

Sustainable WASH Systems Learning Partnership

# End of Project Report Annexes



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**SUSTAINABLE  
WASH SYSTEMS**  
A LEARNING PARTNERSHIP

**Front cover:** Community members fetch water after SWS partner Whave has rehabilitated the community hand pump. Photo credit: Whave

**About the Sustainable WASH Systems Learning Partnership:** The Sustainable WASH Systems Learning Partnership is a global United States Agency for International Development (USAID) cooperative agreement with the University of Colorado Boulder (UCB) to identify locally driven solutions to the challenge of developing robust local systems capable of sustaining water, sanitation, and hygiene (WASH) service delivery. The consortium of partners — Environmental Incentives, IRC, LINC, Oxford University, Tetra Tech, WaterSHED, Whave, and UCB — are demonstrating, learning about, and sharing evidence on systems-based approaches for improving the sustainability of WASH services in four countries.

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## Acronyms

AMS	Asset Management System
APM	Advanced Participatory Methods
ASP	Area Service Providers
CBMS	Community-Based Maintenance System
CDSA	Constituent-Driven Systems Assessment
CSO	Civil Society Organization
CWIS	City-Wide Inclusive Sanitation
DGIS	Directorate-General of International Cooperation
DLG	District Local Government
DWO	District Water Officer
DWTT	District WASH Task Team
EFY	Ethiopian Fiscal Year
ETB	Ethiopian Birr
FCC	Fostering Civic Champions
FIETS	Financial, Institutional, Environmental, Technological, and Social
FSD	Fecal Sludge Disposal
GTP-II	Growth and Transformation Plan II
GoU	Government of Uganda
HPMA	Hand Pump Mechanics Association
IFML	Iterative Factor Mapping and Learning
KCG	Kitui County Government
KIWASH	Kenya Integrated Water, Sanitation and Hygiene
MOU	Memorandum of Understanding

MRD	Ministry of Rural Development
MWE	Ministry of Water and Environment
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
ONA	Organizational Network Analysis
OWNP	One WASH National Program
PAYF	Pay-as-You-Fetch
PMA	Professionalized Maintenance Approach
PPP	Public-Private Partnership
RuSH	Rural Sanitation and Hygiene
RWSF	Reliable Water Source Functionality
SDG	Sustainable Development Goals
SNNPR	Southern Nations Nationalities and Peoples Region
SWS	Sustainable WASH Systems
ToT	Training of Trainers
Triple-S	Sustainable Services at Scale Project
UCB	University of Colorado at Boulder
UGX	Ugandan Shillings
ULGDP	Urban Local Government Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
UWASNET	Uganda Water and Sanitation NGO Network
UWSSP-II	World Bank's Ethiopia Second Urban Water Supply and Sanitation Project
WASH	Water, Sanitation, and Hygiene
WASHCO	WASH Committee

WUA

Water User Association

## Rural Water Activity in Ethiopia (IRC, LINC)

### Context

**South Ari** is in the South Omo Zone, Southern Nations Nationalities and Peoples Region (SNNPR) in Ethiopia (see Figure 1). There is substantial year-round rainfall (around 1,300 mm per year) with peaks in April and October, and the average temperature is 21°C. Groundwater is available at shallow depth in most parts of the woreda. Because of this, there is a focus on boreholes and wells with hand pumps and spring development for domestic water supply.

The total population of the woreda is 177,136 (163,911 rural and 13,225 urban). According to the Woreda water, sanitation, and hygiene (WASH) sustainable development goal (SDG) master plan developed in 2020, there are 178 schemes in the woreda, of which 61 are non-functional (the non-functionality rate is 34 percent). Only 1 percent of the woreda population has access to safely managed service and 21 percent to basic service; 78 percent of the woreda population has no access to water.<sup>1</sup>

The main service delivery models in South Ari are community-managed schemes and a utility-managed piped scheme in Gazer town. Households also self-supply their own facilities. The community-managed schemes are managed by WASH committees (WASHCOs), which are called Water User Associations (WUAs) once legalized. There are also federations at the kebele level that manage and support the WASHCOs/WUAs. These federations are established to streamline communication between WUAs and the woreda.

SNNPR has been a national leader in establishing the necessary proclamation and implementing the legalization policy for community-based water service providers. Although WUAs should be in place as water service providers for all water schemes, 33 percent of the water schemes in South Ari do not have WUAs.<sup>2</sup> Training of WUAs is insufficient, with most having received only limited training on scheme management and regional guidelines when the associations were first established.

The WUAs do not receive continuous support and follow-up from the woreda water office. The woreda provides support on a request basis and cannot provide regular support due to budget limitations. The biggest challenge, in addition to budget limitations, is transportation. It is also difficult to hold WASHCO/WUA members accountable, because they are doing this on a volunteer basis. WASHCOs/WUAs report to the woreda office only when the scheme becomes non-functional, unless staff members call for information or visit the schemes. They also do not meet regularly to evaluate their performance.

**Mille** is in Afar Region, Ethiopia (see Figure 1). The woreda lies in a flat and arid landscape in the lower Awash River basin. It has low average annual rainfall (about 200 mm) with two pronounced rainy seasons in April and July and high temperatures reaching an average of 36°C in the dry season. The

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<sup>1</sup> South Ari Woreda WASH SDG master plan, 2020.

<sup>2</sup> Hailegiorgis, B., Adank, M., and Butterworth, J. (2018). A local systems analysis for rural water service delivery in South Ari (SNNPR) and Mile (Afar), Ethiopia. Sustainable WASH Systems Learning Partnership Concept 1 (Ethiopia). IRC: Addis Ababa.

population is only partly settled (about 25 percent, according to the 2007 Population and Housing Survey), with a large number of pastoralists who live in domed tents that are packed up and moved when the livestock need fresh pasture or water.

Although the river passes through Mille on its way from the highlands around Addis Ababa before drying out in the salt flats toward Djibouti, most of the woreda has high water scarcity. The woreda relies on deep groundwater for domestic water supply.

The total population of the woreda is 113,914 (91,827 rural and 22,087 urban). According to the Woreda WASH SDG master plan developed in 2020, there are 31 schemes in the woreda, of which 11 are non-functional (the non-functionality rate is 35 percent). Only 7 percent of the woreda population has access to safely managed service and 24 percent to basic service; 69 percent of the woreda population has no access to water.<sup>3</sup>

The main service delivery models in Mille are community-managed schemes and utility-managed piped schemes. The community-managed schemes are managed by WASHCOs. The majority of established WASHCOs are weak, and there are also schemes with no WASHCOs. Training of WASHCOs is an issue, with most having received only limited training when they were established more than 2 years ago. Most of the WASHCOs do not receive technical support from the woreda when they face technical issues beyond their capacity.

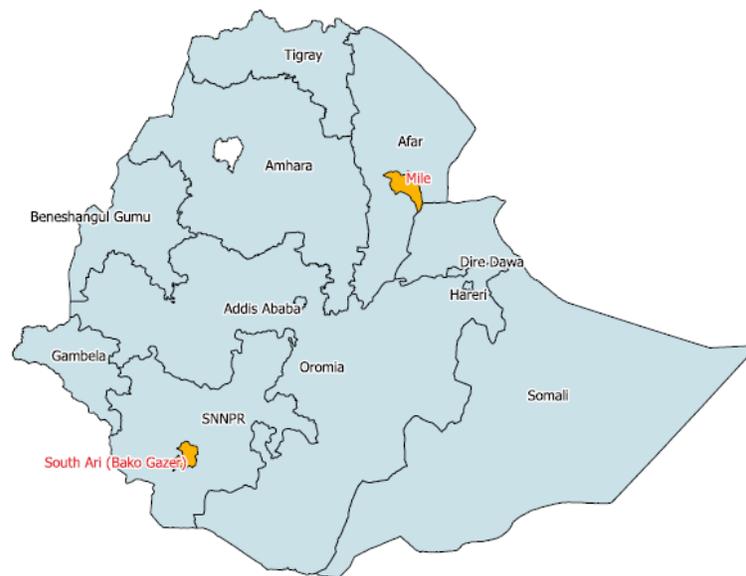


Figure 1. South Ari and Mille Location

In both woredas, building block analysis shows gaps and weaknesses in all 10 building blocks but particularly in financing, infrastructure development and management, monitoring, regulation, learning and adaptation, and water resources management. In both woredas, official structures and capacities for

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<sup>3</sup> Mille Woreda WASH SDG master plan, 2020.

institutions, legislation, and planning are in place to some degree, providing a basis for systems strengthening, but capacities are low.<sup>4</sup>

Finance is also a major constraint in the woredas, with large financing gaps for investment in new services to reach the unserved, as well as for maintenance, rehabilitation, and direct and indirect support to service providers. The woredas struggle with a lack of adequate finance and skilled manpower, time, and resources. Even with the limited budget allocated, there is a cash flow problem that limits the operational capacity of the woredas.

The woreda water office previously budgeted only for salary and operations costs, new water schemes and extensions, and, where needed, undertaking ad hoc rehabilitation of infrastructure, rather than maintaining infrastructure and planning for asset rehabilitation and renewal, which accounts for low rates of functionality. Non-governmental organizations (NGOs) allocate for new water schemes and extensions, rehabilitation, and WASHCO/WUA establishment. Capital maintenance expenditure has been low in the woreda. At least part of capital maintenance expenditure is expected to be raised by WASHCOs/WUAs through tariffs. However, systematic, regular collection of money for operations and maintenance (O&M) is difficult for most rural schemes. Community contribution and willingness to pay for water use is low. There is also a lack of an established system for fee collection and documentation of finances at the WASHCO/WUA level. Most WASHCOs/WUAs have bank accounts, but the amounts collected are insufficient to cover anything beyond day-to-day operations.

In 2019, South Ari Woreda split into three separate woredas: South Ari, Bako Dawla Ari, and Woba Ari. Human resources, office equipment, and logistics were shared between the three new woredas. The split of South Ari into three woredas resulted in dividing the existing experience, capacity, and resources, split staff members who were trained and active in the Sustainable WASH Systems (SWS) Learning Partnership activities, and generally weakened the woreda capacity. However, it has also created an opportunity to reach communities living at remote kebeles through nearby administration structures.

Ownership of assets is unclear, and no systematic asset management system (AMS) is in place in the woreda. Most communities still think the schemes are the responsibility of the government or NGOs. The woreda is still advocating for paying for water and using the money for operation and minor maintenance. The 2017 asset inventory conducted by the woreda with SWS and the United States Agency for International Development (USAID) Lowland WASH Activity (Lowland WASH) covered all water sources and water points, including their age and current physical state.<sup>5</sup> Before this intervention, no recent or detailed asset inventory data were available.

In 2017, until SWS established learning alliances, there was no institutionalized learning platform or regular coordination among government, NGOs, and the other stakeholders in rural water supply. WASH coordination mechanisms exist for emergencies, but there was no standing platform for WASH engagement among NGOs. NGOs do coordinate their efforts with both woreda and zonal government offices, but there is little engagement among the NGOs in the network. Information sharing,

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<sup>4</sup> Hailegiorgis, B., Adank, M., and Butterworth, J. (2018). A local systems analysis for rural water service delivery in South Ari (SNNPR) and Mile (Afar), Ethiopia. Sustainable WASH Systems Learning Partnership Concept I (Ethiopia). IRC: Addis Ababa.

<sup>5</sup> Ibid.

coordination, and communication in government tend to occur between offices at the same level, with woreda offices engaging with other woreda offices and zone offices engaging with other zone offices.<sup>6</sup> This was not a lack of understanding among organizations about the network, but rather a lack of mechanisms and processes for effective collaboration and coordination among stakeholders. Frequent turnover of leadership is also a challenge at different levels (woreda, zone, and region) as political reforms move staff quickly through the government positions.

The COVID-19 pandemic has caused challenges, including limiting the ability of staff to travel and limiting regular communications. Beyond COVID-19, the woredas have experienced other recent challenges, including a cholera outbreak and flooding.

## Approach

SWS promoted local innovation in order to improve systems, with local actors working together through multi-stakeholder partnerships referred to as learning alliances. SWS encouraged learning alliances to develop an understanding of rural and small town water service delivery systems by local stakeholders and then to execute a shared learning and action agenda. SWS believed that if evidence was generated and disseminated effectively, both about systems-based approaches and about the resulting impacts on sustainable services, it would result in changes that increase the sustainability of WASH service delivery (Figure 2).

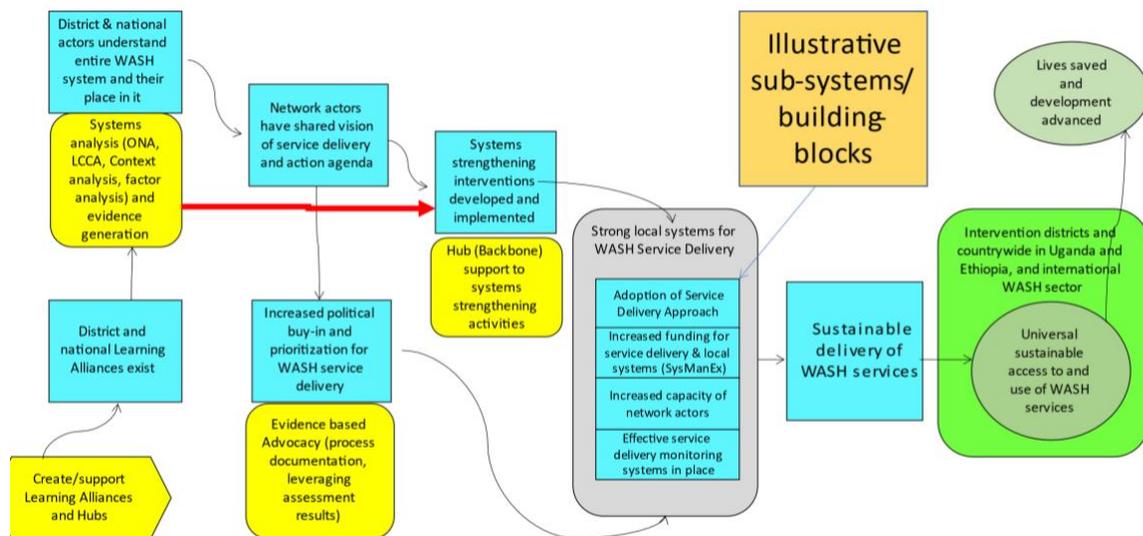


Figure 2. Ethiopia Water Activity Theory of Change

Primary stakeholders and partners were woreda, zone, regional, and national WASH sector offices or bureaus, development partners like Lowland WASH, and WASHCOs/WUAs. In January 2017, to strengthen the functionality and performance of rural water supplies in Afar, a memorandum of understanding was signed between AECOM International Development; IRC; the Ministry of Water,

<sup>6</sup> Guttentag, M. 2018. Mapping Stakeholder Connections to Improve WASH Collaboration in Ethiopia. Available at: <https://www.globalwaters.org/resources/assets/mapping-stakeholder-connections-improve-wash-collaboration-ethiopia>

Irrigation and Energy; Afar National Regional State Water and Irrigation Development Bureau; the Mortenson Center of Global Engineering at the University of Colorado Boulder (UCB); and SweetSense Inc. Lowland WASH activities worked in the Afar, Somali, and SNNPR regions to develop, rehabilitate, and sustain water supply facilities. The collaborations between SWS and Lowland WASH created an opportunity to combine the systems strengthening and learning components of SWS with the software and hardware components of Lowland WASH (i.e., construction, rehabilitation, and improved maintenance for rural water supply schemes).

During 2017, based on discussions with woreda governments and parallel discussions with national and regional officials, IRC and the Mille and South Ari woreda governments and their respective regional offices signed agreements. These agreements set out plans for collaboration and joint work, including the creation of stakeholder platforms called **learning alliances** that were intended to drive the search for locally rooted solutions. The intention was to create sufficient local interest and engagement in change around the sustainability of rural water supplies and to develop and learn about possible solutions through an action research approach.

Based on context analysis and baseline assessments (building blocks, sustainability scorecards) to better understand the local water service delivery systems, the learning alliances set priorities and engaged in the planning and implementation of action research with support from SWS. The learning alliances decided to prioritize two aspects of the rural water services delivery system for action research: monitoring and infrastructure management. Later, the learning alliances also identified financing WASH services as a third component. Action research experiments, defined as identifying, developing, testing, documenting, and adapting systems strengthening innovations, directly addressed the needs identified by the learning alliance members through the presentation and discussion of systems analyses and service delivery baseline assessments.

SWS hypothesized that **strengthening monitoring** by government and use of its data would lead to changes in decision making by government and other key actors, including increased funding and higher prioritization for the maintenance of rural water facilities.

Action research focused on monitoring tools and areas where SWS provided training, meetings, and ongoing support to increase use of the asset management system and improve monitoring. Initial focus was at the woreda level, with a basic system put in place, but in both areas SWS expanded the tool during the project to higher levels of government. In South Omo Zone in SNNPR, IRC built a simple tool for collecting basic asset data and functionality updates, and in the Afar Region, where Mille Woreda is located, SWS built a more comprehensive and complex asset management system in collaboration with Lowland WASH that included asset inventory, functionality updating, and maintenance response tracking.

Action research on **infrastructure management (maintenance)** began after baseline assessments and subsequent discussions within the learning alliance platforms in South Ari and Mille at the end of 2017 and beginning of 2018. It identified the weakness of maintenance approaches and capacities as critical challenges to the sustainability of rural water services. The action research focused on strengthening the current government-led arrangements and proposed maintenance models (a combination of government, community, and enterprises) to improve maintenance services.

In both South Ari and Mille, learning alliances expressed interest in putting in place the capacities and arrangements needed for maintenance that are in line with government guidelines. They also expressed interest in strengthening the supply of maintenance services beyond the woreda water offices by establishing spare parts supply and maintenance service enterprises. During the third learning alliance meetings in July and August 2018, members agreed that the maintenance action research would focus on operationalizing these mechanisms, studying what it takes to put these mechanisms in place (and their scalability), and determining whether they have the desired impact (effectiveness).

During later learning alliance meetings, members discussed the importance of developing **woreda WASH master plans** for the four woredas (Mille, South Ari, Woba Ari, and Baka Dawla Ari). The learning alliances recognized that it was a good opportunity to have a long-term plan for the woreda to mobilize funds and work with development partners to achieve SDG 6 targets. The planning team comprised six to nine members from six woreda sector offices (water, education, health, finance, administration, and women and children). For Mille, in addition to these six sector offices, the planning team included Mille Town Water Utility and the Pastoral Community Office. The planning process involved a series of workshops, with IRC leading coaching and evaluation activities in between.

## Implementation Timeline

- January 2017: Memorandum of understanding between AECOM International Development, IRC, The Ministry of Water, Irrigation and Energy, Afar National Regional State Water and Irrigation Development Bureau, The Mortenson Center of Global Engineering at UCB, and SweetSense Inc. to strengthen the functionality and performance of rural water supplies in Afar.
- March 2017: Asset inventory as an entry point to create links with the woredas. Introductory meeting with South Omo Zone Water Department and South Ari Woreda Water Office and Afar Regional Water Bureau and Mille Woreda. Explaining SWS tools such as Asset Inventory and Life Cycle Cost Analysis to meet the Growth and Transformation Plan II (GTP-II) targets of South Ari Woreda.
- March–July 2017: Baseline assessments conducted.
- November 2017: Maintenance learning visit to Uganda.
- November (South Ari) and December (Mille) 2017: Learning alliance launching workshop. Baseline results shared with government staff and development partners. Learning alliance concept introduced; stakeholders discussed the need to establish learning alliance at woreda level.
- July 2018: Decision on action research experiment focus areas after discussion with learning alliance, i.e., maintenance and monitoring.
- August (South Ari) and December (Mille) 2018: Training of WASHCOs/WUAs, federations. Training given on maintenance, scheme management, regional guidelines.
- August 2018: Learning visits to Tigray, Ethiopia.
- February 2019 (South Ari) and May 2019 (Mille): Training of caretakers.

- February 2019: Afar AMS workshop.
- March 2019: Setup of maintenance and spare part supply enterprise for Mille.
- March 2019: Focal person hired for Mille woreda and regional work.
- May 2019: Uganda-Ethiopia Policy dialogue on maintenance.
- May 2019: Month-long training of Mille Enterprise staff at Ethiopian Water Technology Institute.
- July 2019: South Ari Woreda split into three woredas (South Ari, Baka Dawla Ari, and Woba Ari).
- October 2019: Woreda WASH SDG master plan process started. Establishment of a planning team and training on SDG planning tools and processes.
- November (South Ari) and December (Mille) 2019: IRC WASH procured and provided maintenance hand tools.
- November 2019: Gazer water supply utility management board established.
- April 2020: Learning alliances started communicating through a Telegram group because of COVID-19 restrictions.
- June 2020: SDG planning data verification and narrative report development workshop.
- August 2020: South Ari maintenance and spare part supply enterprise established.
- October 2020: IRC provided leftover spare parts to South Ari Woreda water office after closeout of Lowland WASH.
- January 2021: Training provided to South Ari maintenance and spare part supply enterprise.
- January 2021: Woreda WASH SDG master plan validation and launching workshop.
- February 2021: AMS handover to region by Lowland WASH and SWS.
- February 2021: Woreda WASH SDG master plans endorsed by sector offices.
- March 2021: Afar Regional maintenance workshop.
- September (Mille) and October (South Ari) 2021: Closeout and handover event for SWS in districts.

## Testing Our Theory of Change and Answering Our Learning Questions

### Learning on Systems Understanding

For SWS in Ethiopia, the first contextualized learning question was:

- How can local stakeholders improve their understanding of complex WASH systems and find ways to drive changes aimed at improving the sustainability of WASH services?

The specific learning questions were:

- What tools, methods, and processes are (most) effective for learning alliances to learn about their complex WASH systems?
- What are the actions or changes taken as a result at different levels (by the learning alliance membership or at higher government levels) that may be influenced by the emerging understanding of the learning alliance membership?

The baseline organizational network analysis (ONA) result showed that there was little connection between WASH stakeholders working in both woredas and recommended supporting coordination. Based on these results, IRC decided to move forward with developing learning alliances to improve coordination, facilitate experience sharing, and encourage innovation. In 2017, IRC established two woreda-level learning alliances to create local interest and engagement in change around the sustainability of rural water supplies and to develop and learn about possible solutions through an action research approach.

In the first meeting in South Ari (November 2017) and Mille (December 2017), participants identified learning alliance members, which included woreda administration; offices of water, education, health, agriculture, finance, and women and children; town water utility; NGOs working on WASH; academic institutions; and zonal (South Ari) and regional (Mille) stakeholders. In addition, South Omo Zone decided to have a learning alliance at the zonal level to promote learning and scaling up. Lowland WASH activities are represented in the zonal learning alliance through IRC. The learning alliance has a steering committee and Terms of Reference indicating the role and responsibilities of the steering committee and each member organization. SWS serves as the hub, facilitating the overall process and providing logistical and administrative support to the learning alliance.

At the fifth learning alliance meeting, participants came up with a list of WASH-related activities and partners working on them. Participants compared the list of WASH stakeholders with the existing learning alliance members and decided which missing stakeholders should be invited to join the learning alliance. As a result of this discussion, WASHCO/WUA members and community leaders were included as learning alliance members.

Learning alliance meetings happen quarterly to share learning, discuss challenges, and agree on solutions. Roles and responsibilities are given to institutions and individuals on agreed-upon actions. The steering

committee members set an agenda and decide the date of the meeting, with support from the learning alliance facilitator. Attendance is voluntary. If administration heads attend the meeting, they are invited to give opening and closing remarks. Every meeting starts with a recap of previous action points and a discussion of their implementation status. Generally, the problems shared get the needed attention because relevant stakeholders (including in finance and administration) are involved in the learning alliance. This is more apparent in the South Ari Learning Alliances. For example, in Baka Dawla Woreda, WASH sector office heads — including the woreda administration and governing party office head — decided to allocate budget toward capital maintenance expenditure after participating in a learning alliance meeting in September 2020.

For most meetings, the facilitator needs to encourage members to actively participate and speak freely on how to improve water supply service delivery in the woredas. This is even more difficult when there are too many people or too many discussion points for one meeting. After South Ari Woreda split into three, the number of participants increased significantly, which discouraged active participation. The woredas then decided to have separate meetings in their respective woredas to encourage independent facilitation and learning.

In the first systems understanding interview, participants mentioned that the learning alliance brought together stakeholders who otherwise would not have come together. The learning alliance created a platform for participants to learn and share information and helped members strive to achieve goals of the woreda.

Turnover of local staff and representatives from the different organizations affected institutionalization of the learning alliance and will affect its sustainability after SWS closeout. Participants are concerned about what will happen after the project ends. They believe the learning alliance will not achieve its objective and that there is a probability it will not continue. Sanitation and hygiene is mostly not a topic of discussion, and issues mostly focus on rural water supply and specific action research areas: monitoring, maintenance, and master planning. This has affected the participation of other sector offices. One of the solutions raised is for the learning alliance to discuss other woreda WASH issues in addition to the action research progress.

In the tenth South Ari Woreda Learning Alliance meetings, the participants discussed the sustainability of the learning alliance beyond SWS. They agreed on the significance of the platform and decided to continue with the chair and secretariat nominated from woreda sector offices. They also suggested the administration allocate a budget to facilitate and support learning alliance meetings and activities. In addition to the woreda's willingness to continue the learning alliance, IRC believes there is a need for an external facilitator, without which the learning alliance may not move forward by itself.

While steps taken to establish and facilitate learning alliances in Mille and South Ari Woredas were similar, their impact and progress achieved have been different. In Mille, participation of woreda office heads is limited, which impacts commitment for the implementation of action points between meetings. While discussions are good, they do not lead to much action. Even when actions are set, those responsible do not finish their tasks in the 3 months between the meetings. On the other hand, South Ari Learning Alliance members are committed to implementing action plans between meetings.

Learning alliance members agreed that there are underlying problems, especially in monitoring and O&M, that can hinder South Ari Woreda from achieving GTP-II and SDG 6 in safe water coverage. Evidence from baseline assessments synthesized through the building blocks assessment supported this conclusion. The learning alliances agreed to focus on monitoring and infrastructure management as action research areas to improve rural water services delivery. Later, upon request from the woreda administration, the learning alliances identified WASH financing and development of woreda WASH SDG master plans as the third action research area.

### *Baseline Assessments*

In 2017, SWS undertook assessments with the involvement of representatives from local government and Lowland WASH to understand the context of rural water supply systems in both woredas. The main objectives of the baseline assessment were to:

- Establish a baseline for monitoring changes in systems strength and service levels.
- Synthesize information on local WASH systems to provide a basis for discussion and improving understanding.
- Provide actors with insights into the current status of the water supply system.
- Identify key weaknesses in WASH systems and possible systems-strengthening activities SWS could support to improve services and their sustainability.

The baseline studies included asset inventory, service delivery assessment, life-cycle costs analysis, sustainability checks, organizational network analysis, and factor mapping.

The **asset inventory** involved mapping water supply infrastructure and assessing service levels in collaboration with woreda water offices. **Service delivery assessment** is the analysis of asset inventory data with other data sets, including population and national and global standards for water service provision. The asset inventory and service level assessment are monitored through functionality rate, coverage, reliability, access, and quality. These were updated during the development of woreda WASH SDG master plans.

In South Ari, there were 245 schemes serving a population of 279,000, but actual access to these improved sources was low. Official estimates and analysis based on the asset inventory data showed that coverage (i.e., access to improved water schemes) was 26 percent. Of the users of public water services, 48 percent were reported to spend 30 minutes or less round trip to fetch water, and only 13 percent of people had access to basic water services, based on WHO/UNICEF Joint Monitoring Program definitions of basic water services. The proportion of the population with access to water services that meet national norms, as set out in GTP-I and GTP-II, were also low. Functionality and reliability of community-managed schemes were far from optimal, with scheme functionality rates of 69 percent and reliability rates (providing non-seasonal water services at least 85 percent of the time during the last month) of only 56 percent.

In Mille, there were only 29 water supply schemes, with the official water supply coverage at 35 percent in 2017. However, the updated asset inventory data estimated coverage to be 15 percent. Of users of public water points, 55 percent reported spending 30 minutes or less round trip to fetch water, and only 13 percent had access to basic services, according to Joint Monitoring Program definitions. This

includes the estimated 6 percent of the population with access to piped water supply on premises, because such supplies are not always available when needed. The proportion of the population with access to water services that meet GTP-I and GTP-II national norms was also low. Scheme functionality was 73 percent at the time of the asset inventory.

**Life-cycle costs analysis** assessed the costs of service delivery, expenditures, and sources of funding. The analysis included the status and value of the current water supply infrastructure, the cost to provide services at current levels, sources of finance, and financing gaps to sustain services. The costs found in this analysis were updated during the development of woreda WASH SDG master plans. Major findings from the life-cycle costs analysis include:

- The current cost of providing rural water services is covered by a combination of government budgets at the woreda and regional levels, NGOs, and development partner contributions, as well as by users through tariffs.
- Financing is dominated by capital investment in new water schemes and the expansion of existing ones to reach nearby communities.
- Maintenance expenditures do not come from budgets that are explicitly for maintenance, and data are hard to find and compile. Financing for maintenance is insufficient to ensure sustainable water services.
- Tariff collection by WASHCOs/WUAs is limited. In South Ari there is no tariff payment by water users at 55 percent of the schemes, and in Mille between 35 and 54 percent of schemes do not have tariffs.
- There is little incentive for communities to raise tariffs and pay more for preventive and corrective maintenance when they can wait for the problem to get worse and let the government step in with its support and financing.
- Expenditures of directly supporting WASHCOs/WUAs in both South Ari and Mille are small.
- The effectiveness of government staff is limited by insufficient budgets meant to cover transportation and per diems for technical staff, as well as issues that could likely be related to motivation and leadership factors.

**Sustainability checks** provide an assessment of current service levels and the degree to which the necessary conditions for sustainable WASH service provision are in place. Sustainability checks are a mechanism to estimate the likely sustainability of water service delivery based on service level indicators and proxies, with a focus on capacities. This can serve as a baseline against which progress on outcomes of interventions can be monitored.

The sustainability check framework that SVS applied to assess water services in South Ari and Mille originally consisted of five modules, each focused on WASH service provision in a certain context: rural water, rural sanitation, urban water, urban sanitation, and institutional WASH. For South Ari and Mille, the assessment focused on the main service delivery models found in the two woredas: community-managed schemes and utility-managed schemes. The assessment provided complementary information to the building block assessment.

**ONA** provides information on the position of actors in local systems and interactions among actors. The main objectives of the ONA were to:

- Establish a baseline of the strength and nature of relationships among the network of learning alliance members.
- Provide learning alliance facilitators with insights into the current state of the local network as a tool for generating an effective learning alliance strategy.
- Provide learning alliance members with an understanding of important network dynamics to consider as part of their own participation in the learning alliances.

The initial ONA design was implemented in early 2017 when LINC worked with IRC to establish the objectives of the ONA and the overarching research, to determine which organizations to include in the analysis, and to establish an analysis plan to ensure that the ONA would be as useful as possible in supporting SWS activities in Ethiopia. In November and December 2017, LINC participated in learning alliance kick-off meetings to share results of the analysis to stakeholders, both for feedback on the results and to use these insights as part of discussions on learning alliance structuring.

In South Ari (Figure 3), the network of prospective learning alliance members included 22 organizations: seven woreda government offices, seven zone government offices, five NGOs, two town-level public organizations, and one academic institution.

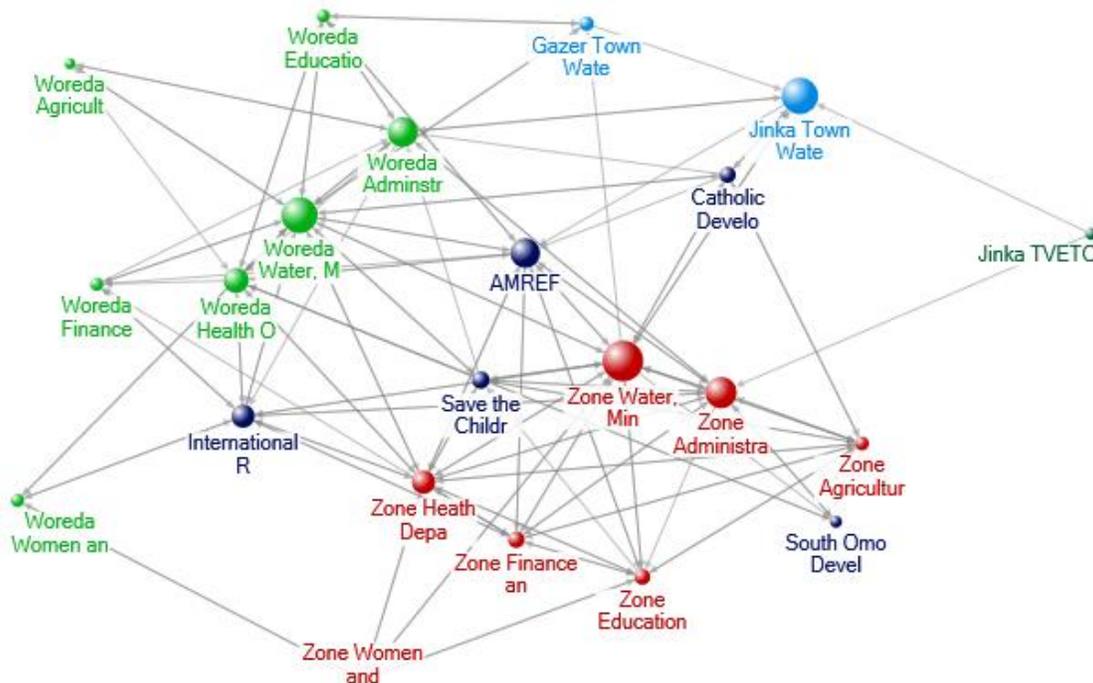


Figure 3. Information-Sharing Network for South Ari

In Mille (Figure 4), the network of prospective learning alliance members included 20 organizations: seven Mille Woreda government offices, five Afar regional government offices, six NGOs, one academic institution, and one town governmental organization.

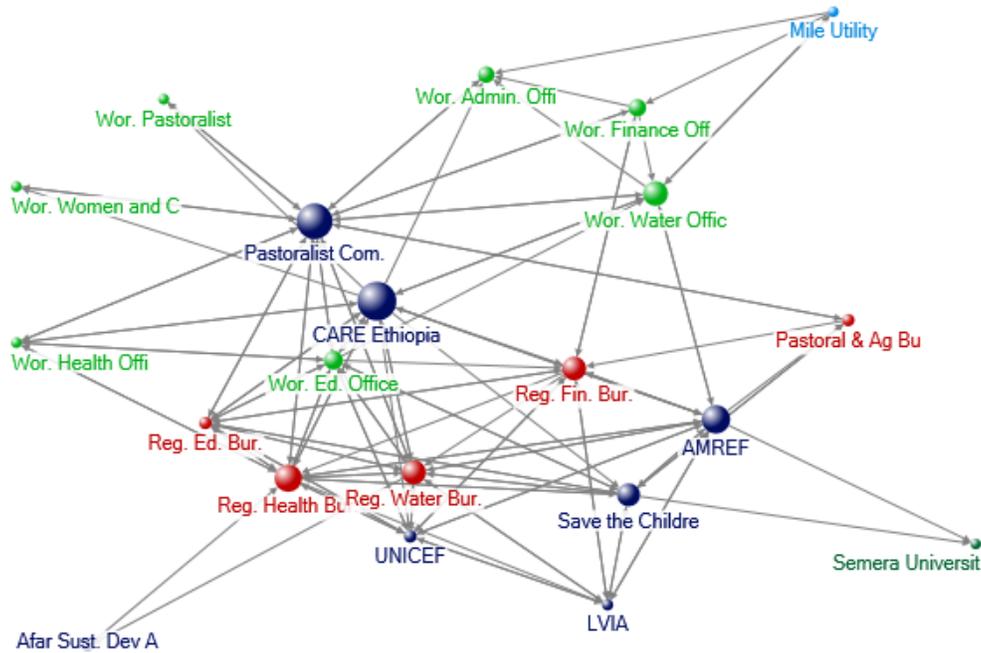


Figure 4. Information-Sharing Network for Mille

During the kick-off meeting, LINC presented findings on the strong clustering of organizations by geographic level and the lack of engagement among NGOs to participants to discuss the implications for the potential structure and activities of the learning alliance. These findings proved to be useful for facilitating a discussion on the optimal structure of the learning alliances.

#### *The Building Blocks (Factors)*

IRC and partners have identified nine building blocks as critical components of a strong system for delivering WASH services. The building blocks are presented in Figure 5. The **building block assessment** provides a qualitative description of a WASH system, as well as a traffic light score for each of the nine building blocks to reflect their current status.



Figure 5. WASH System Building Blocks<sup>7</sup>

The building block assessment synthesized all the baseline assessments. SWS partners conducted the scoring based on the baseline assessments and with the input of zonal and woreda experts who have knowledge of the local system. They discussed the draft building block scores with stakeholders at a learning alliance meeting and revised based on feedback received. SWS updated the building block scoring in 2019 as a midline assessment.

In South Ari and Mille, the analyses revealed gaps and weaknesses in all the building blocks, particularly financing, infrastructure development and management, monitoring, regulation, learning and adaptation, and water resources management. In each woreda, official structures and capacities for institutions, legislation, and planning are in place to some degree, providing a basis for systems strengthening.

#### Endline Assessments

In 2020 and 2021, SWS undertook several endline assessments to assess and document any shifts in the context of rural water supply systems in both woredas. The endline assessment included:

- Updating asset inventory, life-cycle cost analysis, and service levels
- ONA
- Building block assessment

<sup>7</sup> Huston, A., and Moriarty, P.B. 2018. Building strong WASH systems for the SDGs: Understanding the WASH system and its building blocks. Available at: [https://www.ircwash.org/sites/default/files/084-201813wp\\_buildingblocksdef\\_newweb.pdf](https://www.ircwash.org/sites/default/files/084-201813wp_buildingblocksdef_newweb.pdf)

SWS conducted the asset inventory, life-cycle cost analysis, and service-level assessments as part of the development of woreda WASH SDG master plans. In South Ari, basic drinking water coverage increased from 13 percent in 2017 to 22 percent in 2020. In Mille, basic drinking water coverage increased from 21 percent in 2017 to 31 percent in 2020. Figure 6 shows drinking water coverage for South Ari and Mille. The woreda planning team updated functionality status of schemes in the mWater platform and created sites for new schemes constructed.

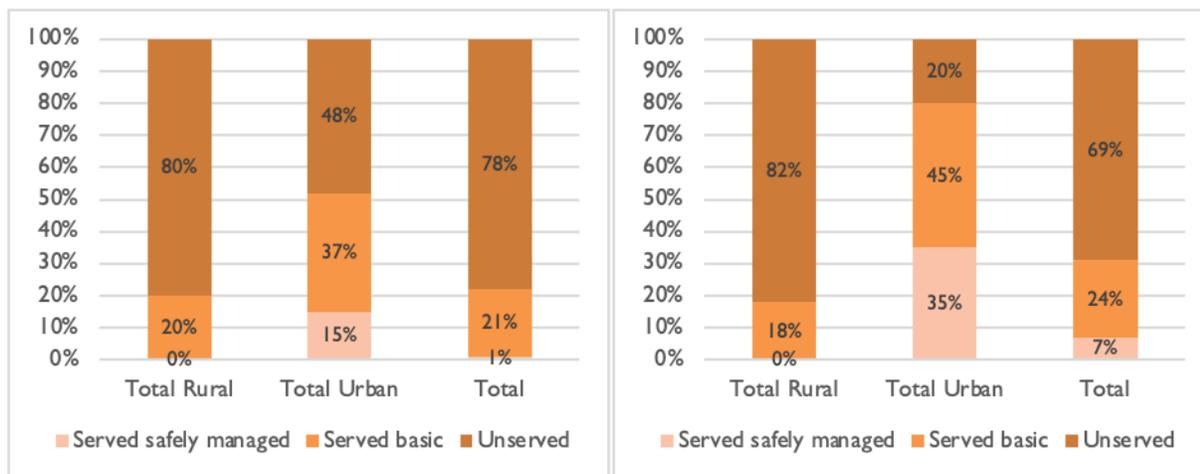


Figure 6. South Ari (Left) and Mille (Right) Woreda Drinking Water Coverage, 2020

The endline ONA<sup>8</sup> included 23 learning alliance members from South Ari and 11 learning alliance members from Mille. The Mille Learning Alliance showed the highest cohesiveness, with important new stakeholders emerging, including Mille Woreda Maintenance and Spare Part Enterprise and WASHCOs. The success of the learning alliance was attributed to SWS facilitation and training support. However, because of a significant change in stakeholders, it was difficult to compare with previous assessments (baseline or midline).

The South Ari Learning Alliance has diverse members. Staff turnover in public institutions is persistent in South Ari and has remained a challenge for the alliance. The numbers of reported connections between alliance members stayed roughly consistent and healthy from the previous period, with only small variances.

The baseline building block assessment revealed gaps and weaknesses in all the building blocks, particularly financing, planning, infrastructure development and management, monitoring, regulation, learning and adaptation, and water resources management. Table I shows building block scores for baseline, midline, and endline assessment. As shown in the table, there is significant change in South Ari, because the woreda shifted from mostly “red” to “orange” and “yellow.” However, in Mille, most building blocks remained the same, with changes only in planning because of the master plan, infrastructure management, and water resource management.

<sup>8</sup> Hempfling, C., Ristovsky, B., and Fromer, R. 2021. Ethiopia Endline Social Network Analysis. Available at: <https://www.globalwaters.org/resources/assets/ethiopia-endline-social-network-analysis>

Table 1. Building Block Assessment Scoring for South Ari and Mille

Country: Ethiopia					District: South Ari					
	Institutional	Legislation	Finance	Planning	Infrastructure Development	Infrastructure Management	Monitoring	Regulation	Learning and Adaptation	Water Resources Management
Endline Score	2.8	3.0	1.8	2.6	2.7	2.3	2.3	2.0	1.8	2.0
Midterm Score	2.3	2.0	1.4	1.6	2.0	1.8	1.3	1.5	1.2	1.8
Baseline Score	2.5	1.7	2.2	1.6	3.0	1.3	1.5	1.0	1.0	1.2

Country: Ethiopia					District: Mille					
	Institutional	Legislation	Finance	Planning	Infrastructure Development	Infrastructure Management	Monitoring	Regulation	Learning and Adaptation	Water Resources Management
Endline Score	2.3	1.3	2.2	2.2	2.0	2.0	1.3	1.3	1.4	1.8
Midterm Score	1.8	1.7	2.0	1.2	2.0	1.3	1.3	1.3	1.0	1.8
Baseline Score	2.8	1.3	2.2	1.6	3.0	1.3	1.3	1.0	1.0	1.0

### Learning on Systems Strengthening

For SWS in Ethiopia, the second contextualized learning question was:

- How do identified (systems strengthening) interventions influence, improve, and strengthen aspects of the system for sustainable WASH services delivery?

The specific learning questions were:

- How can monitoring be strengthened in different contexts and scales (district and region), and is monitoring an effective entry point to advocate for, and support investment in, the provision of maintenance services? (Monitoring and infrastructure management building block.)
  - In South Ari (SNNPR), how does district-level strengthening of the government-led monitoring system improve data management, updating and use, and uptake at the zonal level? What are the outcomes in terms of investment and provision of maintenance?
  - In Mille and Afar, how does regional-level strengthening of the government-led monitoring system, including use of sensors for near-time monitoring, improve data management, updating, and use? What are the outcomes in terms of investment and provision of maintenance?
- How can rural water maintenance services be provided in ways that are sustainable and potentially scalable through innovations in demand, supply, and the enabling environment for maintenance services? (Infrastructure management building block. This also includes the woreda WASH SDG planning, which focuses on planning and finance building blocks.)

### Monitoring Action Research

In 2016, USAID commissioned a scoping study on the state of monitoring and asset management in the Afar and Somali Regions of Ethiopia. The study found monitoring of assets and their status to be weak and overall performance of assets to be poor. After conducting an asset survey in Mille Woreda, IRC recognized that changes in monitoring needed to be led at higher levels of government. SWS subsequently partnered with others working in the region to use similar tools and surveys for

monitoring rural water assets. As IRC found synergies, Lowland WASH led a region-wide approach supported by SWS and other partners. SWS and Lowland WASH supported baseline data collection, cleaning and data validation, and establishment of a regional inventory of motorized boreholes; implemented approaches to support regular updating of the inventory through a network of remote sensors and simple telephone-based updates; operationalized tools designed and built specifically for the region to manage water supply assets; and provided ongoing capacity development and support.

In 2018, the process of designing a regional system began with a consultation workshop in Semera, Afar, with staff participation from Afar Region and Mille Woreda. The resulting system, named the Afar Asset Management System, was initially composed of a mobile application and a web portal. Further development enabled the automatic integration of sensor reports. There are four primary data inputs to the AMS: asset inventory surveys, functionality status updates, tracking O&M issues, and daily sensor reports. The AMS makes this data available to users via mobile devices and desktop computers and can provide a range of analysis and insights that have two main purposes: (1) use in operational activities relating to maintenance and repair of water supplies and (2) use in regional planning and reporting processes. SWS supported the operationalization of the AMS within Mille Woreda and the Regional O&M team from 2019 to 2021 through continuous capacity development, support, and refinement of the monitoring tools and approaches. SWS handed the system over to the Afar regional government in February 2021.

#### *Outcomes in Updating the Afar AMS*

SWS expected to begin operationalizing the monitoring system through a small number of functions at the core of the system design: extending the number of water supply assets recorded to encompass all schemes across the region, tracking maintenance issues and repairs, and updating the functionality status of existing schemes in the inventory. Beginning in September 2019, the maintenance teams opened issues and updated functionality status of schemes. However, they did not perform other functions, such as adding new sites to begin completing the asset inventory, and they made little progress to improve or extend the existing inventory.

Efforts to increase system uptake included raising awareness, increasing engagement with regional leadership, introducing an embedded focal person, modifying the operational approach, and better defining roles and responsibilities. Based on learning and feedback, the region established a new “zonal focal person” team with staff from various departments to be responsible for supporting the O&M team to update the system with regular information about the functionality and condition of schemes.

The team made limited progress in extending the asset inventory with additional water systems and asset components. In total, just 44 new water systems have been added since the rollout, far below the target of capturing all systems across the region, and many of these were added by SWS. Although there were some additional installations and points added to the system, the contextual data in the form of asset inventory and functionality and condition data were not added to new systems or system components. The regional O&M team did not complete a single asset inventory survey since the system rollout began and only submitted one functionality status update. The zonal focal person team contributed a significant number of functionality status updates, but only for a short period (2–3 months) before the team dissolved, underfunded and under-resourced. Mille Woreda consistently submitted a

small number of functionality and condition status updates most months; since June 2020, Mille Woreda Office are the only users providing functionality updates to AMS.

A key system function is tracking maintenance requests and the process for rehabilitation. The O&M team began to engage with this function in the second half of 2020 and tracked and resolved 52 maintenance issues. Mille Woreda also engaged in the O&M issues-tracking process, particularly in the months following the rollout, but their inputs trailed off by May 2020.

#### *Outcomes in Using System and Insights in Afar*

SWS intended for the AMS to strengthen asset management by providing regular and reliable information about the status of water supply services across the region. SWS's hypothesis was that the O&M team would be able to use insights from the AMS to inform and improve their provision of maintenance services. While the AMS is beginning to be used within the region, there is no compelling evidence showing that insights from the AMS are informing regional processes and decisions.

SWS was the main user of the maintenance-tracking process and undertook 70 percent of all system activities individually. Regional use was limited to a few users, with one user managing one-third of issues led by the region. O&M staff resolved 52 issues (34 percent), and the focal person resolved 57 issues (37 percent). The focal person also closed 71 percent of issues, further indicating that issues are not being used by O&M leadership to manage the maintenance response. Two-thirds of issues are either unresolved or take more than 2 months to resolve, indicating less active use of the system.

There was no use of AMS data for planning or budget requests by the region or Mille Woreda. SWS used data insights to provide evidence to support the Ethiopian fiscal year (EFY) 2013 annual planning process for increased maintenance and rehabilitation budget (although no additional funds were allocated), but SWS completed this activity independently, with no engagement from the O&M team.

