# Vision of a Healthy Village Program Results

## Kakumiro, Uganda
## Project 1

A study evaluating the impact of Water for Good's[1]
Vision of a Healthy Village program in Kakumiro Project 1

August 2022

[1] Water for Good and Lifewater International merged in 2024. Project implementation activities prior to January 2024 were conducted by Lifewater International.

# Contents


03 The Problem

04 Water for Good's Program

05 Study Methods

06 Key Indicators

07 Results: Health

08 Results: Water

08 Results: Sanitation

09 Results: Hygiene

10 Results: Community Institutions

12 Conclusion

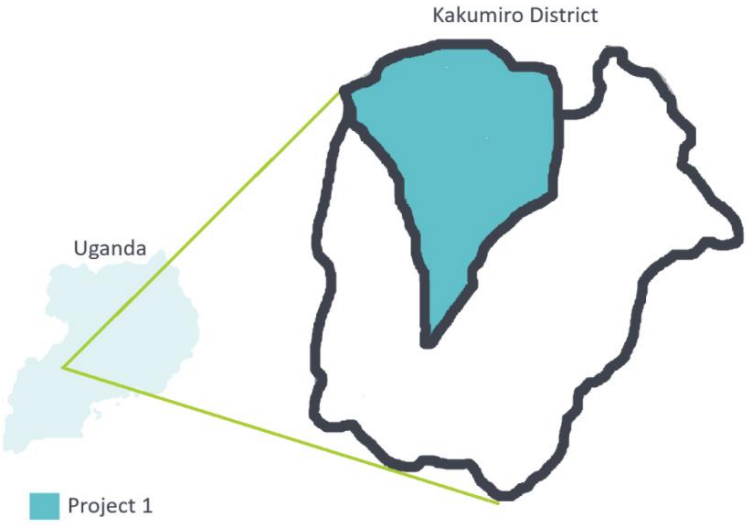
# The Problem

Sub-Saharan Africa is estimated to have the lowest rates of water, sanitation, and hygiene (WASH) coverage globally. In rural Uganda, safe access to WASH is largely inadequate, with an estimated 53% of people lacking at least basic access to drinking water, 81% lacking at least basic access to sanitation, and 83% lacking basic access to handwashing facilities in 2021.[2]

## Kakumiro, Uganda

The Kakumiro District is administratively divided into 105 parishes with a total population of 428,176. Water for Good's first project in this region operated in four rural parishes (Binikira, Bujaaja, Mpsasaana, and Rwamata) of the Mpasaana sub country, serving 20,135 people across 71 sub-villages with WASH programming.

Figure 1. Map of the project area




During the baseline study conducted in this region in August 2018 (before project implementation had begun), Water for Good found that access to safe WASH facilities and WASH knowledge was limited:

- 5.9% of respondents reported using an improved water source (designed to deliver safe water)[3] in both the dry and rainy seasons. Additionally, households reported a median roundtrip journey time of 135 minutes to collect their water.
- 54% of households were observed to have improved latrines (hygienically designed to prevent contact with human feces)[4].
- Proper handwashing facilities were not common at households; 1.3% had a handwashing station with soap/ash and water near their latrine. Furthermore 29% of respondents washed their hands with soap and water at the two most critical times (before eating and after using the latrine) in the 24 hours prior to the survey (self-reported).

[2] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2021). Retrieved from: https://washdata.org/data/household#!/dashboard/6138
[3] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water
[4] WHO/UNICEF Joint Programme for Water Supply, Sanitation, and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/sanitation.

# Water for Good's Program

Water for Good identifies a district for long-term partnership and then begins working through the district, selecting several smaller parishes for each three-year project cycle. Water for Good implemented its first project in the Kakumiro district of Uganda from August 2018 through December 2022. The project focused on changing WASH behaviors (such as handwashing, water treatment, and latrine use) as well as constructing WASH infrastructure. The project had the following high-level goal: *Reduce WASH-related diseases and improve the health and wellbeing of children and families in the Kakumiro district through safe water, sanitation, and hygiene.*

Water points were constructed in communities, schools, and health facilities, and ventilated improved pit latrines were constructed at schools and health facilities. Between baseline and endline[5], 37 water points were completed and 16 ventilated improved pit latrines were constructed.

