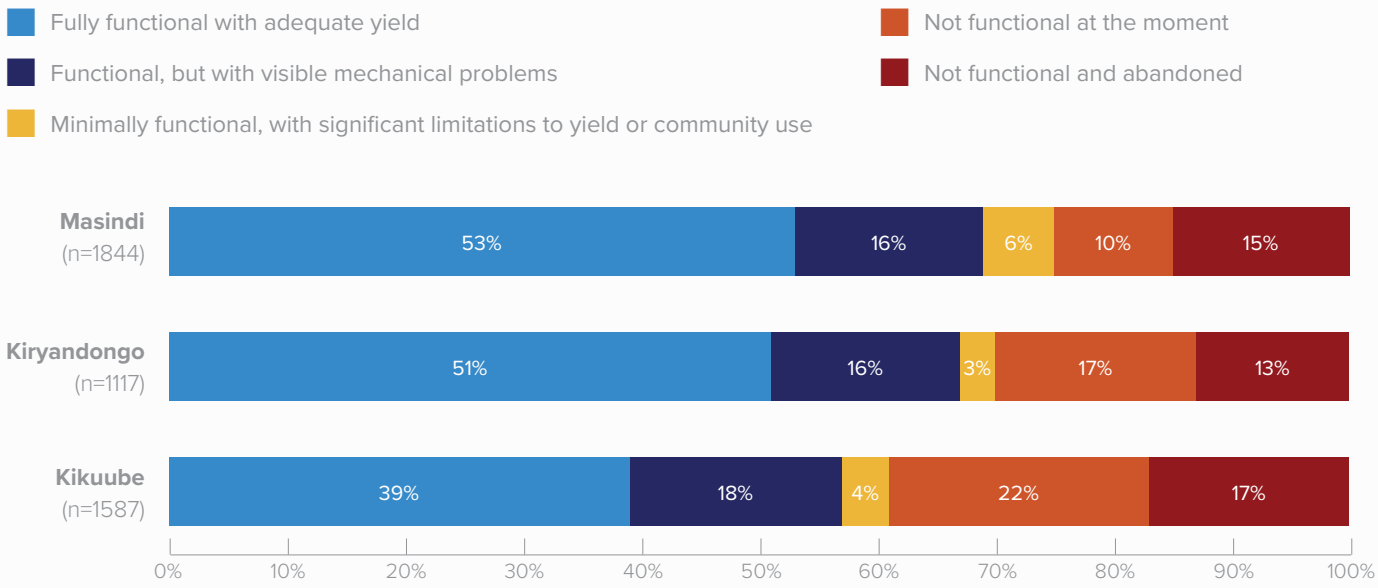
For all water points with water, we collected data on the amount of time it took to fill a jerrican, a measure of the water point's yield. Conditional on water availability, a similar percentage of water points demonstrated functionality issues.

Time required to fill 20 liter jerrican



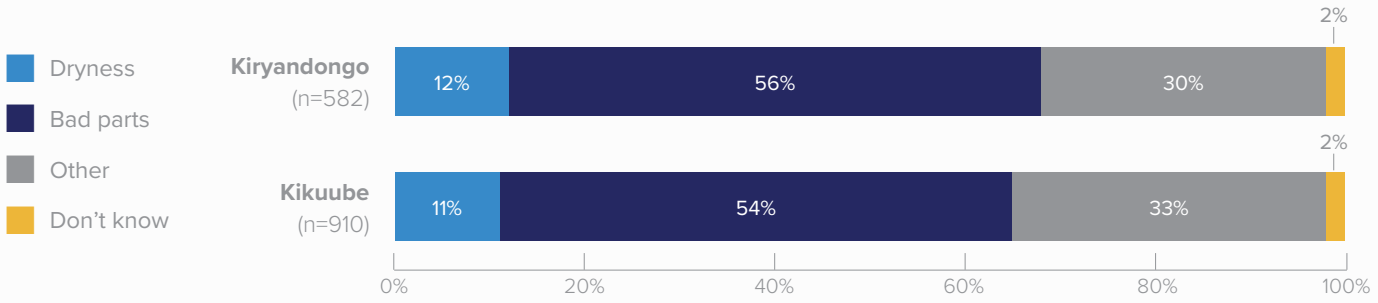
The measures that follow focus on subjective assessments of water point functionality, quality, reliability, and source of water point functionality problems. In contrast to the stated rural water functionality reported in the water atlas, a high percentage of water points are reported as minimally functional to not functional. Functional wells, including both fully functional and functional with visible mechanical problems, represent a relatively low percentage of total water points in Masindi (69%), Kiryandongo (67%), and Kikuube (57%). As noted previously, this may be partially (but not entirely explained) by the atlas' omission of water points recorded as abandoned for five or more years.