#### *Outcomes in Data Management in Afar*

Prior to the action research, data management in the region and woreda was poor, with no comprehensive list of the number of waters systems in the region, incomplete detailed information due to misplaced drilling logs and other technical reports, and no comprehensive tracking of maintenance responses beyond quarterly or annual reports. At the regional and woreda levels, the AMS has resulted in some, but limited, improvements to data management for documenting water supply assets, updating the functionality status of schemes and tracking maintenance. However, these processes are not fully operationalized, and no steps have been taken to institutionalize the tools and processes.

The issues-tracking process has been used more than other functions but has not been consistently used to document all maintenance activities, to improve maintenance responses, or for long-term planning to understand the number of activities completed or outstanding. The process for reviewing and approving incoming data via form approvals has not been implemented in the region, and there is a constant backlog of data to be reviewed and approved. There is uncertainty around the quality of updates from the staff and control of the data, resulting in a dataset that requires a major review and cleaning, and efforts to engage the regional IT team were unfruitful. Ownership of the AMS as regional IT infrastructure has not been accomplished, and there is no certainty that the region will be able to undertake management of the system following the departure of implementing partners.

### *Outcomes in Investment and Provision of Maintenance in Afar*

A minor increase in the regional O&M team budget across the timeframe can be seen, but it is difficult to relate this with the AMS, given the limited use of AMS data in annual planning. There has been limited impact in investment in maintenance but some additional focused investment on supporting monitoring in the region, with 334,600 Ethiopian Birr (ETB) (approximately \$7,800 USD) allocated to data collection, sensor maintenance, and related activities included in the EFY 2013 annual budget. In Mille Woreda, there has been no increase in finance because of SWS activities.

Through the AMS, two datasets are available to triangulate and help understand the changes in functionality: manually submitted updates on scheme functionality and automated sensor reports on scheme runtime. In comparing these datasets, there is not close alignment in the figures and a trend cannot be shown across the data. Both datasets have limitations, but the manual updates are particularly biased toward overreporting on functional schemes. The sensors show little annual variation and no trend toward either increasing or decreasing functionality. The range has been consistent, with 64–67 percent of schemes reporting normal use across the region. If the sensors can be taken as an accurate representation of the state of use and implied functionality, the rate of functionality has not been impacted as a result of the asset management approach.

The impact on scheme downtime can be evaluated through the maintenance-tracking function of the AMS. Although the limited system uptake has resulted in a limited dataset that prevents SWS from drawing strong conclusions, and the short timeframe of the dataset cannot account for seasonal fluctuations in breakdowns, SWS observed some progress toward reducing long periods of downtime.

It is important to recognize that the timeframe of the AMS operationalization, starting in September 2019, is short; therefore, it may not be realistic to expect to see significant or rapid impact service delivery. Improvements in the availability of information relating to schemes and updates about their failures has not immediately resulted in improved water supply service delivery, and more needs to be done to leverage the data in increasing the finance available for maintenance activities and the equitable extension of services.

### *Introduction to the Monitoring Strengthening Inputs in South Ari and South Omo*

Until 2017, the South Ari Woreda Water Office lacked sufficient reliable insight on the status of schemes to effectively maintain, rehabilitate, and plan the equitable extension of services. To evaluate strengths and weaknesses of the district WASH system, SWS undertook a series of assessments. SWS used the results to derive a baseline and inform plans for systems strengthening. An asset inventory and sustainability check provided insight on existing gaps and helped prioritize activities for strengthening monitoring for asset management. Originally SWS and South Ari Woreda, and later in collaboration with South Omo Zone and Lowland WASH, the partners developed and operationalized a monitoring and evaluation system to provide insight to teams responsible for O&M activities and planning service extension.

Between 2017 and 2021, the partners deployed a range of surveys and tools. Multiple survey revisions have concluded in an arrangement of four active surveys. Similarly, editions of monitoring dashboards to present the data and analysis have become refined and concluded in a zone-level data portal. Trainings on monitoring tools and processes have been delivered for woreda and zonal staff, and, since 2019, the

inclusion of an embedded facilitator provided the opportunity for continuous technical and advisory support. To support monitoring activities, SWS provided hardware (including desktop computers, laptops, and mobile devices) to the zone and woredas. SWS also provided financial support for the collection of baseline data and regular updating activities.

#### *Outcomes in Updating in South Ari and South Omo*

Data made available by the South Ari baseline inventory included comprehensive details on water supply assets, scheme functionality and management, and community and beneficiary information. SWS established the same during the data collection in 2019 following the woreda split. Similarly, with the fourth and fifth woredas, collected in collaboration with Lowland WASH coming online in late 2020, SWS used the same surveys and made available the same datasets. The South Omo Zone water supply inventory continues to be developed, in part due to the existing woredas adding new schemes upon their construction and in part through the process of additional woredas coming onboard with the monitoring approach.

All woredas have progressed toward consistent and reliable monthly updates through a process of simple updating templates, completed by woreda water office staff calling in to WASHCOs and scheme operators to determine the current functionality status and entering data into the mWater surveyor app. Progress in reporting the updates shows a strong frequency of reports, increasing over the period of the system operationalization. Throughout 2020, there was a high level of engagement, whereby functionality status updates occasionally exceeded 300 unique scheme updates per month. Updates have continued into early 2021, and although these are now reported with slightly less frequency, there are still about 100 updates each month.

#### *Outcomes in Using System and Insights in South Ari and South Omo*

SWS used the initial baseline data to inform South Ari Woreda government's planning for 30 high- and medium-level maintenance activities, as well as the development of 29 new schemes in collaboration with zone and regional government and development partners including United Nations Children's Fund (UNICEF) and African Medical and Research Foundation. The South Ari Woreda capital budget for the water sector doubled from 800,000 to 1,600,000 ETB (\$17,294 to \$34,587) in just one financial year (EFY 2012), and the woreda increased the budget to perform monitoring, maintenance, and supervision activities from 163,000 to 253,000 ETB (\$3,524 to \$5,469).

For the South Omo Zonal Water Office, the initial inventory dataset enabled greater trust in the maintenance, repair, and construction plans submitted by the woreda and resulted in less need for triangulation with field visits. Having access to the data at the zone level enabled better and more-informed decision making and more-effective resource distribution. It also helped the zone and woreda to prioritize harder-to-reach areas and those with the poorest service levels.

Following the initial inventory, further updating has led to continued use for operations and planning, particularly in South Ari and Woba Ari Woredas. Communities with a low number of schemes compared to the population are targeted for new construction, and places with high non-functionality are targeted for maintenance visits. Woredas also used data in annual planning and informed the 10-year government-directed Prosperity Plan. The zone and development partners have reportedly found the

data useful for improving communication and helping to identify areas of focus for maintenance and new construction.

#### *Outcomes in Investment and Provision of Maintenance in South Ari and South Omo*

Across the woredas, the level of scheme functionality changed from 60 percent at the time of baseline in 2017 to 65 percent in early 2021. However, during the same period, the rate of schemes reported as partially functional decreased from 13 percent to 3 percent, while the rate of non-functionality increased. Therefore, the resulting share of schemes that are either functional or partially functional decreased during the project timeframe. This could be partly due to increased reporting of abandoned schemes, as well as the addition of schemes in remote areas that were missed during the baseline and are less likely to be functional.

The woredas' use of the monitoring data for planning and operational response has, in part, led to results in decreasing non-functionality of schemes, because inventory data and functionality status updates provided insights that directly informed operational repair responses. Generally, the woredas and the zone have used the data for more organized maintenance. At the woreda level, the maintenance team, with assistance from SWS, checks the data in Excel to prepare for maintenance. South Ari Woreda assigns technicians to specific kebeles and uses a printed list of schemes to coordinate their response. Overall, data have helped inform maintenance but have not been used to improve maintenance outcomes due to continued shortages of finance, transport, and other challenges.

#### *Overall Results Summary and Conclusions*

The main data or learning activities used to assess effectiveness of the intervention against the systems strengthening goals for monitoring action research include:

- Feedback on woreda monitoring system effectiveness during visits
- In-depth discussion with woredas — facilitated discussions
- User interaction with the monitoring system
- Afar AMS usage and uptake study using structured discussion points
- Annual action research reports
- Annual sustainability scorecard assessment
- Building block assessment

Main reflections from the monitoring action research are:

- The South Ari monitoring system is being used by the woreda water office as their main reporting tool.
- South Ari Woreda leveraged more resources for rehabilitation and maintenance from partners.
- South Ari Woreda secured resources to develop six shallow wells using the monitoring system.
- Monitoring systems have helped in improving woredas and zone communication.
- Monitoring data are being used in evidence-based planning.

- Monitoring has been strengthened, but systematic use for maintenance is still weak.
- Better aligning monitoring inputs with existing processes and goals and outputs with existing reporting and decision-making tools is essential for gaining buy-in and use of monitoring tools.
- Gradual implementation may improve uptake and use. Establishing and perfecting one process or one data collection input may be easier than implementing a complex, multicomponent monitoring system.
- Establishing a full dataset as soon as possible is ideal. If not possible, a systematic plan for utilizing a limited dataset while establishing the full dataset is necessary to clarify how the existing data are valuable and useful.
- Cast a wider net earlier on who may find the data useful. Understand early the finance allocation, the process, and the people involved.

### *Maintenance Action Research*

Baseline assessments and subsequent discussions within the learning alliance platforms in South Ari and Mille at the end of 2017 and beginning of 2018 identified the weakness of maintenance approaches and capacities as some of the critical challenges to the sustainability of rural water services. In discussion with the learning alliances, SWS committed to support the strengthening of maintenance mechanisms in these two woredas through action research.

The learning alliances identified the following key challenges related to maintenance mechanisms:

- **Low demand for maintenance services.** The willingness and ability of users to pay for maintenance services was low, and users' perception was that the government or NGOs should pay for them. WASHCOs/WUAs were weak and did not have the capacity to raise the funds required for preventive, minor, and major maintenance on a structural basis, nor were they motivated to do so. The established WUA federations in South Ari did not yet act in their planned role of facilitating communication between WUAs and the woreda Water, Mining, and Energy office. In Mille, the baseline assessment shows that more than half of rural water schemes did not have a WASHCO to take up the role of service provider.
- **Low supply of maintenance services.** Volunteer caretakers, which are part of the WASHCOs/WUAs, were only able to do the most basic repairs. Although minor maintenance is supposed to be the responsibility of communities themselves, local governments often step in and provide maintenance services.
- **Lack of an enabling environment at the woreda level for ensuring and facilitating demand and supply for maintenance services.** Woredas are responsible for ensuring ongoing (rather than one-off) capacity building of WASHCOs/WUAs, caretakers, and water users; monitoring functionality of water supply facilities; providing technical support to WASHCOs/WUAs where needed; and ensuring an enabling environment for maintenance service providers. However, woredas struggled to undertake these tasks because they lack systems and procedures and are under-staffed and under-equipped in terms of logistics such as transportation facilities and budget. At the woreda level, there were few or no incentives or systems to monitor and support improvements in functionality. Rather, the focus was on the

construction of new water infrastructure that is immediately counted toward increasing woredas’ water supply coverage.

SWS action research initially focused on strengthening the current government-led arrangements and proposed maintenance models (a combination of government, community, and enterprises) to improve maintenance services. The hypothesis was that rural water maintenance services could be provided in sustainable and potentially scalable ways through the following three action areas:

**Action Area 1.** Enhancing demand for maintenance services through capacity building (e.g., raising awareness and skills through training and coaching on roles and responsibilities, leadership, revenue collection, and recording expenditures) and cultivating interest and motivation of water service providers (WUAs, WASHCOs, and caretakers) on the benefit of both preventive and curative maintenance.

Figure 7 gives an overview of the expected intermediate outcomes of this action. It also shows “ability to pay” as a possible moderating variable, influencing whether increase in “user awareness and willingness to pay” and improved financial management will lead to increased WASHCO/WUA revenues.

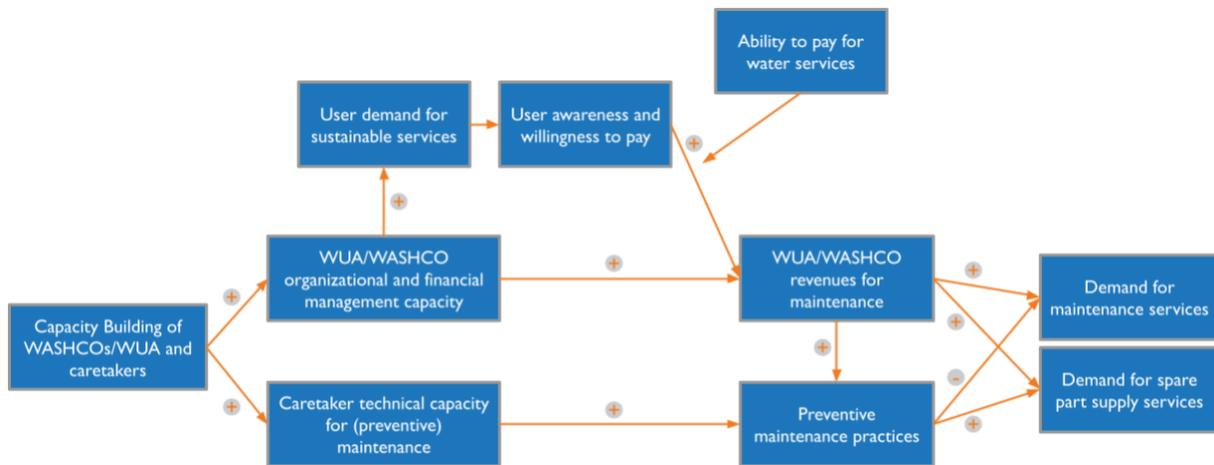


Figure 7. Theory of Change Action Area 1

**Action Area 2.** Enhancing supply of maintenance and spare parts supply services through the development and strengthening of local enterprises (e.g., association of caretakers in South Ari and enterprises in Mille). This is expected to lead to higher demand for such services, which is in turn expected to lead to higher financial viability of the enterprises. This aligns with the Ethiopian government’s interest in addressing low employment rates among women and youth through establishing and strengthening local enterprises. Figure 8 gives an overview of the expected intermediate outcomes of this action.

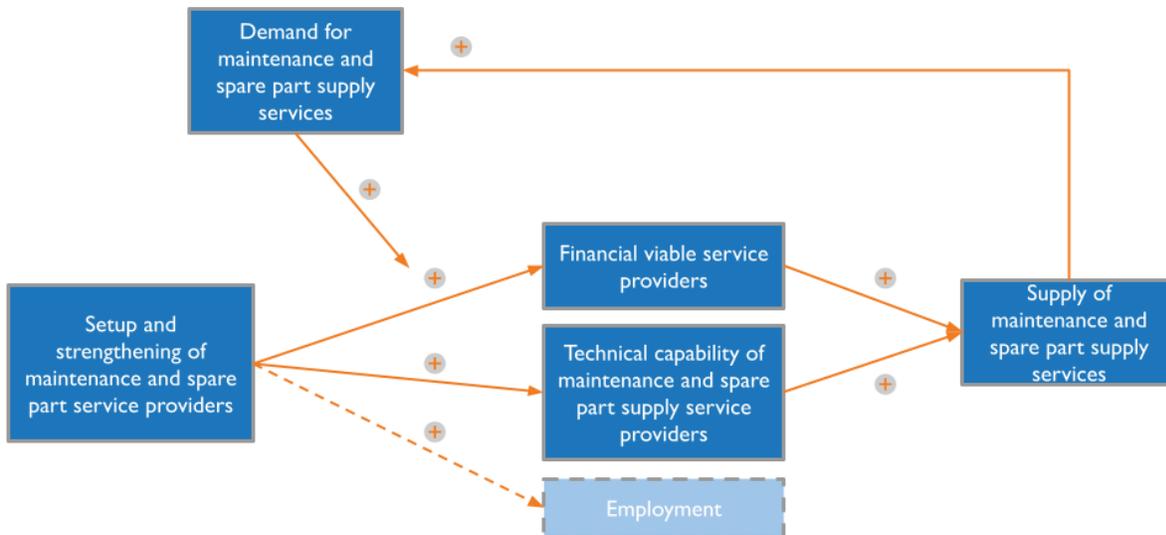


Figure 8. Theory of Change Action Area 2

**Action Area 3.** Strengthening the enabling environment by strengthening systems, capacities (in terms of human, logistical, and financial resources), and incentive structures at the woreda level related to: (1) ongoing capacity building of water users, WASHCOs/WUAs, and caretakers; (2) monitoring functionality and WASHCO/WUA performance; (3) provision of technical support related to maintenance; (4) linking demand for maintenance to supply; and (5) recognizing, enabling, and regulating maintenance service providers. Figure 9 gives an overview of the expected intermediate outcomes of this action.

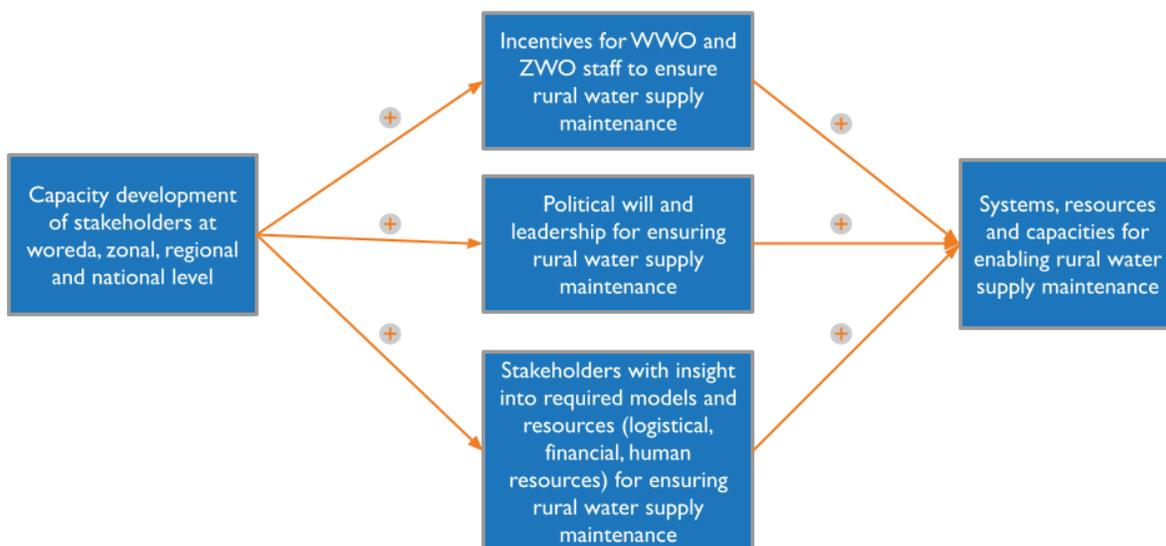


Figure 9. Theory of Change Action Area 3

The above actions were expected to contribute to effective and efficient maintenance services. *Effective* maintenance services are maintenance services that ensure low non-functionality rates and downtimes. Figure 10 shows how the action areas are expected to contribute to effective maintenance services.

Efficient maintenance services are maintenance services that are cost effective and can be scaled up in a financially viable way.

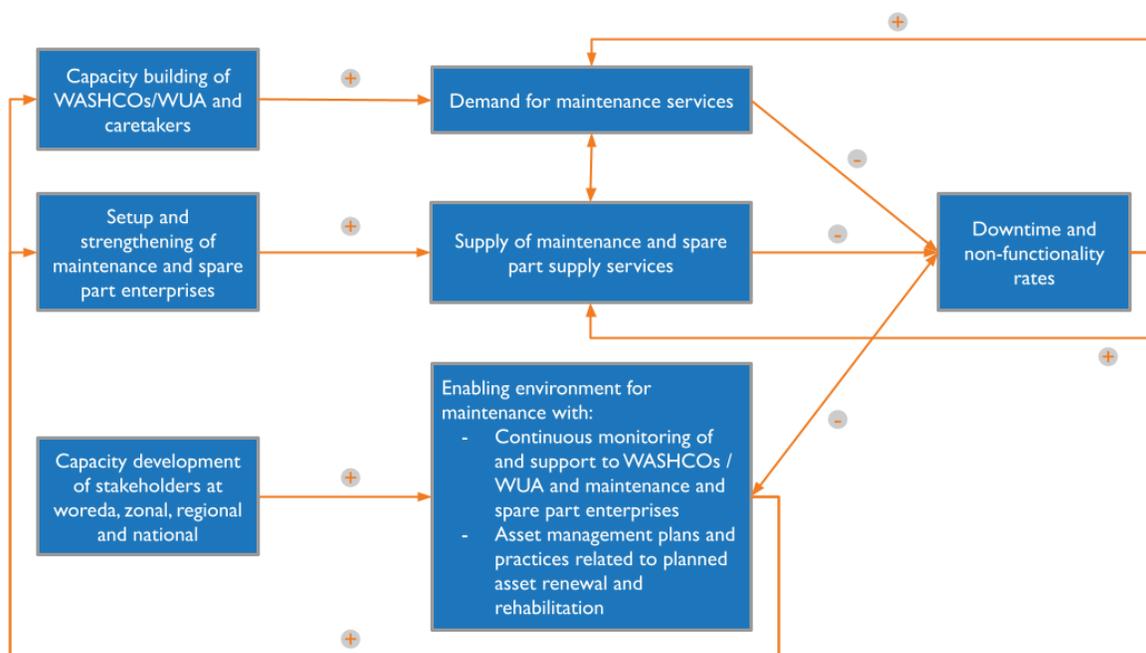


Figure 10. Expected Relations between Activities, Action Areas, and Outcomes in Strengthening Maintenance

Capacity building of service providers was done through a Training of Trainers (ToT) approach, where the regional water bureau, with the support of SWS, trained woreda and zonal staff, who in turn trained WASHCOs/WUAs, federations, and caretakers. This training took place in the first half of 2019. In addition to one-off training, SWS provided follow-up support through monthly supportive performance monitoring.

Results and learnings from Action Area I include:

- WASHCO/WUA capacity-building activities had a positive effect on their organizational capacity, allowing them to engage with water users to increase demand for sustainable water services and thus increase willingness to pay. However, capacity building alone may not ensure sustainable WASHCO/WUA activities, because regular support and follow-up from the nearby administration (kebele chairman and woreda technicians) is critical.
- Improved willingness to pay and financial management of WASHCOs/WUAs increased revenues, especially in South Ari and Baka Dawla Ari.
- Capacity building of caretakers and ensuring they have the requisite tools to put their newly acquired skills into practice had a positive effect on caretakers undertaking preventive and minor maintenance.
- Incentives like certification, recognition, or a small payment will encourage WUAs/WASHCOs to do continuous work in their volunteer roles.

- There is a need for continuous follow-up and re-training. SWS tried to address this issue in multiple ways, including the ToT approach involving woreda staff and by promoting and facilitating monthly follow-up visits in the pilot areas. But the training has not led to systematically refreshed training to WASHCOs/WUAs and caretakers, and the sustainability of ongoing support is questionable. The activities under Action Area 1 did not lead to systemic change in capacity building of and support to WASHCOs/WUAs. This is mainly due to systemic issues related to the enabling environment, as discussed under Action Area 3.

Results and learnings from Action Area 2 include:

- SWS observed that the emphasis of the capacity building of spare parts and maintenance enterprises was on technical capacity rather than business and administrative capacity. As a result, there are challenges with the administrative and business aspects of the enterprises. The enterprises are also still closely linked to local government, which has made them vulnerable to bureaucracy. An example is the inability of the Gazer utility spare part store to organize the procurement of spare parts.
- Kebeles that have received capacity-building support from WASHCOs/WUAs and federations have a higher demand for maintenance services. Nevertheless, it is questionable whether there will be sufficient demand for spare parts and maintenance services from kebeles, because woredas and regions still provide a large part of maintenance and spare part supply.
- Most water facilities in South Ari and Baka Dawla Ari Woredas are hand pumps or protected springs. These types of facilities tend to require more frequent repairs than the mostly motorized boreholes in Mille Woreda. Also, the number of schemes is considerably smaller in Mille, and the region tends to play a more important role in providing maintenance services for the more-complex schemes. Therefore, the potential market for a spare parts and maintenance enterprise may be bigger in South Ari than in Mille. However, at the time of the research, the maintenance enterprise in South Ari had not yet become operational.

There are different interconnected factors that impact the effectiveness of Action Area 3. Strengthening the enabling environment is partly beyond the capacity or mandate of the project, for example regarding staffing and the related budget allocation. However, training and the supply of maintenance hand tools and equipment to the woredas and the zone were possible and resulted in motivating the local government. Unless all required factors are fulfilled and function together, the effectiveness of this action area is difficult to measure.

Continuous coaching and support may sustain the momentum of the commitment (improved willingness to pay, community meetings, better revenue collection, etc.) of the service providers (WASHCOs/WUAs) for short to medium term; but this alone may not guarantee sustainability, because the community-based service authorities (WASHCOs/WUAs and caretakers) are volunteer-based services. The long-term solution to sustain the service is through professionalizing the maintenance where the service providers are paid.

Overall, drawing a full-fledged conclusion on the hypothesis of Action Area 2 has not been possible, mainly due to the short operating time of the business (maintenance and spare parts supply enterprises).

However, it has been possible to draw conclusions on some aspects of the hypothesis. In addition to technical and business skills, private maintenance and spare parts service providers are challenged by other subtle factors such as competition from woreda water office maintenance technicians and utility technicians. In addition, different levels of government (region, zone, and districts) are still providing maintenance services and spare part supplies to WASHCOs/WUAs in many cases. Hence, financial viability of the maintenance and spare parts supply enterprises is challenged by competition of the services and spare part supplies by government entities distorting the market.

### *Overall Results Summary and Conclusions*

The main data or learning activities used to assess effectiveness of the intervention against the systems-strengthening goals for maintenance action research included:

- Monthly maintenance outcome data collection and analysis based on Excel sheet
- Feedback on trainings and other capacity-building activities
- Annual action research reports
- Annual sustainability scorecard assessment
- Building block assessment

Key results from the maintenance action research are:

- Non-functionality/maintenance issue is one of the discussion points with political leaders
- Private sector involvement increased in maintenance and spare parts supply
- Capacity of local service providers improved
- Community ownership increased
- Gazer water utility management board established
- Water tariff increased because of better sense of ownership in the community
- Woreda maintenance budget increased
- Scheme management improved in pilot kebeles
- Woreda maintenance response improved
- Non-functionality decreased in pilot kebeles

Main reflections from maintenance action research are:

- Technology matters: communities are more effective at managing simpler technologies. More advanced technologies may require a different model than community management.
- Local actors are capable but lack resources and incentives. Local actors are a vital component of the system, but change must take place at all levels to provide adequate support to scheme-level managers. Doing things better at the local level is not sustainable without changes elsewhere, potentially a different approach altogether.

- Regular follow-up and support to WASHCOs/ WUAs, as well as provision of maintenance hand tools, is important in addition to capacity building to enact change.

### *Strengthening Financing of WASH Services: Development of Woreda WASH SDG Master Plans*

The WASH sector in Ethiopia does not have a consolidated, long-term strategic plan to meet SDG 6. Previously, there were two medium-term plans: GTP-I and GTP-II. GTP-I was completed in 2015 and GTP-II in 2020. Neither plan incorporated sanitation and hygiene or institutional WASH aspects. In addition, these national plans did not consider life-cycle costs — i.e., operational expenditure, capital maintenance expenditure, and direct support costs — that can ensure sustainability of WASH infrastructures. With the phasing out of GTP-II, development of a new 10-year plan called the Prosperity Plan is underway. From the draft plan, IRC learned that the WASH plan is not consolidated but rather is dispersed across different sector ministries, and life-cycle costs are not considered.

To address the observed gaps, SWS supported the development of consolidated woreda WASH master plans that aim for universal access to safe and sustainable WASH services for the entire population of the woredas by 2030. The master plans were framed within the SDG 6 targets and provide a strategy to achieve the set goals and visions for WASH in the woredas.

The purpose of the woreda WASH master plans was to address both access and sustainability. The plans were comprehensive, with detailed plans for community and institutional WASH. The plans help to understand the woreda's WASH status and to strategize how to achieve the SDGs. They include mechanisms and costs for O&M, replacement, and direct support (monitoring, routine technical assistance, and training/retraining of service providers). The plans consider a variety of WASH service delivery models. For water supply, the main service delivery models are self-supplied, community-managed, and utility-managed supplies. For sanitation and hygiene, the approaches are community-led total sanitation, school-led total sanitation, sanitation marketing, information education communication, and behavior change communication. The plans also help to understand the costing gaps and henceforth use them as evidence for resource mobilization.

Development of the woreda WASH master plans started at early stages of the learning alliance formation, when the woreda administrations in South Ari and Mille requested support to develop well-rounded WASH master plans to be used for evidence-based planning and resource mobilization.

SWS developed the following research questions to assess the development of the woreda WASH master plans:

- Did the woreda SDG planning process lead to costed, actionable, and achievable plans?
- Did the SDG planning process contribute to strengthening collaboration between stakeholders?
- Has the SDG plan helped the woreda understand their WASH systems and challenges better?
- What does the SDG plan look like across the four woredas?

The planning process involved a series of workshops, with IRC providing coaching and evaluation activities in between workshops. To support the planning process, IRC developed four Excel-based planning tools.

In the first workshop (October 2019), the planning team had an introductory training on the (water) planning tool. The main objectives of the workshop were to discuss the basic concepts of the SDGs, provide training on the planning tool, discuss data requirements, and develop a timeline for the planning process. Woreda planning teams decided on the vision with the Woreda WASH Team, collected baseline information, and selected new infrastructure options based on water resource potential of the woredas. The woredas planned to at least achieve 100 percent basic access by 2030.

In the second workshop (February 2020), the planning teams presented the draft plan for feedback, discussed the challenges of the planning process and finding solutions, evaluated the timeline for the planning process, and developed an ideal schedule to finalize the plan. In addition, the planning teams learned to use the sanitation and hygiene planning tool. The teams addressed the comments from the workshops related to the water plans and then collected data for sanitation and hygiene. Because of COVID-19 restrictions and unrest, the planning process was delayed. In this time, SWS developed and shared the planning tools for school WASH and health care facility WASH with the planning teams.

In the third workshop (June 2020), the planning teams verified data for all four plans with support from local facilitators. The planning teams gave feedback on the tools for adjustment and editing. The planning teams also discussed the inputs to the narrative report as bullet points with the support of the local facilitators. SWS adjusted the tools based on comments from all the planning teams and created a final version of the tools.

Woreda WASH master plans were validated during learning alliance meetings held in January 2021. In addition to learning alliance members, WASH stakeholders from the woreda, zonal, regional, and national level participated in the validation workshops. SWS incorporated comments from the validation workshops into the plans and shared them with sector offices for endorsement. Sector offices finalized and endorsed the plans in February 2021.

The woredas developed fully costed master plans for community and institutional WASH. Based on the baseline and the situation in the woredas, they also decided that it was impossible to aim for 100 percent safely managed services by 2030 for community WASH. The plans therefore aim for at least achieving 100 percent basic services by 2030 for both community and institutional WASH. For institutional WASH, all the woredas agreed to reach 100 percent basic WASH services by 2030.

The achievability of the plan depends on the availability of additional financing. The plans show that each woreda needs 2–5 billion ETB (up to \$130 million) to achieve their vision, allocating 200–500 million ETB (up to \$13 million) annually. This is high compared to the present resource allocation practices. The woredas will need support in resource mobilization if they are to achieve their vision by 2030.

Collaboration between WASH sector offices increased during the planning process. Planning teams drawn from WASH sector offices, the Woreda WASH Team, and other learning alliance members participated in the process of evaluation and validation. The discussions helped them to understand the opportunities and challenges in achieving the vision for improved WASH services. SWS stressed the need for coordination during implementation at the validation workshops.

Collecting data for the plans helped the woredas update their water asset inventory and establish a new baseline for sanitation, hygiene, and institutional WASH. The Woreda WASH Team participated in

vision setting, planning, evaluation processes, and validation workshops. The planning teams also presented the plans to their respective sector office management, which increased buy-in. In addition, learning alliance members from the zonal, regional, and national sector validated the plans. The woredas have decided to use the plan for development of the government 10-year plan.

Main reflections from the master planning action research are:

- Detailed planning on the full WASH system had never been done before, and there was value in outlining the full financial needs of the woredas and engaging with multiple sectors to develop the plans.
- Funding the plans will be a major challenge. There is a large gap in capacity to advocate for additional funding.
- The planning process facilitates collaboration between WASH sector offices.
- The master plan process helps in establishing baseline data for WASH.
- Involvement of heads of WASH sector offices is necessary for buy-in.
- Changing the focus from just infrastructure to systems thinking is a long process. Considering the duration it takes to bring better systems understanding and systems strengthening is vital in project design.

#### Learning on Likelihood of Service Sustainability

For SWS in Ethiopia, the third contextualized learning question was:

- How does implementation of a multi-level learning alliance approach affect proxy indicators for WASH system sustainability, i.e., WASH system strength?

The building block assessment provides a qualitative description of a WASH system, as well as a traffic light score for each of the nine building blocks to reflect their status. Results of the baseline, midline, and endline building block assessment are presented in the Learning Question 1 section. In addition to the building block assessment, SWS also used sustainability scorecards, outcome mapping, and progress markers.

SWS used the Likelihood of Sustainability Scorecard to track high-level changes on an annual basis and to inform Learning Question 3. The sustainability scorecard uses financial, institutional, environmental, technological, and social (FIETS) measures of WASH sustainability. For both South Ari and Mille, the scoring remained the same. This is mainly because the scorecard measures high-level changes, whereas most of the activities for SWS were localized and contextualized.

The purpose of outcome mapping reports was to capture the changed behaviors (relationships, activities, and actions) of key stakeholders and to better understand which SWS actions and activities contributed to these changes. In South Ari and Mille, the main progress markers for outcome mapping were:

### *Expect to See*

- The learning alliance convenes regular meetings with active participation of all key local stakeholders in rural water services delivery
- Learning alliance members set the agenda for learning and bring topics to the chair and secretariat
- Learning alliance members work between meetings on individual and/or joint activities that are related to the platform's Terms of Reference and to achieving its vision

### *Like to See*

- Learning alliance members demonstrate an uptake of innovations in monitoring, with use cases of the improved monitoring data
- Learning alliance members demonstrate an uptake of innovations in O&M arrangements, with use cases of practices to improve functionality

### *Love to See*

- There are more financial resources allocated to supporting sustainability of rural water services in the woreda

### *Unexpected Changes*

- Unexpected changes in coalition members' behavior or actions

In South Ari, the learning alliances have been meeting regularly and there has been active participation in learning alliance meetings. However, members may not have the opportunity to work between meetings to address issues. The learning alliance also demonstrated significant uptake of innovations in O&M arrangements, with limited uptake of innovations in monitoring. There is still an issue in budget allocation and use of finance in the woreda, which is demonstrated by the decrease in the woreda water office budget in 2020.

In Mille, the learning alliance meetings happen regularly, with some deviation from plans. When the learning alliances are conducted, the participation of members is high, and meetings are interactive. The learning alliance demonstrated limited uptake of innovations in O&M arrangements, with low uptake of innovations in monitoring. There is also a challenge in budget allocation and use of finance.

## Final Conclusions

Overall, **monitoring** has been strengthened in all woredas, but systematic and sustainable updating has not been achieved, which hinders the ability for the data to be used. There are encouraging signs in both Afar and South Omo indicating that some form of monitoring will continue due to increased awareness and recognition of its importance; however, the complexity of managing the tools, coupled with the overwhelmingly complex challenges facing both areas, hinders monitoring long term. More time and the restructuring of the government to allocate staff to focus on monitoring may improve this and is beginning. However, so far, under current conditions, sustainable use of the new monitoring tools is unlikely. That said, increased awareness and capacity for monitoring has improved, despite the lack of additional finance or services.

The immediate result of the monitoring system at the zonal level is creating better understanding and trust between woredas and zones. Previous arguments and mistrust over the reliability of periodic reporting data (such as the number of schemes and their functionality status) have been reduced. The other result at the zonal level is that South Omo has an example benchmark to guide them on how a monitoring system can be established, and they seem enthusiastic to implement monitoring systems in other woredas. Because of the monitoring systems in the SWVS woredas, the zonal team receives higher-quality reports from the SWVS-supported woredas and subsequently has asked for more data and updates from other woredas in the zone.

South Omo has also benefitted from monitoring-related capacity-building activities. The zonal team benefited from trainings because they have more opportunities to use a computer and have a better internet infrastructure than the woredas.

Regional interest in the remote sensors has been consistently high. Despite failure to utilize the data generated from the devices, the interest in them and the desire to extend to all schemes has persisted throughout discussions with regional leadership.

Interest relating to the AMS and its application in Afar has caught the interest of many of Ethiopia's WASH sector stakeholders, and the progress of system rollout has been presented on numerous occasions, including at the joint sector review meetings. Learning about strengthening asset management with improved tools and approaches has influenced the national dialogue on appropriate technologies for adoption in Ethiopia.

Afar Region is presently planning a restructuring process; the current proposal includes new roles for data management and sensor maintenance, as well as elevating the O&M team to a directorate to give it more financial power and responsibility to better implement the AMS and manage data. This is a positive sign of the value the region is beginning to assign to the AMS, as well as their recognition of the need to evolve to take advantage of the benefits of new technologies.

Improvement has been seen across the **maintenance** action research areas. Capacity-building activities have improved organizations' capacity, willingness to pay, financial management, revenues, preventive

maintenance, and coordination between communities and the woredas. However, sustainability of these improvements is uncertain because finance is still a major limiting factor and thus local government is unable to continue the support provided under SWS.

Scheme-level actors can manage and maintain their water systems, particularly low-level technologies like hand pumps, but are greatly dependent on higher-level government actors for support and have limitations to their effectiveness, such as regarding the availability of spare parts. The research shows that capacity-building activities have been effective in improving organizational capacity, willingness to pay, financial management, revenues, preventive maintenance, and coordination between communities and the woredas. However, although the capacity of woreda, zonal, and regional staff has been built to provide training to WASHCOs, WUAs, and caretakers, little change has been observed in terms of systems and procedures at the enabling environment level for ensuring ongoing capacity building and support to WASHCOs/WUAs and caretakers. This is likely to result in sustainability challenges.

Overall, the action research, with its multi-layered hypothesis, has shown that, although progress on intermediate outcomes has been observed, overall results can only be achieved in a sustainable way through systemic change at different levels. This takes a considerable amount of time and goes beyond the common 5-year program period. Strengthening of weak systems in resource-poor settings like Ethiopia is difficult, takes (a lot of) time, and requires actions and interventions (including evidence-based advocacy) at multiple levels, including the national level.

All four woredas completed fully costed **master plans** for community and institutional WASH. The achievability of the plan depends on availability of additional financing, but beyond the plans, SWS learned much throughout the process and improved the capacity for planning. Collaboration between WASH sector offices increased in the planning process. During various workshops, SWS stressed the need for coordination during implementation and supported the learning alliance in strengthening collaboration between planning team members. The data collection for the plans also helped the woredas update their water asset inventory and establish new baseline information for sanitation, hygiene, and institutional WASH. The plans were validated with the participation of learning alliance members and zonal, regional, and national sector representatives. The woredas have decided to use the plan for development of the government 10-year plan.

## Small Town Sanitation Activity in Ethiopia (Tetra Tech, LINC)

### Context

SWS works in two rapidly growing Ethiopian towns: Woliso (Oromia Region) and Debre Birhan (Amhara Region) (see Figure 11). Woliso is the capital of the Southwest Shewa Zone in the Oromia Region, located approximately 110 kilometers southwest of Addis Ababa. The 2007 census conducted by the Central Statistics Authority of Ethiopia projected its 2021 population at 61,140; however, the municipality estimates it is now closer to 100,000. SWS selected Woliso as representative of towns of similar size and sanitation context. According to projections based on the 2007 census, Debre Birhan has a population of 117,000; it is in the North Shewa Zone, Amhara Region of Ethiopia, approximately 120 kilometers northeast of Addis Ababa. SWS selected Debre Birhan for activities because of its advanced sanitation services relative to towns of similar size.



Figure 11. Map of Ethiopia with Woliso and Debre Birhan

Town administrators historically prioritize water services over sanitation, which is reflected in budgets, planning, and sanitation services in both towns. Woliso has less-developed sanitation services, with no permanent private operators and one vacuum truck that remains idle for long periods. In comparison, Debre Birhan has mechanical fecal sludge emptying services provided by the state-owned utility and by private operators. Debre Birhan is also supported by the World Bank's Second Ethiopia Urban Water Supply and Sanitation project (UWSSP-II), which is planning substantial new sanitation infrastructure investment over the next few years.

SWS formed learning alliances in each town to facilitate local actors getting involved in developing sustainable solutions to sanitation. A learning alliance is a multi-stakeholder process through which people can address a common issue by working and learning together. By using this approach, the

learning alliances developed a better understanding of their respective systems and explored and developed interventions for strengthening their local systems. By carrying out strengthening experiments, the group demonstrated the value of working as a collective. In the early stages of the learning alliance, SWS worked with the members to structure experiments to provide the group with some quick wins to reinforce this approach, and the process strengthened their capacity to work together.

## Approach

SWS's ultimate goal was to improve the quality and sustainability of local sanitation services in Debre Birhan and Woliso by addressing the lack of fecal sludge disposal (FSD) sites and improving the management of communal and public latrine facilities. A baseline assessment of service delivery across the sanitation value chain that focused on actors and factors was critical to the first intermediate result of the SWS Theory of Change (see Figure 12). The assessment provided an opportunity to initiate dialogue with local stakeholders to identify common needs that the project could address. This report focuses on the actions taken to strengthen the WASH system and increase the likelihood of service sustainability.

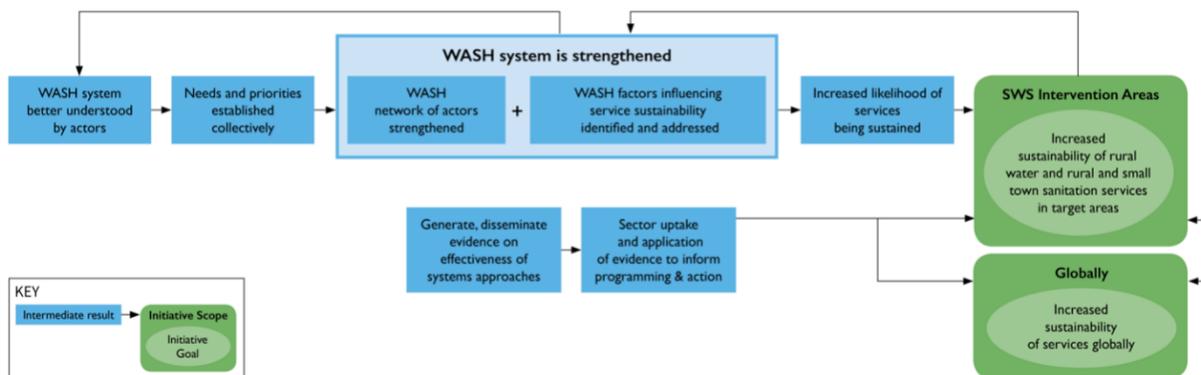


Figure 12. Ethiopia Sanitation Theory of Change

The team developed and tested a replicable approach of engaging with, understanding, and strengthening decentralized WASH delivery systems. To that end, the team designed its activities to:

1. Improve decentralized sanitation service delivery by informing and influencing stakeholders;
2. Develop a locally led platform to coordinate sanitation sector activities (particularly finance) and implement national strategies and action plans; and
3. Test, revise, and scale up public-private partnership (PPP) models to improve the management of public and communal latrines.

### Establishment of Learning Alliances

*Woliso.* Participants in the Woliso baseline validation workshop agreed unanimously that there was a need for greater coordination among sanitation stakeholders. The group voted to form a learning alliance to improve coordination and engage with SWS on priority issues identified at the workshop. The actors established a steering committee that includes representatives of the utility and the municipality's Department of Sanitation and Beautification, Health Office and Environmental Protection, and Forest and Climate Change Authority to provide the political will necessary for implementation. The steering committee developed meeting agendas, carried out tasks identified by the wider learning alliance, and coordinated quarterly learning alliance meetings. The wider learning alliance, composed of the organizations that participated in the stakeholders' workshop and those identified later in the project, developed the work plan and activities to address the priority areas.

*Debre Birhan.* Participants in the Debre Birhan baseline validation workshop also expressed an interest in forming a learning alliance to strengthen coordination among stakeholders supporting implementation of the World Bank's UWSSP-II, which was underway at the time. The Debre Birhan Learning Alliance was identical in structure to the Woliso Learning Alliance; it was made up of a steering committee that developed agendas and the wider learning alliance. Activities centered around two issues: (1) improving communal and public latrine management and (2) building consensus on the management of FSD sites. Going forward, the learning alliance, with support from SWS, facilitated learning and strengthened the capacity of local stakeholders to sustain UWSSP-II infrastructure interventions. UWSSP-II has a project management unit in the town water utility, but its members recognized gaps in its ability to fulfill its mandate (e.g., develop business and management models for sustaining services of the utility and other service providers). SWS worked with the learning alliance to address these gaps.

### Implementation Summary

In 2017 and 2018, respectively, SWS conducted sanitation baseline assessments in Woliso<sup>9</sup> and Debre Birhan.<sup>10</sup> An important outcome of the assessments was engaging a group of local actors involved in sanitation service delivery who subsequently organized into local learning alliances (one in each town). These groups of individuals and organizations influence the effectiveness and sustainability of the sanitation service delivery system and are committed to improving system performance. SWS gave learning alliance members an opportunity to provide feedback on the baseline assessments at validation workshops and asked them to identify interventions to improve the sustainability of sanitation services over the life of the project and beyond.

SWS activities can be grouped as follows:

- **Establishing and facilitating learning alliances.** Learning alliances became the foundational platform for the project to engage with local actors and for local actors to engage with each other.

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<sup>9</sup> Henry, L., and Annis, J. 2018. Sanitation in Small Towns – Woliso, Ethiopia: Baseline Assessment Synthesis Report. Available at: <https://www.globalwaters.org/resources/assets/sws/sanitation-small-towns-woliso-ethiopia-baseline-assessment-synthesis-report>

<sup>10</sup> Scott, P., and Henry, L. 2018. Sanitation in Small Towns – Debre Birhan, Ethiopia: Baseline Assessment Report. Available at: <https://www.globalwaters.org/resources/assets/sws/sanitation-small-towns-debre-birhan-ethiopia-baseline-assessment-report>

Learning alliances provided the forum to validate the baseline, develop a shared vision, and identify priority focus areas.

- **Building learning alliance member capacity.** Working closely with the learning alliances, SWS identified technical, collaboration, and management capacity needs and sourced training and facilitated learning visits for learning alliances to address these gaps. SWS also provided training for decision makers and community representatives as needed. Additionally, the learning alliances organized high-level meetings to facilitate dialogue with decision makers.
- **Improving coordination and communication.** With the support of SWS, learning alliances identified communication and coordination barriers and took steps to resolve them.
- **Providing technical support.** SWS provided technical support in the form of quarterly face-to-face meetings, monthly support visits, and written technical support and guidance to the learning alliances when requested.
- **Documenting the process.** Through documentation of the process, SWS provided valuable feedback mechanisms and accountability to decision makers, which helped maintain momentum (regular follow-up, baseline and midline studies, minutes and actions of meetings, and performance tracking).

Since the learning alliances' inception, SWS observed some similar contextual factors in both towns: (1) lack of a clear mandate for sanitation, (2) insufficient municipal allocations for sanitation, and (3) low prioritization of sanitation by high-level decision makers. One clear difference was the presence of a large sanitation infrastructure project, the World Bank's UWSSP-II in Debre Birhan, which provided incentive for learning alliance members to engage.

Although the Woliso and Debre Birhan Learning Alliances had similar contextual factors and identified the same two priority areas for their respective towns, SWS interventions played out differently in each town. This was most notable for interventions around the FSD sites, with the need for more hands-on involvement of the SWS team in Woliso. The two towns established working groups to steer the process and identified the need to engage high-level officials in the process. The utility took the lead in Debre Birhan, whereas no clear leader emerged in Woliso. Moreover, in Woliso, the technical lead position for the utility's sewerage coordination team remained vacant for more than 2 years, thus contributing to the lack of leadership.