In addition to the construction of water and sanitation infrastructure, the project emphasized intensive behavior change activities at the household-level. For this purpose, 1,435 Community Conversation events were undertaken, in which the communities learned about 14 WASH-related topics, such as handwashing and clean compounds. In the communities, trained volunteers made educational visits to every household in the project (at least quarterly) to motivate and support behavior change and to monitor progress. Additionally, communities were encouraged to obtain government Open Defecation Free (ODF) verifications and declarations. Schools and health facilities in the project area were equipped with training on maintaining a healthy environment for students and patients, to prevent WASH-related diseases. Key outputs of Kakumiro Project 1 are displayed in Table 1.

Table 1. Kakumiro Project 1 outputs as of August 2022

| Outputs | Number (Percent) |
|---|---|
| Healthy Homes[6] | 3,278 (84%) |
| Open Defecation Free villages | 71 (100%) |
| Trained water committees | 53 |
| New and rehabilitated water points completed | 37 |
| New and rehabilitated ventilated improved pit latrines (VIPLs) completed | 16 |
| Healthy Villages[7] | 7 (10%) |

Since the data for the project endline was collected (August 2022), 11 additional water points have been constructed and four more water committees have been trained.

[5] Data for the baseline study were collected in August 2018; data for the endline were collected in August 2022. This project operated on a three-year schedule.
[6] Healthy Homes are verified to be drinking safe water in the dry and rainy seasons, use safe water storage containers, have improved latrines with dignity (with walls, a roof, a pit cover, and a door), two handwashing stations with soap/ash and water (one near the latrine and one near the kitchen), a hygienically raised dish drying rack, a bathing shelter that allows water to drain without pooling, and a clean compound.
[7] Healthy Villages are those that become Open Defecation Free (ODF), have access to safe water, functional water committees, and at least 90% Healthy Homes in their village

# Study Methods

For this study, the following data were utilized:

**Household survey:** Household Knowledge, Attitudes, and Practices (KAP) surveys were conducted in August 2018 and August 2022, combining both observation and interview data. At baseline, 392 households were surveyed via a cluster sampling method of the 71 villages in the project areas. At endline, 401 households were surveyed using the same sampling method. In both studies, enumerators chose which households to randomly sample in each village using the EPI Sampling method.[8]

Data was collected electronically by enumerators through Akvo, a mobile data collection software platform, and downloaded into Excel where it was analyzed. If the data for an indicator were normally distributed, the average value is reported. If they were not normally distributed, the median is provided to give a more representative estimate.

**Health care facility assessment data:** Data from the one health care facility within the target area were collected in August 2022, including information on the number of annual outpatient visits and cases of various WASH-related illnesses.

**Qualitative data:** Twelve focus group discussions (FGDs) and nine in-depth interviews (IDIs) were conducted at endline with key project stakeholders and community members. Data were analyzed using ATLAS.ti, a qualitative data analysis software tool. For each theme that emerged from the data, a detailed description was created.

[8] WHO (2008). Retrieved from: https://www.who.int/publications/i/item/module-7-the-epi-coverage-survey

# Key Indicators

Table 2. Summary of key data from baseline and endline household KAP survey of Kakumiro Project 1

| Theme | Indicators | Baseline | Endline | P-values[9] |
|---|---|---|---|---|
| Health Indicators | % of households with at least one child under 5 that had diarrhea in past 7 days | 23% | 11% | <0.01 |
| | % of respondents reporting that child health has improved in the past year | 32% | 89% | <0.01 |
| | % of respondents reporting that their health has improved in the past year | 29% | 81% | <0.01 |
| Water Indicators | % of households using an improved primary drinking water source in the dry and rainy season[10] | 5.9% | 88% | <0.01 |
| | Median journey time to fetch water (travel to/from water source plus queue time) during dry season[11] | 135 mins | 35 mins | <0.01 |
| | % of households storing water safely (observed)[12,13] | 17% | 99% | <0.01 |
| Latrine Indicators | % of households with latrines that are improved[14] (observed)[15] | 54% | 100% | <0.01 |
| | % of households with latrines that are improved with dignity (slab, walls, roof, pit cover, and door) (observed)[16] | 0.3% | 54% | <0.01 |
| Hygiene Indicators | % of respondents who washed hands in past 24 hours (with soap/ash and water or alcohol-based rub) at the two most critical times (after defecation and before eating) | 29% | 97% | <0.01 |
| | % of households with handwashing facility and materials (soap/ash and water or sanitizer) located close to latrine (within 10 paces) (observed)[17] | 1.3% | 93% | <0.01 |
| | % of households using a hygienic (raised) drying rack (observed)[18] | 42% | 98% | <0.01 |
| | % of households with a clean compound (no visible rubbish or feces) (observed) | 36% | 94% | <0.01 |
| Healthy Homes | % of households meeting all Healthy Home requirements[19] | 0.0% | 49% | <0.01 |