Functionality status by district



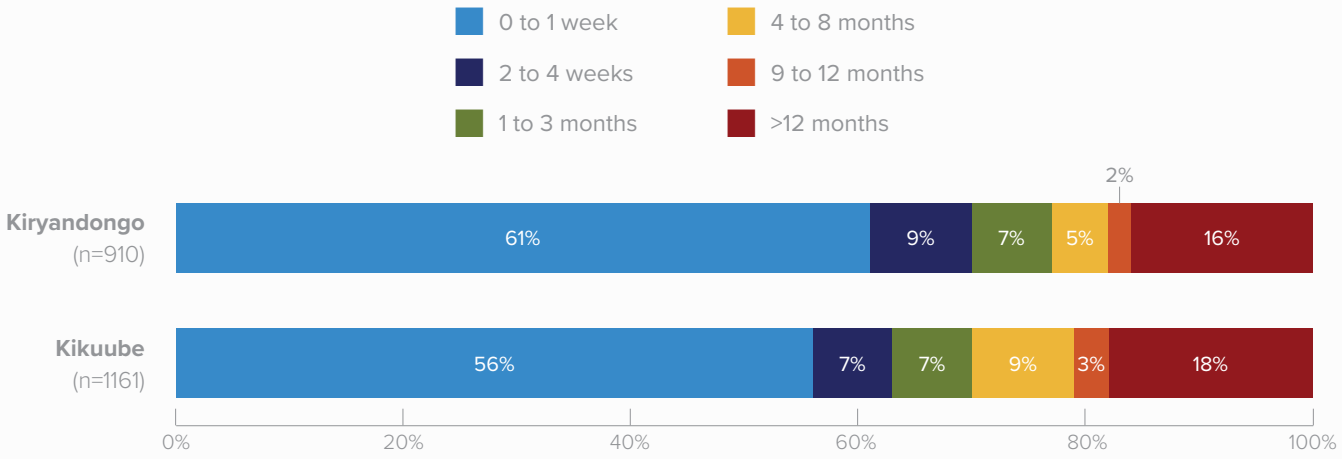
When asked to provide the likely reason for non-functionality, a small majority responded "bad parts" in Masindi and Kiryandongo, and slightly less than a majority did so in Kikuube. Respondents had a variety of uncategorized answers marked other. Please note that Masindi district is omitted because the results are not directly comparable to the other districts, as water points that were indicated as non-functional for 0 to 1 week or greater than 12 months were not sampled due to a survey issue.

Reason for non-functionality



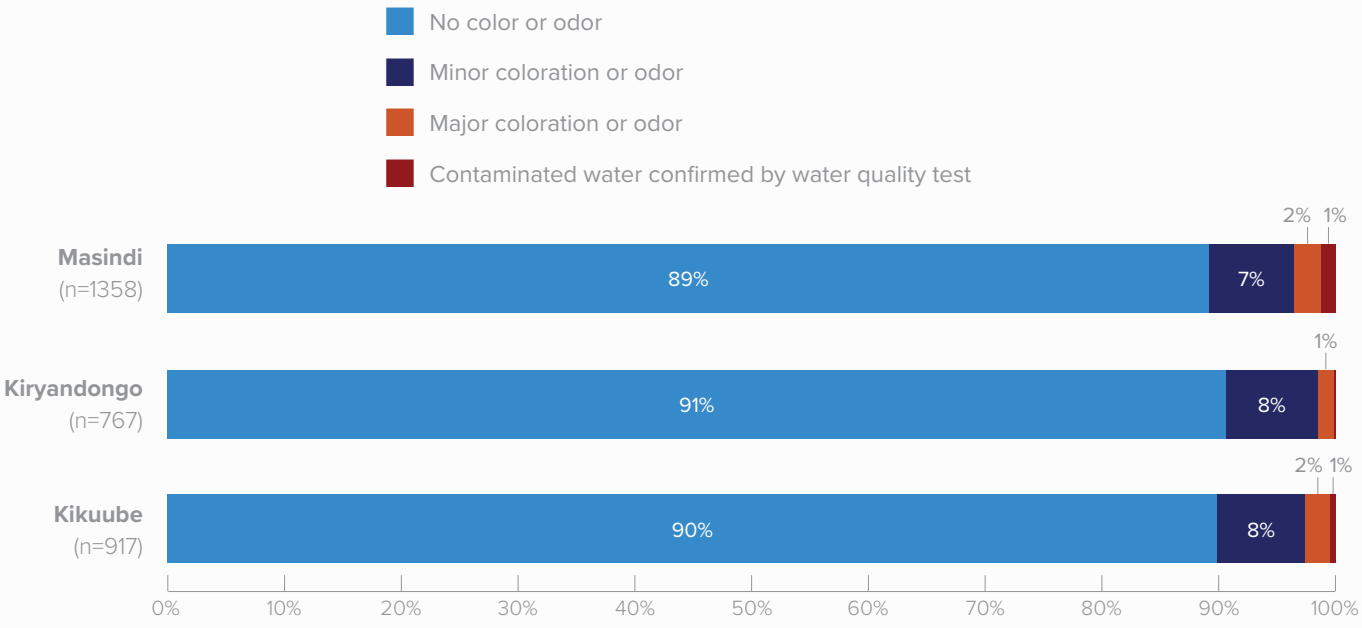
Respondents were also asked to categorize the duration of time the water point was not functional in the last year. The Masindi data is omitted because the results are not directly comparable to the other two districts due to a technical survey error limiting which water points were administered this question.

Duration of breakdown



Finally, this survey did not test water quality, but respondents were asked to report any observed water quality issues. We asked respondents to categorize issues as minor or major concerns related to the coloration of the water or odor, as well as whether there existed water quality issue verified by a test. Perceived water quality was generally high.