Although there is a national-level memorandum of understanding among key ministries involved in sanitation (Ministry of Water, Irrigation, and Electricity; Ministry of Health; Ministry of Finance and Economic Cooperation; Ministry of Urban Development and Construction; and Ministry of Environment) under the 2016 Integrated Urban Sanitation and Hygiene Strategy, this agreement has yet to materialize at the town level. SWS worked to improve awareness and understanding of these mandates, but understanding was influenced by inherent contextual factors that were beyond the scope of the project. With the exception of the Ministry of Urban Development and Construction, all ministries are represented at the town administration level with a clear understanding of their individual mandates as they relate to sanitation (e.g., the Health Office is responsible for hygiene and health promotion and the Education Office is responsible for WASH in schools). The activities of the Ministry of Urban Development and Construction are led by the municipality, which has limited capacity and technical expertise to fulfill this mandate. To date, the municipality focuses on other activities and the

towns do not have updated sanitation master plans. Current (outdated) sanitation master plans do not include provisions for urban sanitation planning and infrastructure or zoning designations.

In Debre Birhan, the utility led significant preparatory work prior to engaging decision makers. During this period, the utility repurposed its vacuum tanker truck to transport water to construction sites and rented it to small towns for emptying services to generate revenue when the FSD site was non-operational. Additionally, the large breweries, which generate large volumes of liquid waste, were included in the process and contributed financially to construction of the site. The new disposal site opened in March 2020. Following a breakdown in communication, the mayor permitted the Rorank Business Share Company and breweries to dispose of their waste without consulting or engaging the utility; the disposal site had to be shut down as it filled up and was a nuisance to the surrounding communities.

In Woliso, the learning visit to Addis Ababa and engaging decision makers through high-level meetings provided impetus to kickstart the process and resulted in the municipality allocating funds (from its own revenue) to procure the FSD site. Additionally, the SWS team facilitated one-on-one meetings between the chair of the learning alliance's FSD working group (the head of the Sanitation and Beautification Office) and the municipality manager, who represents the mayor's office, as well as the heads of the utility and the Offices of Health, Environmental Protection, Finance, and Culture and Tourism. However, this did not translate into continued political will to improve sanitation in the town, to the frustration of the chair of the learning alliance's FSD working group, who is personally invested in advancing the work. This was due to (1) turnover of government staff in critical offices (municipality and health) who were essential to driving the process and (2) lack of political will from the utility, which limited support to the municipality. The SWS team and learning alliances addressed the turnover by quickly arranging informal meetings to orient new appointees. SWS observed that the utility's vacuum truck remained idle in Woliso. Figure 13 summarizes priority areas, actions, outputs, results, and outcomes for the small town sanitation component under SWS.

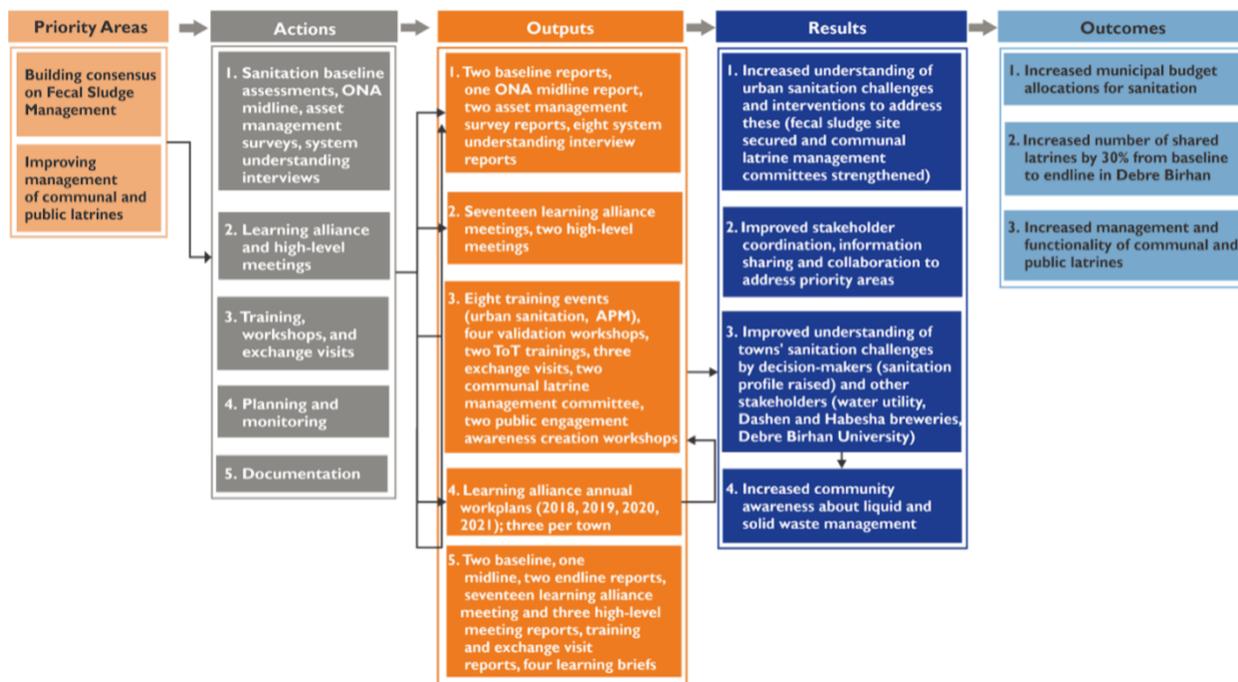


Figure 13. SWS Learning Partnership Project Small Town Sanitation Process at a Glance

## Answering Our Learning Questions

As noted in the introduction, SWS sought to understand (1) how different factor/actor systems approaches improve stakeholder understanding of the system's components, improve their interactions, and influence WASH sustainability; (2) how selected interventions influence, improve, and/or strengthen the system; and (3) how selected interventions increase the likelihood of service sustainability.

Figures 14 and 15 present a snapshot of key learning activities undertaken during the life of the learning alliances in Woliso and Debre Birhan, respectively, from their establishment to the time of reporting. The figures present first and final learning meetings, as well as pivotal activities referenced throughout the report for, e.g., high-level meetings with key decision makers and advanced participatory methods (APM) training.

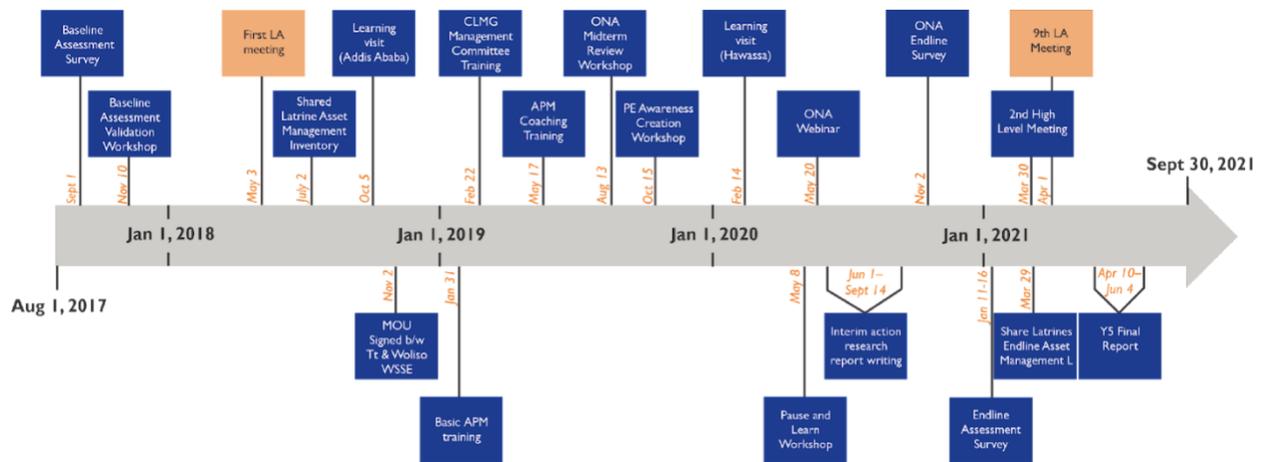


Figure 14. Woliso Timeline of Key Learning Activities

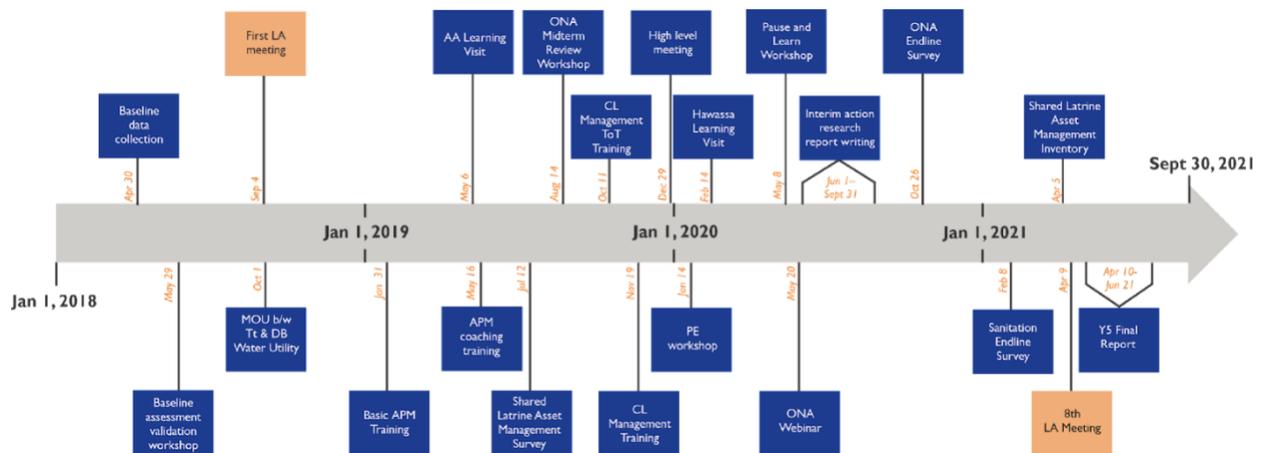


Figure 15. Debre Birhan Timeline of Key Learning Activities

### Learning on Systems Understanding

The first learning question asks: How can local stakeholders improve their understanding of complex WASH systems and find ways to drive changes aimed at improving the sustainability of WASH services?

To answer this question, in Woliso, SWS deployed the Sanitation City Service Delivery Assessment to design and frame the baseline and analysis. The team conducted baseline and endline assessments in 2017 and 2021, respectively. The purpose of the baseline was to understand the sanitation service delivery context in Woliso. The assessment focused on (1) containment and excreta management services, (2) the enabling environment for achieving and sustaining universal access to safely managed sanitation services, and (3) the nature of relationships between local actors involved in service delivery.

In Debre Birhan, SWS used the sanitation cityscape approach to design and frame the baseline and endline assessments in 2018 and 2021, respectively. The sanitation cityscape approach tracks indicators across three different urban “environments,” or sub-systems, that make up the local system, notably the peri-domestic living environment, the service delivery environment, and the enabling environment. The approach also allows for understanding the interfaces and relationships between these domains and comparing the progress across the baseline and endline assessments.

### Systems Analysis Activities

SWS conducted sanitation service delivery baseline assessments validated by both towns. The assessments document the sanitation service chain (Figure 16), with a particular focus on factors and actors along the chain. The evidence produced by the assessments were crucial to the project’s initial phase and served as an entry point to begin dialogue with local stakeholders. The baseline assessments provided an understanding of the sanitation service delivery context. An important outcome of the baseline assessments was identifying and engaging a group of local stakeholders involved in sanitation service delivery to eventually participate in a learning alliance.

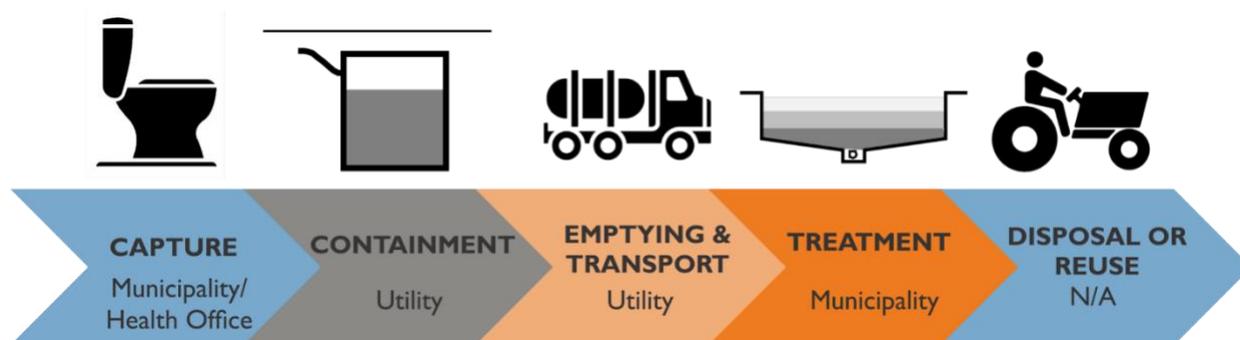


Figure 16. Sanitation Service Chain

The goal of the Debre Birhan and Woliso Learning Alliances was to secure a complete sanitation service chain (from capture to disposal or reuse). Figure 16 presents the sanitation service chain, indicating the responsible actors. In Woliso, emptying, transporting, treatment, and disposal or reuse services were not operational, and the Woliso Municipality is in discussions with the surrounding community about recently secured land for the site required for treatment and disposal. In Debre Birhan, the utility provides partial latrine emptying and transports the sludge to a temporary site, mixing residential and industrial waste on land that is unsuitable for this purpose due to limited infiltration.

### Baseline Assessment Results

The baseline analysis found that the main challenges were household access to sanitation — shared sanitation was a key part of the urban sanitation puzzle — and safe containment and disposal of fecal waste. Neither town had a functioning FSD site, resulting in approximately 82 percent of the towns’ fecal waste not being safely managed<sup>11</sup> (see Figures 17 and 18). The baseline enabling environment had significant challenges around sector coordination, leadership, and oversight. There was no strategic

<sup>11</sup> WHO and UNICEF. 2017. Sanitation. Available at: <https://washdata.org/monitoring/sanitation>

planning for sanitation in Woliso or Debre Birhan and no service-level targets, and, due to the regional fiscal administration system, funding decisions for large-scale infrastructure were not made at the municipal level. Analysis of the networks and relationships between actors highlighted a lack of coordination and communication between key stakeholders. Kebele health extension workers focused on primary health promotion and disease prevention and paid little attention to infrastructure. Where it existed, coordination was primarily horizontal across public sector actors or within an administrative level. Enforcement of environmental protection laws was also low in both towns. Additionally, in Debre Birhan, residents considered sanitation a lesser priority than rainwater drainage, streetlights, and roads.

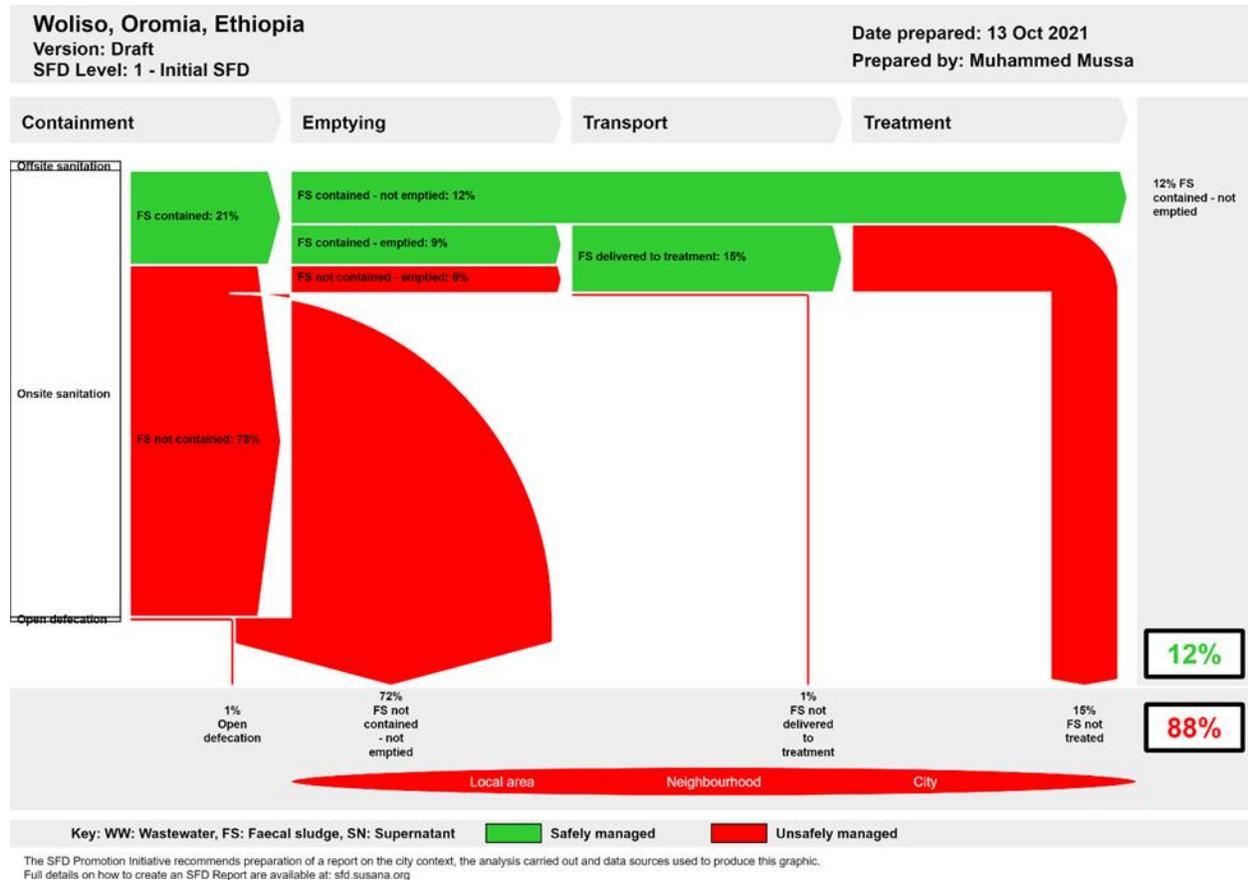


Figure 17. SFD for Woliso, September 2017

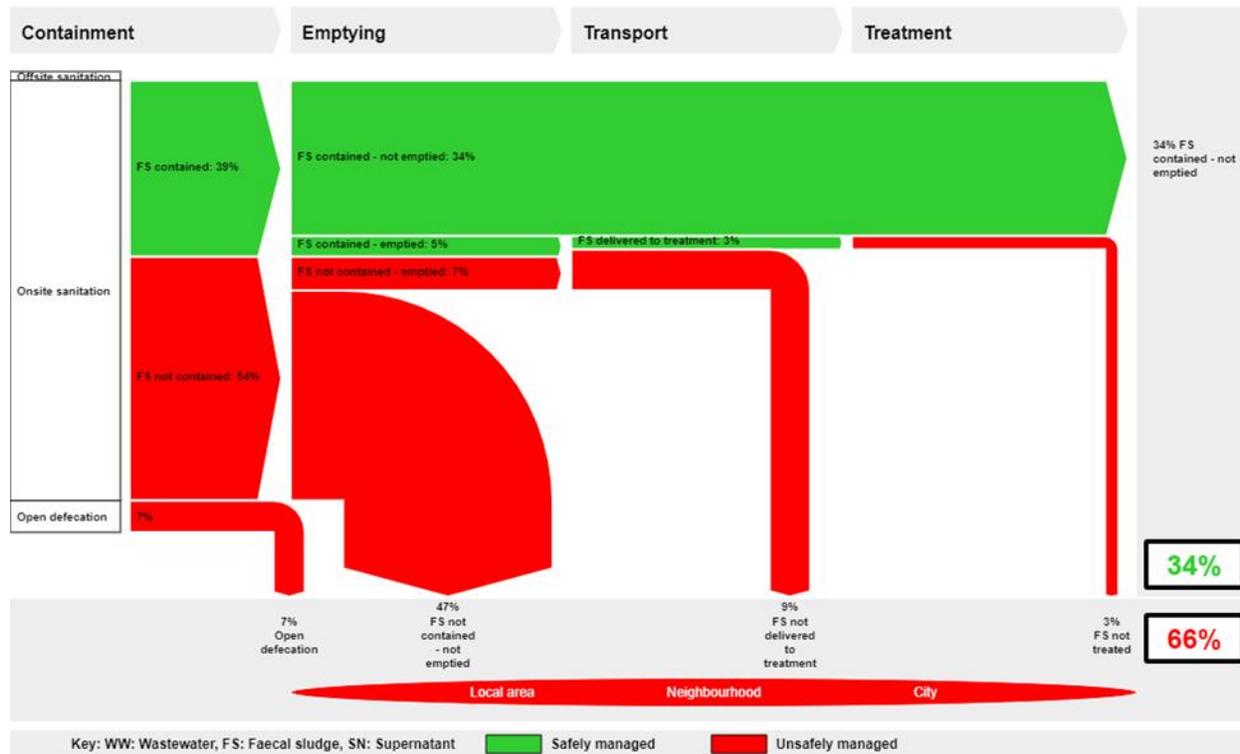


Figure 18. SFD for Debre Birhan, June 2018

### Endline Assessment Results

The endline analysis identified the following key changes:

- Sanitation stakeholders advanced a common agenda for sanitation.** Learning alliance members found the SVS process and learning alliance at the endline to have helped the towns' sanitation stakeholders achieve a shared vision or common agenda for sanitation. The process also worked at the scale of the town (rather than project) and improved collaboration and supported joint planning and decision making.
- The primary emptying service provision shifted from the Debre Birhan and Woliso Water Supply and Sewerage Enterprises to private companies.** This was primarily due to the unavailability of a fecal waste disposal site (Woliso) and temporarily ceasing to provide emptying services for most of the year leading up to the endline (Debre Birhan). However, Debre Birhan resumed emptying service provision in March 2021.
- The amount households paid for emptying services increased.** The endline found an increase in Woliso and Debre Birhan Water Supply and Sewerage Enterprises' emptying fees from baseline from \$14.60 to \$20, representing a 36 percent increase. Private sector rates increased from \$22–\$25 to \$36–\$99, representing a 63 to 296 percent increase. Both Woliso

and Debre Birhan Water Supply and Sewerage Enterprises' emptying rates are fixed. In Woliso and Debre Birhan, households and public latrine operators paid more for emptying services than they paid at baseline. In some cases, private firms incur higher costs when they are traveling long distances, but these costs, as well as inflated rates, are transferred to households.

- **Sanitation risk shifted from the city to the local area.** At baseline, the largest identified risk was untreated fecal sludge. Because the disposal site was unavailable in Woliso and closed in Debre Birhan for most of the project implementation period, some of that untreated waste was discharged into the environment. As such, at endline, the most significant risk for unsafely managed sanitation is that fecal waste is not reaching a dedicated site and instead is being discharged into rivers and farmland.
- **There is stronger environmental protection enforcement and awareness.** At baseline, enforcement of environmental protection laws was low in both towns. At endline, although there are still some resource and capacity challenges regarding enforcement, the study noted a shift toward a stronger mandate to exercise environmental protection regulations within a wider context of improved environmental awareness, i.e., increased numbers of environmental law enforcement officers, sanitation officers, and urban health extension workers at the kebele level.
- **There is a stronger enabling environment.** At endline, the study noted a stronger enabling environment in the areas of operationalizing national policy, strategy, and regulatory frameworks, particularly in Debre Birhan. In addition, the endline assessment found greater clarity around the institutional arrangements, roles and responsibilities, and coordination among stakeholders.
- **Management of shared latrines improved.** In both towns, the shared latrines asset management inventories indicate that the condition of communal and public latrines is better than at baseline. This progress can be attributed to (1) the development of communal and public latrine management guidelines, (2) the establishment of the management body, (3) the training provided for town, kebele-level government staff, and the shared latrines management committee, and (4) the technical support provided by learning alliance members and the SWS team.
- **Alignment of activities and collaboration improved.** For example, in Debre Birhan, different WASH sector actors (municipality, Debre Birhan University, Emanuel Development Association, and Habesha brewery factory) made significant efforts to construct 30 percent more shared latrine facilities over the past 2 years. With financial support from the World Bank UWSSP-II project, 10 shared latrines (four public and six communal) are under construction and expected to be finalized in 2022. All of these efforts will improve the delivery system for Debre Birhan's town sanitation.
- **ONA showed that information sharing, problem solving, and coordination improved over the implementation period of the project in both towns.** At the same time, many of the challenges identified at baseline remain, and both the service delivery environment and the living environment are marginally "weaker" than they were at baseline. This means that positive changes happening at the town level have yet to benefit town residents. The challenges

around commercial and industrial wastewater management remain significant, unaddressed, and under-resourced in terms of capacity and prioritization in the town, and they risk undermining FSD efforts.

### *Shifts in Systems Understanding*

Engaging stakeholders in the review and validation of the baseline findings allowed them to buy into and eventually take ownership of the design and implementation of activities to improve sanitation services. SWS conducted semi-annual systems understanding interviews with select members of the learning alliances and triangulated the results with observations (i.e., interactions during meetings and technical support visits, as well as routine documentation). The main shifts in stakeholders’ systems understanding were in the representation (and identification) of relevant stakeholders, the prioritization of planning, the prioritization of sanitation, and sanitation financing (see Table 2).

*Table 2. Findings and Shifts in Systems Understandings*

<b>Systems Understanding Findings</b>	<b>Evidence of Shifts in Understanding (Actors and Factors)</b>	<b>Actions or Decisions Made as a Result of Systems Understanding</b>
Representation of Critical Stakeholders Is Essential for the Proper Functioning of Learning Alliances	Early on, learning alliance members acknowledged that not all key stakeholders were represented or present at meetings. Over time, the team observed that learning alliance meetings became regularly attended by representatives from town- and kebele-level government, academia, community representatives, NGOs, and small micro-enterprises. Additionally, learning alliance members understood over time the importance of town decision makers participating in quarterly learning alliance meetings, learning visits, and other key events to provide strategic direction to improve learning alliance coordination, implementation, and facilitation.	<p>The learning alliance undertook an activity to identify missing stakeholders in its membership. Town decision-maker involvement improved over time.</p> <p>On average, 25 people regularly attend Woliso Learning Alliance meetings, including officials from the six local government offices involved in sanitation (the mayor’s office, Municipality, Health, Culture and Tourism, Environmental Protection, and Forest and Climate Change Authority and Woliso Water Supply and Sewerage Enterprise).</p> <p>On average, 22 people regularly attend Debre Birhan Learning Alliance meetings, including officials from the five local government offices involved in sanitation (the mayor’s office, Municipality, Health, and Agriculture; Debre Birhan University [community service representative]) and the local utility office (Debre Birhan Water Supply and Sewerage Enterprise).</p>
Sanitation Needs to Be Prioritized	Learning alliance members acknowledged that water being prioritized over sanitation by residents and decision makers was a barrier and identified their role and agency in improving the sanitation system.	<p>Learning alliances regularly engage high-level decision makers through facilitated meetings, increasingly outside of the learning alliance. The Woliso Learning Alliance organized two high-level meetings and the Debre Birhan Learning Alliance organized one high-level meeting, in addition to formal learning alliance meetings.</p> <p>Learning alliances identified the need for wider</p>

		public awareness and engagement around sanitation and implemented different activities to build capacity and create awareness (e.g., shared-latrines management guidelines, liquid and solid waste management, COVID-19 prevention measures training, and learning visits to replicate best practices in both towns).
Effective Sanitation Requires Planning	Woliso and Debre Birhan do not have updated municipal plans guiding their sanitation strategies and priorities. Learning alliances reached consensus on feasible and priority focus areas through their work on the baseline surveys, thereby improving the management of communal latrines and building consensus on fecal sludge disposal sites.	After establishing the learning alliances, the groups developed annual action plans from 2018 to 2021 that outline interventions, roles, and responsibilities to address. Interventions focus on (1) consensus building around fecal sludge disposal sites, (2) a monitoring system for communal and public latrines to ensure accountability and inform decision making, and (3) training to address skills and knowledge gaps.
Increased Financing for Sanitation Is Vital	Financing for sanitation (usually for infrastructure) is widely perceived by actors as a barrier that is difficult to overcome. Over time, learning alliance members successfully advocated for increased allocations in municipal budgets (from the towns' own revenue, federal government transfers, and donor assistance).	SWS provided city-wide inclusive sanitation training on alternative sanitation options, improved coordination, and communication. Learning alliances raised the profile of FSD, and through continuous advocacy, eventually secured allocations in their respective municipal and development partners' budgets for sanitation. They also mobilized funds and in-kind materials and land for the fecal sludge disposal, solid waste landfill sites, and other sanitation activities, such as construction of public and communal latrines and town cleaning campaigns, purchasing vehicles for solid waste transportation, and town greenery development activities.

### *What Promotes Systems Understanding?*

Supporting and developing SWS partners' and actors' systems understanding is a non-linear process. It starts with collecting baseline information and proceeds to sharing the results with WASH stakeholders, identifying gaps in knowledge, and identifying missing actors crucial to collective problem solving and comparing the progress of systems understanding from the baseline to the endline. Although this report presents systems understanding (described in this section) and systems strengthening (described in the next section) sequentially, in practice they are interrelated and overlap. The project's main systems understanding activities are: (1) establishing and facilitating learning alliances, (2) facilitating and hosting training events and workshops, (3) improving coordination and communication through high-level meetings with town decision makers and other actors, (4) ensuring continuous interactions through regular technical support visits, (5) organizing exchange visits that expose members to best practices in towns with more advanced sanitation systems, and (6) consistently documenting all activities and lessons learned. The results of the endline assessment demonstrated how well the learning alliances in both towns understood their respective sanitation systems.

## Learning on Systems Strengthening

This question asks: How do identified (systems-strengthening) interventions actually influence, improve, and strengthen aspects of the system for sustainable WASH services delivery?

- Can a learning alliance of stakeholders overcome constraints in the identification and management of fecal sludge sites?
- After being provided with information on relevant best practices, can the learning alliance develop an improved management model for public and communal latrines?

Figure 19 illustrates the expected intermediate outcomes of providing capacity building to town sanitation stakeholders (decision makers, learning alliance members, latrine user committee members, and community groups).

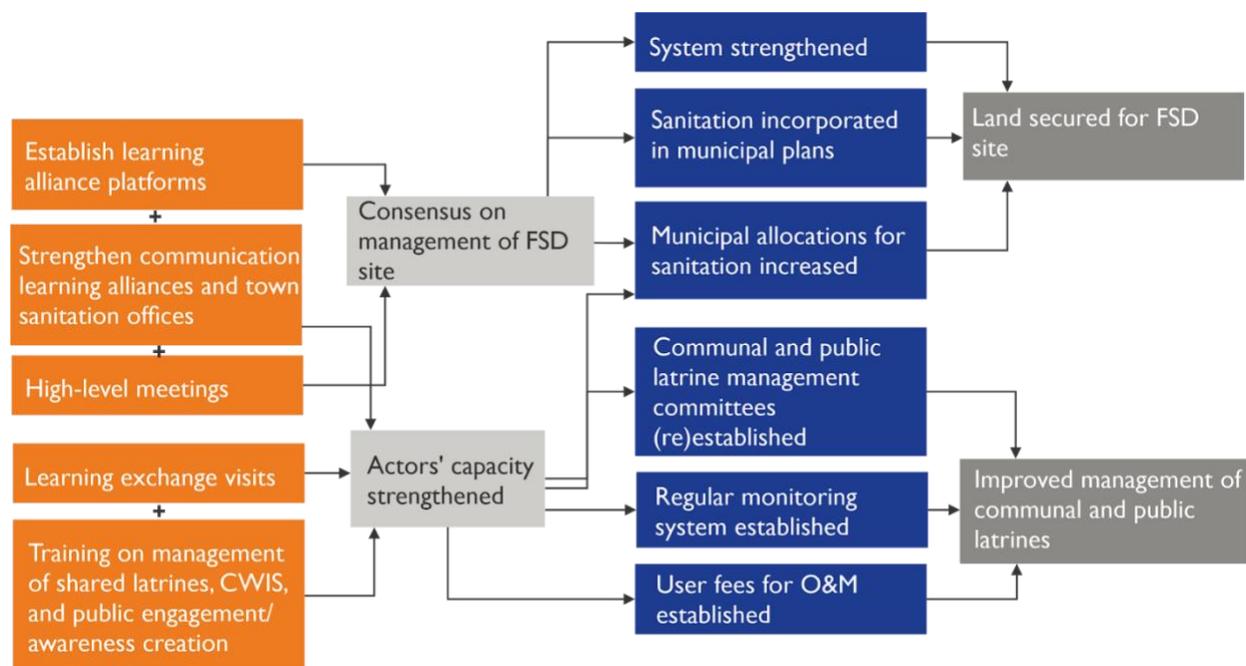


Figure 19. Expected Intermediate Outcomes Capacity Building

## Systems-Strengthening Activities

### Establishing and Facilitating Learning Alliances

SWS established learning alliances; organized training, learning visits, and high-level meetings; promoted public engagement; and provided technical support to learning alliances in Woliso and Debre Birhan. Both learning alliances provide a forum for representatives from government, academia, communities, NGOs, and small micro-enterprises to discuss their respective sanitation challenges and find locally driven solutions. At their first learning alliance meetings, both towns prioritized sanitation challenges and selected the two action research areas of (1) building consensus on the management of FSD sites and (2) improving management of shared latrine facilities.

The Woliso Learning Alliance met ten times and the Debre Birhan Learning Alliance met eight times since their establishment in May 2018 and September 2018, respectively. These meetings helped to increase coordination, knowledge, and information sharing among the sanitation stakeholders and facilitate evidence-based learning for the sector. The learning alliances develop annual plans, conduct quarterly meetings, implement agreed-upon action points from each meeting, and organize working groups targeted at systems strengthening within the two action research areas.

#### *Capacity Building for Learning Alliance Members*

SWS organized several capacity-building activities for learning alliance members and town sanitation stakeholders.

**Learning visits.** SWS organized two learning visits. For the first learning visit, 18 members of the Woliso and Debre Birhan Learning Alliances visited Addis Ababa. Both groups visited the Water Supply and Sewerage Authority's sludge drying bed, public latrines managed by micro-enterprise associations organized by the city administration, the African Medical and Research Foundation-supported communal latrine management at Akaki Kaliti sub-city, and a public latrine supported by Population Services International-Ethiopia, which is promoting a franchised business model for public latrines. SWS designed the learning visits to inspire learning alliance members, strengthen their commitment to address sanitation challenges, and identify the best shared latrine management model for their towns. At the learning visit debriefing session, the teams split into three working groups to discuss establishing an FSD site, public latrines, and communal latrines. These self-selected working groups developed action plans and presented them to the learning alliances for approval.

- For the second learning visit, selected members of both learning alliances jointly visited Hawassa town. The group learned about the Hawassa City Water Supply and Sewerage Enterprise's sludge dumping site, the utility's experience managing UWSSP-II, management models for communal and public latrines, Hawassa University's activities addressing sanitation improvement in the city, the Community Initiatives Facilitation and Assistance's work on a 100 percent plastic-free project, and the municipality's solid waste management system and beautification program. This joint learning visit created an opportunity for learning alliance members from both towns to learn best practices while sharing their experiences with each other.

**Technical training on communal latrines.** SWS conducted the following activities:

- **Management guidelines:** SWS developed communal and public latrine management guidelines, and, at the request of the learning alliances, supported the rollout of training for latrine management committees.
- **Training of trainers:** SWS provided a 2-day ToT to selected learning alliance members, which trained them to implement the communal latrine management guidelines. The local trained teams adapted the guidelines developed by SWS to their town context. ToT trainees translated the English version of the guidelines into the local languages (Oromiffa and Amharic) so they could be used by kebele staff and latrine management committee members.
- **Training latrine management committee members:** ToT trainees divided into three groups with one supervisor, using a cascade training method; SWS played the role of coach and facilitator. A

total of 162 committee members from Debre Birhan and 106 from Woliso participated in training on the translated guidelines.

- **Monitoring template:** Learning alliance members and the SWS team jointly designed a simple monitoring tool to (1) monitor the activities and progress of the communal latrine management committees and (2) communicate latrine status with kebele and town government offices, including providing updates at quarterly learning alliance meetings.

**Technical training on city-wide inclusive sanitation (CWIS).** SWS collaborated with the Ministry of Water, Irrigation, and Energy to host and facilitate a training event for the Debre Birhan Learning Alliance on CWIS aiming to sensitize learning alliance members about CWIS because the World Bank's UWSSP-II focuses on it. In CWIS, adequate sanitation services are widely available, human waste is safely managed along the whole sanitation service chain, and resources are recovered and re-used. A CWIS system embraces diverse technical solutions for adaptive, mixed, and incremental approaches to sanitation, and on-site and sewerage solutions are combined in either centralized or decentralized systems. The training helped learning alliance members understand the approach and strengthened their ability to provide implementation support.

**Collaboration and facilitation skills training on APM.** APM is a bundle of methodological tools and techniques that is easily adapted to any group event or meeting in which a high degree of participation and a concrete outcome are desired. SWS organized a 2-day training with international experts for the local SWS team and selected learning alliance members to participate. Trainees learned the basics of APM: consensus, focused discussion, and action planning. Seven learning alliance members from each town participated in theoretical and practical training, including a demonstration workshop, allowing them to experience the APM process. The learning alliance members that participated in the first APM training facilitated the second APM training in Woliso and Debre Birhan, including visioning exercises and action planning through coaching from the SWS team. The APM training created confident trainers to co-facilitate meetings with the SWS facilitator. At the later learning alliance meetings, the trainees started facilitating meetings themselves with little coaching from the SWS team.

#### *Improving Coordination and Communication*

SWS sponsored several activities to improve coordination and communication with key actors beyond the core learning alliance group. These included:

- **Public engagement and awareness creation workshops.** Woliso and Debre Birhan Learning Alliances organized community awareness workshops to provide selected community members with basic knowledge and skills.
- **Awareness to address sanitation challenges.** These community members then discussed the issues with other community members so that, eventually, the entire community was aware of the challenges and the need to improve sanitation services at all levels through informal community structures. A total of 363 people (177 male and 186 female) from Debre Birhan and 254 people (158 male and 96 female) from Woliso participated in the workshops. Participants represented the kebele administration, urban health extension workers, kebele sanitation officers, the community, religious groups, influential elders, women's associations, youth associations, and town government schools. Health Offices played a significant role in

coordinating preparation for the events in both towns and allocated funds to provide training for the Woliso sanitation task force established by the Health Office. Following the public engagement events in both towns, municipalities started providing weekly waste collection to kebeles and surrounding villages, and learning alliance steering committees and kebele-level members began jointly monitoring shared latrines and their management committees. In addition, both towns started monthly town clean-up campaigns.

- **Awareness on COVID-19 prevention.** In response to the learning alliance requests for COVID-19 prevention and sanitation activities, SWS organized sensitization and community mobilization training. SWS provided ToT training on the Ethiopian Ministry of Health COVID-19 prevention guidelines; cascade training reached selected health workers, town office staff, learning alliance members, kebele administrations, and community representatives. A total of 271 participants (149 male and 122 female) from Debre Birhan and 150 participants (99 male and 51 female) from Woliso attended the training.
- **High-level meetings.** The learning alliances learned that inconsistent attendance on the part of local decision makers at monthly meetings slowed down the implementation of actions adopted by the learning alliances. In response, the learning alliances suggested organizing separate high-level meetings with decision makers on sanitation challenges in Woliso and Debre Birhan. Learning alliances used the meetings to update decision makers about their towns' sanitation challenges and responses from senior government officials to alleviate the problems regarding the need for FSD sites and improved communal and public latrine management. At the end of both meetings, the towns' deputy mayors chairing the meetings provided direction and delegated responsibilities among the water utility, municipality, and woreda administration (Woliso). The high-level meetings brought sanitation issues to the attention of political leaders and, as a result, secured land for FSD and increased the sanitation budget.

### *Technical Support*

SWS provided regular technical support to the learning alliances to encourage implementation of learning alliance action plans between learning alliance meetings. The visits provided an opportunity for informal meetings with most of the learning alliance members, including decision makers, to transfer knowledge and strengthen communication between the SWS team and learning alliance members. Technical support field visits also provided an opportunity to set agendas for learning alliance meetings and review reports and presentations prepared by learning alliance members.

### *Documentation*

SWS is a learning and research project, and documentation is an essential part of the learning process. Documentation includes: (1) reports on all events (learning alliance meetings, high-level meetings, community engagement, training, and learning visits); (2) systems understanding interviews (capturing changes in members' systems understanding); and (3) SWS facilitator's diaries (capturing the formal and informal communication and tracking changes). All formal and informal activities, events, workshops, meetings, and other learning alliance activities are documented in a different format (meeting reports, facilitator's diary, outcome mapping, systems understanding interviews, and likelihood of sustainability scorecards). Both SWS and learning alliances use the event reports, but the facilitator's diaries, outcome mapping, systems understanding interviews, and ONA reports are used primarily by SWS.

## Systems Strengthening Results

### *Factors and Actors Affecting Systems Strengthening*

This section considers which factors and actors had an impact on systems strengthening, and what results strengthening approaches yielded (Table 3). These are presented for each of the action research areas: building consensus on FSD and improving communal and public latrine management.

Table 3. Factors and Actors Interaction for Systems Strengthening

Systems Components	Approaches	Factors		Actors	
		Factors for Systems Strengthening	Outcomes	Actors for Systems Strengthening	Outcomes
<b>FSD Site</b>	<ul style="list-style-type: none"> <li>– Learning alliances</li> <li>– High-level meetings</li> <li>– Capacity-building training</li> <li>– Research for evidence-based planning</li> <li>– Learning visits and adaptation</li> <li>– Public awareness creation workshops</li> </ul>	<ul style="list-style-type: none"> <li>– Sanitation was not a priority for decision makers</li> <li>– Financial constraints</li> <li>– Lack of land for FSD</li> <li>– Weak coordination</li> <li>– Weak implementation of rules and regulations</li> </ul>	<ul style="list-style-type: none"> <li>– Stakeholders' consensus strengthened</li> <li>– Land for FSD site secured</li> <li>– Budget for sanitation increased</li> <li>– Land compensation paid</li> <li>– FSD services operational (Debre Birhan)</li> <li>– Sanitation included in stakeholders' annual plan</li> <li>– Coordination improved</li> </ul>	<ul style="list-style-type: none"> <li>– Municipality</li> <li>– Water utility</li> <li>– Health Office</li> <li>– Environment Protection, Forest and Climate Change Authority</li> <li>– Finance</li> <li>– Tourism and Culture</li> <li>– Breweries</li> <li>– Vacuum truck operators</li> <li>– Kebeles</li> </ul>	<ul style="list-style-type: none"> <li>– Sanitation taken up by decision makers as one of their priorities</li> <li>– Systems understanding improved</li> <li>– Knowledge and attitude of stakeholders improved</li> <li>– Potential stakeholders identified</li> <li>– Regular learning alliance meetings conducted</li> <li>– Member participation increased</li> </ul>
<b>Management of Communal and Public Latrines</b>		<ul style="list-style-type: none"> <li>– Lack of responsible body</li> <li>– Lack of appropriate management systems</li> <li>– No O&amp;M</li> <li>– No ownership</li> <li>– Dependence on government</li> <li>– Lack of awareness</li> <li>– Unclear roles and responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>– Management committees formed</li> <li>– Shared latrines monitoring system is in place</li> <li>– Opened savings account and deposited money</li> <li>– Improved user management of latrines (clean, fenced, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>– Municipality</li> <li>– Water utility</li> <li>– Health Office</li> <li>– Environment Protection, Forest and Climate Change Authority</li> <li>– Kebeles</li> </ul>	<ul style="list-style-type: none"> <li>– Member participation increased</li> </ul>

### *Consensus Building around Improved FSD Site*

The learning alliances engaged in several activities to build consensus between sanitation stakeholders regarding the construction of the FSD sites. They achieved the following:

**Increased budget allocations for sanitation.** Following successful advocacy efforts by the learning alliances to mobilize funds, the government budgets for sanitation activities increased and the towns sought other sources of financing (see Table 4). In Woliso, the town paid \$13,445 in compensation for land used as an FSD site, allocated \$7,620 for fencing around the site, and reached an agreement with the water utility to allocate financial resources and mobilize machinery to construct a road to the site. In Debre Birhan, the water utility paid \$27,570 to construct the FSD site and the municipality allocated \$532,225 to construct a solid waste transfer station, the designated landfill for solid and liquid waste, and to pay for land compensation. The Dashen and Habesha breweries contributed \$64,427 to construct a 3 kilometer access road to the FSD site. Habesha is also providing in-kind services worth about \$2,800 for a town sanitation campaign.

Table 4. Municipal Budget Allocations (2018–2021)

Budget Year	Debre Birhan			Woliso		
	FSD Site	Shared Latrines	Other Sanitation Activities*	FSD Site	Shared Latrines	Other Sanitation Activities*
2018	\$100,000	-	-	-	-	-
2019	\$14,914	-	\$326,084	-	-	-
2020	\$14,914	-	\$517,684	\$15,654	-	-
2021	-	\$325,000	\$2,574,464	\$7,675	\$33,861	\$181,998

\* Activities include sanitation and greenery, land compensation, construction of facilities at the landfill site, and procurement of solid waste truck.

**Secured land for FSD.** Identifying new FSD sites proved challenging for Woliso and Debre Birhan after the closure of their old disposal sites. Through learning alliance working groups and continuous discussions with communities and other stakeholders, both towns secured land for construction for new FSD sites.

**Construction of FSD site.** Debre Birhan built an access road to the FSD and started providing services in March 2020. The FSD site was non-functional between June 2020 and February 2021 because the rainy season and low infiltration capacity caused the pond to overflow. At the time of reporting, the site was again providing services because of the dry season. The learning alliance is also pushing the administration to build an additional FSD site, and alternative land is being identified. In Woliso, fence construction and pond drilling were delayed due to a disagreement with surrounding communities that feel they are not fully engaged in the process. Generally, government authorities are able to secure land and cover costs for temporary FSD sites, but the construction of standard and permanent FSD sites is significantly more expensive and is beyond their capacity. Such investments require external funding, such as the World Bank’s UWSSP-II, which is providing \$196 million for sanitation services improvement in 20 secondary cities.

#### *Improving Communal Latrine Management*

The learning alliances achieved the following improvements in communal latrine management:

- **Developed communal latrine management guidelines.** The communal latrine committees translated the management guidelines into their local languages (Amharic for Debre Birhan and Oromiffa for Woliso); the communities had no guidelines prior to SWS.

- **Created communal latrine management bodies.** Prior to SWS, the Woliso and Debre Birhan administrations had no records of the status, locations, and management arrangements for communal and public latrines in the towns. The learning alliances identified this as a gap, and SWS supported efforts to develop an inventory using the mWater platform. Municipal staff were trained in the process, and all data remain with the respective municipal authorities. In Debre Birhan, the learning alliances established management committees for 93 percent of communal latrines; in Woliso, the learning alliances established management committees for 85 percent of communal latrines. Delegation of responsibilities complies with the management guidelines.
- **Improved capacity of committee members.** The learning alliances trained the established communal latrine management committees in the newly developed guidelines. Learning alliances conducted training in the local languages.
- **Developed a monitoring template.** The learning alliances developed a monitoring template to facilitate communication between the Health Office, municipality, and kebeles regarding implementation of committee activities, as per the guidelines. Use of the template is not yet integrated in the government system. To date, each learning alliance presented the monitoring template in a meeting once. Woliso is now testing how to incorporate the template into the government system.
- **Initiated collection of user fees.** Upon receiving the training, almost half (Woliso) and one-third (Debre Birhan) of the communal latrine committees started collecting user fees for emptying, operation, and maintenance activities, but few of them have saving accounts.
- **Constructed additional shared latrine facilities.** The Debre Birhan Municipal Office approved a budget of \$42,017 for the construction of two new public latrines. In addition, the World Bank's UWSSP-II allocated \$325,000 for construction of four public and six communal latrines, and Debre Birhan University constructed three communal latrines worth \$9,000. It is not common to allocate funds from the government treasury capital budget for the construction of communal and public latrines. NGOs constructed almost all of the shared latrines in Debre Birhan and Woliso. External funding is important for building shared latrine facilities.
- **Adopted latrine design from a learning visit.** The Debre Birhan town municipality constructed two public latrines using the design developed by the World Bank's Urban Local Government Development Program (ULGDP). The design includes additional services co-located with the latrines (green area, reading space, an income-generating shop, and a shower) to sustain the services. Debre Birhan representatives learned about the design on an SWS-sponsored learning visit to Addis Ababa about public latrine management.