[9] A p-value tells you how likely it is that your results happened by random chance. If the p-value is below 0.05, it usually means there's strong enough evidence to suggest the result is not just due to chance. If the statistical significance for a key indicator is marked as "Yes", it has a p-value <0.05

[10] Improved sources of water include "those that have the potential to deliver safe water by nature of their design and construction, and include: piped water, boreholes or tubewells, protected dug wells, protected springs, rainwater, and packaged or delivered water". WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water

[11] This includes all households for whom we had sufficient data to evaluate their water fetching time (n=284 at baseline; n=400 at endline)

[12] This includes all households for whom we had sufficient data to evaluate their water storage containers (n=274 at baseline; n=401 at endline)

[13] Safe water storage containers are those that are narrow mouthed, covered, and clean/mostly clean

[14] Improved latrines are "designed to hygienically separate excreta from human contact, and include: flush/pour flush toilets connected to piped sewer systems, septic tanks or pit latrines; pit latrines with slabs (including ventilated pit latrines), and composting toilets". WHO/UNICEF Joint Programme for Water Supply, Sanitation, and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/sanitation.

[15] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=384 at baseline; n=400 at endline)

[16] This includes all households for whom we had sufficient data to evaluate their sanitation facility (n=384 at baseline; n=400 at endline)

[17] This includes all households for whom we had sufficient data to evaluate their handwashing facility (n=388 at baseline; n=400 at endline)

[18] This includes all households for whom we had sufficient data to evaluate their area for drying dishes (n=392 at baseline; n=401 at endline)

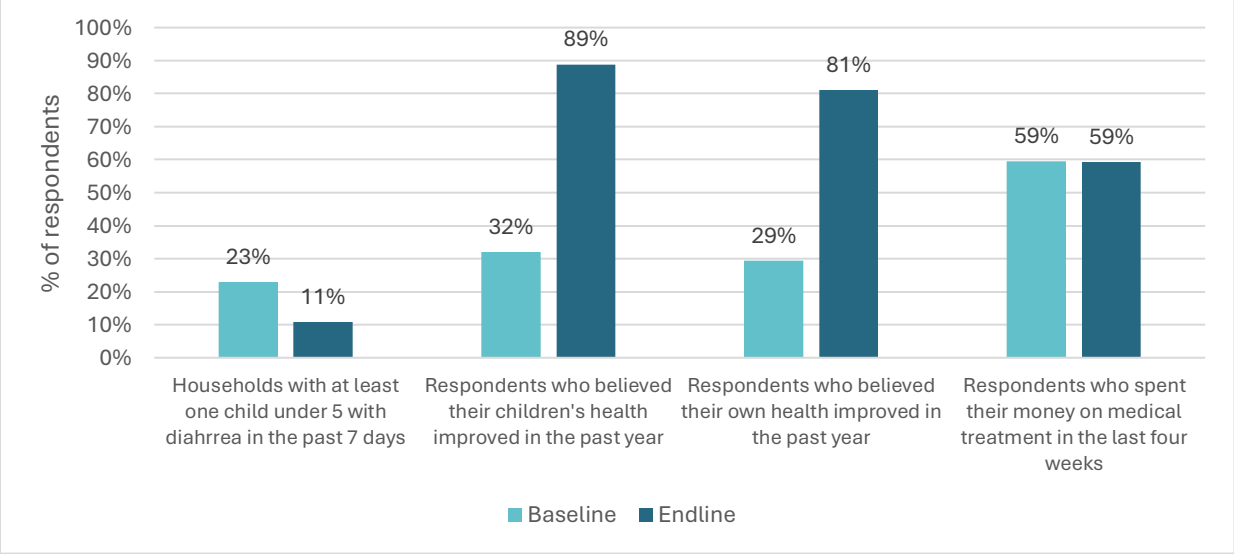
[19] This includes all households for whom we had sufficient data to evaluate Healthy Home criteria (n=264 at baseline; n=399 at endline)