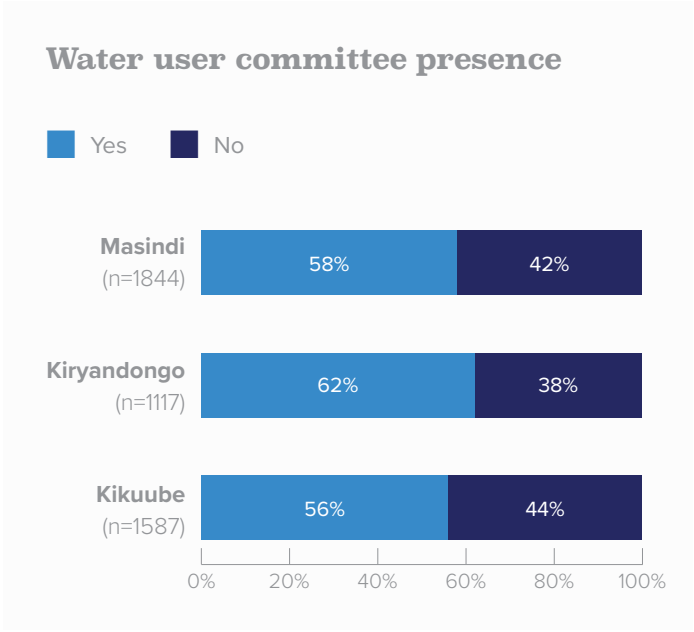
Water quality issues detected

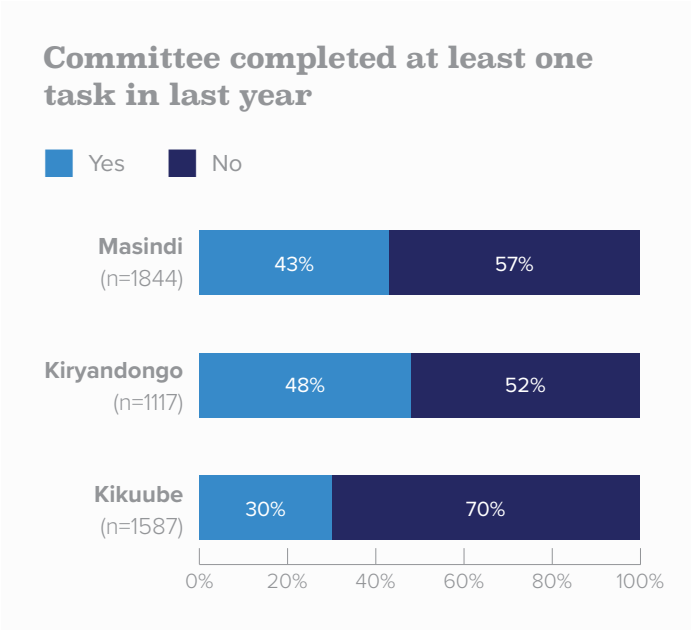


Water point management

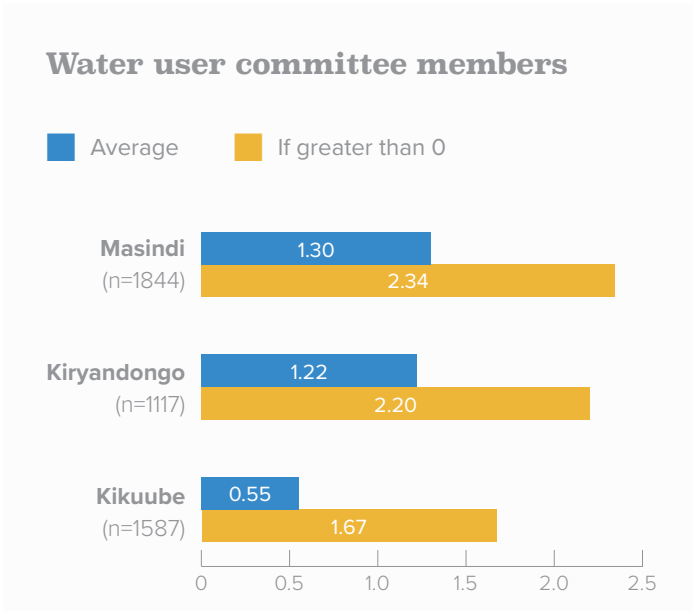
This section details the constitution and practices of water user committees traditionally charged to support water point management by collecting fees, contracting maintenance and repairs, and maintaining a hygienic water point. This community-based management approach has been critiqued in recent years for failing to establish a viable management structure with the incentives and capacities to perform its function. Our survey confirmed that on average, water user committees struggled to perform these functions. An exception to this finding – water points that also have Self-Help Groups trained to support the committees – will be detailed later in the report.