### Reflections on Systems-Strengthening Activities

- External funding is critical to improve urban sanitation. Constructing standard FSD sites, sewerage lines, and shared latrines and establishing collection and emptying services requires significant funding that is beyond the capacity of the local government. In addition, the local government must have the capacity to utilize funding made available to them.
- Learning visits helped participants better understand systems strengthening and exposed them to how similar model towns approach planning, budgeting for sanitation, research, and infrastructure design management. SWS also used learning visits to build momentum and catalyze action-planning.

- Implementing the systems-strengthening components of sanitation without partners working on infrastructure can be difficult. Systems-strengthening activities are not common and do not draw attention from the government in the same way that infrastructure projects can. While systems strengthening is important, simultaneously improving infrastructure is also a priority in contexts with relatively low rates of access.
- Introducing systems thinking (changing people's behaviors) and strengthening takes a long-term commitment and dedication to allocate sufficient resources. Some stakeholders require more time and appropriate capacity building to understand and apply a systems approach.
- Governments are central to systems and should be involved in systems thinking efforts and systems approaches. They are most effective when they include heavy interaction with government and when aligned with government timelines and priorities.

The learning alliance platforms and SWS team (as backbone organization or change hub) provided targeted interventions, such as capacity building of actors, collaboration, and technical support, as learning alliance members identified needs. These interventions required significant input from the SWS team. While targeted capacity building and coordination meetings are required to address the specific gaps or bottlenecks identified as part of the change process, it is evident that systems change requires significant resource commitment and support consistent with what the SWS team provided, i.e., documentation, training, and continuous interaction.

### Learning on Service Sustainability

This learning question asks: How does the implementation of a learning alliance approach affect proxy indicators for WASH systems sustainability, i.e., the strengthening of WASH systems?

This section considers how selected interventions increase the likelihood of service sustainability by drawing from the findings of the first two learning questions to assess the effectiveness of the project's learning alliance approach in Woliso and Debre Birhan.

### Service Sustainability Activities

The learning alliance approach allowed SWS to address sustainability challenges in the two towns. Integral to this was the process of engaging and supporting the learning alliances to (1) map and understand their local systems, (2) develop a shared vision and joint action plan to address sanitation challenges, and (3) carry out action research to improve sustainability around the management of communal and public latrines and to build consensus around securing FSD sites.

The SWS small town sanitation team conducted the baseline assessment at the start of the project. The team also conducted an endline survey in the middle of Year 5 in collaboration with learning alliance members in both towns. Throughout the project, SWS measured systems change using a sustainability scorecard and outcome mapping. These tools focused on changes expected to impact effectiveness and sustainability of WASH services.

## Sustainability of Action Areas: Overall System Evaluations

### Sustainability Scorecard

As previously described, introducing approaches to change behavior and actions requires significant time and resources. SWS used sustainability scorecards focusing on five key parameters contributing to WASH systems sustainability to track change over time. To determine the overall likelihood of sustainability, SWS calculated an overall score composed of an unweighted average of all the indicators. If the overall score increases by any amount, this indicates a greater likelihood that services will be sustained. Table 5 compares sustainability scorecards from 2018 to 2020 in Woliso and Debre Birhan and illustrates the progress made on 3 of the 5 parameters.

Table 5. Results from Likelihood of Sustainability Scorecards

Key Area of Sustainability	Woliso			Debre Birhan		
	2018	2019	2020	2018	2019	2020
Financial	Low	Low	Low	Low	Medium	Low
Institutional	Low	Medium	Medium	Low	Medium	Medium
Environmental	Low	Low	Low	Low	Medium	Medium
Technological	Low	Low	Low	Low	Low	Medium
Social	Low	Low	Low	Low	Low	Medium
<b>Overall Score</b>	<b>Low</b>	<b>Low</b>	<b>Low</b>	<b>Low</b>	<b>Low</b>	<b>Low</b>
<b>Numeric Ranking</b>	<b>1.0</b>	<b>1.2</b>	<b>1.2</b>	<b>1.0</b>	<b>1.4</b>	<b>1.8</b>

**Financial sustainability.** Learning alliances raised the profile of sanitation in both towns and successfully advocated for increased sanitation resources. Both small towns lacked an FSD site and advocated for funding to procure land and construct sanitation facilities. The sustainability of these facilities will require continuous engagement with the towns' decision makers. This will also require a closer look at: (1) design specifications that allow the towns to meet the long-term needs of their growing populations; (2) the dependence on government and external funding for capital expenses (e.g., from the municipal internal revenue, World Bank's ULGDP and UWSSP-II, and the private sector); and (3) business models for generating operating expenses. Both towns' learning alliances advocated for funding to procure land and construct FSD sites, construct and maintain shared latrines, and improve solid waste management.

Changes that support sustainability in **Woliso** include the following changes, but were not enough to raise the indicator from "Low":

- The Woliso municipality purchased land for an FSD site with \$13,445 and allocated \$7,620 for fencing from its municipal budget.
- The Woliso municipality allocated \$118,512 from the ULGDP budget for sanitation services (emptying, public latrine maintenance, and solid waste collectors) and purchasing a lift truck for solid waste transportation and allocated \$97,348 for town greenery development.
- The town water utility allocated \$10,837 to install handwashing facilities to mitigate COVID-19 and provide household water connections to poor households.

- The municipality, in collaboration with the Woliso Catholic development organization, identified four sites for constructing public latrines with funds from the Catholic development organization on municipal land.
- The learning alliance established communal latrine management committees, which increased monthly user fees from \$0.13 to \$0.27, opened bank accounts, and deposited user fees in the account.
- Communal user groups regularly cleaned their latrines, maintained fences, and procured emptying services.

Changes that support sustainability in **Debre Birhan** include the following, which raised financial sustainability to “Medium” in 2019 before it dropped back to “Low” in 2020:

- The Debre Birhan learning alliance mobilized \$91,997 (\$27,570 from the utility and \$64,427 from the Habesha and Dashen breweries) for FSD site land procurement, construction of FSD ponds, and construction of an access road.
- The municipality allocated \$1.2 million from ULGDP funds for:
  - Constructing two standard public latrines (construction completed);
  - Procuring solid waste landfill (payment finalized);
  - Constructing one solid waste transfer center (under construction);
  - Purchasing a lifting truck for solid waste (under purchasing process); and
  - Developing town green spaces.
- Habesha brewery provided in-kind services estimated at \$2,800 for a town sanitation campaign.
- The World Bank’s UWSSP-II allocated \$325,000 to construct four public and six communal latrines.
- Debre Birhan University allocated \$9,000 to construct three communal latrines to be managed by user committees (completed and handed over to the user groups).

**Institutional sustainability.** There is a significant knowledge gap among decision makers, WASH sector staff, and community members about institutional policies, rules, regulations, and procedures to support sanitation systems beyond the initial construction stage. To address this, SWS conducted several capacity-building workshops on CWIS and organized learning visits that influenced the design of local activities. For example, Woliso Learning Alliance members established communal and public latrines and an FSD site task force after the learning visit to Addis Ababa. The learning alliance then facilitated a high-level meeting (including Southwest Shewa zone) with decision makers in June 2019 and March 2021 that proved to be a turning point for understanding town challenges and committing to prioritizing sanitation activities in Woliso.

In Debre Birhan, members of the learning alliance are town decision makers (the heads of the Health, Agriculture, and Environment Offices) and communicate directly with other decision makers regarding the learning alliance’s activities and policies, regulations, and procedures that promote sustainable

sanitation activities at the community level. The Debre Birhan high-level meeting conducted in December 2019 also shifted the thinking of many decision makers regarding sanitation interventions and put sanitation issues on the political agenda.

**Environmental sustainability.** At the time of the baseline assessments, Woliso did not have an operational FSD site and Debre Birhan's FSD site was full and considered an environmental hazard. The learning visits to Addis Ababa and Hawassa were critical because they provided the necessary information and impetus for the learning alliances to secure land for FSD sites and undertake their construction. To date, both towns have land for the FSD sites.

At the time of the endline survey, Debre Birhan had completed construction and was providing emptying and disposal services. This required consensus among town stakeholders around the need for another temporary FSD site while awaiting a permanent solution as part of the World Bank's UWSSP-II, and it also required agreement among decision makers that industrial effluent and fecal sludge should not be disposed of together. To date, private breweries and an alcohol factory also used the town's designated site for the disposal of fecal waste for their effluent management. This led to the trenches filling quickly and overflowing, causing a nuisance to local residents and farmers. This practice is contrary to the legal and environmental framework. In addition to the current temporary FSD site, the town municipal office and water utility FSD site technical team identified a new temporary disposal site and is in the process of finalizing the legal procedures to construct a fence, guard house, and trenches to provide disposal service until a permanent solution is in place.

In Woliso, the municipality compensated the landowner for a site (identified by the Land Administration Office) and reached an agreement with the water utility to provide road access. They also explored opportunities to provide drinking water access near the FSD site community. Discussions are ongoing between the town and woreda administration and with the local community regarding construction of an FSD site to avoid illegal disposal and environmental contamination.

**Technology sustainability.** Households tend to construct unlined or partially lined pit latrines that allow waste to seep into the surrounding environment (ensuring that pits fill slowly). These latrines are inexpensive to build with locally available materials, but they are also prone to collapse and damage. Inspired by the learning visits and training provided by SWS, Debre Birhan municipality constructed two new public latrines, and Debre Birhan University built three communal latrines in accordance with the Ministry of Health's On-site Household Latrine Technology Option Planning and Construction Manual. UWSSP-II is constructing an additional four public and six communal latrines using high-quality materials that contribute to long-term sustainability in Debre Birhan. Woliso town municipal office, in collaboration with water utility, user groups, and small micro-enterprise associations, is also allocating resources for the maintenance of communal and public latrines to improve service delivery and improve access to water systems and handwashing facilities.

**Social sustainability.** Many existing communal and public latrines are relatively old, and some of them are not designed for women or people with disabilities. For example, some shared sanitation facilities did not have dedicated stalls for women and men. Learning visits introduced learning alliance members to new latrine designs that take into account cultural and religious differences and the needs of women and people with disabilities. The recently constructed communal and public latrines have dedicated stalls

for women and men; however, there is still a need for more awareness and advocacy concerning sanitation facilities that respect the needs of all users.

### *Outcome Mapping and Behaviors*

The Debre Birhan and Woliso Learning Alliance members worked to establish a partnership that promotes improved and sustainable sanitation services in the towns. The SWS team used progress markers to measure changes in the behavior, relationships, activities, and/or actions of partners categorized into: (1) expected to see, (2) like to see, and (3) love to see. At the end of Year 5, SWS had five rounds of outcome mapping for Woliso and Debre Birhan based on the progress markers developed at the beginning of the project.

**Progress markers.** Achieving consensus on the FSD site problem, strengthening political will to improve sanitation, securing land, and increasing municipal budgets for sanitation in a 5-year timeframe are significant steps toward small town sanitation planning. However, many significant challenges remain to achieve city-wide safely managed sanitation. Several factors made it easier to gain traction in Woliso than in Debre Birhan. These include Woliso being a transportation hub, Debre Birhan having a larger population and household sizes, social pressure, geological conditions that make Debre Birhan prone to flooding, and having access to funding through UWSSP-II, ULGDP, and the government. In both towns, challenges are being tackled through consensus building, a shared understanding of problems, and sustained planning and dialogue with key town decision makers. The learning alliance is proving to be a successful platform to promote learning, build capacity, and foster ownership of sanitation at the town level. Success factors include the presence of the SWS change hub, which provided sustained and quality technical support, accountability, and momentum; using city-wide tools to gather baseline and endline data and sharing city-level data with key decision makers; and working with town officials to tackle their wider town waste challenges, such as multiple waste streams (industrial effluent and solid waste) in Debre Birhan.

In Debre Birhan and Woliso towns, the learning alliances were able to reach agreement and promote community buy-in to build FSD sites quickly because most key players were members of the learning alliance working group. Learning alliance members also worked with additional stakeholders, such as officials, kebele administrators, and farmers who owned the land identified for FSD sites. In Debre Birhan, the learning alliance engaged the Dashen and Habesha breweries early in the process. The utility's deputy manager played an important role in the process by convincing the breweries to donate funds to cover the costs of (1) compensation to the farmers for the site, (2) construction of the site's access road, and (3) the town's sanitation campaign. Community pressure and the urgency of the situation also played a role in spurring the learning alliances to act quickly.

**Latrines.** Having key players in the learning alliances, such as kebele-level administration representatives and urban health extension workers, helped build consensus around improving existing latrine facilities and constructing new latrines. The shared latrine management work began with an asset management inventory of all public and communal latrines in July 2018 and 2019 in Woliso and Debre Birhan, respectively. In both towns, most communal and public latrines did not have management bodies. The learning alliances discussed and revised their plan to establish shared latrine management committees and organized committee trainings in February 2019 and November 2019 for Woliso and Debre Birhan, respectively. According to the endline asset management inventory results, the number of

communal latrines increased by 16 and 30 percent from the baseline in Woliso and Debre Birhan, respectively. The SWS team observed that the communal latrine user community and elected management committee feel a significant sense of ownership, which contributes to latrine functionality and long-term sustainability.

**Public awareness.** During the ONA midterm result validation and planning workshop, learning alliance members from both towns unanimously agreed that providing community awareness training was a priority action area. Health Office representatives used existing task forces to lead training on community engagement and awareness raising and identified learning alliance steering committee members to facilitate the training workshops. The town administrations supported the training conducted in Woliso in October 2019 and in Debre Birhan in January 2020. Similar to communal latrines, the management of public latrines and their functionality rate also improved over the period of the project. However, the need for technical support and follow-up continued to be important as the demands and number of public latrines increased over time.

The learning alliances made observable progress on their two main goals since SWS began. They moved from building consensus, to finding a location for an FSD site, to actually constructing it (in the case of Debre Birhan), and they improved shared latrines by establishing robust management structures and latrine user groups. The progress achieved to date was made possible, in part, because decision makers are paying considerable attention to sanitation in the two towns. Table 6 presents scores for outcome mapping progress markers for Woliso and Debre Birhan from 2019 to 2021.

Table 6. Woliso and Debre Birhan Learning Alliances Outcome Mapping Progress Marker Scores

Progress Marker Indicators	Woliso Progress Marker Score					Debre Birhan Progress Marker Score				
	2019		2020		2021	2019		2020		2021
	Q2	Q4	Q2	Q4	Q2	Q2	Q4	Q2	Q4	Q2
<b>Expect to See</b>										
Learning alliance members regularly attend meetings and actively participate in discussions	High	High	High	High	High	High	High	High	High	High
Learning alliance members create an annual work plan based on explicit priorities	High	High	High	High	High	High	High	High	High	High
Learning alliance members buy in to a common vision	Medium	Medium	Medium	High	High	Medium	Medium	Medium	High	High
<b>Like to See</b>										
Learning alliance members implement and report progress on the work plan	Medium	Medium	High	High	High	Low	Medium	High	High	High
Learning alliance members regularly report monitoring data	Low	Medium	Medium	High	High	Low	Medium	High	High	High

at meetings										
Learning alliance members regularly communicate and coordinate outside of meetings	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium	High
Learning alliance members demonstrate increased understanding and capacity	Medium	Medium	Medium	Medium	High	Low	Medium	Medium	Medium	Medium
<b>Love to See</b>										
Leaders (city managers) carry out recommendations made by the learning alliance	Low	Medium	Medium	Medium	Medium	Low	Medium	High	High	High
Learning alliance members use the best-available information for decision making and planning	Medium	Medium	Medium	High	High	Medium	Medium	Medium	High	High
Learning alliance members actively promote national guidelines and planning based on the actual situation in towns	Low	Low	Low	Medium	Medium	Low	Low	Low	Medium	Medium
<b>Unexpected Changes</b>										
Learning alliance exhibits unexpected changes in coalition members' behavior or actions	No change	No change	No change	Change observed	Change observed	No change	No change	No change	Change observed	Change observed

### Summary of Systems Sustainability Findings

Following two rounds of reporting on the sustainability scorecards in Year 3 (2019) and Year 4 (2020), SWS observed an overall improvement in the likelihood of services being sustained, most notably in the financial, institutional, and environmental areas, as previously described (see Table 6). There is still a strong emphasis, however, on the capital investment required to build facilities, and life-cycle costs are typically neglected by the municipalities.

Because Woliso does not have a functioning disposal site, gaps remain concerning technological sustainability. Communal and public latrines do not fully take into account cultural or religious differences and are not designed for women or people with disabilities, which undermines sustainability. There is a government policy to ensure that any new communal and public latrines will be built in line with the newly approved construction standards, which takes social concerns into account.

Based on five rounds each of outcome mapping reporting for Woliso and Debre Birhan, SWS observed an overall improvement. SWS found indications of increased likelihood of institutional sustainability, including that learning alliance members regularly attend learning alliance meetings and are fully engaged. Learning alliance members create annual work plans based on clear priorities, get buy-in to a shared vision, report on progress implementing the work plan, regularly report monitoring data at learning alliance meetings, and convince decision makers to support their recommendations (see Table 6).

The learning alliance model is proving to be a successful platform in both towns to promote learning and capacity building that supports government, community, practitioners, and development partners in working toward the vision of improved and sustainable sanitation services. Learning alliance members are playing essential roles to improve understanding of, strengthen, and ensure the sustainability of WASH service delivery systems. However, it is not possible to say at this point whether the learning alliances are themselves sustainable. That will depend largely on political will and community mobilization around sanitation issues in the years to come.

## Final Conclusions

### Summary of Findings

As described in the introduction, SWS conducted comprehensive service delivery systems assessments in both towns at the start of the program. SWS then presented, discussed, and verified the Woliso and Debre Birhan baseline findings in validation workshops with stakeholders. The workshops resulted in the formation of two learning alliances committed to two primary goals identified by participants: (1) building consensus around the need for FSD sites and (2) improving communal and public latrine management.

By applying a local systems framework, the small town sanitation work delivered on the theory of change by (1) facilitating the development of local stakeholder systems understanding and action to improve WASH services (Learning Question 1) and (2) documenting the development and iterative process of action research and systems strengthening (Learning Question 2). These two approaches seek to improve the interactions between actors and factors and to improve functionality and the performance of local systems, thus strengthening systems sustainability (Learning Question 3).

### *Learning Question 1: What Helped Promote Systems Understanding?*

Systems understanding does not happen at a discrete point in time; it is an ongoing endeavor that requires consistent commitment. Some of the ways SWS promoted systems understanding was by: (1) engaging local stakeholders to review and validate the baseline findings, thus allowing them to identify priority areas and foster their commitment to a shared vision and common goal; (2) engaging decision makers to raise community members' awareness of sanitation issues; (3) fostering regular and consistent attendance and active participation of local actors at learning alliance meetings and promoting information sharing, improved coordination, problem solving, and follow-through; and (4) documenting learning and reflections and sharing these with learning alliance members using appropriate communication platforms, such as printouts and email.

### *Learning Question 2: What Helped Strengthen the System?*

First, by establishing the learning alliance, all actors involved in sanitation were given a platform to engage with each other and with decision makers in a collaborative manner. This allowed them to identify and overcome challenges associated with the lack of clarity around roles, responsibilities, and mandates related to the FSD sites. Second, organizing and facilitating learning and experience-sharing on sanitation improved understanding and encouraged reflection about the towns' sanitation challenges, leading to the development of solutions. For example, the learning alliances designed intervention to improve communal latrine management based on observations during a learning visit to Addis Ababa. Third, repeated discussions with learning alliances about the importance of working on systems strengthening helped to internalize the concept. Observable changes in the systems' strength occurred through the active participation and involvement of learning alliance members in different town sanitation activities such as baseline data collection, communal and public latrine asset management surveys and analysis, learning visits, APM training, and a series of public engagements reflecting on all learning alliance processes. Fourth, engaging high-level decision makers led to an alignment of priorities and enabled the learning alliances to quickly secure land for the FSD site. The high-level meetings were successful because they responded to specific barriers. These barriers included the lack of engagement by decision makers, the lack of financing for sanitation, and a clearly articulated need to increase municipal budget allocations for sanitation. Fifth, an essential component to fostering ownership was targeted and specific training in response to identified capacity gaps or needs identified by the learning alliances, augmented and reinforced by regular support and follow-up. For example, the learning alliances developed a regular reporting mechanism to improve communication between communal latrine management committee members and town-level sanitation stakeholders. This reporting led to identifying breakdowns that require action before they render facilities non-functional. Before, there was little knowledge about how the facilities were operated, including how much user fees were, who collected them, where the money was kept, and who was responsible for maintenance, cleaning, and emptying services. SWVS observed significant progress in communal latrine management and a sense of ownership among the user community.

### *Learning Question 3: What Helped Systems Sustainability?*

First, encouraging prioritization of sanitation, through continuous dialogue, and resource allocation by the towns' decision-makers, SWVS addressed a critical step in facilitating thinking about sanitation in the long term (as opposed to one-off or short-term solutions). Second, improving stakeholder awareness and understanding at town, kebele, and community levels allows the towns to better respond to the sanitation challenges. Kebele administrators and urban health extension workers collaborated with the community to manage their solid and liquid waste. The municipalities also assigned sanitation officers (Woliso) and enforcement officers (Debre Birhan) at the kebele level to monitor and help the community to manage waste according to provided training and environmental sanitation laws. Third, involving decision makers in each process, such as the baseline survey, validation workshop, ONA midterm review workshop, Hawassa learning visit, and high-level meetings, elevated the profile of sanitation in the towns.

## Lessons Learned

SWS identified some key lessons while implementing the project for the past 5 years. Actual implementation commenced only after Year 1 due to delays in start-up (some anticipated and others beyond the control of the project). Moreover, in Year 2, SWS experienced some disruptions, including national protests that led to a change in the Prime Minister and ethnic conflict led by groups seeking autonomy. Because SWS conducted most activities in Years 3 and 4, the team recognizes that greater change would be observable over a longer period. According to recent literature on systems thinking, change is unlikely to be institutionalized or “good enough” to achieve lasting outcomes after only 5 years.<sup>12</sup> The literature also recognizes the critical role played by the change hub in actively driving (in the initial stages) and facilitating or supporting (in the later stages) change.<sup>13</sup> Additionally, the team recognizes that systems change is an ongoing process. Continuous discussion and repetitive action is especially necessary to counter the impact of events like those seen in Woliso (e.g., staff turnover and activity disruptions). It also requires multiple levels of action to address challenges that can only be resolved at higher administrative levels (regional, national).

## Next Steps for SWS Partners and Key Stakeholders

In the final year, the learning alliances will continue to focus activities on the common vision of sustainable poor-inclusive city-wide sanitation delivery. The learning alliances will continue to provide a forum for coordinating, integrating, and aligning activities (i.e., management decisions) with the individual organizations’ respective mandates. These activities consist of two types: (1) action research on priority areas to improve systems involved in the management of shared sanitation services (communal and public latrines) and to build consensus among stakeholders on fecal sludge management; and (2) learning and training events on technical topics (likely to focus on fecal sludge management) and group facilitation, including learning visits. SWS will phase out these activities, coupled with focused discussions on future planning, in the second half of Year 5 as it transitions ownership of the learning alliances to the Woliso and Debre Birhan governments.

In Woliso, the learning alliance work will ensure that it has a continued role in advancing progress made on the disposal site intervention. It will continue to advance discussions and activities as SWS transitions off. Moreover, the neighboring community of the site has expressed a desire for continuous dialogue with the learning alliance, because they would like to have a fully operational disposal site. In addition, the learning alliance has begun discussions with WaterAid about how they can collaborate under the “Big Wish for Ethiopia” work that is carried out in partnership with Yorkshire Water in the U.K. and seeks to develop utilities in Woliso and eight other small towns in Ethiopia.

The World Bank’s UWSSP-II coordination task force in Debre Birhan will likely merge with the learning alliance, because there is overlap in the membership and agendas of the two groups. UWSSP-II

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<sup>12</sup> Casey, V., and Crichton-Smith, H. 2020. System strengthening for inclusive, lasting WASH that transforms people's lives. Practical experience from the SusWASH programme. Available at:

<https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/suswash-global-learning-report.pdf>

<sup>13</sup> Darteh, B., Moriarty, P., and Huston, A. 2019. How to use learning alliances to achieve systems change at scale. Available at: [https://www.ircwash.org/sites/default/files/084-2019091a\\_how\\_to\\_paperdef\\_web.pdf](https://www.ircwash.org/sites/default/files/084-2019091a_how_to_paperdef_web.pdf)

implementation and challenges are standing agenda items in learning alliance meetings. Moreover, the utility chairs both groups, and the coordination task force is increasingly leveraging the activities of the learning alliance, e.g., convening the high-level meeting to advance its objectives. Further discussions will focus on the details of the merger, including a timeline.

SWS will maintain contact through regular follow-up and by providing scaled-back support to the learning alliances in the final quarter of Year 5. While the final form of the transition process will, and should, be determined by the key sanitation actors in the two towns — the utility, Health Office, Town Municipal Office, and mayor — SWS recommends a path that involves institutionalizing the learning alliances within the towns' governments with clear accountability structures to promote sustainability. Based on lessons gleaned from the Government of Ethiopia's One WASH National Program (OWNP), SWS recommends embedding the learning alliances within the towns' government rather than using a "project" approach. This contrasts with the OWNP, for which the responsible ministries collaborate under a non-legally-binding memorandum of understanding. The Consolidated WASH Account is the key project implemented under the OWNP. Implementation of the Consolidated WASH Account at the sub-national level is driven by the availability of funding; it is not part of the mandate of the responsible entities.

SWS recognizes that the transfer of ownership of the learning alliances will not be fully realized simply by ensuring that members have the skills required to facilitate their meetings and activities. Moreover, SWS recognizes that the process will require the interest and commitment of learning alliance members who will need to take responsibility for their activities in the absence of an accountability mechanism.

## Water Activity in Uganda (IRC)

### Context

Kabarole District is located in mid-western Uganda and is part of the Kingdom of Toro. It is an old district from which several new districts in the region have been carved out. The district's vision, as set out in the 5 year development plan, is "a beautiful district with a prosperous and harmonious people." The district council has a mission to achieve sustainable socio-economic development through provision of quality services to the people in conformity with national policies and local priorities. Kabarole lies at an altitude of 1,300–3,800 meters above sea level and borders Bunyangabu District in the south, Kamwenge District in the southeast, Kyenjojo District in the east, Bundibugyo and Ntoroko Districts in the northwest, and Kibaale District in the northeast. It has a population of 325,261 people, with an average household size of four people. The district has one county (Burahya), five town councils, 10 sub counties, 52 parishes, and 342 villages. It formerly had one municipality of Fort Portal, which became Fort Portal Tourism City in July 2020. Subsistence farming is the main social economic activity, employing over 80 percent of the population. The main food crops grown include bananas, maize, cassava, beans, and groundnuts, while the main cash crops include tea and coffee. Backyard gardening is commonly practiced in urban areas to supplement household incomes.

Regarding WASH, on average 79 percent of the population has access to safe water services (78 percent in rural areas and 82 percent in urban areas). Kabarole has 1,137 domestic water points, which serve a total of 260,015 people, of which 179,279 are in rural areas. A total of 207 water points have been non-functional for over 5 years and are considered abandoned. Kabarole has four piped schemes. This is an improvement compared to data from 2018 and 2019. IRC conducted a context analysis in 2018 that found that 58 percent of the population had access to safe water and only 45 percent of existing water supply facilities were reliable due to poor O&M that led to frequent breakdowns. There were also high levels of contamination of drinking water sources, at 64 percent. This was especially true in rural areas where the users' willingness to pay for water was low; only 7 percent of users consistently paid for water despite evidence suggesting the majority were able to pay. In 2019, service level data indicated that 12 percent of the population had access to safely managed water, 33 percent to a basic service, 26 percent to a limited service, 20 percent to an unimproved source, and 8 percent accessing surface water. At the time of the assessment, 62 percent of point sources were functional, most water user committees were non-functional, human resource capacity was low, and budget and logistics support from the Water Office were inadequate.

Kabarole District has an active hand pump mechanics association (HPMA) called KAHASA that was formed in 2010 with a membership of over 25 hand pump mechanics and scheme attendants. With IRC's support, KAHASA registered as a community development organization and the private sector service provider.

In 2017, the district established the District WASH Task Team (DWTT) as a forum for learning and influencing WASH planning, implementation, and monitoring. The DWTT is led by the District Secretary for Works and Technical Services and comprises representatives from political, technical, private sector, and civil society organizations. These actors led the development of the Kabarole District WASH Master Plan 2018–2030.

IRC has worked in Kabarole since 2010, starting with implementation of the Sustainable Services at Scale (Triple-S) project (2010–2014), funded by the Bill and Melinda Gates Foundation, that focused on improving sustainability of water services in the district. Through action research and learning, IRC supported the district to diagnose water problems in the district to see what was working and what was not in terms of policies and practices. IRC developed, tested, and implemented new water service delivery models and solutions such as the Mobile Phones for Water and Pay-as-You-Fetch (PAYF). The District Water Supply and Sanitation Coordination Committee was strengthened (the DWTT now links to this platform). The Triple-S project catalyzed existing WASH structures to promote services beyond just infrastructure development and management. It introduced elements of a WASH systems approach and promoted the added value of an enabling environment for service delivery, effective monitoring, planning, budgeting, and institutional development.

Other projects have since supported Kabarole District to continue improving WASH service delivery, including: (1) the Conrad N. Hilton Foundation, which focused on water service delivery and WASH in health care facilities; (2) the Waterloo Foundation, focused on capacity building of the HPMA and improving sanitation and hygiene in the district; and (3) the Dutch Government, focused on advocacy at the district, regional, and national level. Beginning in 2017, SWS enabled Kabarole District to improve decentralized WASH service delivery by increasing stakeholders' understanding of the WASH systems and sustainable delivery of district-wide rural water services. The DWTT gained confidence to engage the district council on key WASH issues, including the implementation of the District WASH Master Plan, improving staffing in the district Water Office, and ensuring strong linkages between the district Water Office, Health Office, and sub-county chief and health assistants in charge of WASH. DWTT members have directly engaged communities and involved them in data collection and monitoring of WASH service delivery.

At the national level, the Ministry of Water and Environment (MWE) provides strong leadership for the management and delivery of water services in the country, provides good opportunities for learning and innovation, and feeds these ideas into national processes. MWE regional deconcentrated structures that include the Rural Water Supply and Sanitation Regional Centre 6, Umbrella for Water and Sanitation, National Water and Sewerage Corporation, and Albert Water Management Zone work to support and supervise WASH improvement in the Rwenzori region.

### Major Challenges to Sustainable WASH Services in Uganda

Through its national constitution, Uganda has ratified and domesticated national development plans and district development plans that recognize and provide access to water and sanitation as a human right. However, translation of policies and regulations has not been matched, with financial commitments at just 4 percent of the national budget. The sector requires about nine times more than the current

investment to meet national targets. This threatens the achievement of universal access to the human right to drinking water and sanitation by 2030.

Several challenges impede access to sustainable WASH services for various categories of people. These include:

- **Planning challenges and population dynamics.** Uganda is experiencing exponential population growth (3 percent per year) and high urbanization (6.6 percent per year) that hinders the government's ability to plan and provide appropriate basic services, including water and sanitation.
- **Monitoring (assets and infrastructure).** There is a lack of reliable data schemes and asset management systems for WASH service improvement.
- **Economic or financial challenges.** Low budget allocation to WASH infrastructure maintenance has resulted in a high non-functionality rate. The sector has also consistently experienced low funding levels (averaging at 3 percent per year), insufficient to meet demand in line with the strategic investment plan projections. Only 3 percent of district water and sanitation conditional grants can be allocated to sanitation. MWE's budget allocation to sanitation remains at 2 billion Ugandan shillings (UGX) (\$561) per annum, and the line ministries of education and health have no or limited allocation to sanitation and hygiene in schools and health care facilities.
- **Inappropriate and expensive technologies.** Due to climatic variations and topographical limitations, some of the traditional water supply technologies, such as boreholes and springs, are no longer viable. Spare parts supply and access is also inadequate, which affects O&M of the systems.
- **Geographical and topographical barriers.** In some places, water quality is poor due to salinity and high iron content, making it unsuitable for human consumption. Weak and collapsing soils, especially in hilly and flat areas, often cause erosion, leading to flooding and water logging. In such areas, it is nearly impossible to construct lasting latrines and water sources are easily contaminated. As a result, communities resort to risky, distant, polluted, and dirty water from streams and rivers, limiting the amount of water available for use per household per day.
- **Institutional challenges.** These challenges include inadequate planning and participation of communities in activities and decision-making processes, especially those affecting prioritization and resource allocation for WASH. There is also limited integration across sectors (such as education and health), which creates gaps in guidelines for district allocation.
- **Insecure and hard-to-reach groups or communities.** Communities living in remote and insecure locations are sometimes left out of the service delivery chain, mainly due to the difficulties associated with reaching them. For example, people in fishing communities, displaced populations, and refugees in emergency settings are sometimes excluded from access to WASH services due to planning, technological, and cost limitations.
- **Sociocultural challenges.** Tribal and social classifications, particularly among the Batooro, Bakonjo, and Bakiga tribes, can result in exclusion from receiving services or gaining

representation in decision-making spaces. For example, farming communities such as tea estates predominated by migrant tribes are less attended to in resource allocation. Communities in the mountainous parts of the district (predominantly the Bakonjo tribe) have low access to water sources and sanitation facilities, with cultural differences viewed as a key factor.

- **Political influence.** Politicians can influence the payment of water user fees and decisions on resource allocation. Lower-level councilors and members of parliament encourage the community not to pay user fees.

## Approach

The approach focused on convening a learning alliance of stakeholders in the district that could jointly assess problems and develop solutions through action research (and collective action) on jointly determined priorities. This had a dual aim of piloting solutions and strategies to improve rural water supply sustainability, while at the same time building the capacity of learning alliance members to become systems thinkers and to become more strategically engaged in solving WASH issues, ultimately improving the efficacy of collective action. The learning alliance is not a formal government structure, but the members in their formal roles can influence local institutions and strategies. Learning alliances made efforts to connect with and include regional and national actors to foster opportunities to scale up district-level innovations while at the same time bringing ideas and best practices from outside the district into the learning alliance for consideration and potential application in Kabarole.

Following the participatory WASH systems assessment, the learning alliance chose four main priority areas. These include:

- Building the capacity of the local government (to be a “one-stop shop” for WASH information);
- Generating proactive support from political leaders for sustainable WASH strategies;
- Engaging community members to participate in decision-making processes related to the sustainability of WASH services in their respective localities; and
- Improving asset management and maintenance of rural water supplies (e.g., developing and incentivizing preventive maintenance of point sources).

The learning alliance achieved these goals through several strategies, including:

- Learning through assessments, learning exchange visits, and action research.
- Disseminating evidence and advocating to a wide range of stakeholders at local, national, and global levels to increase the availability of information on WASH systems for informed decision making.
- Using different tactics (e.g., inter-district learning and exchange visits, video documentaries on WASH systems, and participation in national, regional, and global events on WASH systems such as the All Systems Go Symposium) to increase understanding and present evidence on the benefits of using a WASH systems approach.

- Strengthening collective action among WASH service providers, district politicians, opinion leaders, and technical staff involved in WASH planning and decision making. The principal tool for this is the District WASH Master Plan (also used for advocacy).
- Testing models and generating evidence on workable solutions that can be scaled up to the national level.

### Team and Primary Stakeholders

In Uganda, the SWS team comprises IRC Uganda staff, associates, and consultants. Implementation has mainly targeted the Kabarole District Local Government (DLG) and communities through the DWTT, District Water and Sanitation Coordination Committee, District Council, and local civil society organization (CSO) partners. At the national level, the main implementing channels for SWS were the Uganda Water and Sanitation NGO Network (UWASNET) as CSO coordinator, Agenda for Change partners, and the MWE. The work was implemented in collaboration with funding from different programs that IRC is engaged in to leverage additional resources and create synergies in activities. These include:

- The Uganda Country Program Netherlands Directorate-General for International Cooperation (DGIS) provides programmatic funding that contributes toward activities and outputs to establish strong national systems and partnerships, increase political and financial commitment, enhance capacities in WASH management, and test and document WASH models.
- The WASH SDG Consortium, funded by the DGIS, is a 5-year program implemented by a consortium of WASH Alliance International (WASH Alliance International includes IRC, Simavi, Akvo, and Amref Health), SNV, and Plan Netherlands, and funded by DGIS. The program aimed to sustainably improve access to and use of sanitation facilities and improve hygiene behaviors for at least 2 million people; it also aimed to improve access to and use of safe drinking water for at least 450,000 people in seven countries: Bangladesh, Ethiopia, Indonesia, Nepal, Tanzania, Uganda, and Zambia. IRC Uganda was involved in the advocacy and knowledge management aspects of the program being implemented in Agago District.
- Hilton Six Countries Program is a 4-year project in six countries — Uganda, Ethiopia, Ghana, Burkina Faso, Mali, and Niger — aimed at facilitating high-impact collaborations, improving water governance, and generating and capturing evidence to support collaborative advocacy and communication to improve practices, policies, and investments.
- Let's Leave No One Behind, Waterloo Foundation, is based on the Kabarole District WASH Master Plan for achieving universal access by 2030. This intervention supports Kabarole DLG to implement the master plan in three areas of WASH: health care facilities, access to safe water for underserved populations, and systematic sanitation improvement at the household level. At the national level, IRC continues to be involved in advocacy and providing technical expertise to the sector.

Key stakeholders include: the MWE, Ministry of Health, Kabarole DLG (Water, Health, and Community Development Offices), District Council (Secretaries for Health and Works and Technical Services, the Speaker), District Chairperson, Chief Administrative Office, Ministry of Water deconcentrated structures (Rural Water and Sanitation Regional Centre 6, Albert Water Management Zone), Umbrella

for Water and Sanitation - Mid Western, National Water and Sewerage Corporation, water user committees, KAHASA, and WASH CSOs, including JESE, CARITAS, and HEWASA).

## Implementation Summary

### Implementation Timeline

- March 2017: DWTT is formed as a learning alliance. The DWTT was established to support the Kabarole DLG with a strategy and approach to achieving SDG 6 in the district. Through SWS, the DWTT was strengthened as a learning alliance.
- January 2018: SWS supported baseline assessment of the local WASH system in Kabarole District. SWS synthesized and discussed the results from national and district context, as well as rural water systems analysis (qualitative content analysis, a building blocks assessment, and an actor and network analysis), with the learning alliance.
- March 2018: DWTT establishes its vision and priorities for systems strengthening. Following the systems assessment and network analysis, the learning alliance discussed priority areas for strengthening the local system and established a vision for the learning alliance.
- August 2018: SWS completes action research and publishes an initial study on effectiveness of PAYF. SWS focused this first analysis on the effectiveness of the PAYF model in triggering faster repairs and improving rural water functionality. A pilot of PAYF to improve rural water O&M was started prior to SWS but received additional support and interest from the DWTT as part of the systems-strengthening initiative.
- March–December 2018: DWTT presents a draft of the District WASH Master Plan to key stakeholders. This encompassed discussions, data collection, and compilation of the District WASH Master Plan; presenting a draft to the District Executive Committee and District Council for approval and adoption; and preparing to launch and market the plan in December 2019 and January 2020.
- February 2019: District Council launches the District WASH Master Plan (funded by Hilton). Following a comprehensive assessment of the WASH system and services in Kabarole, the District Council approved and launched the plan.
- March 2019: Local government and district officials participate in the All Systems Go! Symposium in The Netherlands. This was an opportunity to share experiences and learn from other districts and initiatives around the world, build systems thinking among key actors, and encourage political commitment.
- May 2019: Uganda Ministry officials visit Ethiopia for a learning exchange on improving rural water maintenance. The learning exchange was an opportunity for high-level national officials to exchange ideas on improving rural water maintenance, resulting in a written ten-point action plan by Ugandan delegates committing to address outstanding issues to improve O&M. These included:
  - I. Redefining the functionality of water facilities to include water quality and quantity.

2. Legalizing water source committees to manage, operate, and maintain point water sources.
  3. Creating an enabling environment for the private sector to engage in water sustainability activities.
  4. Strengthening and reviewing the profile of the regulation department within the MWE.
  5. Developing a capacity-building strategy for all actors in the O&M chain.
  6. Investigating technical options on how to implement shallow well suspension.
  7. Addressing climate change issues that affect water resources and promoting a catchment protection approach.
  8. Addressing the spare parts supply chain.
  9. Addressing the quality of installation materials for WASH infrastructure.
  10. Advocating for increased funding toward O&M activities and improving coordination of all actors to address challenges of limited resources.
- June 2019: Fifteen learning alliance members visit Kamwenge District to learn about their strategies for rural O&M. Learning alliance members traveled to learn from the neighboring district, focusing on local government initiatives, community engagement strategies, and models for rural O&M (specifically their village saving and loans approach).
    - June 2019: SWS Concept One conducts a learning exchange visit with Concept Three to learn about the Whave model. The DWTT visited Kamuli District to learn from the Whave model, and the Whave team visited Kabarole District to learn about PAYF and master planning.
    - July 2019: IRC and MWE's IOM Division organize a national dialogue on O&M for rural water systems. This was organized with the IOM Division of the MWE to gather national views on reframing the O&M framework.
    - March–August 2019: Government launches a new National O&M Framework. National dialogue resulted in the launch of a new framework, introducing a new approach to rural water supply maintenance based on area service providers (ASPs) for contracted services (reducing the role of community committees for maintenance) as a step toward professionalization.
    - August 2019: IRC conducts an analysis on using the master plan as a political and technical tool for strengthening local WASH systems and presents recommendations to the District Local Government Council and Technical Staff. Action research identified the strength of the master plan as a tool to increase political will and presented recommendations for ensuring that initial progress is sustained and leads to real change.
    - February–November 2020: DWTT drafts a district sanitation and hygiene ordinance that is presented to the District Executive Committee. The DWTT contributed to the local policy by drafting the district sanitation and hygiene ordinance and presenting it to the District Executive Committee, where it was discussed and tabled before the District Council for adoption.

- April 2019–August 2020: IRC conducts action research on the PAYF model. IRC found willingness to pay and a few cases of payment leading to exclusion of users; however, the current PAYF model does not incentivize preventive maintenance.
- January 2020: MWE visits Kabarole District, and DWTT shares key lessons relevant for implementation of the new National O&M Framework. Because the MWE is still learning how to implement the National O&M Framework at decentralized levels, the DWTT shared expertise and findings from action research in Kabarole to inform their thinking.
- February 2020: DWTT members participate in the African Water Association Congress in Kampala. DWTT members participated in the international congress to learn more about models for strengthening rural water supply and to focus on knowledge dissemination and building advocacy skills (i.e., bringing light to known challenges in rural water in Kabarole through multi-stakeholder engagement).
- May 2020: DWTT case is shared at the Collective Impact Virtual Convening.
- September 2020: DWTT meets with sub-counties and communities to discuss implementation of the District WASH Master Plan.
- September 2020: National learning events held during the virtual Uganda Water and Environment Week 2020. SWS presented a research paper titled, “Infrastructure planning: A tool for sustainable rural water services.”
- March 2021: DWTT members participate in Albertine/Rwenzori Region Uganda Water and Environment Week. DWTT led a session on community engagement for WASH that focused on improving sanitation and integrated water resources management. It was also an opportunity for DWTT members to learn from various regional and national WASH stakeholders (CSOs and Ministry agencies) about inclusive WASH.

## Narrative

### *DWTT Establishment as the SWS Learning Alliance*

In order to not reinvent the wheel, IRC adopted the Kabarole District WASH Task Team as the SWS learning alliance. National, regional, and district learning alliances had been established under the Triple=S Project. The Rwenzori Regional Learning Forum and the Kabarole District Stakeholder Forum were the major learning alliances convening at least once a year to focus on WASH issues. The District Stakeholders Forum of March 22, 2017 created a small team of 16 members to meet regularly to discuss and provide strategies for improving WASH services in Kabarole District. This was the birth of the DWTT; from quarterly reflections, the team has grown to 25 members based on recognized gaps in the discussion for sustainable WASH. For example, the Secretary for Finance was incorporated to give guidance on the finance and budgeting processes of the district when the DWTT was discussing strategies for increasing local finances for WASH. DWTT has contributed to: planning and budgeting for WASH with the District WASH Master Plan; local government capacity through advocacy for staff recruitment and office equipment; and legislation through contributions to the National O&M Framework and District Sanitation and Hygiene Ordinance. WASH is now a key agenda for discussion in the District Political and Technical Forums.

SWS supported WASH systems analysis in Kabarole, aiming to increase understanding of the gaps that needed focused interventions. The iterative factor mapping and learning (IFML) model was used with the help of UCB. SWS and the DWTT assessed factors for sustainable WASH services using the Networks and Factor Analysis tools and generated an influence map based on the level of influence of the factor on other factors and its dependence on other factors. SWS and the DWTT identified local government capacity and political involvement as leverage factors. The DWTT used these to build strategies for sustainable WASH services in the district.

SWS also used ONA to assess the actors and factors affecting WASH sustainability in Kabarole District. This did not entirely focus on the DWTT members. The aim was to identify stakeholders central to the network, network gaps, successes, challenges, and possible solutions to WASH sustainability. The analysis also established how the stakeholders that identify an issue relate to each other. Results from the ONA analysis recognized the centrality of the DLG. Results also noted that the communities that were the major focus of all the interventions were disconnected from district and sub-county stakeholders. This prompted the DWTT to incorporate community development workers at the sub-county level and community engagement involvement as a factor for sustainable WASH services. SWS carried out direct community engagement activities on sanitation promotion and master plan implementation.

#### *Building Blocks Analysis*

Annual building block analysis has been carried out, focusing on the nine building blocks in the IRC model. So far, results indicated poor performance in finance, integrated water resources management, and infrastructure and asset management. The DWTT has focused on the infrastructure and asset management building block by working with the District Water Officer (DWO) to establish mechanisms for infrastructure management. The PAYF model has been promoted to ensure maintenance services are carried out on water infrastructures. The new O&M Framework has so far adopted water supply services boards and ASPs as local structures to improve asset management. Further focus on infrastructure and asset management has been through capacity development HPMA (KAHASA) to undertake maintenance services in the district. These have the capacity to negotiate framework contracts with the district to rehabilitate hand pumps and piped networks.

#### *Learning from Others through Exchange Visits*

The learning alliance and key local and national government officials have had an opportunity under SWS to learn from other local, national, and international initiatives. The DWTT members participated in learning exchange visits to Kamwenge District on O&M and community engagement, where they adopted key lessons on direct community engagement. Select members of the DWTT participated in the National Uganda Water and Environment Week event to share their own initiatives at the district and to learn from national and international stakeholders. The 2020 Africa Water Alliance Congress involved six members of the DWTT. International events included Africa Water Week, where the Secretary for Works and the Chairperson of the DWTT participated in the global event in Gabon. The District Chairperson of Kabarole and Director of Rural Water Department also participated in the All Systems Go! symposium in the Hague, Netherlands.

The MWE also led a learning visit to Kabarole. Activities of the DWTT such as the WASH Master Plan, PAYF model, water supply services board, and capacity building of HPMA (KAHASA) attracted the

IOM/MWE team during the process of developing the new O&M Framework to visit and learn from Kabarole. The initial visit contributed to the drafting of the O&M Framework, whose validation and dissemination also involved the IOM/MWE visit to the DWTT in Kabarole.

## Testing Our Theory of Change and Answering Our Learning Questions

### Theory of Change

The theory of change developed at the outset of the SWS project assumed that political prioritization, funding, and capacity would improve once WASH actors better understood the local systems for WASH services (linked to learning alliance participation and evidence), tested ways to develop political engagement and wider community engagement, and put into place a shared vision or plan. SWS also expected sustainability of WASH services at the lower local government, district, and national level to improve. SWS emphasized the application of innovation to improve local systems and worked with local actors through multi-stakeholder partnerships or learning alliances. Figure 20 provides a visual depiction of the theory of change.