# Health

Diarrhea is the third leading cause of death for children under 5 globally, resulting in approximately 443,832 deaths per year.[20] The majority of these deaths are attributed to inadequate WASH. In this study, the percentage of households who had at least one child under five with diarrhea in the past week decreased from 23% at baseline to 11% at endline (p-value <0.01). The percentage of respondents reporting that their children's health had improved in the last year increased from 32% at baseline to 89% at endline (p-value <0.01). When the respondents were asked what the most common illnesses were affecting children under five in their household, the percentage reporting stomach pain decreased from 14% at baseline to 4.6% at endline, and the percentage reporting diarrhea decreased from 11% at baseline to 4.9% at endline.

When respondents were asked how their own health had changed in the year prior to the survey at baseline, 29% said their health had improved, 44% said their health had stayed the same, and 27% said their health had declined. At endline, 81% said their health had improved since last year. The burden of medical visits and fees also decreased from baseline to endline. The percentage of respondents reporting to have spent money on medical treatment in the month prior to the survey was the same at baseline (59%) and endline (59%). The median amount spent decreased between the studies, from 11,537 UGX ($3.01 USD) at baseline and 2,500 UGX ($0.65 USD) at endline. Additionally, the median number of workdays missed due to illness in the two weeks prior to the survey decreased from four and a half days at baseline to two days at endline.

Figure 2. Key health indicators at baseline and endline




During qualitative interviews, respondents demonstrated increased understanding of the connection between WASH practices/conditions and the occurrence of diseases such as diarrhea. Many also mentioned observing improvements in the health of their family, especially among children. Notably, a water committee member reflected on this change in child illness during an interview, saying:

[20] WHO (2024). Retrieved from: https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease

"Children are now happy and healthy looking in their bodies since they no longer fall sick, due to improved hygiene and sanitation."

# Water

Water for Good is interested in understanding the level of "basic access" to drinking water within the project area, which is defined as "Drinking water from an improved source, provided collection time is not more than 30 minutes for a roundtrip including queuing"[21]. Water for Good was able to assess the rate of basic access for 86% (n=284) of respondents for the dry season at baseline, 82% (n=271) of respondents for the rainy season at baseline, 99.8% (n=400) of respondents for the dry season at endline, and 98% (n=391) of respondents for the rainy season at endline. Basic access to water increased from baseline to endline, from 0.0% to 36% in the dry season and 4.4% to 40% in the rainy season (Table 3).

Table 3. Drinking water source types in the dry and rainy seasons

| | Season | Source type | % of respondents | Median water fetching time | % with basic access |
|---|---|---|---|---|---|
| Baseline | Dry | All sources<br>Improved<br>Unimproved | 100% (n=284)<br>12% (n=34)<br>88% (n=250) | 135 minutes<br>185 minutes<br>123 minutes | 0.0% (n=0) |
| | Rainy | All sources<br>Improved<br>Unimproved | 100% (n=271)<br>12% (n=32)<br>88% (n=239) | 60 minutes<br>80 minutes<br>60 minutes | 4.4% (n=12) |
| Endline | Dry | All sources<br>Improved<br>Unimproved | 100% (n=400)<br>91% (n=362)<br>9.5% (n=38) | 35 minutes<br>35 minutes<br>43 minutes | 36% (n=142) |
| | Rainy | All sources<br>Improved<br>Unimproved | 100% (n=391)<br>93% (n=365)<br>6.6% (n=26) | 35 minutes<br>35 minutes<br>35 minutes | 40% (n=156) |

Enumerators observed the water storage containers at the respondents' households. Of the containers observed at baseline (n=274), 36% were covered, 63% were narrow mouthed, and 42% were clean or mostly clean. Of the containers observed at endline (n=401), 99.5% were covered, 100% were narrow mouthed, and 99% were clean or mostly clean. Overall, the percentage of households storing water safely increased from 17% at baseline to 99% at endline (p-value <0.01) The percentage of households who reported being satisfied with the current water situation increased from 3.8% at baseline to 81% at endline.