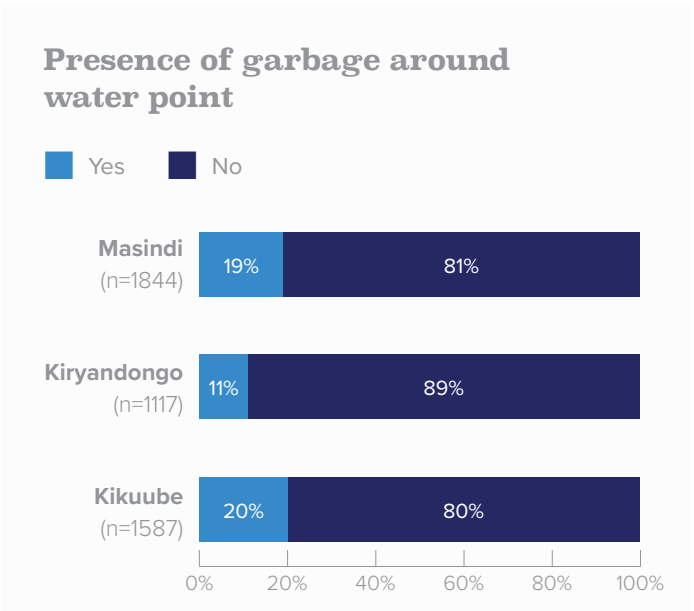
Respondents were first asked if a water user committee was present at the moment or in the recent past. A small minority in each district reported a committee. Furthermore, fewer than 50% completed a single task in the last year.





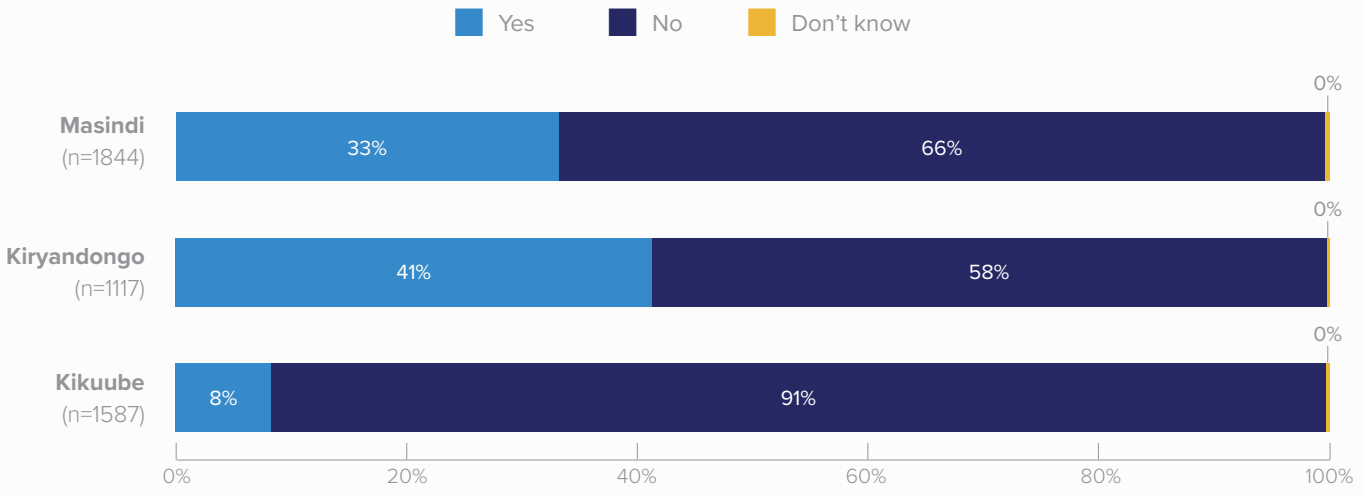
Active water user committee membership likewise was low. Even among committees with at least one active member, the average number of active members ranged between 1.61 and 2.3, below the recommended number of active committee members. The rate of unsanitary water points was relatively low.