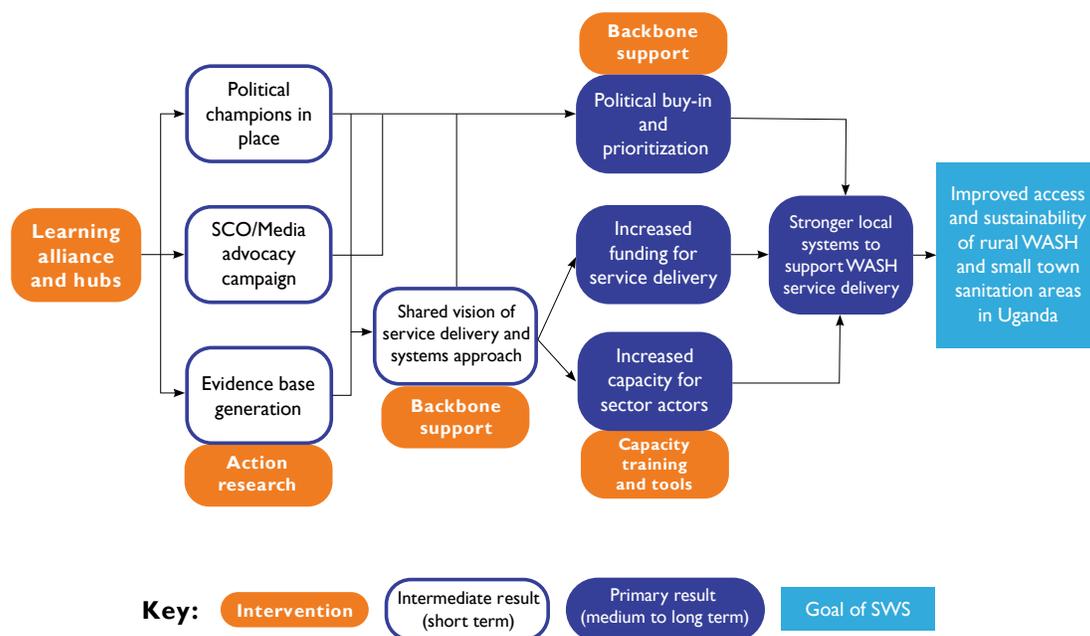


Figure 20. Uganda Theory of Change

### Learning on Systems Understanding

For SWS in Uganda, the first contextualized learning question was: How can local stakeholders improve their understanding of complex WASH systems and find ways to drive changes aimed at improving the sustainability of WASH services?

The specific learning questions were:

- Learning Question 1.1 (addresses Learning Question 1A and 1B): What tools, methods, and processes are (most) effective for learning alliances to learn about their complex WASH systems?
- Learning Question 1.2 (addresses Learning Question 1C): What are the actions and/or changes taken as a result at different levels (by the learning alliance membership, at higher government levels) that may be influenced by the emerging understanding of the learning alliance membership? What created or informed this emergent understanding among learning alliance membership?

## Context

Establishing learning alliances as multi-stakeholder learning platforms follows a set of iterative steps: engaging stakeholders, dialoguing and seeking agreement, working and learning together, and consolidating and replicating lessons.

The learning alliance approach involves multiple stakeholders as representatives of a particular system (i.e., the local WASH system) seeking to collectively develop a better understanding of issues of mutual interest confronting their system, with the aim of identifying, and ultimately enacting, resolution processes. Engaging stakeholders in learning alliances is more than just participation and representation; it involves co-creation to maximize knowledge transfer and resource sharing, as well as shared responsibility. Learning alliances are facilitated by a team of IRC staff who support planning, implementing, monitoring, and learning from joint activities.

The learning alliance model includes the following sub-teams:

- **Core membership:** Key stakeholders in regular attendance and participation.
- **Technical sub-groups or working groups:** These may be task teams that already exist through formal structures or are developed within the learning alliance.
- **Facilitation team:** Facilitators and support staff who help with documentation, interviews, learning frameworks, or facilitating specific activities.

## Baseline

In Kabarole, Uganda, SWS undertook several initial analyses of the WASH system and network to assess different aspects of the local WASH system. Baseline studies included factor mapping, building blocks assessment, ONA, asset inventory, life-cycle costing, factor analysis, service-level assessments, and sustainability checks. These studies involved local stakeholders and included local perspectives, for example, through participatory data collection and factor mapping workshops, key informant interviews, and in analysis, review, and/or validation of results. The process of conducting these studies, along with the analysis and presentation of results, is one mechanism for building systems understanding. DWTT members were supported to develop a baseline understanding of the WASH system and play a lead role in setting priorities and targets for the learning alliance.

SWS performance indicator 1.1, “Percentage of coalition participants reporting an improvement in WASH system understanding,” also served as a discrete baseline for Learning Question 1. Stakeholder

understanding interviews focused on assessing learning by the political and technical actors (e.g., WASH CSOs and service providers) on engagement processes, successes, and areas for replication for WASH service improvement, as well as assessing their understanding of the systemic reasons for and potential implications of the different action research topics (studied under Learning Question 2).

Learning alliances include a facilitated series of regular and inclusive events (e.g., meetings, workshops), along with exploration of critical issues by sub-groups through action research, with feedback loops to the alliance. Additional one-off capacity-building events have been provided on request to specific groups from the alliance (e.g., training of trainers, and training of WUA on management of water schemes), together with facilitated learning visits to other locations.

These activities and processes supported DWTT members to improve their understanding of WASH system complexity while also addressing specific challenges. In Kabarole, learning occurred:

- Not only from participation and reflection on the various assessments and action research, but also through other learning alliance processes such as exchange visits.
- Through presentations and discussions at meetings, workshops and training, and application of systems tools (asset inventory, life-cycle cost analysis, ONA, etc.).
- Outside of formal meetings through bilateral engagements and social learning, some of which IRC participated in and documented.

This learning question seeks to understand the efficacy of the different tools, methods, and approaches that are used in terms of learning, co-creating, and stimulating change.

## **Hypotheses**

*Learning Question 1.1A and 1.1B.* In each project area, local stakeholders will develop a more comprehensive understanding of their respective WASH systems, which will enable them to develop a widely shared diagnosis of the strengths and weaknesses (evidence of learning) in the system.

*Learning Question 1.2C.* Increased understanding of WASH system complexity will lead learning alliances to take a more active role in designing, critiquing, and implementing actions to improve WASH system strength (via direct action taking and action research or through aiming to influence other stakeholders such as high-level decision makers).

## **Endline**

SWS observed the following trends at endline:

- Stakeholders began to understand water supply as a service beyond infrastructure and appreciate the systems that facilitate service delivery.
- Being exposed to WASH approaches outside of Kabarole District challenged and motivated district stakeholders to think about WASH from a broader perspective. For example, a learning visit from the Ministry of Water on PAYF inspired the learning alliance to suggest possible changes to improve the system.

- Learning alliance members are willing to see change but are less reflective on how that change can happen. Most efforts should be directed toward building capacity in innovative ways for making change happen in WASH systems.
- Learning alliance members wanted to undertake activities that brought about a change in their community. This led to pockets of success but could not be scaled up to bring about systemic change.
- Kabarole WASH actors better appreciate working together and have sustained many of the relationships identified during the baseline study.
- The DWTT played a central role in coordination, planning, and resource mobilization for the development and implementation of the District WASH Master Plan.
- The involvement of the technical team and political leadership in the DWTT enabled some decisions and activities to be implemented directly, without the need for wider lobbying or advocacy.
- DWTT members appreciated the importance of an effective learning platform for WASH stakeholders in Kabarole. It enabled them to create a shared agenda informing the DWTT actions.

### **Reflections**

- Service-level analysis and dialogue with users and local leaders on WASH services is important to diagnose issues and identify solutions.
  - Emphasis on sustainability of all interventions (e.g., construction of a water point) is key for Kabarole District, using examples of non-functionality.
- The DWTT should be sustained; it has potential to continue to play a valuable role in improving WASH services in Kabarole District through the influence of its members and collective action.
- The mapping out of the critical DWTT focus is done on an annual basis and then integrated into the existing funded arrangements covered under the District Water and Sanitation conditional grant to ensure sustainability of these efforts.

### [Learning on Systems Strengthening: Learning Question 2.5](#)

For SWS in Uganda, the second contextualized learning question was: How do identified (WASH systems-strengthening) interventions influence, improve, and/or strengthen aspects of the system for sustainable WASH services delivery?

Before defining the sub-questions, SWS worked with the DWTT to identify systems-strengthening interventions and analyze baseline data. The SWS theory of change was built around the learning alliance approach mustering political support, influencing the role of CSOs and service providers, and generating evidence or proof of concept through action research. The 2017 baseline synthesis report for Kabarole District illuminated WASH issues and presented recommendations for guided WASH programming in the district. WASH systems analysis (IFML, ONA, and building blocks analysis) further affirmed the need to ensure political buy-in, local government capacity, and service provider capacity as intermediate outcomes for strengthening the WASH system to support WASH service delivery.

Learning Question 2.5 asks, “How can the PAYF model be strengthened to improve preventative maintenance and mitigate exclusion to rural WASH services?”

SWS hypothesized that adoption of PAYF incentivizes preventive maintenance and timely repairs of rural water facilities but leads to the exclusion of poorer households unless specific mitigation measures are implemented.

### **Context**

SWS tested the PAYF model in Year 2 in a pilot involving the task team, IRC, and KAHASA. SWS identified two critical gaps in knowledge: (1) whether and how the model incentivizes preventive maintenance and (2) who is excluded (due to affordability and willingness to pay) and how such impacts might be mitigated. Follow-up research in Year 3 sought to investigate the willingness and ability of users to pay for services and the capacity of operators to generate, manage, and apply revenue from sales toward O&M costs.

### **SWS Activities at Baseline**

- Collected scheme records on payments received, maintenance expenditure, etc.
- Conducted key informant interviews with HPMAs, pump operators, and the learning alliance.
- Documented actions and decisions through meeting minutes and reports, a facilitator’s diary, etc.
- Carried out a study in 2020 to assess exclusion of poorer households using key informant interviews, a household survey, and focus group discussions.

### **SWS Activities and Findings at Endline**

- Shared report highlights from the action research report with stakeholders.
- Some payment collected but not yet leading to preventive maintenance.
- Little to no evidence that the model excluded poorer households.

### **Reflections**

- PAYF action research indicated that innovations can only succeed with strong district and sub-county leadership and involvement.
- Technological aspects impact consumer behavior. SWS recommended pre-paid meters to increase accountability. People are willing to pay for a better service, like for tap water rather than a hand pump.
- The District Council should consider local legislation through passing ordinances at the district level and bylaws at the sub-county level on water user payment to mitigate political influence.
- There is an urgent need to strengthen accountability at the district level to ensure that monitoring and support supervision leads to timely and corrective actions. The newly appointed water supply services boards should be empowered to hold service providers accountable but should also have performance-based contracts for their support roles.

- Water quality monitoring should be one of the primary performance measures for district extension staff, and results should be reported to the sub-county and district water boards to ensure corrective actions are taken.

Piloting the PAYF model on 16 hand pumps and conducting action research on whether the model promotes preventive maintenance equipped the DWTT with evidence to engage with the district political leaders and MWE technocrats. The District Council agreed and passed PAYF as one of the sustainability models that was adopted and was to be scaled out of the district to improve sustainability of the water sources. PAYF has been extended to piped water systems under utilities and community management in the rural areas of Kabarole District.

The new National O&M Framework for O&M of rural water systems embraces PAYF in community-based maintenance system plus (CBMS+). Structures like water supply services boards and ASPs, as well as a paid water supply committee per water source, have been developed under the same concept of communities paying for water services.

### Learning on Systems Strengthening: Learning Question 2.6

Learning Question 2.6 asks, “How can the engagement of politicians and communities be strengthened to improve the sustainability of rural water services?”

SWS hypothesized that:

- A master plan for universal services can be used as a tool to mobilize communities and political leaders.
- Effective political and community engagement contributes to increased willingness to pay for rural water services via sensitization of community reinforced by messaging from political leadership.
- Engaging politicians in a learning alliance, and via learning alliance membership, will increase political engagement and commitment (including financial) to WASH sustainability.

### Context

The DWTT developed and tested strategies to actively engage politicians and communities on issues affecting sustainability. At baseline, the DWTT identified that politicians intentionally discourage water users from paying for services but that the effective collection and use of fees from water users is critical to fund minor O&M costs at local levels. The ONA also noted that many activities at the district level, including the DWTT, have limited reach down to the community level. Based on this finding, the DWTT expanded its membership to include stakeholders that are further engaged at local levels to bridge the gap and build local understanding on issues of sustainability, O&M, and needs for cost-recovery via user fees. Actions were targeted at improving: learning and adaptation, planning, finance, institutions, infrastructure management, and monitoring, as they relate to rural services

A few contextual factors arose that influenced these efforts:

- The creation of new administrative units in Kabarole influenced the available resources and staffing needs.
- The COVID-19 pandemic influenced implementation, with restrictions and lockdown hindering efforts to conduct activities.
- Limited funding for DWTT WASH improvement activities influenced the level of effort and engagement.
- Limited WASH funding within local government influenced staffing and the degree of participation and engagement in the DWTT.

### **Baseline**

The baseline assessment and formative DWTT meetings and workshops laid out the issues and challenges regarding political behavior, as well as a vision for the types of changes DWTT members wanted to see. Specifically, the ONA and IFML analysis showed a gap between district-level actors and communities, where communities were more distant from other key actors, including the initial DWTT members.

Despite the centrality of elected officials observed in the ONA, the IFML analysis showed that political involvement was among the least central factors in the system overall. Political involvement also appeared to be relatively independent of other factors, meaning it was unlikely to be influenced by changes to other factors and may be difficult to change.

The strong influence and centrality of political leaders suggested that improving coordination among district, sub-county, and community-level actors could be meaningful in leveraging their power. Inadequate coordination between administrative levels could be linked to a perceived weak capacity of leadership. Forging relationships with district-level political leaders and sub-county local governments could be helpful to ensure the fulfillment of oversight and backstopping functions of the district authority. This could be critical in strengthening the regulation building block.

### **Endline**

SWS conducted action research on the effectiveness of the District WASH Master Plan to mobilize politicians and completed endline network and factor analysis, interviews, and analysis of qualitative process documentation. SWS observed the following trends:

- After the PAYF action research study on willingness to pay showed relatively high willingness to pay, the district council proposed and supported the collection of water user fees to support O&M.
- A review of how learning alliance members' understanding of factor interactions within the WASH system context shifted over the SWS project showed increased engagement of political and technical leadership in WASH planning and decision making.
- Routine entries to the facilitator's diary showed that an improved understanding of the system resulted in clear action and/or influence on WASH decisions. The diary pointed to incremental progress in stakeholder actions toward WASH service improvement.

- IRC observed that political engagement through the District WASH Master Plan and the use of a comprehensive baseline helped political leaders prioritize infrastructure needs to areas with low coverage.
- A review of district annual budgets showed they were aligned to addressing priority areas in the District WASH Master Plan.

## Conclusions

- The DWTT should continue to support the rollout of the new National O&M Framework and strengthen the capacity of sub-county and district water supply boards.
- IRC should increase the capacity of the DWTT to continue lobbying for planning and recruitment of district water and environment staff.
- Political leadership and engagement promotion of sustainable WASH can be achieved with some champions like members of the district council who are on the DWTT.
- The learning alliance approach helped the district to think through systems-strengthening interventions using the District WASH Master Plan. An example was the joint Kabarole District, IRC, and National Water and Sewerage Corporation partnership to extend water supply to Kabende Sub-County in the northern part of Kabarole. This area was formerly marginalized, with poor surface and ground water potential. Springing from the District WASH Master Plan, works on these extensions commenced in 2019 and will be completed in 2021.
- Filling the financial gap requires diverse sources of funds; hence, finding alternative financing mechanisms is necessary, including partnerships with public service providers or private actors. It will be important to help key actors directly engage in resource mobilization from non-traditional WASH sources.

## Learning on Likelihood of Service Sustainability

For SWS in Uganda, the third contextualized learning question was: How does implementation of a multi-level learning alliance approach affect proxy indicators for WASH systems sustainability, i.e., the improvement of WASH systems strength?

The learning alliance approach entails implementing a learning and action change agenda with a focus on districts but including activities at regional, national, and other levels. The activity at higher levels varies across the different learning alliances.

Systems strength is measured using proxy sustainability metrics (for rural/small town water, using IRC building blocks and actor behaviors; for urban sanitation, using city service delivery assessment pillars). Systems strength is related to the likelihood of service sustainability. SWS also used sustainability scorecards and outcome mapping.

SWS hypothesized that:

- The learning and adaptation building block will improve as a result of an expanded and strengthened DWTT.

- An expanded DWTT that includes participation from sub-county levels will alter (positively) the network connections between communities and district-level actors.
- The expanded DWTT generates learning lessons from the district and sub-county levels that will be used to enrich the national WASH learning agenda and improve ways of working collectively.

### Context

This question focused on the overall effectiveness of the multi-level learning alliance approach and its value, as compared to having conducted the action research interventions separately. The aim of the learning alliance was to identify solutions, build capacity, and motivate collective action. SWS used proxy indicators and building blocks to assess whether the WASH system improved, as well as the extent to which SWS activities contributed to these changes.

The target for systems strength moved somewhat during implementation, with the central government updating the National O&M Framework and bringing new service delivery models (rural utilities) into Kabarole District. For this reason, engagement with the national level was also critical. IRC could not do “pure piloting of new ideas” because it was important to connect with and fit into emerging national priorities; thus, the team engaged at both the local and national level to ensure relevance and increase potential for scale and integration.

### Baseline

IRC divided the WASH systems into nine building blocks: institutional, legislation, finance, planning, infrastructure, monitoring, regulation, learning and adaptation, and water resources management (Figure 21).



Figure 21. IRC WASH System Building Blocks

The building blocks analysis of institutions (and coordination) and planning scored relatively high, and factor analysis shows how these stronger factors may be used as leverage points to address weaker building blocks such as infrastructure management and regulation (Table 7).

Table 7. Baseline 2017 and 2020 Building Blocks Assessment Informed WASH Systems Improvement Priorities of DWTT in Kabarole

Building Blocks	2017	2020	Change
Finance	2	3.2	1.2
Infrastructure Development	2.3	3.7	1.4
Infrastructure Management	2	3.4	1.4
Institutional	2.3	3.8	1.5
Learning and Adaptation	3	4.7	1.8
Legislation	2.3	3.5	1.2
Monitoring	3	4	1
Planning	4	4.1	0.1
Regulation	3	4.1	1.1
Water Resource Management	2.5	3	0.5
Average	2.64	3.75	1.11

*\*Note: All weights harmonized to maximum of 5.*

## Results

*Change in Sustainability Scorecards.* SWS used sustainability scorecards to track high-level changes of each coalition in five key areas of sustainability: financial, institutional, environmental, social, and technological. Reporting teams scored each key area of sustainability with a low, medium, or high ranking (with low being equal to a score of 1 and high being a 3). Figure 22 below shows the aggregate score of each of the five SWS geographies and their changes from 2018 to 2021.

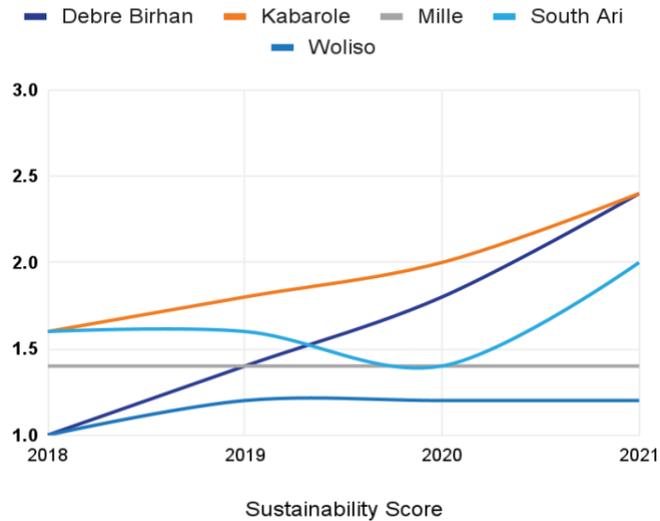


Figure 22. Sustainability Scorecard Graph

Over the course of the project, there has been an observed improvement in the sustainability scores in Kabarole District, changing from an average of 1.6 in 2018 to 2.4 in 2021. Results showed notable increments in institutional sustainability, which increased from 2 to 3 as a result of improved staffing in the District Water Office and more clarity in the roles and responsibilities of staff. This was underpinned by improved capacity of staff due to the capacity-building effort from partners and from the technical support unit. Results also noted further improvement in social sustainability, which increased from 1 to 3 as result of improved implementation of policies that address marginalization, including an increased focus in reducing service level inequalities. The last 2 years have seen Kabende Sub-County, which lies in the farthest north part of Kabarole and was formerly left out on service delivery, get more focus in increasing access to safe water supply.

An endline ONA found that Kabarole WASH actors sustained many of the relationships identified during the baseline study. Analysis of the stakeholder interactions showed that the quality of connections had improved between baseline in 2017 and endline in 2021. Interactions among stakeholders were more frequent, on a quarterly basis, and the DWTT was more closely linked. This is likely due to the frequent and consistent meetings of the DWTT and the IRC Uganda’s facilitation support.

The DWTT played a central role in coordination, planning, and resource mobilization for the development and implementation of the District WASH Master Plan. The involvement of the technical team and political leadership with decision-making power appears to have been a unique advantage of the DWTT. Their involvement enabled some decisions and activities to be implemented directly, without a need for wider lobbying or advocacy. In this sense, the DWTT not only provided a coordination platform but also influenced collection action.

*“We were locating about 1.8 million for the whole financial year for sanitation activities, but now our budget has 4 million Ugandan shillings that go to WASH, so it’s either sanitation activities or campaigns, [and] the*

*budget increase... has helped us. Secondly, as an individual it has helped me to mobilize resources. I have been able to write a proposal to [the] National Water and Sewerage Cooperation, and they have been able to build for us a five-stance latrine.” — Community Development Officer Mugusu Town Council*

Key informants interviewed for the network analysis agreed that the DWTT provided an effective learning platform for the WASH stakeholders in Kabarole. The adoption of the District WASH Master Plan played an important role in the creation of a shared agenda that informed DWTT actions. In addition, DWTT stood out as an influential platform for advocacy for a series of WASH issues such as influencing resource allocation, planning, and implementation.

*“The WASH Task team for me is an advocacy tool that has helped us mobilize stakeholders and come up with a Master Plan and identify WASH issues that we can manage. The WASH Task team is very useful as an advocacy team and also for resource mobilization.” — District Planner, Kabarole*

However, ONA results suggest that stakeholder engagement at the sub-county and community level remains weak, and key informants reported that sub-county actors have limited knowledge of the District WASH Master Plan.

Despite its perceived efficacy, long-term resources for a sustainable DWTT operation have not been secured. Identifying opportunities to institutionalize the platform through sustainable funding sources is a critical task required for the DWTT to continue pursuing its function in the long term.

At endline, the WASH building blocks analysis shows an overall improvement in the nine building blocks. Seven of the nine building blocks are in green (reflecting a high score), compared to one at the baseline in 2017. Three building blocks — infrastructure management, water resources management, and finance — moved from red to yellow. There is a need for the DWTT and all WASH stakeholders in Kabarole District to promote actions that will accelerate improvement in infrastructure development and management, water resources management, and WASH financing while ensuring that the gains in the other areas are maintained and improved further.

## **Conclusions**

- Evidence from building blocks analysis and context analysis in Uganda suggests that networking between regional and local levels can be effective to achieve national scale of local pilots, and that training and supporting local actors can improve their uptake and implementation of national initiatives and strategies.
- Local ownership and capacity, embedded in national institutions, is essential and would not be achieved without the additional learning loop offered in the learning alliance.
- Change in actual service levels will be slow but is expected in the longer term.
- These proxy indicators seem appropriate to assess likelihood of sustainability, based on their use in other contexts, but cannot be confirmed at this timescale.

## Final Conclusions

In Uganda, SWS facilitated learning and reflection on sustainable WASH services through convening and strengthening a learning alliance (DWTT), conducting action research, and building capacity of service institutions like the district authority and rural water services providers (HPMA and water supply services board). This approach has been slow, requiring more time for tangible results to emerge, but provides for more long-lasting solutions and strategies for sustainable WASH services.

Nevertheless, the team achieved key milestones to improve on planning and monitoring through the District WASH Master Plan. The DWTT is institutionalized and focused on influencing the district to prioritize WASH services in its planning and resource allocation through community engagement and political commitment to attain the goal of universal and sustainable access to WASH services. The success of the District WASH Master Plan will ultimately be judged by the extent to which it generates resources needed to fund its targets. The insights generated, recommendations made, and reports produced by the DWTT are key drivers of advocacy and lobbying to influence budget allocations toward WASH. With funding from SWS ending, the DWTT has requested financial resources from the district, and there is commitment across the board on continuing the platform, including from government stakeholders, but funds have yet to be made available.

The learning alliance enabled continuous and structured engagements with stakeholders. IRC Uganda played the role of the hub and helped influence the rapid growth of the learning alliance. SWS benefited from the complementarity of other programs with a strong sustainability component. These include the Hilton Safe Water Strategy, Watershed Community Empowerment Project, and Waterloo Foundation Project for universal access to WASH services. Links were developed to national processes, and learning went in both directions from the local to national levels through learning visits and engagement in events.

The source of the DWTT's influence is its membership. It is composed of individuals who are well connected and therefore able to carry its ideas and proposals directly to decision makers. Individual members in positions of authority can influence the actions and decisions of their respective organizations, thereby accelerating the change process. The success of the DWTT in mobilizing action is proof of how a diversity of actors — including politicians, technocrats, private sector, and civil society — can synchronize interests and effect change.

IRC will continue to support the DWTT in Kabarole to implement plans for achieving sustainable WASH services for all by 2030. District leadership has pledged to support the DWTT, and IRC will continue to follow up on this promise.

# Rural Sanitation Activity in Cambodia (WaterSHED, LINC)

## Context

Despite a number of intense WASH initiatives since the early 1990s, including large-scale subsidy and behavior change campaigns, challenges and gaps remain related to sector-wide improvements in sanitation services and hygiene practices within rural Cambodia. The country's current National Action Plan set a clear and ambitious vision for the WASH sector: "Every person in rural communities has access to safe water supply and sanitation services and lives in a hygienic environment by 2025." However, Cambodia still faces significant challenges to achieve this goal. These challenges include a lack of coordination between institutions and actors, a lack of government capacity, not enough funding, and not enough key group participation, such as women and the private sector. Actors do not use a uniform measurement system to implement and track WASH systems and outcomes.

### Strategic Objectives from Cambodia's National Strategy for Rural Water Supply, Sanitation and Hygiene

1. Water Supply: 50% of rural population will have access to improved water supply by 2015, and 100% by 2025.
2. Sanitation: 30% of rural population will have access to improved sanitation and live in a hygienic environment by 2015, and 100% by 2025.
3. Hygiene: 30% of rural population will practice basic safe hygiene behavior by 2015, and 100% by 2025.
4. Enabling Environment: By 2015, institutional arrangements, legal instruments and human resources will be in place and able to rapidly increase and sustain services.
5. Financing: Funding for capital and recurrent expenditure will be available.

### Challenges within the Rural Sanitation and Hygiene Sector

The sector faces a number of challenges related to a common approach throughout the sector and related to coordination and integration of efforts.

**Lack of coordination among actors.** The WASH sector in Cambodia has significant potential to improve. Historically, thousands of NGOs pursued insular and isolated initiatives, working through the Ministry of Rural Development (MRD) and a few large international aid agencies. However, little was done to align interventions, actors, resources, indicators, or a shared vision for the future, despite beneficiaries' and institutions' demands for better coordination.

**Lack of shared measurement.** Lack of uniform indicators and measurements across geographic regions means that WASH datasets are often of little use to others. In addition, data collection is often duplicated, indicating competition among actors with differing priorities, a weakness that the government recognized.

**Low government capacity.** Attracting, training, and maintaining government staff is a major challenge for the government. In addition, Cambodia's decade-long decentralization and deconcentration process transferred many rural WASH responsibilities to sub-national authorities who had little access to WASH training. These sub-national offices often perform WASH duties with little oversight or accountability.

**Lack of clarity around how to engage business.** Private sector participation in sanitation service provision is necessary to achieve sustainable targets. Given this need, the government and major development institutions in Cambodia agreed that institutional structures and policies that include greater and more easily facilitated private sector involvement need to be established and implemented.

### Opportunities for Sector-Wide Alignment

The timing of SWS activity coincided with a number of key opportunities for sector progress, including the government's launch of the National Strategic Plan and major WASH initiatives that aligned with the plan from key agencies such as the Asian Development Bank.

**An opportunity to align sector activities with government priorities.** The creation and launch of the 2016 National Strategic Plan provided a basis for sector-wide alignment with government priorities and goals. The plan includes an overarching results framework, a medium-term action plan, specific activities, outputs, timelines, estimated resources, and a results framework. Improved sector-wide coordination could increase support for and lead to greater achievement of the goals set forth within the plan.

**An opportunity to align major donors and actors.** A handful of large donors planned, designed, or began implementing activities. The World Bank water practice designed a technical assistance program to support government training and plan implementation. The Asian Development Bank also kicked off a large project that potentially aligned around the plan, as did the Stone Family Foundation, a major WASH sector donor. In addition, the Water Supply and Sanitation Collaborative Council's Global Sanitation Fund designed the second phase of the Cambodian Rural Sanitation and Hygiene Improvement Project, a 5-year grant program to fund interventions across selected provinces. A supported, collaborative rural sanitation and hygiene sector could affect greater complementarity among sector programs, increase alignment among actors, and expand information sharing on progress, challenges, and needs.

**WaterSHED's positioning as a sector-wide convener and facilitator.** Since 2009, WaterSHED, a local NGO, has been deeply engaged in the Cambodian rural sanitation space. It pioneered several market-based approaches to WASH, led the collaborative development of an open-source behavior change toolkit now in use by nearly 30 organizations, designed and launched several essential WASH products, and carried out formative research to educate the wider sector. After establishing itself as a credible partner of various ministries at both national and sub-national levels, WaterSHED had the knowledge, relationships, and government trust to oversee a program aimed at sector-wide collaboration and integration of both major and more-localized rural sanitation and hygiene (RuSH) sector actors.

## Approach

To achieve improved sanitation and hygiene outcomes through enhanced and better-coordinated programs, SWS sought to improve RuSH sector collaboration and cohesion through a collective action approach. WaterSHED led the activity with support from LINC, which sought to operationalize USAID's Local Systems Framework in Cambodia's RuSH sub-sector by:

- Mapping and analyzing Cambodia's RuSH system (both the key factors and the network of RuSH actors) to identify leverage points and help actors recognize their role in the system;
- Developing a locally led and locally owned platform (including government, donors, and the private sector) to identify larger goals, align efforts, coordinate investment, and monitor progress; and
- Transferring this platform to local ownership, and in turn empowering the MRD to increase its facilitation and coordination of RuSH sector-wide activities and functions.

WaterSHED and LINC designed this activity, entitled the collective action activity (also referred to throughout this report as “the activity”), guided by a number of overarching principles from collective impact theory and other frameworks for collaboration, including:

- **Continuous adaptation:** Embrace continuous adaptation and be prepared to realign and/or modify the project if it is not achieving adequate progress and local buy-in.
- **An activity cannot do everything:** Map and understand the full system, while strategically intervening at points of opportunity, leverage, or constraint.
- **Establish shared resources and support:** Design and launch a sector-support entity (or a “backbone” organization) to support sector-wide integration, coordination, and growth.
- **Systems depend on people:** Relationships, processes, incentives, regulations, etc., all depend on the leadership, capacity, and motivation of the local people who design and execute them.

In addition to the collective action activity, SWS also implemented a leadership development program, entitled Fostering Civic Champions (FCC), aimed at building local leaders that can advocate for and realize improvements in local sanitation and hygiene practices and services in their communities. The FCC activity and its findings are summarized within this report and discussed in greater detail on the WaterSHED website.<sup>14</sup>

## Implementation Summary

### Timeline for Collective Action

- September 2016: Project inception; collective action initiative launched. SWS officially launches the collective action initiative within Cambodia's RuSH sector.

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<sup>14</sup> Available at: <https://watershedasia.org/civic-champions/>

- February 2017: Monitoring and learning workshop. Learning team meets to develop a theory of change, develop monitoring and learning activities, and review gap analysis.
- April 2017: Backbone entity proposed to RuSH. WaterSHED presents the idea of a backbone for collective action for RuSH, as well as priority areas of focus (coordination, monitoring information system rollout, National Action Plan II development).
- June 2017: Convening of leadership roundtable. Leadership roundtable meets to determine initial approach, structure, level of inclusion, and accountability mechanisms and decides that a technical working group sub-committee will oversee the backbone.
- June 2017: Collective action plenary workshop. Over 70 network members come together to introduce both the RuSH collective action initiative and the methodologies for ONA and constituent-driven systems assessment (CDSA).
- July–September 2017: Network and systems analysis. LINC and WaterSHED undertake network and systems analysis.
- October 2017: Technical working group sub-committee formation. A technical working group sub-committee is formed to oversee the backbone RuSH support team.
- December 2017: Collective action network and systems analysis workshop. More than 100 participants take part in an ONA, systems mapping, and factor analysis consultative workshop.
- November–February 2018: Develop and circulate backbone organization planning materials. WaterSHED develops and presents support documentation, including terms of reference, support team structure options, governance options, and a communications plan.
- August 2017: Hiring of collective action consultants. WaterSHED hires Community at Work, a U.S.–based consulting firm aimed at collective and collaborative activities, to support project implementation.
- February 2018: Withdrawal of MRD support and proposed pivot to provincial level. Primary stakeholder WASH working group, under the MRD, withdraws support for an independent backbone, as proposed under the activity; WaterSHED develops a pivot plan to work instead at the provincial level.
- May 2018: Decision to end collective action activities. Based on review of the pivot plan, SWS management makes the decision to end the collective action activities and to not pursue the pivot to the provincial level.
- December 2018: Completion of activities. Final SWS activities, notably the FCC program, are completed, and the concept program ends.

#### Timeline for the Fostering Civic Champions Program

Beginning in 2011, prior to SWS implementation, WaterSHED launched and has been successfully implementing the FCC leadership training program throughout the RuSH sector, aimed at empowering local champions for improved sanitation within communities. Commencing in October 2017, WaterSHED and the MRD held a meeting to discuss parameters for the selection of target provinces and districts. MRD deferred the selection decision to provincial authorities. Meetings followed with the chairpersons of six WASH provincial working groups. Based on key selection criteria, WaterSHED

identified 5 provinces, 11 districts, and 92 communes to participate. SWS held provincial workshops in each of the five target provinces to introduce the FCC program and garner support. SWS then launched training and development activities in early 2018 in three rounds, all of which were completed by the end of 2018. See Figure 23 below for more details.

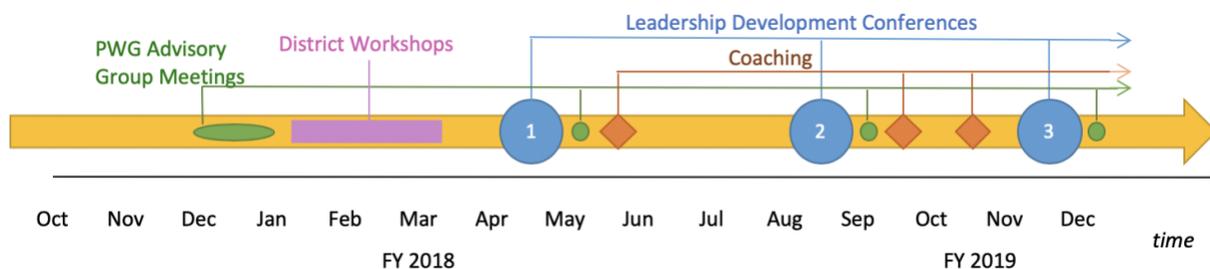


Figure 23. Fostering Civic Champions Leadership Development Program Timeline

### Implementation Narrative

SWS activities encompassed two broad categories: (1) national-level collective action activities (the primary subject of this report) that sought to strengthen the RuSH network and improve RuSH sector efforts, and (2) local leadership training activities via the FCC model.

FCC activities were separate from the collective action activity and are reported upon within specific FCC sections through this report.

Implementation of the collective action activity can be divided into five phases, listed here and discussed further below in greater detail:

1. Activity inception, planning, and design
2. ONA and CDSA
3. Findings validation workshop
4. Backbone organization design and negotiation
5. Government hesitancy and activity closeout

#### Activity Inception, Planning, and Design

Shortly after SWS program inception, WaterSHED met with its primary government counterpart, Cheary Pom, Director of the Rural Health Care Department within MRD, to discuss and receive MRD support. Director Pom supported the program, and WaterSHED and MRD signed a Memorandum of Understanding in early 2017. After some initial planning for the activity — including a monitoring and learning workshop with UCB and Environmental Incentives staff from SWS — WaterSHED prepared an initial proposal for the collective action activity, which it presented to the MRD-led working group for the RuSH sector (referred to as the RuSH sub-group) in April 2017. The initial plan focused on the creation of a collective action network support entity, later referred to as the “backbone.” As a note, the RuSH sub-group became the primary stakeholder group for the collective action activity because it included both MRD decision makers and large-sector actors and organizations (e.g., WaterAID, the World Bank).

RuSH sub-group membership supported WaterSHED's proposal in principle, and discussions progressed regarding what areas the backbone should support. The sub-group agreed to four initial priority areas, including (1) sector-wide capacity strengthening, (2) data coordination and sharing via a newly designed and initially launched monitoring information system, (3) support for the National Action Plan review and subsequent National Action Plan II development process, and (4) support or leadership of thematic group initiatives (e.g., vulnerable populations access). To identify the specific actions and focal areas of the backbone, WaterSHED and LINC began the planning and design of a sector-wide systems analysis to include both an ONA of all mid- to large-scale sector actors and a CDSA to better understand the dynamic and interacting factors impacting sector function.

#### *Organizational Network Analysis and Constituent-Driven Systems Assessment*

WaterSHED and LINC performed a sector-wide assessment aimed at understanding the actor network and interacting factors that supported, constrained, and influenced the ways in which Cambodia delivered rural sanitation and hygiene services. WaterSHED and LINC selected two technical approaches: (1) an ONA, which maps and analyzes the actor network of interactions based on member interviews and inputs, and (2) a CDSA, which develops interacting factor maps (e.g., causal loop diagrams) based on sector constituents' input. To undertake these assessments, WaterSHED and LINC analyzed in-depth interviews with more than 100 sector actors. The analysis mapped both connections and gaps within the RuSH network (e.g., identified organizations disconnected from broader sector groups) and identified causal loops of interacting system factors (e.g., access to finance) that impact services and the achievement of National Action Plan goals. A June 2017 collective action plenary workshop kicked off the process, presenting the overall goals of the collective action activity and introducing RuSH sector participants to network analysis and systems mapping. WaterSHED and LINC conducted interviews from July to September. They then assessed and analyzed content in detail and presented it during a December 2017 consultative workshop.

#### *ONA/CDSA Consultative and Validation Workshop*

In December 2017, WaterSHED and LINC convened a consultative workshop in Phnom Penh to discuss and validate ONA/CDSA findings and to garner feedback on participation in and the utility of the ONA/CDSA process. Invitees to this workshop included organizations and individuals that participated in the assessment interview process determined by the scale of their work in RuSH. Specific criteria included a permanent office in Phnom Penh and a commitment to RuSH, as demonstrated by at least one of the following: a strategy or mission that includes a focus on RuSH; three or more staff that spend at least 50 percent of their time on RuSH issues; and/or an annual budget for RuSH activities of at least \$25,000.

Additionally, the workshop sought to engage stakeholders with the data and promote interaction with the systems maps and findings to broaden sector-wide understanding of the way the RuSH sector functions, as well as the constraints and opportunities embedded within the system and network of actors. Primary findings from the ONA/CDSA process, validated and refined through the workshop, include the following:

- Network interconnectivity disparities exist based on gender and language.

- The MRD is well-positioned to lead improved coordination and collaboration.
- Existing thematic sub-groups within the network represent strong models for coordination.

Participants expressed a positive sentiment overall regarding the value of the ONA/CDSA and associated workshops. The presentation of the results in both Khmer and English appeared to be effective, and nearly all interviewees found the ONA results to be interesting, potentially actionable, and particularly relevant when seeing how their organization connects with others and how central they are in the sector. However, when asked 1 year later about using the ONA results, no interviewee had used or heard of another organization using the results at the time of the interview, and only one planned to use the results in the future.

### *Backbone Organization Design and Negotiation*

After the ONA/CDSA assessment, WaterSHED proceeded with its plan to design and establish a backbone organization for the RuSH sub-group. The backbone would have the mandate to administer all collective action work in Cambodia, both during and after the implementation of the WaterSHED collective action activity. To aid in WaterSHED’s design and planning efforts, it hired U.S.–based consultants to advise on the sector consultation process and collaborative design of the backbone. This included the creation of a thinking group called the leadership roundtable (also referred to as the steering committee, as noted by one local NGO) that planned to use “checkpoints,” or intermediate steps, throughout the process of designing and launching the backbone organization.

Design of the backbone included three primary areas: (1) technical functions of backbone staff and overall areas of focus, (2) governance structures and financing models, and (3) transition planning, moving the backbone from WaterSHED to MRD oversight. In terms of functions and focus areas, WaterSHED developed position descriptions and planning documents for the team’s work areas, which initially focused on capacity building and facilitator functions, and included staff focused on communication, training, and facilitation. WaterSHED also proposed that technical staff support the RuSH monitoring information system development, launch, and integration sector-wide.

Initially, WaterSHED planned to hire backbone employees as its own staff and pay their salaries. Over time (theoretically by the end of SWS–funded WaterSHED activities in late 2019), such staff would be transferred either to its own independent organizational structure and pay (sector actors would fund in some manner) or to direct MRD oversight. Given this transition, WaterSHED led the development of options for such governance of the backbone. Governance options proposed and considered ranged from RuSH membership representational oversight (i.e., a board of members that would oversee the backbone) to more traditional models that leaned less on collaborative governance and more heavily on the supervision of an executive director. None of the initial governance options proposed that the backbone be part of the MRD directly, but rather that it would be transitioned to more-formal MRD oversight after its establishment and regular functioning. In terms of transition post–SWS, WaterSHED’s plan to achieve its program goals primarily involved strengthening MRD’s support of, resources dedicated to, and ownership of the sector. As MRD’s role in overseeing the backbone increased, WaterSHED would be able to exit its management of the backbone organization, which would remain quasi-independent, despite MRD oversight.

### *Government Hesitancy and Project Closedown*

While WaterSHED continued its planning and design of the backbone, with significant advising from consultants, questions began to emerge among RuSH stakeholders and MRD staff. Post-activity interviews noted that many stakeholders remained unclear about what the backbone's functions and tasks would be, what role it would play both independently and within existing mechanisms (e.g., RuSH sub-group meetings), and what staff profiles would consist of. Stakeholders also remained unclear on who the backbone would report to, how it would be supervised (i.e., by the Cambodian government and/or WaterSHED), and how it would be sustained financially beyond the duration of SWS. Discussion with MRD regarding the independence of the backbone, and its associated funding, began to illuminate tensions between WaterSHED's and MRD's visions for the activity. Ultimately, MRD withdrew its support for the activity in March of 2018, the timing of which coincided with other tensions between government ministries and international donors.

Once MRD withdrew support, WaterSHED developed a plan to pivot the collective action work to the sub-national level. The new proposal would apply systems analysis at the provincial level, using the provincial WASH working groups as the primary stakeholders, and then design and implement systems-strengthening activities based on the findings of the analysis. USAID (USAID/Washington and USAID/Cambodia) and UCB considered this pivot option but ultimately decided against its pursuit based on (1) its tenuous alignment with the overall SWS theory of change, (2) the limited time remaining to both launch and fully implement a new initiative, and (3) a lack of clarity regarding how to avoid similar MRD concerns for the newly proposed activities. WaterSHED and LINC shifted to closing down the collective action activities and completing all final reporting, which took place in December 2018.

### *Fostering Civic Champions*

FCC was a leadership development program that included a series of 3-day conferences and regular coaching sessions that guided commune councilors (the lowest political level of government within Cambodia) through three cycles of community and sector leadership, entitled "Discover, Develop, and Deliver." During the conferences, participants "discovered" new leadership skills and planned how to realize them. In the 3 months between conferences, they "developed" their skills and implementation plans through practice and coaching sessions. Finally, participants "delivered" on their plans and received feedback on their progress from their peers and superiors. Plans for delivery could be personal actions, such as discussions with community members, or more political-level actions within the commune council. WaterSHED completed the Discover, Develop, Deliver cycle three times over a 10-month period. A capstone alumni event followed 6 months later.

In terms of implementation, FCC launched in October 2017 with MRD agreement. Decisions regarding who should participate were deferred to the provincial level. Based on key selection criteria, WaterSHED identified 5 provinces, 11 districts, and 92 communes to participate. WaterSHED held provincial workshops in each of the five target provinces to introduce the FCC program and garner support. WaterSHED had district-level recruitment workshops next on its agenda; however, a court ruling dissolving the opposition party in November 2017 delayed the recruitment of commune councilors until the government nominated new ones and officially installed them in the vacated positions. Furthermore, the government deferred the national senate election scheduled for January

2018 until February 2018, further delaying participant recruitment at the district recruitment workshops. The first cycle of FCC activities began in July 2018 and concluded in December 2018, by the time SWS completed its activities. See Table 8 below for a summary of participation.

*Table 8. Commune Councilor Participation in Discover Conferences by Cohort*

Cohort	Number of Participants				
	Discover Conference 1	Discover Conference 2	Discover Conference 3	Discover Conference 4	Alumni Event
1. Battambang/Pailin	35 (7F/28M)	40 (8F/32M)	33 (8F/25M)	Not yet held	Not yet held
2. Kampong Cham	38 (15F/23M)	37 (16F/21M)	40 (14F/26M)	Not yet held	Not yet held
3. Tbong Khmum	29 (13F/16M)	24 (12F/12M)	27 (14F/13M)	Not yet held	Not yet held
4. Takeo	38 (11F/27M)	40 (12F/28M)	Not yet held	Not yet held	Not yet held
<b>Total</b>	<b>140</b> (46F/94M)	<b>141</b> (48F/93M)	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

## Testing Our Theory of Change and Answering Our Learning Questions

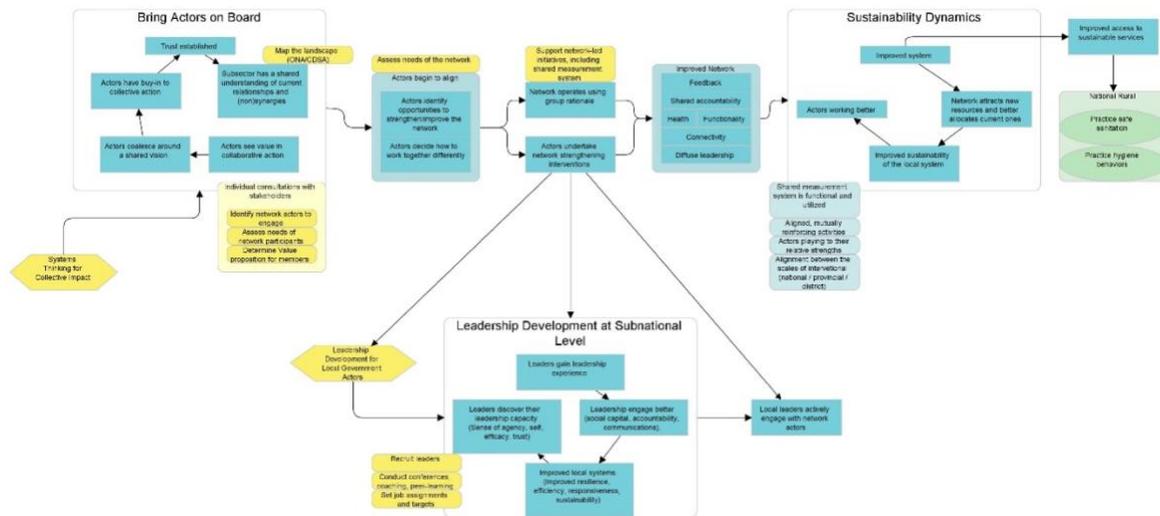


Figure 24. Cambodia Theory of Change

As shown in Figure 24 above, SWS’s theory of change can be broken down into three main steps.