# Sanitation

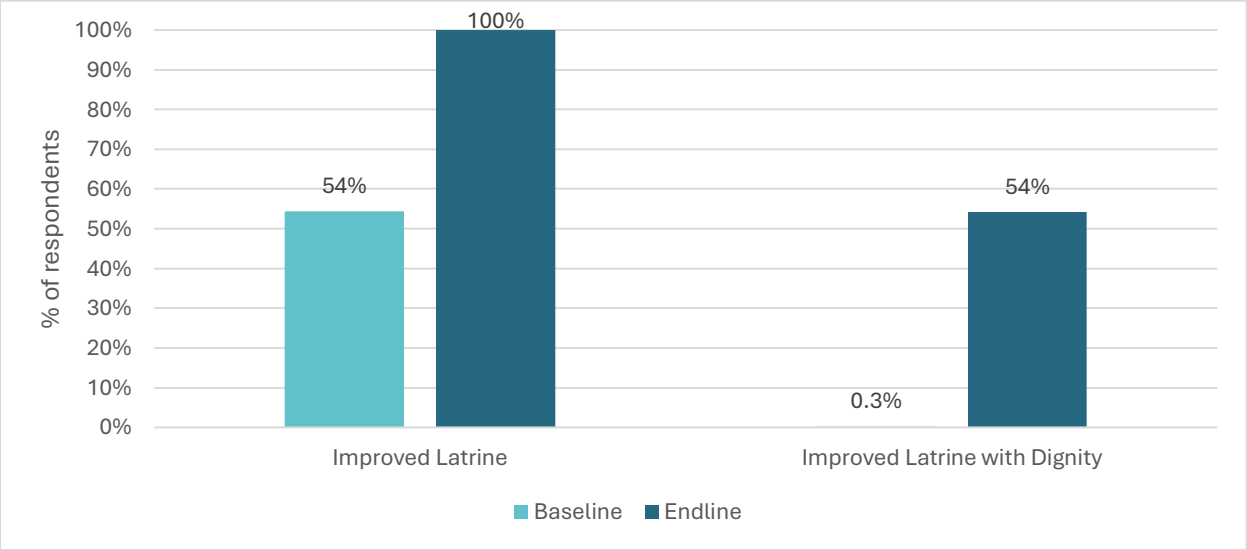
Water for Good trains households to invest in "improved latrines with dignity", which meet all the criteria to be considered an improved latrine (designed to prevent the spread of disease through human feces) while also protecting the dignity of the users. Improved latrines with dignity are not shared with other households and have walls, a roof, a door that provides complete privacy, and a tight-fitting pit cover that keeps flies and insects out.

[21] WHO/UNICEF Joint Programme for Water Supply, Sanitation and Hygiene (2016). Retrieved from: https://washdata.org/monitoring/drinking-water

During qualitative interviews, respondents frequently described improved access to sanitation facilities following Water for Good's intervention. Participants highlighted the construction of additional latrine stances in schools and households, which reduced congestion, improved privacy and dignity, and increased the availability of sanitation services. Respondents also noted greater adoption and proper use of latrines at households, accompanied by handwashing facilities, contributing to improved hygiene practices and a reduction in open defecation within communities. These changes were widely perceived as contributing to better sanitation conditions and healthier environments in both schools and households.

Overall, the percentage of households with improved latrines increased from 54% at baseline to 100% at endline (p-value <0.01), and the percentage of households with improved latrines with dignity increased from 0.3% at baseline to 54% at endline (p-value <0.01) (Figure 3). At endline, the most commonly missed improved latrine with dignity standard was having a tight-fitting pit cover. At baseline, 15% of respondents reported being "very satisfied" with their current place of defecation, compared to 58% of respondents at endline who reported the same.