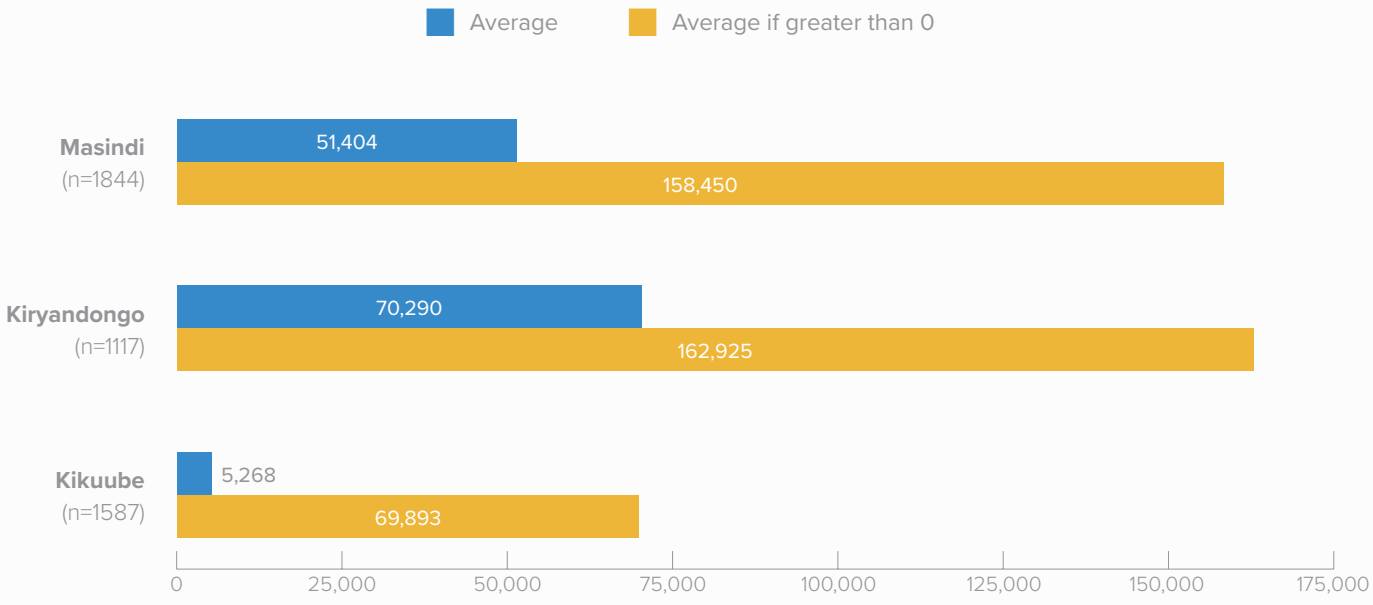


The absence of a functional management committee is clearly observed in the financial and administrative capacities of the communities to maintain their water points. While a borehole might require 150,000 to 300,000 Ugandan shillings for a year's maintenance and repair, the average community did not have funds available. Rates of funds available were significantly higher in Masindi and Kiryandongo, related to the higher prevalence of self-help groups described later in the report.

Committee has funds available for maintenance or repair

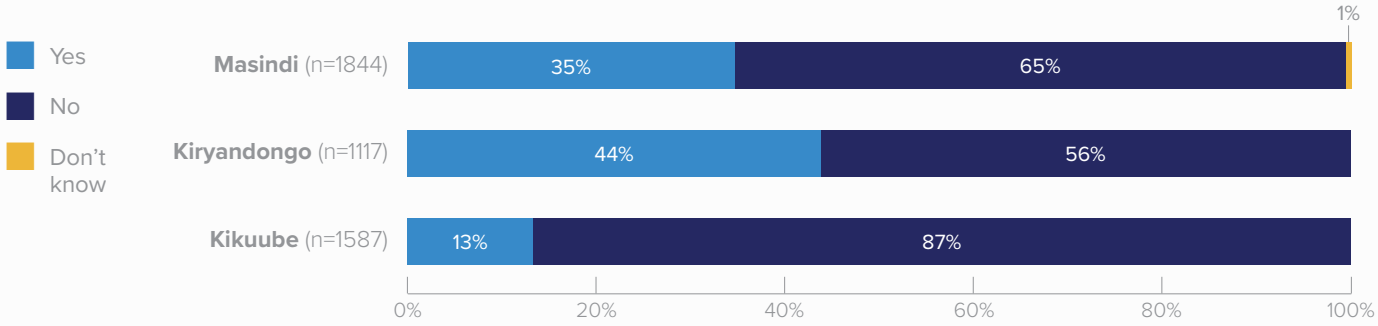


Funds available for repair (Ugandan Shillings)

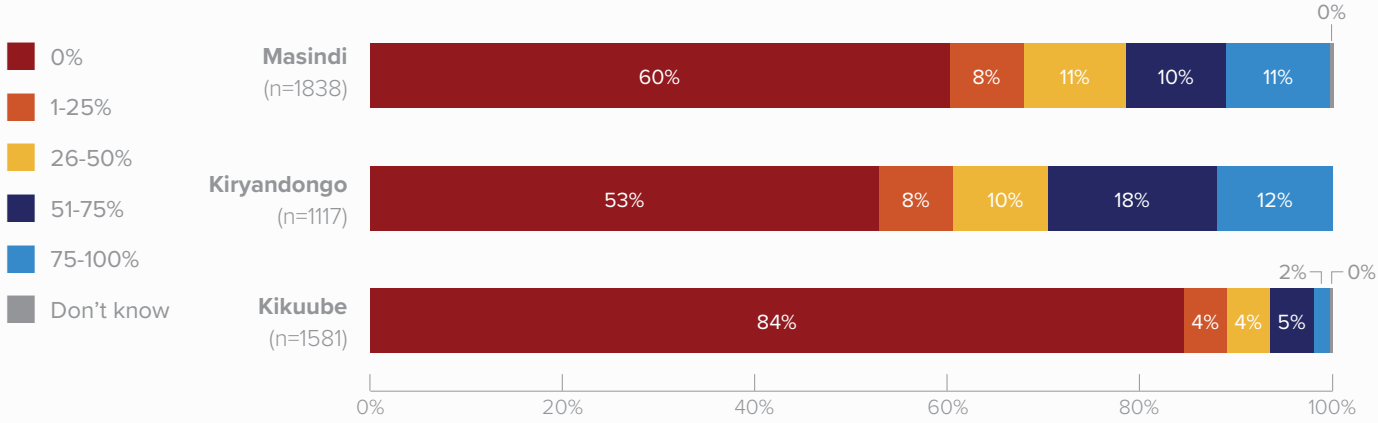


The lack of available funding is connected to an interrelated problem of poor financial management and low willingness to pay. Few water user committees maintain any financial records, though significantly more committees maintain records in Masindi and Kiryandongo. Respondents also report very low rates of user contributions to water point maintenance and repair. Only 15% of communities in Kikuube reported that anyone paid user fees in the prior year.