### Step One: Bring Actors on Board

As the first step, the project team identifies network actors to engage, assess their needs, and determine the value proposition for each member, resulting in actors seeing value in collaborative action. This process happens at the individual organization’s level through consultations with network actors. If network actors see value in collaborative action — if they see that they are able to achieve more together than as individual organizations — then they coalesce around a shared vision, which in turn translates into network actors having buy-in to collective action and trust between actors. As a result of trust being established, the sub-sector has a shared understanding of current relationships and (non)synergies. This is facilitated by mapping the stakeholder landscape using ONA to understand the interactions and relationships among organizations within the RuSH subsector and CDSA to understand the dynamics of various efforts and interventions to achieve sector-wide goals. Once some actors have been brought on board through the above process, more non-network actors will see the value in joining the network. This will form a self-reinforcing cycle of attracting new members to join the network, which will eventually become a self-perpetuating dynamic.

If the subsector has a shared understanding of current relationships and (non)synergies, actors will identify opportunities to strengthen the network and decide how to work together differently; in sum, they begin to align. An assessment of the needs of the network drives this process. If actors begin to align, then they will undertake network-strengthening interventions and the network will operate using a group rationale. Driving these results will be activities to support efforts toward a common measurement system and toward catalyzing existing sector mechanisms. If actors undertake network-strengthening interventions and operate using a group rationale, then the network will be improved.

Improvements can be in the following areas: feedback mechanisms, shared accountability, network health, functionality, connectivity, and/or diffuse leadership.

### *Step Two: Sustainability Dynamics*

An improved network will translate into actors working better, which includes a functional and utilized shared measurement system, aligned and mutually reinforcing activities, actors playing to their relative strengths, and alignment between the scales of intervention (national, provincial, and district-level). If actors work together better, the system will be improved. An improved system will attract new resources (project funds, members, information, etc.) and will better allocate current resources. Better-allocated and more-available resources will result in improved sustainability of the local system, which in turn leads to actors working better. Similar to the onboarding dynamic, actors working better, improving the system, attracting and better allocating resources, and improving sustainability will become a dynamic that strengthens sustainability and maintains the system.

### *Step Three: Leadership Development at the Subnational Level*

If the system is improved — i.e., activities are aligned and mutually reinforcing, actors play to their relative strengths, the national and sub-national levels align, and a shared measurement system is functional — then access to sustainable services will improve. Finally, improved access to sustainable services will lead to better practices of safe sanitation and hygiene behaviors.

### **Learning on Systems Understanding**

The SWS partnership-wide Learning Question 1 explores both the input and output side of strong stakeholder understanding of the systems in which they operate.

- Learning Question 1: How do different factor/actor systems approaches improve stakeholder understanding of the system's components, their interactions, and how they influence the sustainability of WASH services?

Under this broad area of learning, SWS sought to explore two contextualized learning questions related to systems understanding:

1. What influences actors to join and participate in network-strengthening efforts and align their activities with the network?
2. What are the strengths and weaknesses of the current network?

Given that the learning questions and activities focused on the RuSH network and its function, a sector-wide network analysis and associated stakeholder-centric factor analysis served as the primary vehicle for exploring these questions.

### **Baseline Activities (ONA/CDSA)**

As discussed previously, WaterSHED and LINC undertook a detailed ONA and CDSA, with the primary goal of understanding and documenting both (1) individual organizations' understanding of their system and network and (2) a complete, composite network of actors and system of factors for the national

rural sanitation and hygiene sector. The baseline is discussed in brief below and in more detail within the full baseline report.<sup>15</sup>

## **Methodology**

WaterSHED and LINC launched the ONA/CDSA process through a kickoff workshop (see Implementation section above for details). Using the draft maps as a basis for discussion, WaterSHED and LINC conducted a consultative workshop in December 2017, during which participants provided feedback on, revisions to, and interactions with the network and system maps.

## **Findings**

Based on the results of the analyses and subsequent validation and input from participants, WaterSHED developed a number of general findings.

### *Network Structure Findings*

**Network interconnectivity disparities exist based on gender and language.** When looking at less-connected organizations within the network, both the language of the interview conducted and the gender of the head of the organization served as indicators of disparities among organizations. On average, female-run organizations reported fewer than 60 percent of the number of connections as male-run organizations. Female-run organizations averaged less than half of the betweenness centrality of organizations as male-run counterparts, meaning they are much less likely to be an informational bridge between two other actors. Additionally, organizations interviewed in English (based on their preference) had more than 80 percent more connections than organizations interviewed in Khmer. These two findings indicated a clear area for improvement regarding network inclusiveness and interconnectedness.

**The Ministry of Rural Development is well positioned to lead improved coordination and collaboration.** MRD is by far the most centrally positioned actor within the network, as well as the most frequent bridge between other actors who are not directly connected. Given this, MRD is the logical entity to lead coordination and collaboration sector-wide, which aligns with its existing mandate to do so.

**Existing thematic sub-groups within the network represent strong models for coordination.** A number of sub-groups within the broader RuSH network focus on specific technical areas, such as the sub-group on sanitation in challenging environments (e.g., flooded areas) or the sub-group on fecal sludge management. These groups represent strong, connected sub-networks that exhibit a high level of coordination among members. Exploring the ways in which these sub-groups function could help model improved network functions sector-wide.

An interactive version of the system map can be found online.<sup>16</sup>

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<sup>15</sup> LINC. 2018. Network Analysis and Systems Assessment for Sustainability in the RuSH Sector in Cambodia. Available at: [https://www.globalwaters.org/sites/default/files/SVWSCambBaseline\\_Report.pdf](https://www.globalwaters.org/sites/default/files/SVWSCambBaseline_Report.pdf)

<sup>16</sup> Available at: <https://embed.kumu.io/11cab1cdd663aba677c6cd60809bfa50#rush-sector-map>

### *Stakeholder Understanding Findings*

While SWS did not capture shifts in stakeholder understanding and subsequent actions due to the lack of an endline, the process of planning, performing, and validating the baseline did elicit some findings on how to engage stakeholders. Additionally, UCB post-activity interviews with participants also provided some insight into the process of influencing stakeholders' understanding. Summarized findings are included below.

**More discussion and conversation with participants prior to the ONA would have benefited the process and clarified its utility.** Some participants, notably ones from international NGOs, questioned the need for the ONA overall, given a recent 2014 World Bank sector mapping exercise. Because of the large time and resource costs sector-wide associated with the ONA (two workshops, 99 detailed interviews that lasted up to 90 minutes each), greater clarity on the ONA's purpose, as well as the purpose and planning of the overall collective action activity, would have been useful to participants.

**While interesting, the ONA results were not inherently actionable.** Many findings of the ONA, as presented and interacted with during the consultative workshop, surprised and interested participants. This included the clear and overwhelming centrality of MRD, the barriers faced by Khmer-centric and women-led organizations, and the overall vision of the full network. However, participants took limited or no actions as a result of the network findings and dissemination, and no organizations used the ONA results for a specific purpose. Presumably, WaterSHED intended to take the majority of subsequent actions based on the ONA, as well as the backbone organization once established, but in their absence, it was not clear if the knowledge conveyed had utility to actors on its own.

**Engaging stakeholders in interpreting, understanding, and acting on systems analyses is challenging.** The highly participatory and interactive December 2017 consultative workshop provided stakeholders with the opportunity to learn about and interact with the data. This was believed to be an important step both for the stakeholders to begin to interpret and act on the data and for the LINC and WaterSHED teams to gain further insight into the context and improve the presentation of results. However, this set of analyses is generally new to many stakeholders for several reasons. First, the team introduced new concepts: in particular, the network analysis data collection as a census and the data structure built around relationships, as well as coding of factor analysis open-ended responses. Second, it is much more common to present findings than to gather input from stakeholders in a consultative workshop. Additionally, these stakeholders are used to reviewing data about rural households, not data about themselves. Combined, these conditions require that the stakeholders spend more time to absorb the data and their implications and continue to contemplate results and next steps.

### **Reflections and Recommendations**

In revisiting the activity as implemented, the most notable finding is the limited utility of improved understanding of the RuSH system map and network, disconnected from a broader activity set or a champion empowered to act based on this knowledge. The full sector was prepared for, engaged during, and consulted after the network analysis and system mapping exercise. When WaterSHED and LINC provided the RuSH network with the final report and associated information sets — some of which they presented in a highly interactive way and specifically curated for sub-groups — they made network actors fully aware of what the information represented, including the location of individual actors and

organizations within maps and networks. However, the actors took limited to no actions as a result, and it is unclear whether any organization used this information for any specific purpose.

As a recommendation based on this reflection, it would not be advised to undertake systems-wide mapping exercises without a clear follow-up plan that included both actions to address the findings of network and/or systems mapping analyses and a clear leader and responsible entity to initiate, maintain, and oversee such resulting work.

In summary, improved stakeholder understanding does not inherently improve systems strength or function.

### *Fostering Civic Champions: Learning Regarding Stakeholder Understanding*

In terms of systems understanding, the goals of the FCC program centered around improvements in understanding and increased empowerment of individuals themselves, which in turn results in actions individuals take within their own communities.

As a result of participation in the FCC program, there are indications that participants are starting to think and act differently from one conference to the next. For some participants, public recognition and kudos create a strong sense of pride and promote a willingness to do more.

*“It is the first time in my life to get a medal. I have worked for more than 40 years and never got any recognition. Thanks so much ... for this great event. It inspired me to work more.”* — Medalist, Kampong Cham, female

One commune team in Takeo Province is comprised of three commune councilors. When considering their higher target than smaller commune teams, they said that they know their target is set higher than any other communes, but they are prepared to accept the challenge.

*“The program is really good, the training methodology is very interesting and different from other trainings we have joined before, and the leadership skills are very valuable for us and can be applied to other sectors as well. We applied to join the program not only for the sanitation uptake but because we want to build our leadership capacity.”* — Commune Team, Udom Soriya Commune, Tramkok District, Takeo Province, male

For many, this program helps develop confidence and key skills such as public speaking and communication.

*“Thanks ... for bringing the change to our community, especially my commune. Without your support I do not think we could have such sanitation coverage, especially the knowledge and confidence that I can get from you.”* — Prey Slek Commune, Treang District, Takeo Province, male

*“I joined a leadership training with WaterSHED before and I realize that I had changed so much. Not only in my work progress, but my personal attitude to communicate with other staff within the commune and people. [It’s] not only myself who sees the change, but people who used to communicate with me [are] asking what are the reasons, why I did change a lot in communicating with people in a good manner? I told them, through joining with ... [the Civic Champions] program it gave me the best reflection for myself, what I have done and not, and what I need to change.”* — Oudom Sorya Commune, Tramkok District, Takeo Province, male

The opportunity for personal development in terms of knowledge and confidence was attractive for other commune councilors. One of the commune councilors in Takeo shared why he joined the program:

*“I decided to join this training because my relative, who works in another commune, previously joined this program and he told me, ‘Please do join this training because it is really good. You should join because through this program I have changed myself a lot. If the commune does not have budget, just pay by yourself because you will get even more value than this money.’ From what my nephew told me, it convinced me.”* — Participant, Takeo Province, male

Overall, the FCC activity broadened its participants’ understanding of their role and possible influence in the sanitation situation within their communities and local governments. The activity placed emphasis more on the individual’s understanding of how services can be improved and how changes can be realized, as opposed to an understanding of the interacting factors or network of actors involved in the delivery of a specific service. Ultimately, the activities demonstrated the value of building individual knowledge and ownership over rural sanitation.

### Learning on Systems Strengthening

The SWS partnership-wide Learning Question 2 explores ways in which a system or actor network can be strengthened, both in terms of the network of actors and the system of interacting factors that deliver a specific WASH service.

- Learning Question 2: How do selected interventions influence, improve, and/or strengthen the system?

Under this broader area of learning, SWS sought to explore one contextualized learning question related to systems strengthening:

- I. What conditions improve the network health within the RuSH sub-sector?

While WaterSHED aimed many planned activities at strengthening the RuSH network and addressing specific constraints within the RuSH system map, these activities had barely begun, and none were completed. Given this, WaterSHED identified limited insights into the above learning question. For more general insights into the role of collective action approaches within WASH systems-strengthening activities, see the full network analysis report.<sup>17</sup>

### Fostering Civic Champions: Learning Regarding Systems Strengthening

In addition to individual empowerment, a secondary goal of FCC is the development of local networks through which graduated champions can exchange information, share successes and strategies, and motivate each other. The findings regarding network strengthening are anecdotal (as opposed to

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<sup>17</sup> LINC. 2018. Network Analysis and Systems Assessment for Sustainability in the Rural Sanitation and Hygiene Sector in Cambodia. Sustainable WASH Systems Learning Partnership. Available at: <https://drive.google.com/file/d/1OkCYZz0cWuoNbr7UMA6D1dBTekSWYoWg/view>

quantitative via network analysis), but they do indicate improvements in both the strength and the functions of networks of FCC graduates and their engaged stakeholders.

As conferencing and on-the-job activities got underway, some teams began specifically acknowledging the value of stakeholder involvement and the need to work collectively to achieve goals. Teams have developed more specific ideas about who to engage in their networks, such as a village focal person, relevant line departments, commune chiefs, village chiefs, a councilor responsible for women and children, elders, and school presidents.

Some participants and trainers have mentioned the improved cooperation with trainers, provincial working groups, district WASH working groups, commune chiefs, and village chiefs that have emerged through this program. Some have highlighted improved cooperation with external stakeholders, including microfinance institutions, latrine supply businesses, and other NGOs and private individuals who are providing support to vulnerable people, including widows, people living with disabilities, and the elderly.

### Learning on Likelihood of Service Sustainability

The SWS partnership-wide Learning Question 3 explores ways in which a system can be strengthened, both in terms of the network of actors and the system of interacting factors that deliver a specific WASH service.

- Learning Question 3: How do selected interventions increase the likelihood of service sustainability?

Under this broader area of learning, SWS sought to explore one contextualized learning question related to systems strengthening:

- I. How does taking a collective impact approach affect the WASH service delivery system?

Given the limited implementation of the overall SWS activity, notably the fact that WaterSHED never established the backbone, SWS identified limited insights into the above learning question. For more general insights into the role of collective action approaches within WASH systems strengthening activities, see the flagship report on collective action in WASH.<sup>18</sup>

### **Fostering Civic Champions: Learning Regarding the Likelihood of Service Sustainability**

Given the program's limited time duration and its distance from direct service providers, SWS achieved limited insights into the effects of the FCC activity on the long-term functions and sustainability of sanitation services.

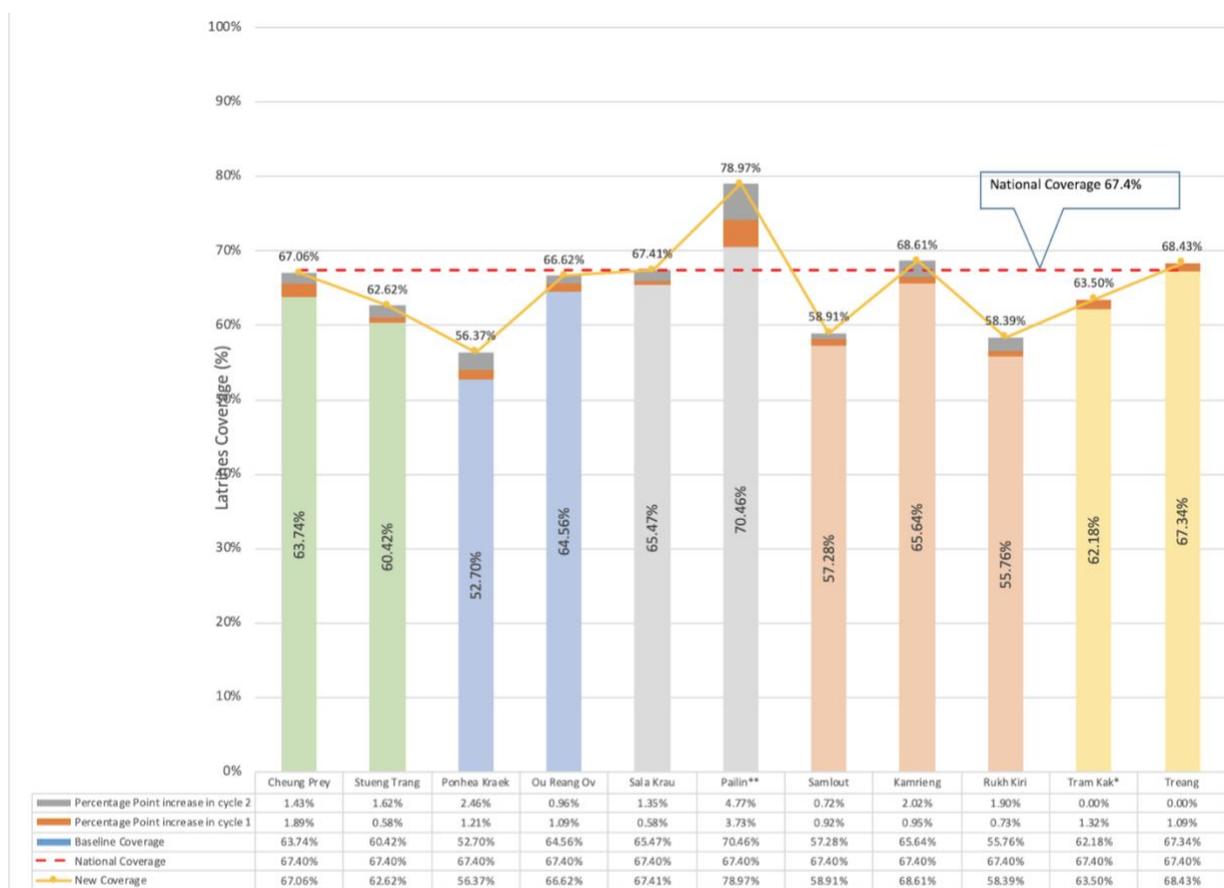
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<sup>18</sup> Peabody, S., Pugel, K., Javernick-Will, A., Mussa, M., Dimtse, D., Buhungiro, E., and Mukanga, J. 2021. Collective Action in WASH : Lessons and Findings from 11 Collaborative Approaches. Sustainable WASH Systems Learning Partnership. Available at: [https://www.globalwaters.org/sites/default/files/2021-10/Collective\\_Action\\_in\\_WASH\\_final\\_.pdf](https://www.globalwaters.org/sites/default/files/2021-10/Collective_Action_in_WASH_final_.pdf)

However, baseline/endline data on latrine uptake and use within FCC geographies highlight promising improvements to current service levels. In the first cycle, 18 percent of districts (2 of 11) achieved a 1.5 percentage point or greater increase in sanitation coverage. In the second cycle, 44 percent of districts (4 of 9) had achieved greater than a 1.5 percentage point increase in sanitation coverage.

In total, the 87 participating communes in 11 districts gained 5,065 latrines in 7 months. Prior to commencement of the leadership development program, only 9 percent (1 of 11 districts) met or exceeded the national rural sanitation coverage average of 67.4 percent. After completion of the second cycle, 36 percent of districts (4 of 11) exceeded the national average.

Figure 25 below shows the average percentage point increase in sanitation coverage in participating districts over the course of two cycles (6 months). The districts of Tramkok and Treang in Takeo Province show only data from the first cycle because the second was still in progress.



Data sources: District Baseline coverage: Commune latrine census (2018); Percentage point increase: Commune latrine uptake record, (end of each cycle); National Coverage CSES (2016)

\* Four communes did not participate in the FCC Program.

\*\* One commune that did not participate in the FCC Program.

Note: Tramkok and Treang districts have not yet completed cycle 2

Figure 25. Change in Sanitation Coverage of 11 Districts in 5 Provinces Participating in FCC Program at Baseline, Cycle 1, and Cycle 2

## Final Conclusions

### Reflections on Program Theory of Change, Design, and Outcomes

A summary of program-wide reflections is provided below, mostly focused on the early stages of the theory of change, including the establishment of trust and agreement, and the design and implementation of baseline activities.

**Trust and mutual understanding are critical to ensuring sector support.** At the project's onset, WaterSHED sought (and reasonably believed it had secured) MRD buy-in over the collective action process and approach. However, it later became clear that a high- and general-level of understanding of a program of this complexity (notably one that set out to develop a parallel organization that would later be transferred to government ownership) proved insufficient. Initial clarity and agreement at activity launch regarding (1) the development of a backbone organization, (2) its level of independence, and (3) a general transition plan for backbone staff and functions after SWS ends needed to ensure that government support would continue to apply to project activities. Greater clarity may have prevented later misunderstandings and frustrations on all sides.

**Systems can be better understood; strengthening them requires more than knowledge.**

WaterSHED and LINC successfully designed, socialized, implemented, validated, and completed a large-scale, sector-wide analysis of both the actor network and system of factors via the ONA/CDSA. This large undertaking resulted in validated, broadly understood, and widely disseminated sector-wide analysis. However, once WaterSHED suspended its collective action activities, limited or no further sector actions or decisions resulted from this improved understanding. This highlights both the feasibility of improving systems understanding and the need for a clear pathway for its use and integration into decision making.

### Reflections on Program Implementation

The experience of working to build collective action in the RuSH sub-sector in Cambodia resulted in a number of insights around how to design and implement a collective action approach:

**With large activities comes large expectations.** When WaterSHED first launched the collective action activity, the sector expressed great excitement related to the goals of the activity (strategic planning around National Action Plan II and greater sector cohesion), as well as a high expectation of the resources it would bring. However, it seems after activity close that misunderstood expectations surrounded the level of funding and how that funding should be used. During post-activity interviews, a number of participants from international organizations noted some likely fallout and a general sense of disappointment regarding the lost investment within the sector, as well as a lack of clarity regarding how it would be leveraged. WaterSHED never provided details on how a backbone organization would be designed, implemented, supportive of sector activities, and ultimately merged with MRD functions. This left more questions than answers regarding the purpose of the ONA/CDSA baseline, both among participants and within the MRD.

**Clear, regular, and transparent communication is critical for collective activities.** Related to the above reflection, a lack of clear messaging from WaterSHED, potentially due to the varying messages and/or different understanding of the activity's goals by WaterSHED staff themselves, hindered support

and created a lack of confidence on the part of USAID, UCB, MRD, and others in the program's goals and its ability to achieve them. Given the novelty of the approach and the scale of its potential impacts, more transparent, clear, and understandable communications may have increased MRD and sector-wide support for and engagement in activities.

**An early demonstration of value could have increased support.** By adhering rigidly to the principles of collective action (especially related to the collective setting of objectives and subsequent activities), and by not quickly establishing concrete activities that provided value to sector actors, many stakeholders became impatient with the program. This is especially true of the planning and design of the backbone organization, where a lack of detail and planning may have decreased MRD and sector support. Reliance on external, U.S.-based collective action consultants who advised against beginning implementation until the full collective had agreed on their common agenda and actions may have amplified this situation.

### Recommendations

While the collective action activity in Cambodia did not achieve all of its objectives, it provided an important case study from which future WASH collaborative and collective approaches can learn, with respect to both activity design and implementation.

**Establish strong governmental support at launch and cultivate this support throughout implementation.** The Cambodia collective action activity hinged critically on MRD support for and ownership over the establishment of an independent backbone organization. Although MRD gave initial support, later disagreements and withdrawal of support indicate that greater clarity on the specifics would have been beneficial. Additionally, given the vital nature of MRD support, ongoing and regular check-ins with MRD on its understanding of and support for the activities proposed would have avoided the sudden halt to activities mid-implementation. As others develop collective action activities, it is critical to understand an activity's level of dependence on stakeholder support and to ensure such support continues on an ongoing basis.

**Communicate clearly and often.** Under this activity, more direct communication would have benefited implementation in two primary areas: (1) the overall program's objectives and components and (2) unpacking the detailed technical information within baseline analyses. If an activity requires significant time, engagement, and resources from many different actors (in this case, nearly 100 organizations), it is important to spend the time necessary to clearly communicate the overall activity's programmatic arch, as well as how specific pieces fit within the overall plan.

First, greater discussion of and communication about collective action as an approach (what it sought to achieve, how it works, what this means for stakeholders) would have been useful not only at activity inception, but also periodically throughout the activity to link tasks and actions to the broader activity's goals. Second, regular updates regarding progress, decision making, and next steps related to the design, establishment, and launch of the RuSH backbone organization would have been useful in order to ensure continued support from both critical stakeholders (e.g., MRD, international NGOs) and participants (e.g., RuSH sub-group members) in time-consuming exercises.

**Early tangible actions and sector support tasks can help demonstrate value and appease skepticism.** Opportunities existed for the activity to support specific needs and tasks within the sector, even before the backbone had been established (e.g., coordination tasks related to National Action Plan II development, monitoring information system development and integration). WaterSHED could have undertaken these tasks directly and transitioned to the backbone later, when appropriate. Although these tasks may have deviated from the specific collective impact theory requirement of allowing activities and priorities to emerge through a collective process, they would have helped sector actors (and, most notably, local government stakeholders from MRD and other entities) to envision the utility of the activity and resulting backbone organization. The importance of quick wins and demonstrating value has been a common theme throughout collaborative activities under SWS and applies here, where significant time and resources were required from actors sector-wide with few tangible outcomes or outputs to show for their investment.

**Ground collective action theory in real-world context.** As WASH practitioners continue to explore applications of collective action within the sector, balancing theoretical frameworks and processes with contextual opportunities and constraints will be critical. This will allow collective action theory — developed and initially applied primarily to non-service-related challenges within developed countries — to adapt to the needs and constraints of development programming. Related to the above recommendation on early tangible actions, WaterSHED activities could have benefited from greater adaptation of theoretical requirements to the cultural, social, and political context of sanitation and hygiene in Cambodia. Inputs and guidance from external, U.S.-based consultants may have been more appropriate at a further distance from activity design and implementation.

## Rural Water Activity in Uganda (Whave)

### Context

The principal water supply technology in most of rural Uganda is the hand pump, and despite firm policies for the transition to piped water, it is expected that more than 50 percent of the population will remain dependent on hand pumps for the next 30 years or more.

The poverty context is the failure of hand pumps to provide adequate rural water supply, despite sufficient capital investment being available and channeled into fresh hand pump installation and restoration. This is evidenced by academic baselines such as the ODI Hidden Crisis study, which found hand pump functionality levels in rural Uganda at 30 percent in a statistically valid survey of 10 districts.

Founded in 2011 in response to persistent low levels of functionality of rural water infrastructure in Uganda and elsewhere in sub-Saharan Africa, Whave has spent a decade documenting the systemic causes of poor functionality and the factors critical to establishing an economic and socially viable system that permanently addresses this issue. The work has been based throughout the period on practical collaboration with hundreds of communities and many district government water authorities, as well as central government. Whave's goal is to ensure consistent, reliable, safe water service delivery, sustainably.

The geographic focus for SWS includes three areas of Uganda in the central and eastern regions, including Buganda, Busoga, and Teso language groups: (1) the pilot district of Nakaseke (Buganda, central), (2) Kamuli (Busoga, mid-eastern), and (3) Kumi (Teso, northern eastern).

The environmental characteristics are that northern Nakaseke and Kumi are located in the cattle corridor with weak ground water resources and are relatively arid, with the tradition of pastoralism, while southern Nakaseke and Kamuli have relatively high levels of rainfall, crop cultivation, and ground water resources.

The social demographics are that high poverty levels persist in the northern Nakaseke, Busoga, and Teso regions, where there is high dependence on NGO interventions, while in southern Nakaseke income levels are better due to agricultural production.

The prevailing governance context for assurance of operational reliability of hand pumps is the national policy known as the CBMS. CBMS requires rural communities to pay for and manage maintenance using their own resources, setting unique fees in each community. The MWE formally removed CBMS as the national policy as of December 2019 and replaced it with a policy known as the professionalized maintenance approach (PMA), also called CBMS+. The PMA is not yet operationalized in general in rural Uganda, with the SWS initiative being one example of early-start piloting and implementation.

Since 2011, rural communities' district governments and MWE have been consulted as to whether a pay-by-results approach to local hand pump mechanics would help to solve the endemic water point failure issue. MWE promoted the concept, and Whave accordingly started in 2013 to sign service agreements with communities and pay local mechanics according to their success in keeping the pumps working all the time by way of quick repairs and preventive maintenance checks. Whave established agreements to act as a management body in this way for local mechanics with a number of district local governments and sub-county governments, whose councils passed resolutions requiring maintenance fees to be paid to Whave for reliability assurance.

In October 2015, the Government of Uganda (GoU) formally analyzed this professionalized maintenance approach in a meeting presided over by the then Rural Water Commissioner. The analysis considered the two options of preventive maintenance service agreements being managed directly by local mechanics or by a professionalized maintenance company, and the Commissioner selected the latter option for expanded piloting.

The approach worked well in several pilot districts, leading to the MWE adopting it as a national "professional management approach" framework for O&M of rural water points.

### Challenges

- Improved water sources fail to function reliably and deliver service continuously, as evidenced by academic baselines such as the ODI Hidden Crisis survey, which found hand pump adequate functionality levels in rural Uganda to be less than 30 percent in a statistically valid study of 10 districts.
- There is weak financial accountability and weak financial transparency of local community water committees and government, resulting in unwillingness to pay for service.
- There is weak monitoring of service delivery quality. Published figures for functionality are often perceived as inaccurate or not detailed enough to promote appropriate remedies.
- NGOs, local government, and aid programs undertake temporary rehabilitation and construction projects with little coordination with each other, reaching a small sample of sites without effective provision for long-term maintenance, also leading the public to believe that repairs are paid for by external parties. This results in widespread failure of access to reliable safe water.
- Vote-seeking politicians engage in quick repair and construction campaigns, which reach only a few sites, and make promises to undertake repairs, prompting the public to wait for politicians to distribute free-of-charge repairs or build new water points, resulting in widespread failure of access to reliable safe water.
- There is a lack of aid coordination and lack of role and responsibility demarcation between stakeholders.

### Team

- Principal investigator: Adam Harvey

- Program coordinator: Joel Mukanga
- Learning point of contact: Elizabeth Buhungiro
- Service area staff in Busoga, Buganda, and Teso regions
- Members of district HPMA in Busoga, Buganda, and Teso regions

### Primary Stakeholders and Partners

- Ministry of Water and Environment
- Politicians ranging from members of parliament to district and sub-county councilors, community councilors, and chairpersons
- District and sub-county local governments
- Government extension officers
- WASH NGOs and aid programs
- Community members and water committees
- District HPMA
- WASH donors

## Implementation Summary

### Timeline of Events

Table 9. Timeline of Events

Event	Explanation	Timing
Initial PPP contracts appoint Whave as rural water service provider.	Whave signs initial PPP contracts with Kamuli, Kumi, and Nakaseke DLGs.	Whave signed a memorandum of understanding (MOU) in Kumi in March 2016; in Nakaseke and Kamuli in 2018; and in Kamuli and Kumi again in September 2018 and August 2018, respectively.
Advanced PPPs appoint Whave as rural water O&M ASP.	Initial PPP contracts focused on the role of Whave as a preventive maintenance provider collecting revenue from communities. Whave signed several of these from 2015 to 2018 and then signed advanced PPP contracts with Nakaseke and Serere DLGs to implement the new National O&M Framework. These contained greater emphasis on the local government enabling services, such as assigning government staff mobilization and moderation roles and guiding NGOs to follow pre-construction maintenance protocols.	Whave signed an advanced MOU in Nakaseke in June 2020 and in Serere in March 2021.
Whave holds multi-stakeholder workshops each year, beginning in 2016.	Whave conducted detailed technical systems analysis and strengthening workshops. Participants included WASH NGOs, local government, HPMA, and senior MWE representatives.	Continuous each year since 2016.
Whave achieves leadership in national WASH.	Whave was elected vice chair of UWASNET, chair of the UWASNET good governance thematic working group, and vice chair of the WASH technologies thematic working group.	2018.

Whave convenes group of NGOs with successful advocacy results.	Whave convened a group of NGOs interested in maintenance service advocacy to provide inputs to the National O&M Framework for rural water. As a result, the GoU adopted significant inputs for structuring the new PMA, reflecting successful communication of the professionalized maintenance model for assuring reliable safe water supply.	2019.
GoU formally adopts professionalized maintenance model, labeled the PMA.	MWE published the National O&M Framework in December 2019, within which GoU formally adopted the professionalized maintenance model for rural service delivery advocated and tested over the previous 7 years by Whave in collaboration with communities, local and national government, NGOs, and hand pump mechanics.	2019.
Whave convenes group of NGOs to prepare National O&M Framework manual.	Whave and two NGOs submitted an operational manual for the National O&M Framework to the MWE to guide practical application of the new framework. Whave convened the group and led the preparation of manual content. MWE adopted key sections of the manual and omitted approximately 10 percent.	August 2020.
Whave expands ASP contracts outside of SWS.	Whave received invitations from several district governments outside of the three initial SWS districts to act as their ASP. As a result, Whave expanded its activities to Serere (2019), Luuka (2020), Mityana (2018), and Kassanda (2020) Districts and has invitations pending from other districts. Whave signed advanced ASP contracts with Kaabong, Kotido, and Karenga Districts in 2021.	2019, 2020, and 2021.

To implement and test this concept, Whave’s primary activities under SWS were to: (1) analyze baseline system conditions, identifying the root causes of the current failure of reliable service delivery; (2) develop and test solutions that address those systemic issues successfully; and (3) communicate solutions effectively to stakeholders. Examples of these activities include:

- **Accountability for reliable service delivery.** Whave observed that the current national management approach for rural water point operation was not effective because it relied on community leaders having resources for maintenance and repairs that, in reality, they did not have. Whave tested the introduction of a professional entity to take responsibility for reliable safe water delivery, contracted by the local government to achieve functionality assurance targets according to well-defined indicators. The MWE adopted this professionalized structure in the National O&M Framework in 2019.
  - **Financial incentives.** Whave observed that local mechanics lacked incentives to practice preventive maintenance and optimize long-term cost efficiency when doing repairs. Whave tested offering mechanics performance-payment contracts that rewarded preventive maintenance, along with a minimized number of breakdowns and immediate repair.
  - **Segregation of minor and major repairs.** Whave observed the common practice by local government water departments of promising to pay for major repairs to incentivize water users to avoid making routine repairs. This led to frequent breakdowns, severe repair delays, and excessive costs. Whave tested including larger repairs and the timely replacement of major and minor components in water user maintenance service agreements.

- **Infrastructure and maintenance coordination protocols.** Whave observed that voluntary agencies, local government, and other entities investing in water infrastructure were constrained by budget-spend timelines that prevented integration of maintenance arrangements. Whave assisted local government offices to develop and test a pre-investment maintenance protocol that required the investor to ensure that O&M agreements are signed and paid for by communities prior to construction or rehabilitation work. Several district governments adopted this protocol, with significant success in two districts during SWS.
- **Multi-stakeholder O&M performance reviews.** Whave observed that local government personnel needed assistance in defining O&M indicators and enabling their monitoring and evaluation. Whave assisted local governments in conducting quarterly review meetings that tracked progress in performance of all stakeholders in O&M services. Initially, these meetings focused on functionality assurance indicators achieved by Whave as a prototype ASP (including functionality levels, customer satisfaction, payment compliance, and transparent accounting to explain fee levels for sustained service) and progress toward enabling service targets by local government, principally the mobilization of communities to understand preventive maintenance agreements and moderation of those agreements. The meetings progressed to include other stakeholders, such as NGOs investing in construction and rehabilitation of water points, joining to track infrastructure investment coordination with maintenance arrangements.
- **Communication.** Whave communicated lessons around systems strengthening through regular multi-stakeholder workshops, taking place often more than once each year, as well as continuous dialogue with representatives of government at all tiers (sub-county, district, and ministry) and local HPMAAs, as well as with NGOs and members of parliament candidates and other political leaders during election cycles. Whave regularly participated in NGO and government forums and sector reviews.

### Demonstrating Professionalized Maintenance Services

To communicate the process of analyzing and strengthening local systems, Whave judged it essential to field-test the professionalized maintenance concept. Therefore, Whave built a rural water utility with capable staff and deployed these staff on the ground in more than 600 communities (as of Q1 2021) in varied regions of the country; before 2016 in Central and Busoga Regions, then expanding in 2016 to Teso and Karamoja Regions. A key element of Whave's success was this decision to develop and test a prototype ASP.

Staff included field engineers, sales officers, customer relations officers, branch office managers and administrators, stock keepers, field technician contractors, senior managers, engineers, independent monitoring and technician contractors, and accountants. These skill sets and profiles were essential for Whave to operate as a rural water utility and provide a service paid for through water user maintenance tariffs, where:

- Sales and customer relations officers introduce communities to preventive maintenance agreements and fee levels necessary to meet full functionality assurance costs and also offer

promotional discounted fee levels as an inducement to build experience of professionalized service.

- Field engineers train HPMA members to become service technicians and manage performance-pay contracts to ensure that communities receive full water source functionality ratings. Whave engineers and managers monitor performance of these technicians and manage the quality and cost efficiency of their work.
- Branch managers conduct regular performance reviews with district government partners, both parties reporting on progress against agreed-upon complementary activities.

In terms of testing this capability, the overall result has been that communities have experienced unprecedented functionality assurance conditions, significantly improving on baseline conditions. Table 10 shows functionality and repair time data achieved in the three primary geographies studied under SWS, focusing on Q2 2021 as a representative snapshot, in relation to the accumulated number of consistently paying communities, excluding communities that are suspended due to payment arrears. In 2020 and 2021, Whave expanded to Serere District. Whave also obtained similar performance results to those shown in the table in its wider geographic scope in Uganda’s Central and Karamoja Regions.

*Table 10. Service-Level Summary of Data Collected for Q2 of FY 2021*

Region	District	Number of PMAs	Spot Functionality Q2 2021	Number of Breakdowns	Repair Time (Percent Breakdowns Fixed within 2 Days)	Customer Satisfaction
Teso	Kumi	93	100%	11	100%	98%
Busoga	Kamuli	143	97%	20	100%	86%
Central	Nakaseke	77	98%	23	100%	98%

### Expansion to Serere District

To further test the professionalized maintenance approach under SWS, it was important to see how effectively Whave could replicate its model in new districts. This became especially relevant when the central government adopted the approach formally as a national policy. For several years, discussions between Whave and the MWE had positioned Whave as a lead government partner in developing the professionalized maintenance approach. In 2020, Whave became the lead partner in implementation of the National O&M Framework, or the PMA. The core concept of the framework was the appointment of ASPs by local government water authorities.

The DWO of Serere District first showed interest in the professionalized maintenance approach in 2019 after SWS invited him to attend a meeting. In 2020, the DWO continued to express interest in appointing Whave as an ASP. To explore this potential, it was first necessary for the DWO to engage senior officials, including the political head, the chair and administrative head of Local Council 5, the chief administrative officer, and other key decision makers. COVID-19 restrictions in 2020 slowed expansion plans to Serere significantly, as did the buildup in late 2020 to national elections, during which time vote-seeking politicians conducted and promised free repairs, in contradiction to long-standing government policy on payment of maintenance fees.

As part of the preparation process leading up to this decision, Whave conducted a baseline survey of water point functionality in late 2020 in collaboration with the DWO, following standard SWS research practice. In a full census of 284 hand pumps in the two sub-counties studied, the survey found that only half the hand pumps were adequately functional. Of the 52 percent of working hand pumps, some were not in good working order but provided more than half of the correct water flow when subjected to the manufacturer’s recommended test. The remaining 48 percent were either not working at all (20 percent) or were severely malfunctioning, producing less than half the correct water flow when subjected to the standardized test (28 percent) (see Figure 26).

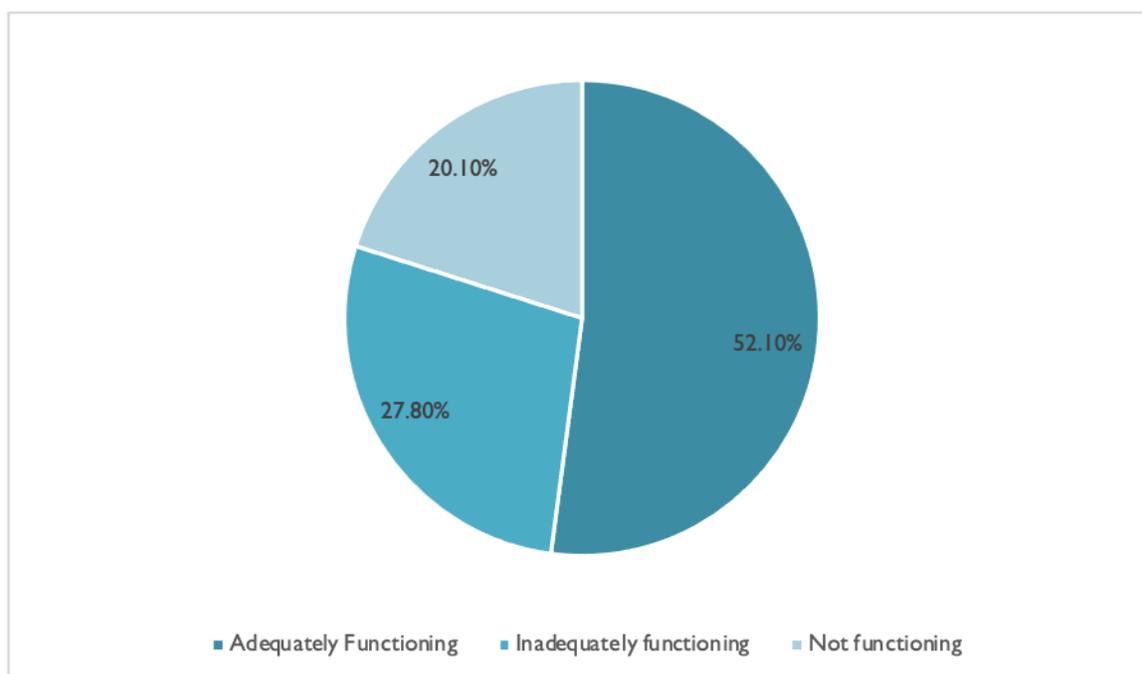


Figure 26. Hand pump functionality in two Uganda sub-counties

Ugandan national and local leadership elections took place in January 2021. Despite the ensuing delays, the DWO remained active in early 2021 in engaging his colleagues in the discussion. They verified the baseline survey findings and informed Whave that the functionality problem revealed in the survey was equally serious in other sub-counties, such that they decided that Whave’s services were needed district-wide. At this time, the national government had published the National O&M Framework requiring districts to appoint maintenance companies known as ASPs. In March 2020, Serere DLG was ready to sign a pilot ASP performance contract. The contract was signed on March 25, 2020 by the Local Council 5, the chief administrative officer, the DWO, and Whave.

To demonstrate its commitment, in April 2021, Serere DLG provided Whave with an office in its government compound and space for Whave to install hardware storage facilities. Whave started work in Serere in April 2021, first focusing on the two initial sub-counties and working widely in the district by June 2021. (Whave was unable to start work sooner due to COVID-19 restrictions and election disruptions, as discussed above.)

In May 2021, Whave conducted a series of training workshops for government extension personnel and sub-county leaders and identified government extension champions to lead enabling services, principally

mobilization through community engagement meetings. By the end of June 2021, 24 communities, in three sub-counties, had engaged with Whave extension staff to discuss PMAs.

Also in May 2021, Whave organized a workshop for members of the HPMAs of Serere to introduce the National O&M Framework and explain their key role as service technician contractors working for the ASP. The workshop was followed by training in preventive maintenance schedules. By July 2021, four local technicians were actively providing preventive maintenance services.

In June 2021, Serere DLG indicated that their budget planning included 16 infrastructure investments in hand pump construction and rehabilitation in the GoU financial year (from July 2021 to June 2022). However, they did not provide data on which specific communities will receive these investments, and it is not yet known how diligent Serere DLG will be in fulfilling its commitment. Whave has observed that some elements within local governments are slow to transition to the new structure, such as procurement committees, so that even when senior individuals among the DLG authorities (e.g., Local Council 5, chief administrative officer, DWO) are urging transition, the process is still slow and requires considerable effort.

One expectation in Serere, which has not yet been fulfilled, is support for implementing the National O&M Framework from the MWE regional regulation team. This commitment is expected to be clarified and progressed in 2021. To date, MWE has not been active in disseminating the National O&M Framework using its own staff and regional representatives. In its role as chair of the national CSO coordination forum under UWASNET, Whave organizes national meetings on piloting the National O&M Framework.

In July 2021, Whave joined Serere DLG officials in publicizing the new functionality assurance arrangements on radio talk shows and radio spot messages. The DLG announced and described the National O&M Framework and informed the public of Whave's appointment as the maintenance service company for Serere District. During the program, Whave publicized its services and the availability of a toll-free phone number. This led Whave to receive several calls from communities wishing to learn more about the service.

By mid-August 2021, more than 30 communities engaged in the enrollment process. Of these, 8 communities paid the initial deposit of 50 percent of the annual service fee and, under the terms of the PMA, committed to paying the remaining installments within 6 months; 5 communities collected the required 50 percent deposit; and the remaining 17 will enroll once they have collected enough money. Whave projects that 40 communities will be enrolled by the end of 2021, and 100 communities enrolled by mid-2022.

#### Advocating for Roles and Responsibilities Demarcations

Whave staff capability includes skills and experience in national and international WASH advocacy based on operational experience and detailed practical monitoring. This involves the following activities:

- Whave developed and uses a detailed WASH monitoring system that tracks functionality, repair time, number of breakdowns, customer satisfaction, and payment compliance. Detailed records are maintained consistently, building a comprehensive evidence base for advocacy.

- Whave convenes several stakeholder workshops each year focused on encouraging collaboration and building consensus on functionality assurance. Whave also stimulates active participation of major international NGOs, national and local government, WASH NGOs, community representatives, HPMA, and politicians such as members of parliament.
- Whave published key findings on systems analysis and strengthening, including the flagship product, “Ten Factors for Viable Rural Water Services.”
- Whave held successive meetings with key stakeholders and the WASH CSO community in Uganda to present and discuss lessons learned. Whave also held meetings with WASH donors such as the World Bank, European Union, African Development Bank, Austrian Aid, GIZ, BMZ, UK AID, and USAID. Whave continued to communicate project findings in meetings and publications to an international and national audience throughout the SWS close-out period.

## Testing Our Theory of Change and Answering Our Learning Questions

Whave aimed to improve the quality and sustainability of water service delivery by understanding the key factors and actors, as well as actions and inputs, necessary to develop and test models for financially viable and reliable water supply services in rural areas in Uganda. Through coordinated monitoring, evaluation, and learning activities, the research used the theory of change to develop questions, test hypotheses, identify needed course corrections, and document lessons learned. The theory of change diagram (see Figure 27) for this project illustrates how SWS expected Whave’s interventions (yellow hexagons) to lead to the project’s goals (green circles) through a set of anticipated intermediate results (blue rectangles). Arrows between results served as hypotheses within the theory of change, and examining the relationships between factors provided a foundation for monitoring, evaluation, and learning.