Figure 3. Quality of observed latrines at baseline and endline



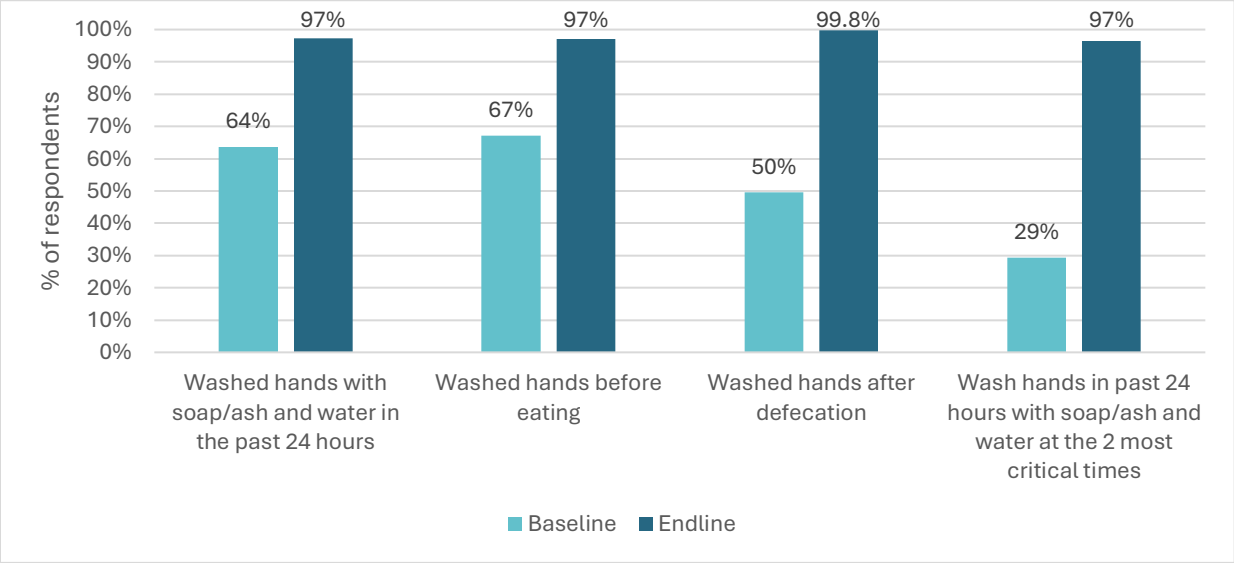

# Hygiene

Handwashing facilities and self-reported handwashing behaviors were investigated in each study. The prevalence of handwashing stations near the latrine with the appropriate materials (soap/ash and water) increased from baseline to endline, from 1.2% to 93% (p-value <0.01). The percentage of respondents who reported washing their hands after defecation/using the latrine increased from 50% to 99.8%, and the percentage who reported washing their hands before eating increased from 67% to 97%. Overall, the percentage of respondents who washed their hands with soap/ash and water at the two most critical times increased from 29% at baseline to 97% at endline (p-value <0.01).

During qualitative interviews, respondents described increased handwashing and hygiene practices. Participants frequently mentioned washing hands with soap after using the latrine and before eating, supported by the availability of handwashing facilities and hygiene education through schools and

communities. Respondents also referred to WASH clubs, hygiene parades, and sanitation messaging as important avenues for promoting hygiene practices.

Figure 4. Self-reported handwashing behavior in the 24 hours prior to the survey




Enumerators also observed the households' waste management. The percentage of households observed to have feces on the compound decreased from 22% at baseline to 0.2% at endline, and the percentage observed to have rubbish on their compound decreased from 56% to 5.7%. Overall, the percentage of households observed to have clean compounds increased from 36% at baseline to 94% at endline (p-value <0.01).