Water user committee has records of fees collected

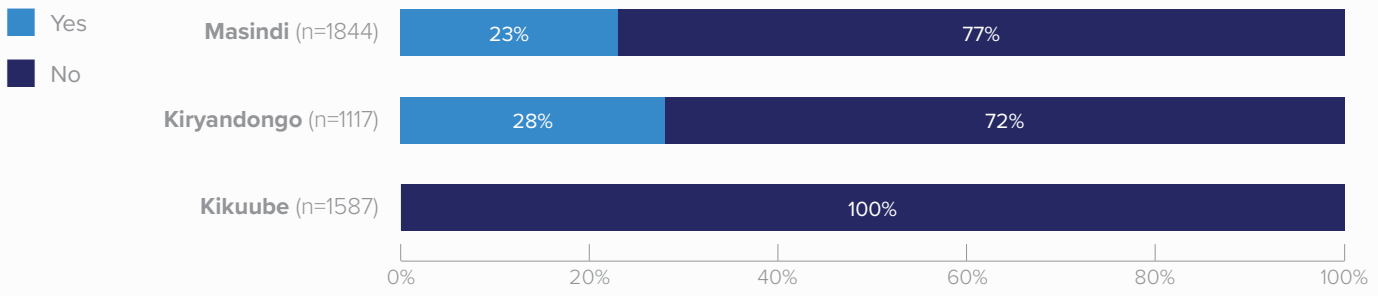


Percentage of catchment households paying user fees



Finally, enumerators also asked respondents if there was a Self-Help Group, or a savings group of any type, that was aiding the local water point with its collection and management of water user fees. Nearly a quarter of water points in Masindi and Kiryandongo reported such a group, in contrast to none in Kikuube, where The Water Trust has not operated. The presence of these groups explains much of the positive variances for Masindi and Kiryandongo above, as will be detailed in the following section.

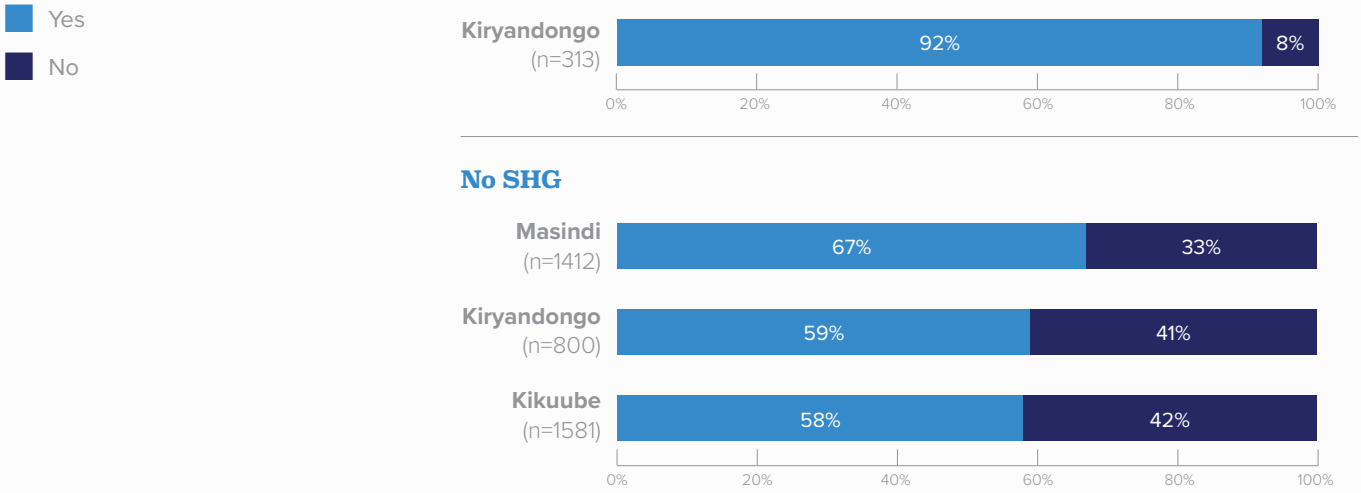
Presence of Self-Help Group at water point