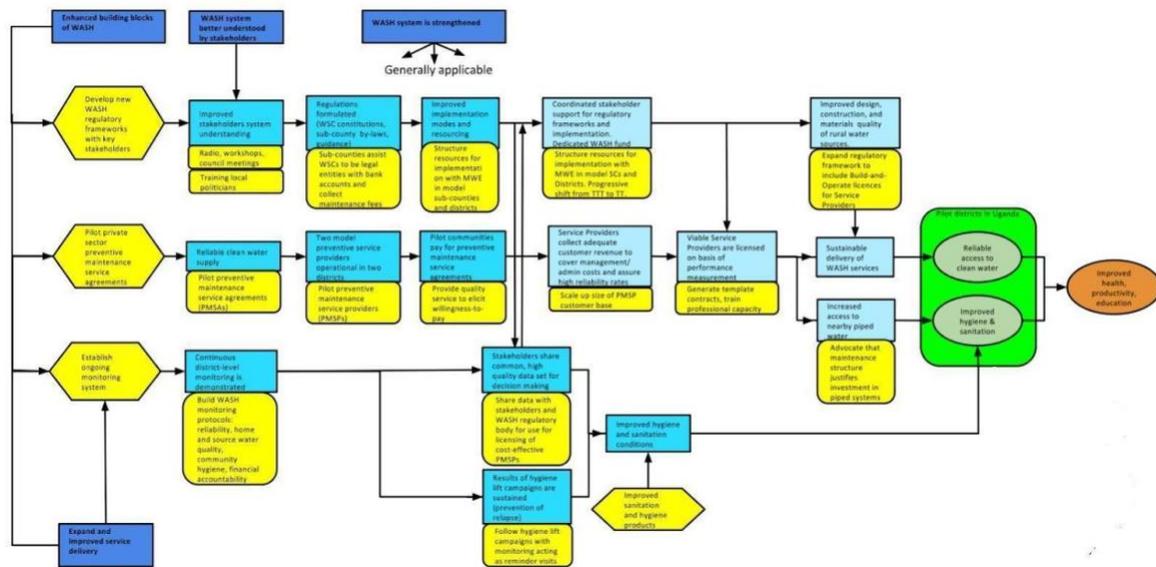


Figure 27. Uganda Theory of Change

Whave's program addressed one of the main issues underlying the persistence of the WASH crisis in rural Uganda and in developing countries worldwide: the failure of improved water sources to function reliably. The theory of change asserts that reliable daily operation will be achieved sustainably if Ugandan rural community members regularly pay sufficient tariffs that are used cost-effectively to provide appropriate services of commensurate value. The necessary services can include banking of tariffs and accountability for expenditure by village water committees; provision of preventive maintenance services to ensure operational reliability of water sources; and service contracts (or "reliability assurance" contracts), which are renewed for successive periods, typically year by year, by a competent local company (a "service utility"). Another important part of the hypothesis is that improved regulation by the local government is also necessary, so that service utilities, local technicians, and communities collaborate within a mutually understood PPP framework. This framework includes provision for independent monitoring conducted by a credible local body, providing a basis for licensing and regulation of service companies.

The theory of change has two overarching objectives: (1) to develop improved regulatory conditions by relevant government entities (e.g., sub-county councils) and support local government in becoming PPP regulators through service performance assessments and development of licenses; and (2) to pilot private sector preventive maintenance service arrangements and scale these services to demonstrate their potential for both impact and financial viability. The ultimate goal is to improve the quality and sustainability of the services provided. More specifically, Whave aims to establish a proof-of-concept of how to effectively implement a professionalized rural water maintenance PPP and strengthen complex local water service delivery systems in rural areas.

The theory of change has, for the most part, proved to be applicable and valid based on hypothesis testing. Major examples are the following:

- **Collecting sufficient tariff revenue:** Whave built a firm pathway to balance service cost and tariff revenue, which has been adopted by the national government as a key part of its O&M implementation plan. It has also been demonstrated in practice by Whave and its partners' collective actions. All of Whave's community service agreements charge maintenance fee values that correspond to the projected economic cost of service delivery. Discounts on service fees for communities signing new contracts were deemed necessary to address the issue of NGOs and politicians offering free repairs, and these discounts were progressively reduced. At the end of the project period, the discounts constituted between 20 and 60 percent of the viable tariff, showing a sound trajectory toward a full balancing of cost and revenue.
- **Renewing service contracts:** Since 2013, communities have continued to renew their contracts with Whave, even in the face of continually reduced discounts on service tariffs. Whave suspended service to communities that did not pay their fees; however, most communities re-joined after determining that falling into arrears and losing service is less beneficial to community well-being and livelihoods. Table I I shows the number of PMAs renewed for Q2 of FY 2021.

Table 11. Number of PMAs Renewed in Q2 of FY 2021

Region	District	Number of PMAs Renewed
Teso	Kumi	5
Busoga	Kamuli	7
Central	Nakaseke	17

- Improving local government regulation:** Local government regulation was achieved through the government signing district-ASP contracts with Whave and convening regular quarterly performance review meetings. Whave took this a step further in 2020 and 2021 by assisting local governments to include NGOs in the quarterly reviews to coordinate infrastructure investment and maintenance.

Some of the tested hypotheses led to changes in Whave’s approach, as a result of learning from practical application. Examples of these are:

- Increased accountability and capacity of water user committees to manage collected tariffs:** After pursuing this hypothesis over the early years of the project period and assisting communities to open fee-collection accounts in rural banks, Whave found that community water committees did not have sufficient resources and motivation to use these accounts. It became increasingly evident that professionalization of maintenance in rural communities could not depend on reliable financial management by committees, despite increasing availability of rural financial services.
- Independent licensing and regulation of service companies:** After exploring the concept of instituting a credible local body to license maintenance companies and provide independent and neutral monitoring of their performance, Whave and NGO partners determined that the most practical way forward was to sign performance contracts between district governments and ASPs and to appoint a monitoring and evaluation facilitator for each service area. This solution is described in greater detail in the paper, Ten Factors for Viable Rural Water Services.<sup>19</sup>

### Learning on Systems Understanding

The first learning question was: How do different factor/actor systems approaches — including the demonstration of the Whave professionalized maintenance approach — improve stakeholder understanding of the system’s components, improve their interactions, and improve how they influence the sustainability of WASH services?

The sub-questions were:

- How can the factors and interconnections of factors that influence WASH service sustainability be better understood by stakeholders?

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<sup>19</sup> Harvey, A. 2021. Ten Factors for Viable Rural Water Services. Sustainable WASH Systems Learning Partnership. Available at: <https://www.globalwaters.org/resources/assets/ten-factors-viable-rural-water-services>

- B. How can the networks of actors that influence WASH service sustainability be better understood by stakeholders?
- C. How does an improved understanding of the preventive maintenance system (1) result in stakeholder action and/or (2) influence the design of future interventions?

To track and measure changes in stakeholders' understanding of the preventive maintenance system, Whave conducted a series of IFML and ONA workshops. Whave also held quarterly PPP review meetings with the local government in which they administered post-meeting questionnaires to participants with the purpose of tracking changes in systems understanding over time for the following stakeholders:

- Ministry of Water and Environment
- NGOs
- Aid agencies
- District local government
- Sub-county local government
- Hand pump mechanics
- Whave service area staff
- Community members

### **Baseline ONA in Kamuli District**

In April 2018, Whave conducted a study of actors involved in rural water service delivery in one of the SWS districts (Kamuli District). The study applied ONA to better understand the relationships between actors in the rural water supply network and the factors they perceive as affecting rural water service sustainability.

At the outset of the study, Whave identified relevant actors involved in establishing a PPP for professionalized maintenance in Kamuli District and listed them on a roster. The study included 51 actors representing different stakeholder groups at different levels of hierarchy in the rural water supply network.

The study had four main objectives:

- To identify coordination gaps;
- To identify gaps in technical support;
- To identify challenges, positive factors, and how they relate to specific actors; and
- To contribute to an understanding of how to study, analyze, and strategically act to influence water service delivery systems.

Exploring the extent to which actors are coordinated and mutually reinforcing a coherent vision for rural water service delivery can help to identify opportunities for further intervention and to evaluate progress to date. Analysis of the same network could then be repeated at a later stage of SWS to understand how the network changes over time. The analysis consisted of both quantitative network parameters and qualitative descriptions of factors identified by network participants as affecting service delivery sustainability. The study findings were as follows:

#### *Network Centrality*

Whave was found to be the most central actor in the network for multiple frequencies of interaction. This finding makes sense because of the numerous relationships Whave holds at all levels of hierarchy in Kamuli District. Whave's position in the network is neither inherently good nor inherently bad. The key questions for practitioners working in Kamuli District are whether this is the desired structure of the network and whether these interactions can be sustained indefinitely. Whave currently invests considerable resources in both community engagement and collaboration with government actors. Practitioners need to consider whether this level of engagement should be sustained or roles should be shifted to other actors. With a better understanding of the network structure as a result of this analysis, actors can make informed decisions to intentionally facilitate shifts in the structure if desired.

#### *Connected Components*

Analysis of connected components and the number of actors without any ties at different frequencies of interaction found that, of the 51 actors included in the study, all but one have information ties to the broader network on at least a monthly frequency of interaction. This indicates that concerted efforts to bridge network gaps might have little discernible effect on the network from a purely quantitative standpoint. Practitioners might, therefore, focus on the quality of specific relationships and whether these interactions are creating the desired effect on service quality or sustainability, rather than simply trying to establish connections where none exist.

#### *Community Networks*

Analysis of community ego networks found a variety of actors interacting with communities in the two parishes studied. Some actors interact with communities more consistently than others, depending on the area being considered. SWS identified government actors as consistently interacting with communities, and these relationships might be leveraged to help expand and reinforce uptake of preventive maintenance services by communities. Determining which actors to engage, however, requires reassessment in each area to determine who is most active and able to influence how services are delivered in that area.

#### *Endline ONA in Kamuli District*

The endline study repeated the network analysis to understand what has changed over the past 2 years. SWS repeated research methods from the 2018 study for the 2020 endline survey to understand how the network and factors affecting rural water service delivery in Kamuli District have evolved. SWS also asked interviewed stakeholders to comment on how the network changed during this period. As was the case during the baseline, not all actors were available for interview at the time of the study, but the response rate was deemed to be sufficiently high and was the same for both baseline and endline studies.

SWS interviewed a total of 46 of the 51 network stakeholders in September 2020, representing a 90.2 percent response rate.

Findings from the endline ONA include:

- The number of total network ties remains relatively unchanged since 2018, but analysis of network diameter and density suggests that the network has become more tightly connected over the past 2 years.
- Local stakeholders, such as hand pump mechanics and government officials or councilors involved in preventive maintenance, are increasingly central to the network and are frequently engaging communities — an increase from 2018.
- The most widely perceived success in the network is preventive maintenance services provided by dedicated maintenance organizations, as opposed to improvement of repair reaction time and reliance on individual mechanics. The impact of preventive maintenance services on service reliability is also the most commonly perceived change in the network over the past 2 years.
- Analysis of both network properties and interviews suggests that the Kamuli stakeholder network is converging around a coordinated vision for rural water services focused on preventive maintenance and dedicated service providers. This approach is having a widely recognized impact on the reliability of rural water services. The challenge remains to determine the extent to which services can extend to cover the entire district, as well as to determine whether the preventive maintenance approach can be fully institutionalized and embraced as the new norm by all stakeholders.

### **Key Factors Affecting Sustainability of Rural Water Services**

Interview participants identified several factors as affecting rural water service sustainability in Kamuli District, either positively or negatively. Preventive maintenance appears to be widely viewed as a success. However, despite progress toward service sustainability, willingness to pay remains the most commonly cited challenge. Determining how to reduce costs and increase revenues to achieve a financially viable model remains a key area for inquiry in Kamuli District.

This analysis was part of the IFML process, a participatory, stakeholder-driven approach for collecting and analyzing insights into how different local factors impact the success of WASH projects and policies. Whave and the UCB conducted the factor mapping workshops in Kamuli District, Uganda on April 16–20 and October 1, 2018. SWS determined the focus topic, or outcome factor, of the workshops in consultation with Whave managers in Kamuli District, who recommended the phrase “reliable water source functionality (RWSF).” The analysis identified several factors, as described by stakeholders, that could be used as leverage points to affect positive and sustainable improvement of RWSF in Kamuli District.

Overall, the workshops actively engaged 57 participants from district government (6), sub-county government (20), water user committees (13), Whave staff (8), and HPMA members (10). Collectively, these participants represent different perspectives on the factors that influence RWSF in Kamuli District. On average, the workshops lasted 3 hours. While SWS conducted most of the workshops in

English, for a portion of each session participants also discussed factors and interconnections in the local language, Lusoga.

### Summary of Study Findings

The goal of the IFML process is to systematically map, analyze, and assess the key local factors that influence sustained WASH services and their context-dependent relationships to one another. This is achieved by considering all the information, both quantitative and qualitative, gathered during the exercise to draw meaning from the suite of factor map analyses used in the IFML process. The findings below are informed by a review of notes of the participants’ discussion, conversations with key stakeholders, and a debriefing with the session facilitator.

#### *Finding 1: Each Stakeholder Group Sees the Local System from Their Own Perspective*

From the factor brainstorming and ranking to mapping the factors and the subsequent analysis, it is clear that there are commonalities across the four groups that participated in the factor mapping activities. Of all the possible factors to influence water services in Kamuli District, the 57 participants identified a total of 63 factors, of which 50 (nearly 80 percent) were common. When the groups voted to rank the factors to determine which ones they would use in the factor mapping activity, they all used the same group of 13 factors. The definitions for each of these factors were similar as well. This demonstrates that the groups are relatively aligned in their understanding of the critical factors and are “speaking the same language” when they refer to those factors.

However, closer inspection of the results of the analysis highlights important differences among these groups. This is most clear in the influence mapping analysis, where the factor that each group ranked as least dependent (most easily influenced) is the factor that group is most likely to be able to influence (Table 12). For example, Whave ranked spare parts as the easiest to influence. Since they are a major buyer of spare parts, this is something they can affect. The district group ranked water source bylaws (and tools for repair) as their least-dependent factor, implying that this group believes that enacting bylaws could be a relatively easy task. Similarly, the sub-county group ranked political presence and support as their least-dependent factor, presumably because they are the ones, along with their elected colleagues, who can exert influence easiest at the local level. The water users group ranked monitoring and water user fees as their least-dependent factors, two tasks that community members are capable of and responsible for within the system. Finally, the HPMA group ranked monthly meetings as their least-dependent factor (after RWVSF), an activity that is in their ability to conduct independent of other actor groups.

Table 12. Common Factors Ranked by Importance

Common Factor	Average Rank	Number of Groups
Preventative Maintenance	1.5	2
Water User Committee	2.2	5
Mechanics	3.4	5
Water Source Bylaws	4.8	4
Spare Parts	6.0	5
Coordination	6.8	4

Role of Water Users	7.3	3
Supervision and Monitoring	7.5	4
Water User Attitudes	7.5	2
Water User Fees	7.7	5
Political Involvement and Government Support	8.0	5
Hygiene and Sanitation	11.0	2
Vandalism	13.0	2

The differences between groups' perspectives on how each of the factors affect one another could be seen most clearly in the centrality analysis. This analysis, which is a product of the cross-impact matrix, showed that each group had a striking difference in the levels of complexity and ranking of the centrality of the factors. In this analysis, the only factor ranking that was close to being similar across all four was the outcome factor, RWVSF. However, that is mostly the result of the common +3 rankings for the row and column of the outcome factor.

*Finding II: Water User Committees' Ability to Collect Water User Fees Is Key to Functionality and Preventive Maintenance*

Throughout the analysis, water user committees and water user fees were shown to consistently play an important role in affecting RWVSF and preventative maintenance. These factors were among the most influential, dependent, and central to the system and were part of the some of the key common feedback loops. These two factors were also initially ranked by the workshop participants as the most important factors before the factor mapping activity began.

In all five groups, participants described nearly the same qualities desired of these two factors. Water user committees should be fully constituted, trained, and capable. They should implement bylaws, oversee the work of mechanics, and be trusted to collect and manage water user fees. Similarly, all the groups noted that water user fees should be agreed upon, known by the users, collected regularly, and kept secure, ideally in a banking facility.

Most telling was the highest centrality scores for water user committees (on average) of all the factors. This suggests that they are an essential part of the local system that, when strengthened, has a higher likelihood of strengthening other parts of the system as well. In practice, this would imply that when water user committees demand better quality of services from mechanics, more effectively implementing water source bylaws and more consistently collecting water user fees, there is a substantially higher likelihood of increasing and maintaining RWVSF via preventive maintenance. Combining these insights, especially the feedback loops, indicates that the ability of the water user committees to instill confidence in community members and collect water user fees is most likely to have a positive, near-term impact on RWVSF and preventive maintenance.

*Finding III: Government Support, Regulation, and Politics Are Secondary Factors*

Although the Whave group, sub-county government, and water users collectively discussed five factors about government or political involvement in the brainstorming phase, only two factors ended up in the factor mapping of activities for Whave and sub-county (one each). Thus, of the 63 total factors mapped

across all five groups, only 2 factors focused on government support, regulations, or politics. Where these factors were included, they resulted in relatively low importance overall, with the exception of Whave's high rankings of government support and regulation in influence and centrality. However, it is important to note that in the definition of this factor, the group included water source bylaws, which was a separate factor for all the other groups. For the Whave group, separating these factors out may lead to some slightly different conclusions, but based on the analysis of all four of the group's cross-impact matrices as mapped, factors around governance and politics do not appear to be influential overall.

### **Activities Influencing Understanding**

*Quarterly PPP meetings and multi-district meetings.* Engagement with local government and other stakeholders has been central to the establishment and scaling of the service model. Whave actively engaged authorities at the community, sub-county, and district levels simultaneously to facilitate a shift toward community payment for professionalized maintenance services as the new norm.

In 2016, Whave initiated quarterly PPP review meetings with representatives of district and sub-county local government technical staff and politicians, as well as local mechanics who are members of district HPMAAs. Whave focused on gaining stakeholder understanding and buy-in of preventive maintenance as an alternative to reactive maintenance. Whave also worked to build the capacity of the district to play a regulatory role. To this end, Whave and Kamuli, Kumi, and Nakaseke PPP stakeholders developed key performance indicators on functionality, customer satisfaction, enrollment numbers for preventive maintenance agreements, number of breakdowns, repair time, and payment compliance for the service provider. As stakeholder understanding improved, PPP stakeholders in all three districts discussed network strengthening through role sharing to strengthen preventive maintenance, increasingly including NGO infrastructure investors as key actors in the governance structure.

*Training workshops for hand pump mechanics and sub-county local government leaders.* Conducting regular training for hand pump mechanics on preventive maintenance was instrumental for incentivizing functionality. Training local leaders built their capacity to mobilize communities for preventive maintenance.

*Quarterly GoU reports.* Whave shares reports with district and sub-county governments on a quarterly basis to build their capacity to regulate preventive maintenance service provision. Adherence to key performance indicators was key to improving stakeholder understanding and building buy-in.

*National advocacy.* Whave conducted a large number of multi-stakeholder workshops, at which MWE often chaired the meetings; led a good governance working group of the national CSO network for WASH (UWASNET), which involved MWE personnel; played a leading role in national NGO forums on O&M, to which MWE staff were invited and engaged; and met with senior MWE personnel in small meetings frequently. This resulted in the adoption of the Whave professionalized maintenance approach for preventive maintenance in the National O&M Framework. Whave was also involved in the development of the National O&M Framework manual.

## Shifts in Understanding

In some cases, shifts in understanding resulted in a change in actions. In other cases, actions were hindered by preference of status quo (e.g., electioneering and uncoordinated aid).

Actions or decisions taken as a result of shifts in understanding included the following:

- Adoption of the professionalized maintenance model by the MWE at the national level in the National O&M Framework (2019).
- Appointments of Whave as a pilot ASP by the DLG in Kotido, Karenga, Kaabong, Serere, Kumi, Luuka, Kamuli, Kassanda, Nakaseke, and Mityana Districts.
- Provision to Whave of government-purchased hand pump hardware by DWOs in Nakaseke and Kamuli Districts.
- Compliance with the enabling service terms of the ASP performance contracts by Nakaseke District, namely the pre-construction maintenance protocol and utilizing government budget for mobilization of communities into PMAs by government extension staff.
- Contribution of some politicians toward preventive maintenance where previously they would have offered one-time repairs.
- Provision of finances from the Kumi Resident District Commissioner to Whave to conduct a radio program promoting preventive maintenance.

## Reflections on Learning Question I

After many years of Whave piloting a professionalized maintenance approach and technical meetings to share learning with MWE, NGOs, local government, and communities, MWE adopted a service provider professionalized maintenance approach. Landmark meetings included a 2015 meeting with the Commissioner of Rural Water, and activities that contributed to this important step include a large number of multi-stakeholder workshops convened and led by Whave.

Whave also improved systems understanding through several meetings held during SWS, including the O&M forum, Uganda Parliamentary Forum private sector session, UWASNET CSO Forum and Good Governance Working Group, Uganda Water and Environment Week, multiple DLG meetings, and quarterly PPP reviews. Through these meetings, Whave influenced a range of NGOs to pay attention to maintenance and reliability of access to safe water, including IRC, SNV, Charity Water, GOAL, International LifeLine Fund, Busoga Trust, UNICEF, and the Ugandan Water Project.

However, the Whave team feels that improved systems understanding was only partially achieved. A shortage of operational experience and expertise in service provision by other NGOs in the country has meant that the solutions communicated have not been absorbed by all relevant stakeholders.

The efforts made to investigate this learning question have improved local actors' understanding of the WASH system, as evidenced by a growing number of stakeholders actively engaging in performing the roles agreed upon in the PPP MOU. Whave has agreed with several district governments regarding demarcated responsibilities, and the arrangements have been well understood. Whave has successfully

transferred many responsibilities and associated costs to local government actors, including local politicians, indicating the success of this improved understanding among local government actors.

Not all government actors have engaged, and some have agreed nominally but not in practice due to habits of financial practice. However, Whave has achieved important precedents. For example, one district government (Mityana) issued a pre-investment maintenance procedure directive to NGOs and joined with Whave and a major NGO infrastructure investor to implement it in practice. Approximately 80 rural communities have already benefited from this arrangement, and plans are in place to extend activities to a second district. In another district (Nakaseke), the DWO recognized its role as an infrastructure investor and ensured that its staff engage in a pre-investment maintenance procedure, ensuring that service agreements are signed and paid for by communities as pre-conditions of receiving rehabilitation funds. A third district (Luuka) signed into a full performance contract document, which demonstrates a high level of systems understanding.

### Learning on Systems Strengthening

The second learning question was: How do SWS interventions influence the structure of the system that produces WASH services?

The sub-questions were:

- A. Is it possible to establish a positive experience of professionalized and financially transparent water point maintenance service, in large enough numbers of communities and to a high enough quality, over a long enough time, that the experience leads to a new system norm of self-sustaining reliable water supply based on willingness to pay maintenance tariffs?
- B. Is it possible to establish a positive experience among stakeholders — principally WASH donors, government, NGOs and aid programs, local technicians, and regional service provider organizations — of coordinated collective action in role and responsibility demarcation and in harmonized monitoring procedures, at the operational level, focused on nation-wide assurance of reliable operation of water points?

Whave focused on the following systems-strengthening areas:

- Normalization of community payment for preventive maintenance
- National replication of the professionalized maintenance ASP contractual arrangement
- Service area gazettement, as opposed to gazettement according to type of technology
- WASH NGO coordination
- Efficient local government budget allocations to WASH
- Incentivizing functionality

The following contextual factors were beyond Whave's control:

- Weak governance
- Donor coordination
- Electioneering
- Community dependency on free services due to the above-mentioned factors

Whave, in collaboration with communities, government, and NGOs, used both top-down national advocacy and bottom-up proof-of-concept approaches to establish a viable rural water supply service. They collected data on key performance indicators developed with district stakeholders on functionality, community payment compliance, number of breakdowns and repair time, and customer satisfaction. Whave also collected data on the following systems-strengthening interventions:

- Pay-for-volume or pay-as-you-fetch
- Spare parts reclamation and refurbishment
- Allocations of government resources to preventive maintenance
- Mobile money payment
- Transfer of the mobilization role to hand pump mechanics and district local government to reduce costs to Whave
- Technical upgrade of water sources instead of rehabilitation
- Discount reduction

Learning Question 2A focuses on optimizing the role of community mobilization taken by other stakeholders (e.g., hand pump mechanics and sub-county government) to reduce costs to Whave. SWS assessed this by comparison of baseline/endline ONA exercises to identify changes in the network, including discussion of how and why changes occurred.

Learning Question 2B focuses on different interventions to improve financial viability (i.e., reducing costs, increasing revenues). Examples of interventions may include: PAYF collection models, local refurbishment of spare parts, and variations in approach to allocation of government resources for preventive maintenance.

The first maintenance tariff strategy Whave adopted was a uniform household tariff approach in which each rural water user premise pays a subscription; for example, households pay 2,000 UGX (\$0.56) per month. This was judged the most appropriate for two reasons: (1) communities, government, and NGOs already accept the concept; and (2) in principle, it supports universal pro-poor reliable access to water because it allows small communities with cost higher than reasonable revenue to be cross-subsidized by larger ones on the basis of an equal fair tariff for everyone. However, the actual implementation of this tariff-setting approach was unsuccessful because communities progressively reported fewer households per water point to pay smaller sums, and it became clear that financial sustainability could not be achieved because revenues were low and the cost of direct collection of tariffs was too high.

Whave considered two alternative tariff modalities. The first approach was to charge tariffs on a volume-consumed basis, mirroring the norm at kiosks and metered connections in urban piped water networks. This seemed a reasonable approach in a context in which all water supply is expected to be in time by metered connection, especially because most water users, government, and Whave support a national policy of transitioning away from hand pumps to metered connections to piped water. This modality offered the best route in principle to universal pro-poor reliable access because small-volume consumers in poor households and small communities were cross-subsidized by larger, wealthier consumers and collectively by consumers in large communities. However, this modality was refused in practice in all SWS districts because local government perceived it to be inappropriate for hand pumps.

The second alternative approach was a uniform technology fee in which communities are charged according to the depth of the water source and the number of pipes. For instance, in Kamuli District in Q2 2021, the categorizations are: community water sources with 1–3 pipes pay UGX 300,000 (\$84), those with 4–6 pipes pay UGX 450,000 (\$125), those with 7–10 pipes pay UGX 550,000 (\$153), and those with 11 or more pipes pay UGX 650,000 (\$181). This was found to be acceptable to communities and local governments. It was also highly convenient in that it suited tariff collection by community committees, which was mandatory in the early years of the program. It also had important cost-saving advantages: because tariff collection is as expensive as direct maintenance, this approach promised to reduce costs by half.

Accordingly, this approach was adopted because it was acceptable socially, it saved tariff collection costs, it promised financial sustainability for most communities (small ones would need a subsidy, which potentially would come from piped water in larger communities), and it acted as an intermediate step toward the other modalities.

The outcome of this work had some positive impacts on the system, principally:

- Performance-payment of technicians solved the problem of perverse incentives for hand pump mechanics.
- Inclusion of capital maintenance expenditure in tariff-setting calculations solved the problem of perverse incentive for communities to avoid small and timely repairs.
- Introduction of ASPs in a PPP with district governments solved the problem of a lack of a professional organization to manage O&M.
- Contribution of detailed practical operational guidance solved the problem of a lack of operational experience and expertise among government, consultants, and NGOs.

The following system weaknesses have only been partially addressed to date:

- Introduction of a pre-investment maintenance procedure, under which infrastructure investors join with an ASP during planning stages so that O&M agreements are signed and paid for by

communities as pre-conditions of investment to solve the problem of NGOs and government offices being obliged to spend budgets on infrastructure without regard for O&M structures.

- Introduction of local government and infrastructure investors, such as NGOs, to quarterly multi-stakeholder performance reviews to solve the problem of accountability.

The problem of shortage of operational experience and expertise in service provision has meant that only a few stakeholders have adopted suitable capability. Whave initiated collaborative action around these issues among a sub-group of stakeholders now called the Rural Water Support Group, mostly organizations aspiring to become ASPs and NGOs committed to complying with pre-investment maintenance procedures.

The outcome of efforts to answer Learning Question 2A was strong evidence of systems strengthening. The evidence collected was of high functionality ratings achieved by affordable cost levels, and willingness by communities to pay for professionalized service at prices discounted to about half the projected economic break-even level.

The systems strengthening implied in the full question is that of a new system norm being induced by large numbers of communities experiencing a high enough quality of service, which is characterized by communities being willing to pay the full maintenance tariffs necessary for cost recovery. This goal still lies in the future, but the current strengthening projects a solid trajectory.

The efforts made to investigate Learning Question 2B have strengthened the WASH system with respect to a growing number of stakeholders actively engaging in a demarcated responsibility approach and thus complying with the new national policy for rural water O&M. For example, one district government (Mityana) resolved a hand pump water tariff and issued a pre-investment maintenance procedure directive to NGOs, then joined with Whave and a major NGO infrastructure investor to implement it in practice; approximately 50 rural communities have already benefited from this. In another district (Nakaseke), the DWO has recognized its role as an infrastructure investor and ensured its staff engage in a pre-investment maintenance procedure, ensuring that service agreements are signed and paid for by communities as pre-conditions of receiving its rehabilitation funds. Another district (Luuka) demonstrated a high level of systems understanding by signing into a full performance contract document between itself and Whave as the appointed ASP. Several other districts have invited Whave to be their service provider, and in the case of Serere, baseline studies have been conducted in collaboration with the district.

### [Learning on Likelihood of Service Sustainability](#)

The third learning question was: How does the Whave demonstration and implementation of the preventive maintenance approach increase the likelihood of local government support for and ownership of (creation of an enabling environment for) increased investment in preventive maintenance to sustain services?

This learning question focuses on active engagement and regulation by the government toward full participation in a functional PPP model.

Whave’s program addresses a key aspect of the persistence of the rural WASH crisis in developing countries worldwide: the failure of improved water sources to function reliably and thus realize their promise of poverty alleviation. SWS’s theory of change holds that stakeholders will collectively build a WASH system for reliable rural water supply that is both self-sustaining at a national scale and cost effective if they are exposed to two positive experiences:

**Experience 1.** Ugandan rural community members experience professionalized and financially transparent water point maintenance services, leading to their willingness to regularly pay tariffs sufficient to sustain maintenance service provision.

**Experience 2.** Other stakeholders — principally WASH donors, government, NGOs or aid programs, local technicians, and regional service provider organizations — experience coordinated collective action in role and responsibility demarcation and in harmonized monitoring procedures, at the operational level, focused on nation-wide assurance of reliable operation of water points.

These two experiences will be effectively delivered if the program accomplishes three tasks: (1) it identifies the root causes of the current failure of reliable service delivery, (2) it develops and tests solutions that address those systemic issues successfully, and (3) it communicates this process effectively to stakeholders.

SWS assessed progress on Learning Question 3 using:

- Bi-weekly storyboards to monitor changes in stakeholder (i.e., the local government, water users) actions that strengthen the active regulatory and financial environment toward sustainable preventive maintenance service
- PPP meeting minutes to ensure consistent attendance, support, and follow-through on action plans agreed upon in the PPP MOU
- After-action reviews to report meetings held between Whave service area staff and local stakeholders
- Quantitative data on the number of communities with preventive maintenance agreements, the number of service agreement renewals, customer satisfaction, and willingness to pay

SWS synthesized the above into semi-annual outcome mapping linked to SWS performance indicator 3.2, “Average rating of each coalition on progress markers for their vision of more sustainable services.”

### Outcome Mapping Scores as of March 2021

*District Local Government Adopts Resolutions on Preventive Maintenance*

	Kamuli	Kumi	Nakaseke
Level of Progression	Low	Medium	High

In Kamuli, this progress marker remained low. The process of becoming the approved ASP for the whole district based on the MWE National O&M Framework is being hampered by a newly appointed unsupportive DWO who is wary of new O&M arrangements, perhaps for fear of losing personal gains from rehabilitation works. In Kumi, the current MOU between Whave and the government, signed in 2018 and valid until 2023, represents a formal resolution by the DLG that Whave provides maintenance services within a professionalized maintenance model. However, the government has yet to appoint Whave as the ASP within the context of the new National O&M Framework issued by the MWE, although there are strong signs that this will happen soon. In Nakaseke, the DLG signed an MOU appointing Whave as the ASP, in alignment with the National O&M Framework for rural water services. Nakaseke DLG also instituted and is adhering to the point water source maintenance procedure embedded within the MOU by, for instance, requiring communities to sign preventive maintenance agreements with Whave prior to rehabilitations and repairs by the DLG or other WASH partners.

*Communities Sign Preventive Maintenance Agreements*

	<b>Kamuli</b>	<b>Kumi</b>	<b>Nakaseke</b>
<b>Level of Progression</b>	<b>Medium</b>	<b>Medium</b>	<b>Medium</b>

By the end of March 2021, the number of communities with a service agreement was 126 in Kamuli, 97 in Kumi, and 72 in Nakaseke. During the project duration, local government uptake of community mobilization for signups constantly fluctuated in all three districts and stabilized in year 4 in Nakaseke. The fluctuation can be attributed to three major factors: a weak legislative structure, the presence of NGOs in Kamuli and Kumi, and vote-seeking behavior during the national election cycle that ended in February 2021.

*Communities Are Willing to Pay Service Fees to a Preventive Maintenance Service Provider*

	<b>Kamuli</b>	<b>Kumi</b>	<b>Nakaseke</b>
<b>Level of Progression</b>	<b>Medium</b>	<b>Medium</b>	<b>Medium</b>

Average community payment compliance for all three districts in March 2021 (calculated as the amount of service fee requested versus the amount paid) was 77 percent. Communities pay in installments and have up to 6 months to pay their balances, according to their respective PMA dates. For this reason, compliance is never at 100 percent in any given reporting period. In Kamuli and Kumi, payment compliance was affected by electioneering during the national election cycle, during which some district politicians who were campaigning ahead of the 2021 election year told communities not to pay for preventive maintenance and stated that water should be provided free of charge. In Nakaseke, payment compliance has greatly improved. The narrative that communities would be prompted by erratic functionality and frequent breakdowns is starting to change. Some communities whose water sources were already functional signed maintenance agreements.

*Sub-County Local Government, District Government, and Service Providers Agree on a Vision, Strategy, and Key Performance Indicators for Preventive Maintenance*

	<b>Kamuli</b>	<b>Kumi</b>	<b>Nakaseke</b>
<b>Level of Progression</b>	<b>High</b>	<b>High</b>	<b>High</b>

In all three districts, Whave signed an MOU with district local governments with a common goal of an effective and self-financing maintenance system that supports conversion from hand pumps to piped systems. The MOUs have content close to what is now required by the MWE National O&M Framework. An example of agreement on a vision is voluntary action by government staff at the sub-county and local levels to undertake mobilization. Government extension workers and local politicians such as Local Council I mobilize communities to sign preventive maintenance agreements.

*Sub-County Local Government, District Government, and Service Provider Have a Clear Division of Roles and Responsibilities*

	<b>Kamuli</b>	<b>Kumi</b>	<b>Nakaseke</b>
<b>Level of Progression</b>	<b>Medium</b>	<b>Medium</b>	<b>High</b>

Roles of the district local government, sub-county local government, and Whave as the service provider are clearly stipulated in PPP MOUs signed with district local governments. In Kamuli and Kumi, even though there is voluntary action to mobilize communities, follow-through on action plans and division of roles and responsibilities were still hampered by vote-seeking behavior, lack of NGO coordination, and unsupportive DWOs. In Nakaseke, district and sub-county government officers are adhering to the roles and responsibilities indicated in the MOU in which Whave was appointed as the approved ASP.

*Customers Are Satisfied with the Service They Are Receiving and Understand the Importance of Preventive Maintenance*

	<b>Kamuli</b>	<b>Kumi</b>	<b>Nakaseke</b>
<b>Level of Progression</b>	<b>High</b>	<b>High</b>	<b>High</b>

Whave conducts a customer satisfaction survey on a quarterly basis to assess whether communities are happy with the service and would recommend it to other water user groups. A Likert scale is used, in which 1 denotes not happy at all, 2 denotes not happy, 3 denotes neutral, 4 denotes happy, and 5 denotes very happy. Customer satisfaction in all three districts was consistently high. At the end of March 2021, the average percentage of customers who indicated that they were happy with the service from Whave was 91 percent. Other indications of customer satisfaction were contract renewals and community referrals.

*Communities Are Willing to Pay Higher Water Service Fees than the Current Ones*

	Kamuli	Kumi	Nakaseke
<b>Level of Progression</b>	Medium	Medium	Medium

Whave reduced discounts on service fees in 2019, and then again in early 2020, with the aim of charging the full projected economic tariff. This is evidence that communities are willing to pay higher service fees. The main constraint is lack of trust in accountability. The new National O&M Framework requires ASPs to declare their financials, so full transparency and accountability is expected soon, with the anticipated result being that communities will understand and trust the validity of the projected economic tariff and how it is sent to their benefit. During the COVID-19 lockdown in 2020, Whave instituted several 6 month service fee exemptions, which lasted up to early 2021.

*Sub-County Local Government and District Local Government Formally Allocate a Percentage of Their Budget to Preventive Maintenance*

	Kamuli	Kumi	Nakaseke
<b>Level of Progression</b>	Low	Low	Medium

In Kamuli, the assistant DWO, who was supportive of preventive maintenance, provided hardware for preventive maintenance twice during the SWS program lifetime. It is unclear if hardware transfers will continue to occur following the appointment of a new DWO, who has thus far been unsupportive. In Kumi, the district government did not formally allocate a percentage of their budget toward preventive maintenance, but they did spend their budgets on this activity. Whave staff did not do all the mobilization; government staff also made positive steps, especially at the sub-county and local level. In Nakaseke, following the appointment of Whave as the ASP, the DLG provided hardware for the rehabilitation of community boreholes. Sub-county local government officers also mobilized water sources to sign up for preventive maintenance, in adherence with the pre-works maintenance procedure embedded within the ASP arrangement.

## Final Conclusions

### Recommendations to USAID and Further Work

The project has been successful in identifying critical systemic issues in rural water service delivery. It has also developed and tested solutions to these issues, as described above. These solutions are implemented to some degree already in Uganda. The table below lists the solutions and the extent to which they are already scaled and implemented.

Further work is needed to consolidate the gains of the project. This is described in Table 13 below. These recommendations for further work also act as recommendations to USAID for future WASH program design.

Table 13. Recommendations for Solving Critical Rural Water Systematic Issues

District-Provider Contracts	<p><b>System solution:</b> In line with Uganda National O&amp;M Framework, each local government water authority contracts an ASP and sets appropriate performance indicators and targets to monitor functionality assurance.</p> <p><b>Degree of implementation:</b> This policy is new and is not yet disseminated effectively to all local government water authorities. Out of 130 local governments in Uganda, an estimated 30 are familiar with the policy as of mid-2021.</p> <p><b>Recommendations for further work:</b> Aid must fund interventions to build familiarity with the policy among local government water authorities and to help the central government build its dissemination and regulation skills to adopt this role more effectively than it does at present.</p>
Performance-Pay and Service Agreements	<p><b>System solution:</b> Local technicians are contracted on a performance-pay basis to ensure that water points function consistently and that there are no disincentives for reliable operation. Detailed agreements specifying the roles and responsibilities of each party are signed with communities.</p> <p><b>Degree of implementation:</b> Both of these contracts are familiar to members of HPMA's and several hundred communities in ten districts as of mid-2021.</p> <p><b>Recommendations for further work:</b> Our learning demonstrates that these contracts get the results intended, in that local mechanics comply and communities are willing to pay the fees set in the service agreements. The indication is that fee revenue will be sufficient to sustain service, but only if ASPs are servicing a minimum of 4,000 water points (about 1 million people) in concentrated service areas. The process of expansion to this economic break-even volume requires a system investment by aid projects, as well as coordination of the finance injected currently by multiple WASH donors.</p>
Coordination of Aid on Pre-Works Maintenance Protocols	<p><b>System solution:</b> Donors and donor-funded NGOs should ensure that any new infrastructure investments are protected by professional maintenance protocols, applied prior to construction, to avoid the common and unsustainable “fast-gifting” approach that encourages a “wait-until-it-breaks” baseline culture.</p> <p><b>Degree of implementation:</b> Implementation has been much slower than expected, likely due to a change in inertia among WASH NGOs. Although three NGOs have agreed to the pre-investment maintenance procedure in principle, only one had engaged actively by mid-2021. By this time, there were 80 hand pump constructions and rehabilitations conducted under PMP, and several hundred were planned in multiple districts.</p> <p><b>Recommendations for further work:</b> Donors of all types and sizes must guide their implementing organizations to follow GoU policies working under agreed protocols of complementary roles and responsibilities, and finance must be provided on condition of PMP compliance. Donors must internally coordinate and ensure that the efforts of organizations they fund is coordinated and in line with government policy to regulate the PMP effectively.</p>
Expert Monitoring and Evaluation Facilitators for	<p><b>System solution:</b> Donors should support and fund neutral facilitators of performance reviews in each service area to monitor O&amp;M indicators of (1)</p>

<p>Regular District or Service Area Multi-Stakeholder Performance Reviews</p>	<p>area maintenance service providers, (2) infrastructure investors such as NGOs, and (3) enabling service providers (district governments) on a regular basis, such as quarterly or semi-annually. Facilitators should have performance evaluation authority and executive powers on behalf of central government regulators to replace inefficient actors with efficient actors.</p> <p><b>Degree of implementation:</b> This recommendation has not yet been implemented in a substantial way, inclusive of a complete set of O&amp;M indicators. However, the SWS project has established the principle enshrined in the GoU guidelines such as the National O&amp;M Framework, and four district governments have already engaged in regular quarterly PPP reviews, which are a first step to the full reviews recommended here.</p> <p><b>Recommendations for further work:</b> This concept should become a central WASH programming component on the part of large donors such as USAID, such that the monitoring and evaluation affiliation becomes the norm and underpins the National O&amp;M Framework for reliable safe water.</p>
<p>Optimized Service Area Size</p>	<p><b>System solution:</b> Service areas must be large enough to ensure economies of scale, consensus on tariff levels, and quality spare part supply chains. In Uganda, this equates to service areas of four or five districts ensuring reliable safe water for about 1 million people.</p> <p><b>Degree of implementation:</b> The SWS project has achieved concrete practical proof-of-concept at a scale large enough to guide national action. Four service areas have been established, consisting of clusters of neighboring districts, and existing maintenance teams have proved competence and cost-efficiency. These are the nucleus of four economically sized service areas.</p> <p><b>Recommendations for further work:</b> Donors must provide growth and discount subsidy declining to zero over 10 years, as described here under the heading Smart Subsidies.</p>
<p>Including Major Parts in Service Agreements</p>	<p><b>System solution:</b> In addition to minor maintenance tasks, major repairs and major parts replacement must be included in service agreements between communities and ASPs. This ensures viability because it removes the inclination of water users to neglect minor faults and to neglect early warnings of imminent breakdown as a method of passing costs to an external party.</p> <p><b>Degree of implementation:</b> This is implemented and has proved effective in removing one of the core systemic failings. The smart subsidy proposals here have been designed to build a financially self-sustaining system that does not require subsidy of major component replacement.</p> <p><b>Recommendations for further work:</b> Care must be taken to avoid a reversal of the progress made, because it is convenient for donors and local governments to provide finance for major parts as a method of subsidizing maintenance costs. It is strongly recommended that the smart subsidy approach is adopted to avoid this potential reversal to an identified system weakness.</p>
<p>Clear Demarcation of Cost Responsibilities</p>	<p><b>System solution:</b> Viability depends on each O&amp;M actor knowing its role and its cost-bearing responsibility. The four key roles are maintenance service (the role of the ASP), enabling service (the role of local government), infrastructure investment (undertaken by NGOs, sponsors such as vote-seeking politicians, and government), and system investment (undertaken by aid and government). The latter two roles should eventually be financed in full by the government.</p>

	<p>Maintenance is financed by tariff revenue, and enabling services are financed by the government. A critical step to viability will be the adoption of this clear demarcation by foreign aid donors because of the predominant influence they wield in the WASH sector at all levels of government and among communities.</p> <p><b>Degree of implementation:</b> This has become a norm already, insofar as the new National O&amp;M Framework is complied with, but there is a strong tendency for local governments to not provide their enabling services when NGOs and aid programs provide them directly. However, NGOs are increasingly adopting this approach for sustainability reasons.</p> <p><b>Recommendations for further work:</b> This demarcation must be a core part of large-scale aid interventions and programs of coordinating WASH NGOs.</p>
Transparency of Revenue and Cost	<p><b>System solution:</b> Service providers must be transparent with consumers and water authorities regarding their use of revenue collected and the actual cost of maintenance service provision.</p> <p><b>Degree of implementation:</b> This has become feasible by virtue of Whave making an extensive effort in building a service cost-tracking accounting system, including careful recording of component life-cycle costs. Evidence of service cost is now available from Whave, and transparency for DLGs and paying communities is pending establishment of the multi-stakeholder O&amp;M monitoring and evaluation facilitation performance review process to provide a platform for communication.</p> <p><b>Recommendations for further work:</b> Large-scale aid programs in WASH must integrate this transparency in their support for the multi-stakeholder O&amp;M monitoring and evaluation facilitation performance review process.</p>
Fair Tariff for Everyone	<p><b>System solution:</b> To ensure viability, tariffs must be affordable to low-income rural families and must still generate enough revenue to balance service costs. Tariff modalities must be accepted by all water users and must be seen to be fair, implying a single tariff for hand pumps within a given region or language group, or nationally. Trials of different tariff modalities are still ongoing and necessary. The government plays an essential role in the ultimate determination of tariffs.</p> <p><b>Degree of implementation:</b> Whave tested three tariff modes at scale in several districts and hundreds of communities and published evidence of their characteristics. Also, beginning in 2020, Whave convenes consensus-building discussions each year among stakeholders.</p> <p><b>Recommendations for further work:</b> Large-scale WASH programs must include support in the process of consensus building.</p>
Smart Subsidies	<p><b>System solution:</b> Subsidies from donors are necessary but must be provided in smart ways to ensure that service providers grow business volume large enough to break even and to ensure that discounts on tariffs decline to zero so service costs are eventually fully met by tariff revenue.</p> <p><b>Degree of implementation:</b> Whave tested this approach and established a strong trajectory toward financial sustained safe water reliability assurance.</p> <p><b>Recommendations for further work:</b> The techniques used to ensure break-even volume and elimination of discounts must be adopted by the government, so it is important that foreign aid support to this system-</p>

investment process is conducted through government protocols and that the government ensures uniform compliance among stakeholders nationally.

## Rural Water Activity in Kenya (University of Oxford)

### Context

Kitui County is the sixth-largest county in Kenya by area (30,430 km<sup>2</sup>), with 95 percent of the 1.1 million residents living in rural areas of the eight administrative sub-counties.<sup>20</sup> Agro-pastoral livelihoods dominate the rural economy with the production of pigeon peas, beans, sorghum, millet, mangoes, cassava, and, in some places, cotton, tobacco, and sisal. Human development indicators based on education, welfare, poverty, nutrition and child stunting, and access to basic services, such as drinking water, sanitation, or electricity, are low.<sup>21,22,23,24,25</sup>

Kitui County has an arid and semi-arid climate with a bi-modal rainfall pattern of short (October, November, December) and long (March, April, May) rains. Average rainfall is misleading, as the short and long rains are separated by an extended dry period. Water resources include the Tana River, which is the only major perennial river, defining the northern boundary with Machakos, Tharaka-Nithi, and Embu counties.

Kitui town and Mwingi town are the two main urban centers and rely on water treated and pumped south from Masinga and Kiambere dams. The dams are located on the Tana River and primarily used for hydro-power production, and water is supplied to these towns by the two county-owned water service providers, Kitui Water and Sanitation Company and Kiambere-Mwingi Water and Sanitation Company. However, these water service providers currently serve roughly 31 percent (or 360,000 people) of the total county population (1,221,001) due to various constraints that include limited infrastructure coverage, inefficient operations, inadequate water resources, urbanization, low tariffs, inadequate funding, and unprecedented demand or population growth.<sup>26</sup> The remainder of the county population, which is mostly rural, is partly served by community water points that play a critical role in closing the water access gap.