# Community Institutions

## Schools

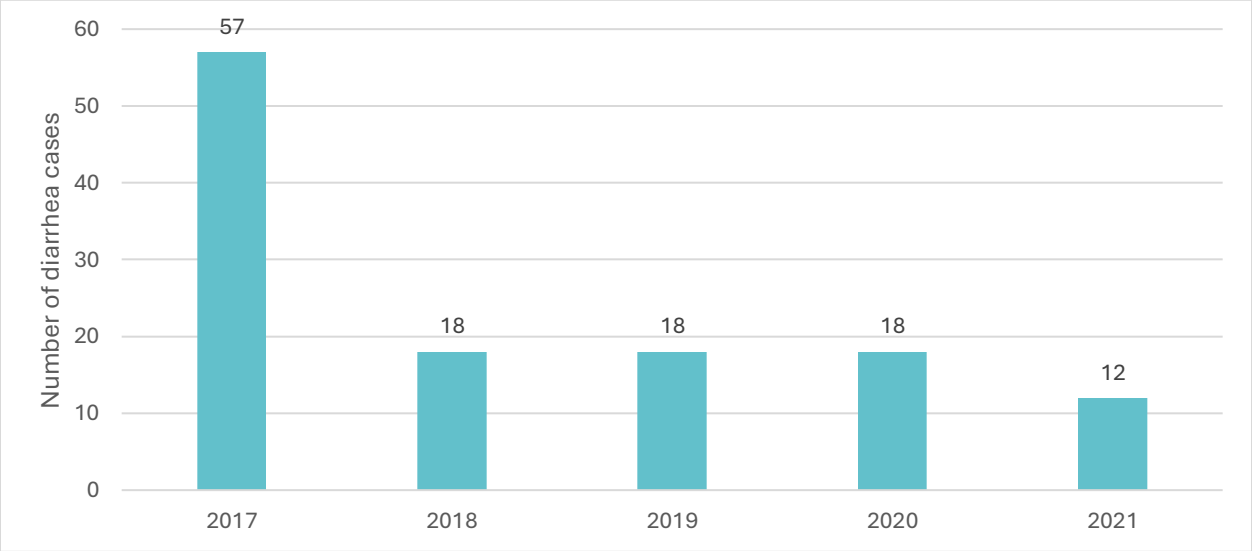
During the qualitative interviews, respondents described improvements in school attendance alongside enhanced WASH practices and infrastructure following Water for Good's intervention. Participants linked attendance and enrollment improvements with access to safe water, improved sanitation facilities, handwashing infrastructure, and menstrual hygiene management support. They also highlighted the role of WASH clubs, hygiene parades, and sanitation education in schools. Several respondents specifically noted that improved support for menstruating girls had increased their confidence and participation in school. A group of female students explained this change during an FGD, saying:

> "Children at the school don't fear going to school because of menstruation because there has been sensitization to enable them [to] manage their situation in school."

## Health Facilities

One government supported health center was included in Kakumiro Project 1, St. Andrea Kahwa Mpasaana Health Centre, serving a population of 8,446 people. Overall, the health facility data shows a decrease in total outpatient visits by people of all ages and by children under 5 (Figure 5). Additionally, the number of cases of diarrhea and intestinal parasites in children under 5 decreased each year.

Figure 5. Total cases of diarrhea in children under 5



# Conclusion

Water, sanitation, and hygiene conditions improved in the Kakumiro project 1 area between baseline and endline. Households received training on WASH practices, schools were mobilized to teach their students about WASH, water points were rehabilitated and constructed, and water committees were established for ongoing maintenance and operations of water points. As a result, communities are equipped to prevent WASH-related diseases through healthy practices such as safe water consumption and handwashing. Of the 3,902 households in the project area, 84% were registered as Healthy Homes, and 100% of villages were verified Open Defecation Free.

All of the observed households at endline (n=400) had improved latrines (100%), as compared to 54% at baseline. At endline, 54% of households had improved latrines with dignity. Of the latrines at endline which were not improved with dignity, the main difficulty was maintaining tight-fitting pit covers. Further encouragement and promotion of pit covers is needed so households can experience the maximum health benefits these facilities can offer.

Safe water storage increased from 17% at baseline to 99% at endline, and the number of respondents drinking safe water increased from 54% to 99%. Furthermore, 87% of respondents at endline indicated that their water point is managed by a water committee, with 94% of these respondents (n=347) rating their performance as good. The number of respondents satisfied with their current water situation increased from 3.8% at baseline to 81% at endline.

WASH-related diseases decreased between baseline and endline. The number of households with children under five reporting a diarrhea case in the week (7 days) prior to the surveys decreased from baseline (23%) to endline (11%). The local health facility data mirrors these findings, showing that diarrhea cases in children under five decreased throughout the program implementation (from 57 cases in 2017 to 12 cases in 2021). Eighty-nine percent of households at endline said their children's health had improved in the past year, and 81% said their own health had improved (as compared to 32% and 29% at baseline, respectively).