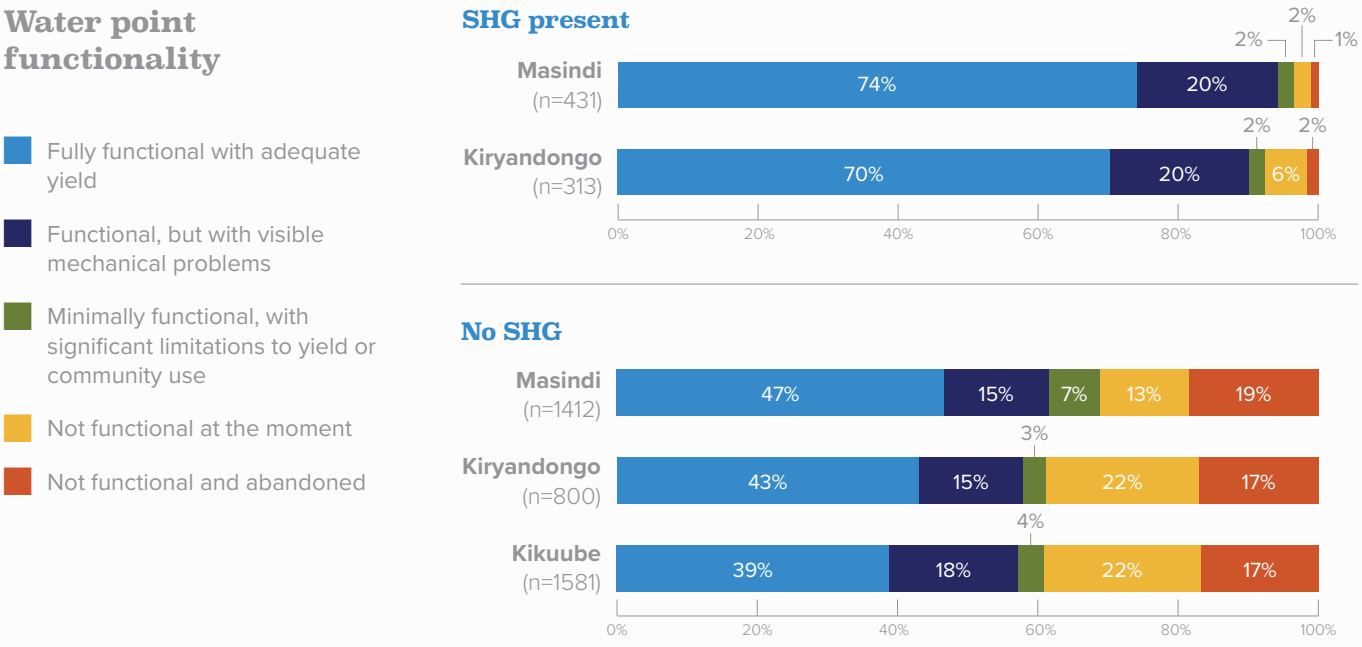
Self-Help Groups and water point functionality

Water point functionality in Masindi and Kiryandongo was meaningfully higher than in Kikuube, despite a higher official rural functionality rate in the latter. This is largely explained by the 744 water points reported to have a Self-Help Group supporting their water user committee in the functions of collecting user fees from group members, and managing the reserve fund. The indicators below reflect significantly higher water availability and functionality than comparable water points. Notably there are still a meaningful minority of water points that are functional but have visible mechanical problems that have not yet been addressed by the groups. Communities are more likely to fix water points when there is not water available rather than perform preventative maintenance.

Water available at source

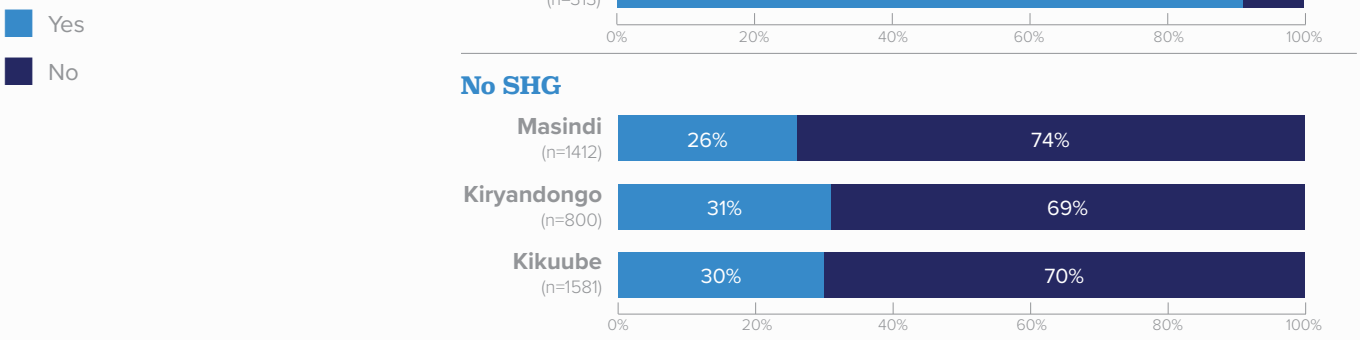


Water point functionality

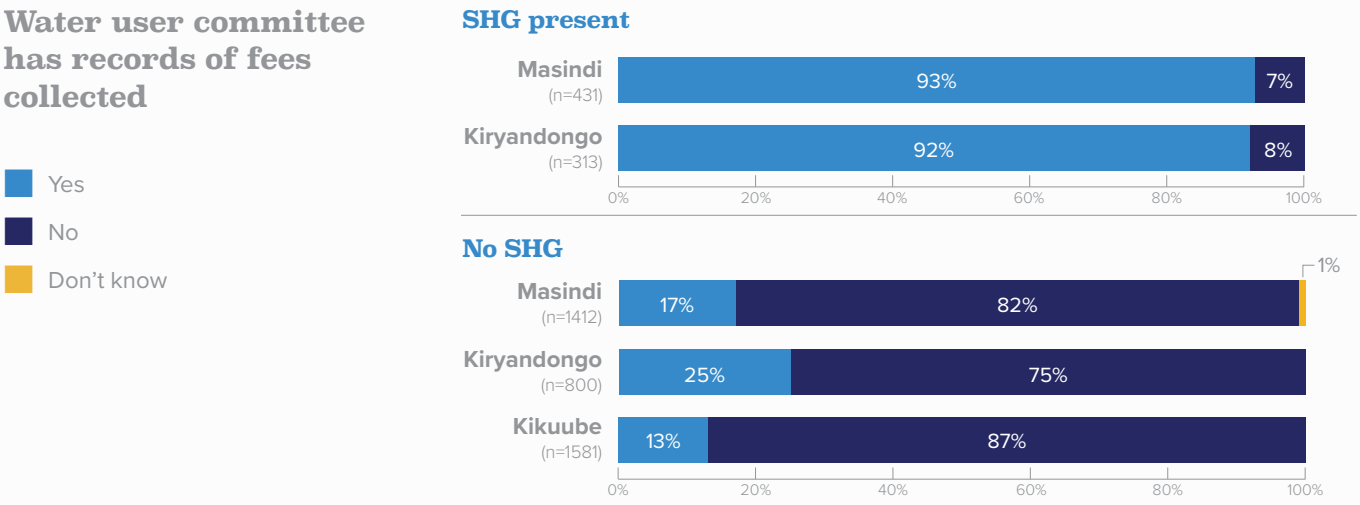


This improved water point functionality is associated with higher levels of water user committee and Self-Help Group activity.

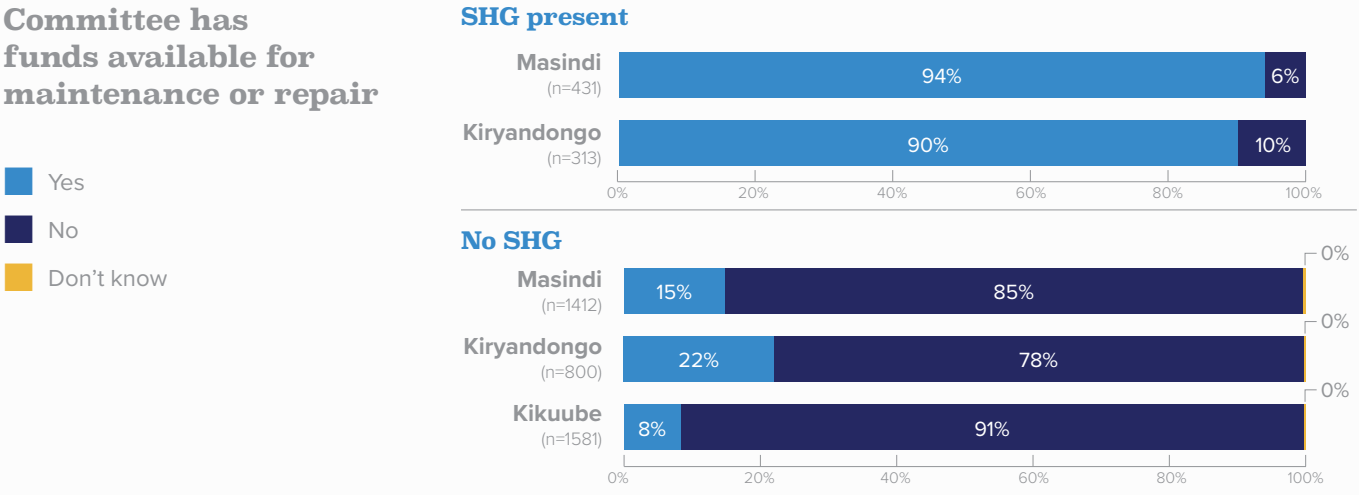
Water user committee completed at least one task in last year



Water user committee has records of fees collected



Committee has funds available for maintenance or repair



The average amount of funds available for water points without a Self-Help Group ranges between 5,289 (Kikuube) and 20,868 (Kiryandongo) Ugandan Shillings. In contrast, water points with Self-Help Group average between 178,00 (Masindi) and 194,794 (Kiryandongo) Ugandan Shillings. These figures do not include the funds collected but already expended during the year for water point maintenance and repair. The Water Trust sets an annual target of 300,000 Ugandan shillings either saved or spent each year.

Conclusions

This survey provides an assessment of water point functionality and management practices across three districts in western Uganda. Water point functionality and management is significantly lower than identified in the water supply atlas. Traditional community based management approaches (i.e., water user committees) are not functioning adequately to sustain investments in rural water, sanitation, and hygiene. The Self-Help Group model does achieve significantly higher results in functionality and management. There is scope for improvement in its performance by encouraging more preventative maintenance to reduce the percentage of water points with visible mechanical issues. Our results align with the perception of the Ministry of Water and Environment that substantive changes to the process of maintaining the water atlas would provide significantly improved visibility on water point functionality and management. We would recommend such an investment is made to inform decision-making on how to best target investments in expanding access to water. We would also recommend that the Self-Help Group model be replicated in other contexts in Uganda to see if it can improve the sustainability of rural water points.

Acknowledgments

The Water Trust would like to acknowledge the World Bank for financing this project as well as the Ministry of Water and Environment and the district governments of Masindi, Kiryandongo, and Kikuube for their support and collaboration. We would also like to acknowledge Deerfield Foundation for its financial support of the development of the Self Help Group model for sustainable water and staff members Bena Nakabiri, Pheona Ayomirwothjamony, and Enock Obwon for their hard work and dedication to collect and validate the data.

THE WATER TRUST

WATERTRUST.ORG