In many rural locations, groundwater is lifted using hand pumps or pumped using solar, electricity, or diesel power for stand-taps and kiosks. Groundwater varies in quality with salinity, a challenge in many

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<sup>20</sup> KNBS. 2019. 2019 Kenya Population and Housing Census, Volume II: Distribution of Population by Administrative Units. Available at: <https://www.knbs.or.ke/?wpdmpromo=2019-kenya-population-and-housing-census-volume-ii-distribution-of-population-by-administrative-units>

<sup>21</sup> Kenya Institute for Public Policy Research and Analysis (KIPPRA). 2018. Education and Training Budget Brief No. 64/2018-2019. Available at: <https://www.unicef.org/esa/sites/unicef.org/esa/files/2019-03/UNICEF-Kenya-2018-Education-Budget-Brief.pdf>

<sup>22</sup> KNBS. 2014. Kenya demographic and health survey 2014. Available at: <https://dhsprogram.com/pubs/pdf/fr308/fr308.pdf>

<sup>23</sup> KNBS. 2016. Kenya integrated household budget survey 2015/16. Available at: [https://sun-connect-news.org/fileadmin/DATEIEN/Dateien/New/KNBS\\_-\\_Basic\\_Report.pdf](https://sun-connect-news.org/fileadmin/DATEIEN/Dateien/New/KNBS_-_Basic_Report.pdf)

<sup>24</sup> KNBS. 2018. 2015/2016 Kenya Integrated Household Budget Survey. Available at: <https://www.knbs.or.ke/publications/>

<sup>25</sup> County Government of Kitui. 2019. County Integrated Development Plan 2018–2022. Available at: <https://cog.go.ke/downloads/category/106-county-integrated-development-plans-2018-2022?download=314:kitui-county-integrated-development-plan-2018-2022>

<sup>26</sup> WASREB. 2021. A Performance Report of Kenya's Water Services Sector 2019/2020. Available at: <https://wasreb.go.ke/impact-report-issue-no-13/>

areas of the county. Households in the country commonly use surface water, with over 400,000 people stating that it is their main drinking water source.<sup>20</sup> Households, communities, and schools also capture and store seasonal rainfall from roofs, rock catchments, small earth dams, or sand-dams. The drier months between June and late October present significant water supply challenges and affect the resilience of rainwater-harvesting strategies.

A water infrastructure audit in the county identified 460 piped water schemes and 687 hand pumps, of which 50 percent were non-functional.<sup>27</sup> Often, community water schemes serve local schools and health facilities, but water services are unreliable, with limited to no monitoring of the quality and quantity of water supplied. The Kitui County government identified water as one of its five development pillars of focus under the leadership of its second governor after the 2017 election. Other development pillars include food and water, health care, education and youth development, women empowerment, and wealth creation. County policies and budgets have been aligned to support these pillars.

The University of Oxford led SWS work in Kenya, working in partnership with UNICEF Kenya, and they implemented activities with a Kenya partner, Rural Focus Ltd. SWS tested a risk-based approach to rural water services delivery in Kitui County. Specifically, SWS applied the FundiFix model to demonstrate a maintenance approach for rural piped schemes and hand pumps and to inform learning at the county level with WASH stakeholders to influence emergence of the enabling environment, adoption, investment, and scale-up for rural water sustainability.

## Approach

Devolution under Kenya's 2010 constitution assigns responsibility for water service provision to 47 devolved governments or counties in Kenya. The Kitui County Government (KCG) became responsible for delivering water services to its mostly rural population of 1.2 million in 2013. However, historically, rural water investments have largely focused on building water supply infrastructure, leaving communities to manage and maintain them after construction. These users are often poor and located in rural areas with limited capacity, finance, or support to make systems sustainable. As a result, long and frequent service disruptions leave people without water, leading to high social and economic costs.

Oxford University and UNICEF Kenya led SWS's Kenya research, which they implemented in partnership with Rural Focus Ltd. (Kenya). The research objective was to test a risk-based approach to provide a maintenance model for universal water service delivery, working in rural Kenya (Kitui County). This required working with WASH actors to develop, scale up, and test the FundiFix model as one response to Kitui County's rural water supply challenge. SWS's theory of change hypothesized that if a WASH system is well understood by the actors in that system, those actors will then use that understanding to work together to identify needs and priorities and implement activities to strengthen the system. A strengthened system for the delivery of WASH services will lead to an increased likelihood that these services will be sustained.

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<sup>27</sup> Nyaga, C. 2019. A Water Infrastructure Audit of Kitui County. Available at: <https://www.globalwaters.org/resources/assets/sws/Infrastructure-Audit-Kitui-County>

To enable a better understanding of the system, SWS conducted a suite of analyses, including a water audit of major rural water infrastructure for communities and schools across Kitui County, a household survey to understand user behavior, systems dynamics modeling, and ONA to better understand relationships. SWS shared results from these analyses at county WASH forums to improve actors' understanding of WASH system performance.

To strengthen the system, SWS supported an existing coalition: the Kitui County WASH forum, initiated in 2016 with support from UNICEF, to convene county actors including donors, non-governmental organizations, government officers, community groups, and the local private sector. These forums provided a platform for improving sector coordination and systematically documenting plans, interventions, and lessons learned in improving rural water service delivery. Further, SWS worked with the county government to develop a prototype data management system to monitor the functionality of rural water infrastructure. An endline ONA allowed assessment of changes of relationships and priorities within the Kitui WASH network and the influence of SWS activities.

To increase the likelihood of sustainability, SWS provided learning from demonstration of a model for rural water maintenance service delivery: the FundiFix model. This included insights from a Water Services Maintenance Trust Fund established in 2016 to provide performance-based funding to maintenance service providers/enterprises. Funding is released to the maintenance service provider, i.e., FundiFix, based on agreed performance indicators and milestones to fund reliable water supplies for all communities, schools, and health care facilities. SWS shared lessons from demonstration of the FundiFix model with the County Government to build support for the Water Services Maintenance Trust Fund and to catalyze development of policies that recognize the role of monitoring, funding, maintenance, and enterprises in rural water service delivery. SWS also leveraged the WASH forum to document lessons from the FundiFix approach, providing an empirical basis for reforming the county water policy. The Kitui Water Bill and Policy also emerged through this process.

## Implementation Summary

### Landscape of Key Milestones and Timelines

#### *Systems Analysis Milestones*

- SWS completed and disseminated the community water sources audit within the WASH forum and externally in sector events, starting January 2019, to highlight rural water sustainability challenges and influence practice.
- SWS completed an ONA in August 2018 to understand network strength, actor interactions, and perspectives on rural water sustainability. SWS shared findings with key actors in a workshop and with the WASH forum in 2019.
- SWS completed a household welfare survey in 2019, providing insights on water access and uses at the household level, including priorities and policy preferences for users. Initially, SWS shared the findings at the WASH forum; later, SWS analyzed data to support financial analysis on returns of a professionalized maintenance service.

- In October 2020, SWS completed an audit of WASH facilities in schools and health care facilities in Kitui, highlighting institutional access levels, and disseminated key findings across sectors at both national and county platforms.
- From 2017 to 2020, SWS completed WASH forum surveys to monitor the evolution of the Kitui WASH forum, including actor behaviors, priorities for rural water sustainability, and feedback on the design of the coalition’s dialogue.

#### *Systems Strengthening Milestones*

- In 2019, the KCG adopted 10 key performance indicators from the water audit analysis for monitoring sector change and progress with respect to the governor’s manifesto.
- County water service monitoring progressively improved through adoption of standard reporting and, in December 2019, through consensus on reporting format and key performance indicators for effective sector reviews at the quarterly WASH forums.
- FundiFix received repair spare parts to support maintenance community supplies in Mwingi North, from the KCG (pipes and rods) and separately from a local NGO (World Vision). The National Drought Management Authority and Afya-Halisi programs also invested in major repair of schemes over 2018–2020, indicating increasing focus on rural water repair and maintenance on the part of county WASH actors.
- Following intensive rehabilitation and restoration of the Tharaka Women’s Piped Scheme, which serves roughly 15,000 people, the USAID-funded 5-year Kenya integrated water, sanitation and hygiene (KIWASH) program supported the scheme’s transition to the FundiFix maintenance program in July 2019 for a sustainable service.
- Launched in Q3 FY 2020, an online WASH database allowed functionality monitoring and reporting of county-wide water service access.

#### *Likelihood of Sustainability Milestones*

- SWS worked with the Kitui WASH Forum to develop the first county Water Bill and Policy. If enacted as-is, the bill will form the basis for sustainable change in the areas of private sector participation, sector funding, sector performance monitoring, new service delivery models, and coordination through the WASH forum.

## Approach

SWS’s approach for Kenya entailed first conducting analyses of the Kitui rural water service system to enable a better understanding of the service delivery issues. This was followed by implementation of systems-strengthening activities identified as a priority by the coalition, so as to increase the likelihood of rural water sustainability. The various systems analysis and strengthening activities completed are summarized below.

## Systems Analysis Activities

1. **Water audit.** A Kitui County-wide water audit of community water sources mapped up to 3,100 rural water points in 2017. The findings were key in informing discussion at the WASH forum, influencing development of the Water Bill and Policy, and providing a basis for a county WASH database design.
2. **Kitui WASH Forum survey.** Since February 2018 and jointly with UNICEF, SWS facilitated the Kitui County WASH Forum meetings to effectively coordinate the county water sector. SWS's support to the forum entailed dissemination of systems analysis findings to ensure evidence-based debate on service sustainability, among other supports. SWS administered a WASH forum survey at the forum semi-annually and analyzed data to track shifts on stakeholder behavior with respect to monitoring, reporting, investment in maintenance, and priorities.
3. **Household survey.** SWS completed a survey of households in Mwingi North to determine (1) welfare status, (2) water user behavior, including gender analysis, (3) water infrastructure availability and performance, and (4) policy preferences across operational, financial, and institutional determinants. These data and maps later supported economic analysis on the value of a professionalized maintenance service (item 5 below).
4. **Baseline ONA.** SWS completed a baseline ONA in 2018 to understand the status of the local actor network. Data collection involved mapping interactions and priorities with 25 key WASH actors (representing organizations) in Kitui. Analysis also explored the network strength, centrality of individual actors within the larger sector, frequency, and the types of interactions (skills, resources, authority, and information).
5. **Functionality returns from a professionalized maintenance service.** SWS conducted an analysis of the financial, economic, and social returns from a maintenance provider (Fundifix), in which they analyzed the collective data (from the schools and community water infrastructure audits, infrastructure investment cost data, household welfare survey, and operational data from Fundifix) to provide a methodology for measuring returns of a professionalized maintenance over the status quo (building new infrastructure and community-based management). Further, SWS also worked with UCB to overlay systems dynamic modeling research applying the Stella Architect model to investigate the functionality and financial implications of scaling up a professional maintenance service for all rural piped schemes in Kitui County, Kenya.

## Systems-Strengthening Activities

1. **Kitui WASH Forum/learning coalition.** UNICEF's Kenya program initiated the Kitui County Government's WASH Forum in 2016 with quarterly sector meetings. The forums provided a new and regular mechanism for the County's Directorate for Water to bring their sub-county water officers and other relevant WASH sector actors together to improve sector coordination, communication, and planning. Since February 2018 and jointly with UNICEF, SWS has contributed to the WASH forum agenda through dissemination of systems analysis findings from the activities listed above to support the quality of debate. SWS also influenced the structure of the WASH forum, agenda, and its governance for a stronger role, and SWS supported logistical elements such as meeting documentation, funding, planning of meetings, and more.

2. **Kitui schools and health facilities water audit.** Dissemination of findings of the Kitui County Water Audit over the 2018–2019 period generated interest among actors, with the County Minister for Water indicating interest in improving drinking water access in county schools (primary and secondary, both public and private), colleges, and health facilities. To address the information gap, SWS completed a county-wide audit of WASH facilities at all public and private institutions in 2020.
3. **Endline ONA.** SWS completed an endline ONA in August 2020 that examined shifts of the actor relationships since the baseline. The endline also explored changes of actor priorities since the baseline and the driving factors, including the role of SWS interventions.
4. **WASH database.** The KCG, like most counties in Kenya, lacked a comprehensive data management system for recording and monitoring water services infrastructure. The activity identified a prototype data management system as important for Kitui County with actors and anchored the development process within the Kitui WASH Forum to ensure collective input. The database has provided an inventory of water infrastructure and, progressively, is expanding to include operational performance data. The database may in future influence sector planning and resource allocations, as well as wider accountability, including donor programming.

#### Likelihood of Sustainability

1. **Kitui County Water Bill and Policy development:** SWS supported development of the first Kitui Water Bill and Policy, following a request from the KCG. SWS delivered the final County Water Bill and Policy in February 2020 through a collaborative effort with the USAID-funded KIWASH program in Kenya and the Kitui WASH Forum. The Water Bill and Policy provides a basis to advance more sustainable WASH systems, with a legal mandate and revised roles and responsibilities for the building, maintenance, monitoring, and sustainable funding of rural water services. The bill will institutionalize the following: a trust fund to ring-fence and mobilize funding for rural water services; sector coordination through a WASH forum; monitoring of services; private sector participation, as well as enabling factors; a universal service access goal of a basis of non-discrimination in service provision by wealth, location, gender, and facilities (e.g., schools, health care facilities, and hospitals); water resource management and protection, for both surface water and groundwater; and other initiatives.
2. **Demonstration of the FundiFix model in Mwingi North, Kitui:** SWS supported demonstration of the FundiFix model for professionalized maintenance service delivery through a local FundiFix company, Miambani Ltd. SWS then shared with the WASH forum functionality results, coverage, costs, funding, lessons, and challenges from FundiFix demonstration. SWS also discussed these in separate meetings with the Kitui County leadership and in dissemination events at national and international platforms to increase reach and to influence policy and practice. The work is generating performance evidence and continues to support learning on factors of sustainability of professionalized maintenance service providers.

## Testing Our Theory of Change and Answering Our Learning Questions

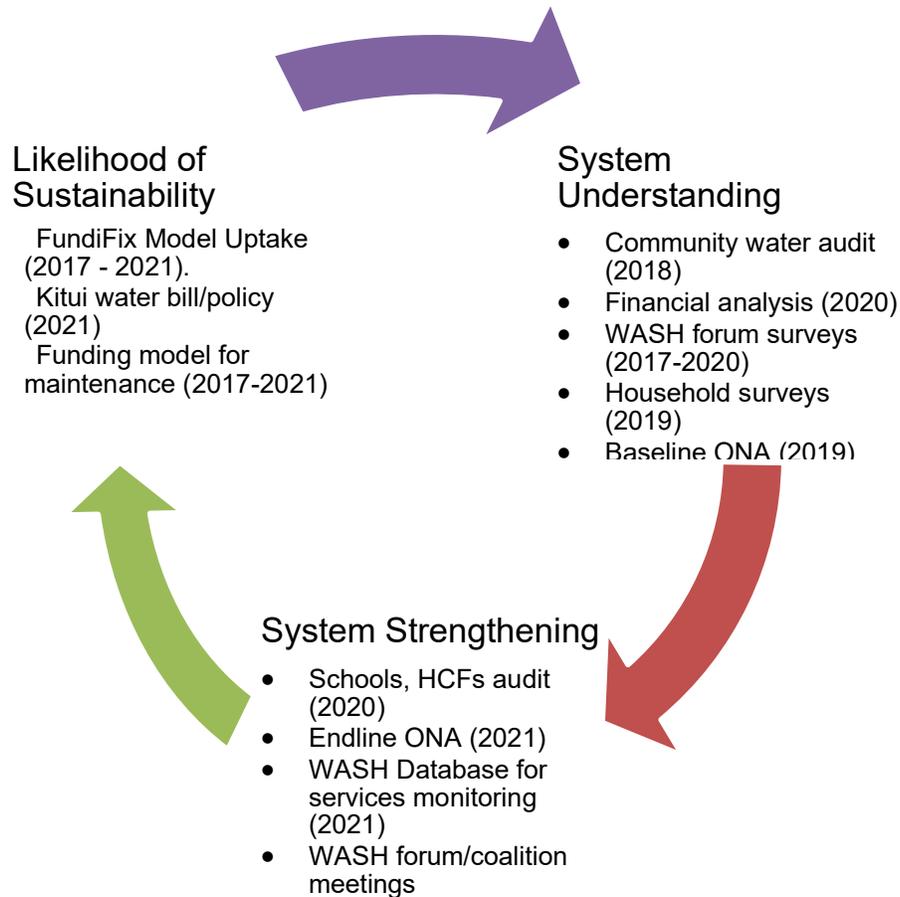


Figure 28. Alignment of SWS Activities with the Theory of Change

### Understanding the System

SWS conducted various analyses — including an audit of rural water infrastructure across Kitui County communities, schools, and health facilities, a household survey on water user behavior, an ONA, financial analysis coupled with systems dynamic modeling to provide a methodology for quantifying the value of professionalized maintenance, and WASH forum surveys — to promote a better understanding of the Kitui WASH network and to identify enablers and barriers to sustainable and universal water service access. SWS shared these results at county WASH forums to inform actors’ debate on sustainability. The theory of change guiding SWS’s approach hypothesized that convening relevant WASH actors in quarterly meetings to debate the systems analysis findings may enable them to discuss and identify factors constraining, or supporting, sustainability. This may in turn shift collective system behavior for a collective response and more sustainable outcomes.

### Strengthening the System

SWS's theory of change assumed that strengthening activities summarized below would improve information flows, influence individual-for-collective decision making, and shift system behavior toward investment in rural water maintenance and a service sustainability focus.

SWS co-facilitated county WASH forums that convened actors, including donors, NGOs, government officers, community groups, and the local private sector. These forums provided a platform for improving sector coordination and systematically documenting plans, interventions, and lessons learned in improving rural water sustainability. SWS also worked with the county government to develop and pilot a prototype data management system to monitor the performance of rural water services. Further, an ONA completed at the endline examined shifts of actor relationships over the implementation period across the domains: authority, information, resources, and skills exchange.

### *Increasing Likelihood of Sustainability*

SWS supported operations and learned from the performance of a locally owned social enterprise, FundiFix. FundiFix offered professional maintenance services for rural water infrastructure, starting with community hand pump sources and progressively scaling to include small, piped schemes. SWS shared lessons from demonstration of the FundiFix model with actors at the WASH forum and with senior-level county management to mobilize support for maintenance, including reform of water service delivery strategies and policies.

The work also included demonstration of a performance-based funding mechanism: the Kitui County Water Services Maintenance Trust Fund, established in 2016. This trust fund provided a mechanism to pool funding from government, donors, and private investors, based on evidence of water point functionality and user payments. Experiences and impact of the approach were debated to influence government support for the Water Services Maintenance Trust Fund and advance the development of policies that recognize the role of government funding in support of social enterprises like FundiFix for equitable access and improved rural water reliability.

SWS hypothesized that learning from a new rural water maintenance service provider (Fundifix) would shift sector priorities from a dominant focus on building infrastructure to maintaining infrastructure sustainably and provide for the required enabling environment to support service delivery and scale up.

### *Learning on Systems Understanding*

SWS work in Kenya sought to answer the following overall question on system understanding:

Learning Question 1: How do different factor/actor systems and approaches improve stakeholder understanding of the system's components and their interactions, and how do they influence sustainability of WASH services?

For Kitui, the lack of timely and reliable information on water supply infrastructure hindered progress on water system sustainability interventions at the county WASH forums, especially for the rural sub-sector, where monitoring and reporting were almost non-existent. Likewise, there was no prioritization of key focus areas for sustainability to be achieved. As a result, different organizations had a broad range of interventions in place, but little collaboration existed between them.

SWS hypothesized that generating and sharing recent information on performance of the county water services would contribute to building a better understanding of the issues impeding rural water service sustainability. This would, in turn, promote consensus building regarding priorities for sustainability and translate to more collaborative behavior. SWS work in Kitui therefore sought to answer the following specific sub-questions:

- A. What information or interventions are most useful in changing stakeholder understanding?
- B. How do stakeholders rank eight pre-selected factors (new infrastructure development, financial sustainability, service reliability, sector coordination, post-construction support, mapping and monitoring, new O&M models, and private sector engagement) presumed to be critical for sustainability?
- C. What aspect of the network is working well in sustaining water services in Kitui County? What are the main problems in sustaining rural water services in Kitui County, and what are the main recommendations by actors for solutions to these problems?

### **Answering the Learning Questions**

The Kitui County-convened quarterly WASH forums that UNICEF initiated in 2016 served as the primary platform for enabling systems understanding. The WASH forum membership comprises up to 63 individual actors drawn from the national and county government, NGOs, bilateral programs, donors, the private sector, FundiFix, community groups, and academic/research institutions. Since February 2018, at least 12 coalition meetings have been convened, with the participation of 37–63 actors. In 2020, however, the COVID-19 pandemic interrupted WASH forum meetings, making it difficult to monitor sector changes. A phased resumption of meetings started in March 2021, with a subset (37) of the actors. SWS continually assessed changes in the sector through observation, interviews, and surveys, as follows:

- Interviews with 25 key actors who also attend the WASH forum, at baseline in August 2018, midline in August 2019, and endline in August 2020, to examine relationships in the network, shifts over time, and stakeholder understanding.
- Various high-level meetings with the Kitui County water ministry leadership over 2017–2021, including the County Executive Committee Member, Chief Officer, and directors for water at the county.
- Quarterly WASH forum meetings with 37–63 Kitui WASH actors.
- A survey administered at the WASH forum, every 6 months, to assess changes with respect to behaviors and priorities.

*Learning Question 1A.* What information or interventions are most useful in changing stakeholder understanding?

Analysis of WASH forum surveys shows that, on average, 40 percent of WASH forum participants reported improved understanding in 2019 (four quarterly forums held in 2019). The most influential tools, reported by actors, in creating this shift in understanding included:

- Sharing of sector performance (service status) reports (key performance indicators) and strategy documents at the WASH forums.
- Dissemination of research findings, new innovations or technologies, and learnings from exchange visits.
- Discussions about tools, models, and approaches for improving management and sustainability of rural water supplies, managed by communities.

Systems analysis by SWS and subsequent discussions on the status of rural water services, mostly based on the water sources audit, dominated as the most influential SWS activity in shifting stakeholder understanding. This activity enabled an evidence-based conversation at the WASH forum about “what next” for sustainability to be achieved and, later, significantly influenced the county water policy development initiative and content. Through the WASH forum surveys, actors also indicated that information, data, and discussions in relation to status or performance of the county’s water sector — for example, the sub-county level reports on status/performance of water service access — was key in influencing their understanding of factors.

Smaller and targeted or high-level meetings with the County Executive Committee Member were central to influencing the overall vision of the county leadership.

*Learning Question 1B.* How do stakeholders rank eight pre-selected factors presumed to be critical for sustainability?

SWS administered a WASH forum survey to track actors shifts with respect to understanding and priorities for the sector. At baseline (February 2018), SWS administered the WASH forum survey to all participants and analyzed the results to assess the z-score ranking of eight pre-selected factors of sustainability of relevance to Kitui (standard deviations above/below mean).

Results, documented in a briefing note,<sup>28</sup> indicated that at baseline, Kitui actors considered the following three factors to be important for the sustainability of drinking water services: (1) new infrastructure, (2) financial sustainability, and (3) service reliability. Meanwhile, the two factors weakly associated with sector sustainability were: (1) private sector engagement and (2) mapping and monitoring. More-experienced government and policy sector respondents identified the factor “new operation and maintenance models” to be important for sustainability. Government was the only group not to rank “mapping and monitoring” as low priority. Notably, all groups ranked the factor “sector coordination” as intermediately important (see Figure 29 below).

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<sup>28</sup> Nyaga, C. 2018. Understanding factors and actors to achieve sustainable drinking water systems in Kitui County. Available at: <https://www.globalwaters.org/resources/assets/sws/understanding-factors-and-actors-achieve-sustainable-drinking-water-systems-kitui>

At the subsequent four WASH forums held in 2019 (n=164), WASH forum attendees repeated the ranking exercise on priority factors of sustainability. From the results, actors ranked “infrastructure,” “finance,” and “reliability” consistently high, with “private sector” the lowest. “Coordination and planning,” “monitoring,” and “O&M models” do not feature highly (see Figure 30 below).

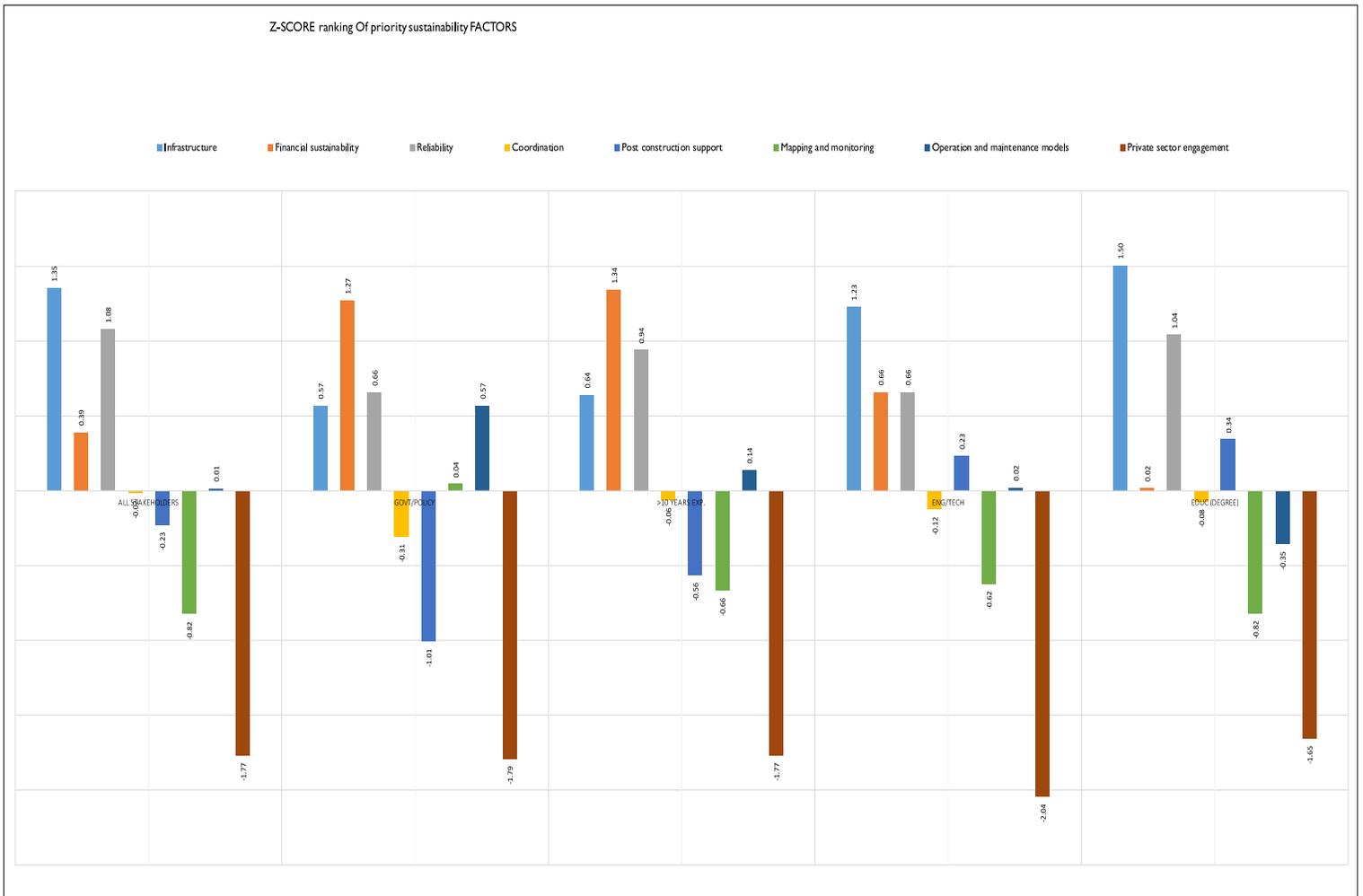


Figure 29. Prioritization of sustainability factors by Kitui WASH actors at baseline, assessed in February 2018

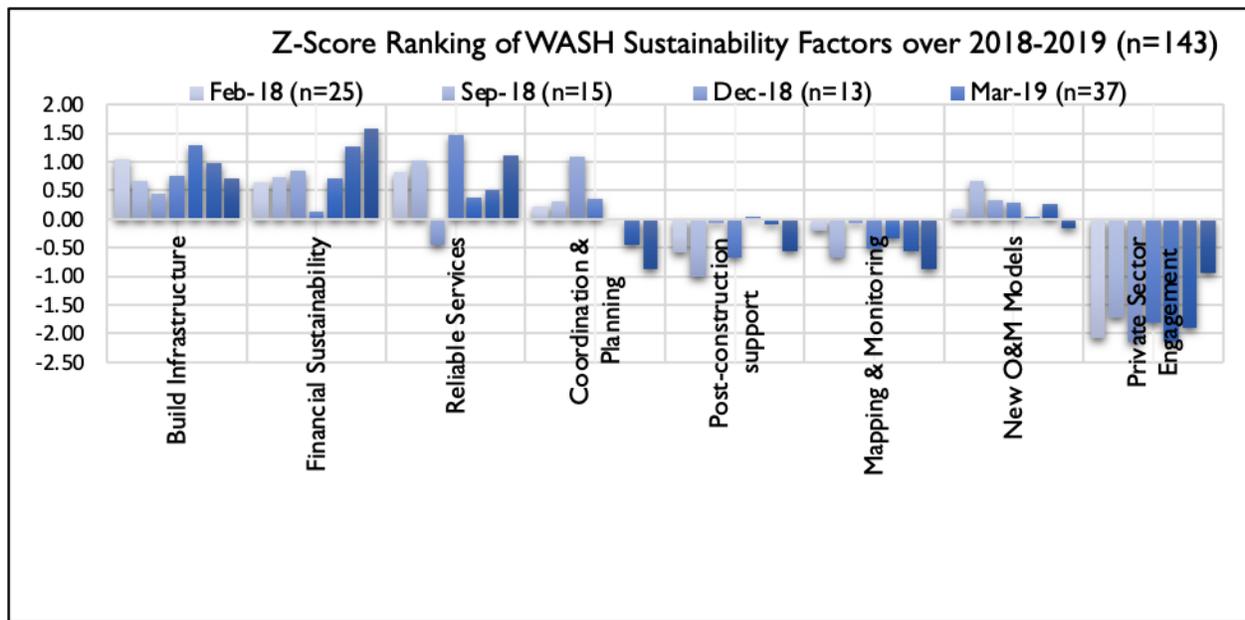


Figure 30. Prioritization Trend of Sustainability Factors by Actors, Based on Seven WASH Forum Surveys Completed in 2018–2019

*Learning Question 1C.* What aspect of the network was working well in sustaining water services in Kitui County? What were the main problems in sustaining rural water services in Kitui County, and what were the main recommendations by actors for solutions to these problems at baseline?

SWS applied ONA methodology to quantitatively understand interactions between stakeholders and to identify opportunities for strategically strengthening particular parts of a network. SWS completed a baseline ONA in August 2018. This required interviews with 25 key actors selected from the WASH forum.

The ONA results identified an additional 50 organizations to the 25 already actively present in the WASH forum, totaling 75 organizations or actors that have worked in the county on water-related programs and projects. An information network analysis revealed that all actors included in the study had an information-sharing relationship (see Figure 31 below). Connections were not extensively present for other relationship types (skills, authority, and resources) at baseline.

Regarding priority factors for sustainable rural water delivery, actors flagged key challenges to be inadequate sector funding, poor management of rural water supplies, and a lack of technical capacity among communities managing water supplies. Similarly, the most-cited recommendations for solutions to these challenges was the development and adoption of alternative models for rural water supply, re-allocation of funding, and capacity support of community water service providers. The baseline ONA also highlighted a misalignment of rural water priorities, especially within the county government, where priority for monitoring at the county head office did not cascade to their lower-level county offices (sub-county water offices). Instead, sub-county water offices prioritized operational aspects on capacity building, management, finances, and alternative energy sources for water pumping to lower operating costs of water supplies.



SWS observed gradual response to reporting. In the Q3 2018 WASH forum, SWS observed “naming and shaming” of actors not reporting or cooperating with the county government in the course of implementing their interventions. SWS also observed increased prioritization of maintenance. Self-reported data through the WASH forum surveys suggests that 3 in 5 actors have invested in maintenance, albeit internally within their organization with no direct engagement of FundiFix or local private sector. For KCG, observed responses entailed proactive efforts to repair broken rural water infrastructure through the Chief Officer’s office, while individual sub-counties (i.e., Mwingi West) arranged maintenance campaigns in partnership with the communities. Interviews with actors (stakeholder interview transcripts) also indicated that some actors (mostly NGOs) are responding by directly providing post-construction repair and maintenance support for their communities or supplies to avoid failure and the bad reputation that may arise from that in future.

### **Lessons on Stakeholder Understanding for Systems Change**

SWS work in Kitui suggested that:

1. Credibility of the lead organizations is key, linked to the ability to generate undisputed evidence for informing actor debate on priorities. UNICEF and Oxford’s reputation in Kitui, and their long-standing relationship with the Kitui County Government, created an environment of trust and built credibility. The community water audits, schools and health facilities audits, and the ONA all provided uncontested evidence of issues hindering sustainable water access in the county and allowed the coalition to shift debate to what the priorities or responses should be.
2. The WASH forum discussion of systems analysis findings entailed a non-prescriptive debate founded on the basis of trust and open conversation on issues for actors to openly debate and agree on priorities and routes for change.
3. Creating understanding was not achieved in a single event but required repeated and consistent messaging, through regular presentations at the WASH forum meetings and participation of SWS in county water sector events to emphasize the evidence.
4. Change in understanding did not lead to immediate and explicit adoption of maintenance in actor programming. Instead, different routes for change occurred. Mostly, actors or organizations changed their internal programming to integrate maintenance practices on a light scale, with the lack of flexible donor funding within NGOs being a key limitation to change. Therefore, a big part of the transition to sector-wide integration of sustainability approaches will also largely depend on donors’ response. Government actors responded by increasing maintenance-related campaigns, as well as indirect support for the FundiFix model through staff time and support and through provision of repair materials. The lack of a policy framework limited the government’s ability to provide in-cash support to FundiFix for rural water maintenance.
5. Through SWS support, progressive strengthening of the WASH forum governance also empowered the coalition to play a lead role in influencing fellow actors and organizations to conform.

## Lessons on Systems Strengthening

SWS work in Kitui sought to answer the following overall learning question and sub-questions:

How do selected interventions influence the WASH network and influence and/or address the WASH system factors?

- A. What key strengthening interventions are required for sustainable rollout of a government-owned WASH database and monitoring system?
- B. Which interventions demonstrate most influence on the network?
- C. How have information sharing, coordination, skills, and resource relationships changed within the network (actors)?

SWS's theory of change posited that collaborative design and implementation of network-strengthening activities would deepen communication (information sharing and reporting) among local actors and contribute to increased ownership of WASH sustainability dialogue at the county level. SWS implemented the following three learning activities to answer the specific learning questions above, all through the Kitui County WASH Forum:

- A second iteration of the ONA to provide insights into how the network had shifted over time and the drivers of observed changes, if any;
- The co-design, development, testing, and discussion of a county rural water monitoring database; and
- A schools and health facilities audit, which was a follow-up activity to the community water sources audit completed under Learning Question I.

The Kitui WASH network meetings/forums provided a learning platform to convene actors quarterly to discuss and debate findings. SWS also provided administrative support to the Kitui County WASH Forum to strengthen its role in facilitating a structured debate on service sustainability. Monitoring activities, to track system shifts, entailed observation of actor responses, documentation of qualitative and quantitative data, administration of a WASH forum survey, and interviews with key participants.

### Answering Our Learning Questions

*Learning Question 1A.* What key strengthening interventions are required for sustainable rollout of a government-owned WASH database and monitoring system?

SWS selected database development as a learning activity because information on county water services tended to be dispersed in various institutions (locally, nationally, and regionally); therefore, to change actors' preference for new infrastructure development over maintenance of existing water infrastructure, the government required a better information management system.

The water audit activity completed for systems understanding provided a baseline status of rural water services in Kitui County, with the dataset providing a basis for designing a monitoring platform.

Therefore, this intervention aimed to transition Kitui County from a paper-based to a digital county WASH information management system while integrating learning on factors of sustainable adoption of databases and their influence on sector priorities, planning, and investments.

SWS identified the mWater platform as an appropriate choice, due to its wide adoption for water service mapping and monitoring in rural Africa, for guaranteed availability of technical support for Kitui post-SWS. Thereafter, SWS uploaded data collected through systems analysis activities (mostly the community water sources audit) on the mWater platform and followed up with ongoing technical support for county-wide adoption. Pending development of the mWater platform, SWS preliminarily supported improvement of the paper-based reporting system that the KCG had established. SWS facilitated the debate for identification of priority key performance indicators for monitoring and to highlight data quality issues; SWS also facilitated the design of a standard reporting template for sub-counties to allow standardization of formats and indicators, comparability, and aggregation of performance and to entrench a culture of consistent quarterly reporting for smooth transition to the online database system when ready.

The WASH forum provided a platform to share and discuss (1) the motivators for sustainable adoption of WASH databases and (2) the strengthening interventions that are required for successful adoption, while also evaluating the role of the WASH database in influencing alignment of county government and actors' priorities for sustainability. Delayed implementation of the database meant the insights below are based on a short evaluation period, from April to November 2021, and partial implementation of the database for asset inventorying and functionality monitoring only. Nonetheless, SWS observed:

1. **Varied adoption of mWater between sub-counties of Kitui for asset management and functionality monitoring.** While some sub-counties immediately begun updating the system, others, such as Kitui East and Kitui Central, were slow to adopt. Discussions in review meetings indicated some disincentives for adoption to be an aging county staff and the associated challenges of field mobility, use of smart (mobile app and web) technology, and the approach of retirement age.
2. **Slow integration with routine work processes and information needs.** While SWS received several requests for custom or large-scale data needs from the KCG and several WASH partners, day-to-day information or reporting needs continued to follow the pre-mWater approach, leading to parallel efforts. Activity on the monitoring platform would peak just before key progress review meetings, indicating the need for further support to integrate the platform into day-to-day roles of government officers. Again, this suggests the need to ensure databases are customized and to respond to local data and reporting needs as much as possible. As of the end of FY 2020–2021, SWS was supporting customization of data collection forms and reports or dashboards to respond to KCG's needs and encourage usage.
3. **Monitoring costs.** Paper-based monitoring provided clarity of monitoring roles and processes. However, monitoring resources, especially travel budgets, were a significant limitation. Inadequate budgets at the field offices level meant sub-county water officers, primarily responsible for field data collection, were not mobile, hence limiting progress. Successful rollout

of a monitoring system should therefore recognize these operational costs and allocate sufficient resources to match information needs.

4. **Unclear roles.** While non-governmental actors' investments comprise a significant proportion in the county water sector, their role with respect to updating the database remained unclear, mostly due to their short-term presence in the county linked to donor funding cycles. Accountability mechanisms for regular updating would also potentially be weaker if different layers of institutions are involved; therefore, SWS efforts were focused on strengthening KCG's capacities as the mandated institution for sector monitoring.
5. **Data availability and quality challenges.** Even with the monitoring platform in place, SWS continued to face data availability and quality challenges, especially for borehole installations such as pumps and motors, with communities mostly lacking accurate data. The implication here is that future water assets would need to be inventoried in real time to avoid a similar scenario, implying that future success also hinges on having in place a strong and stable actor coordination system for the wider county water sector.

*Learning Question 1B.* Which interventions demonstrated the most influence on the network?

SWS disseminated the county water audit findings detailed in the systems understanding section above. Over the period of 2018–2019, this generated interest in improving drinking water access for institutions, with the Kitui County Minister for Water acknowledging that it is the county government's responsibility to ensure institutional water supply. However, concerns arose that the community water audit missed the service status of key institutions (schools, colleges, and health care facilities) in Kitui. To address this gap, in 2019 SWS supported a WASH facilities audit for schools and health care centers as a follow-up intervention to the community water sources audit.

SWS developed the schools and health care facilities audit in consultation with UNICEF Kenya, the Ministry of Education, and the KCG's Ministries for Health and Water. For schools, the activity surveyed 1,887 learning institutions in Kitui County; 76 percent of these were primary schools, 23 percent were secondary schools, and 1 percent were colleges or polytechnics. For health care facilities, SWS assessed WASH facilities at 122 health care centers in Kitui County's eight sub-counties, comprising 84 government and 38 non-government facilities.

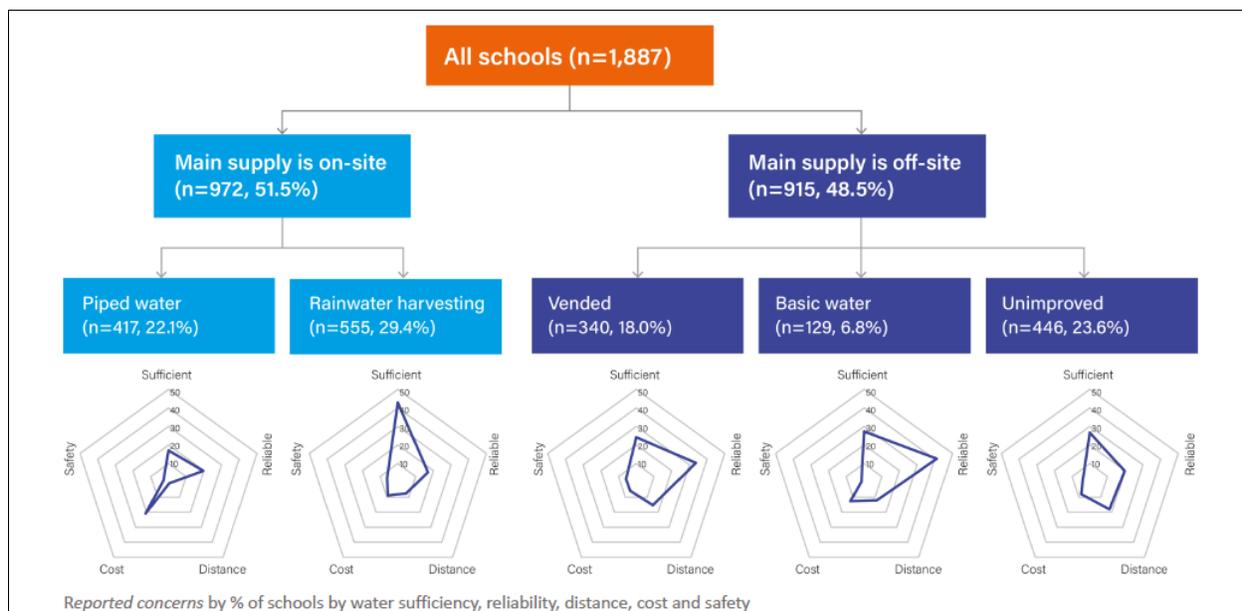


Figure 32. A Typology of the Main Water Sources and Concerns for Primary and Secondary Schools

SWS completed preliminary analysis of data from the health care facilities audit and is preparing a briefing note for the local audience in Kitui. For schools, results indicated:

- Water management concerns.** Schools cited water availability (35 percent), reliability (26 percent), cost (11 percent), and distance (9 percent) as concerns (Figure 32 above). Schools relying mainly on rainwater were least likely to report daily group handwashing activities (16 percent); primary schools were eight times more likely to report pupils carrying water to school than secondary schools.
- Water risks.** 1 in 2 schools had no handwashing facility; daily group handwashing activities were reported in fewer than 1 in 3 schools; fewer than 1 in 2 schools reported toilets as clean; few teachers had water quality concerns (4 percent), though monthly monitoring revealed multiple hazards, including *E. coli*, fluoride, salinity, and nitrate; more than 8 in 10 schools relied on rainwater-harvesting tanks, though 40 percent had storage for 1 week or less (Figure 33 below).
- Funding inequalities.** One-third of schools spent no money on water services; secondary schools spent over five times more on water per pupil than primary schools; 1 in 3 schools purchased 16,544 m<sup>3</sup> of vended water per year, costing \$115,754; 70 percent of vended water purchased for schools occurred in the dry months, from June through October.
- Learning challenges.** Teachers related absenteeism at school to sickness, fees, and a lack of food or water. One in two secondary schools reported no water for menstrual hygiene management; schools connected to piped water on-site mostly lacked water for menstrual hygiene management (31 percent), followed by schools relying on rainwater (27 percent) for their main supply. Male teachers did not relate water concerns with menstrual hygiene management; female teachers did but comprised only one-third of the total of 3,141 staff.

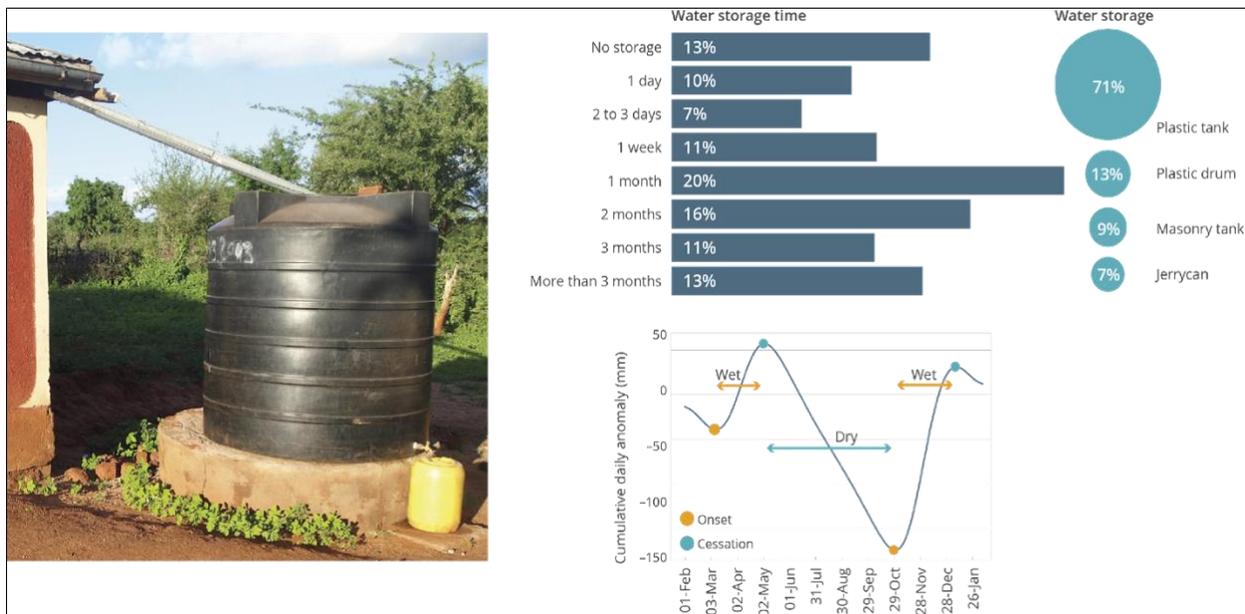


Figure 33. Rainwater-Harvesting Storage Capacity for All Schools in Kitui County

The schools audit report identifies four areas to improve outcomes: (1) clarification of national and county responsibilities for WASH services in schools; (2) improvement of monitoring and regulatory capacity at the county level; (3) use of information from monitoring systems to rethink funding models; and (4) piloting performance-based models to support a national program of reform. A detailed report of the schools study with the findings is available online.<sup>30</sup>

Due to COVID-19 disruptions, SWS discussed results (for schools only) remotely in online workshops and webinars with county-level WASH, education, and health actors, as well as with the national Ministry of Education and donors. The well-attended meetings led up to a new proposed activity that would build off of the results. SWS and REACH Programs discussed with various stakeholders how to implement the report findings at a pilot scale and demonstrate a model for water service delivery for institutions.

*Learning Question 1C.* How have information sharing, coordination, skills, and resource relationships changed within the network?

SWS completed an endline ONA in 2020 to establish shifts in the Kitui WASH network, from the baseline done in 2018 and examined under Learning Question 1 above. In the endline ONA, SWS sought to explain the extent to which different stakeholder groups had become stronger or more influential, as well as the nature of their relationships.

<sup>30</sup> Hope, R., Katuva, J., Nyaga, C., Koehler, J., Charles, K., Nowicki, S., Dyer, E., Olago, D., Tanui, F., Trevett, A., Thomas, M., and Gladstone, N. 2021. Delivering safely-managed water to schools in Kenya. Available at: <https://www.globalwaters.org/sites/default/files/kitui-report-web.pdf>

SWS repeated the methodology applied in the baseline ONA. SWS completed interviews with actors identified during the baseline and included questions on observed successes, challenges, and recommended solutions to achieve sustainable rural water services in the Kitui WASH sector. SWS interviewed fewer actors at the endline than baseline because the three organizations (KIWASH, ActionAid, and The Red Cross) had either phased out or were in transition to new phases of their programming for Kitui County.

Endline ONA results indicated increased relationships or interactions between the WASH forum actors driven by information and skill ties. The overall number of network ties and/or relationships has increased nearly four-fold since the baseline study (Figure 34 below).

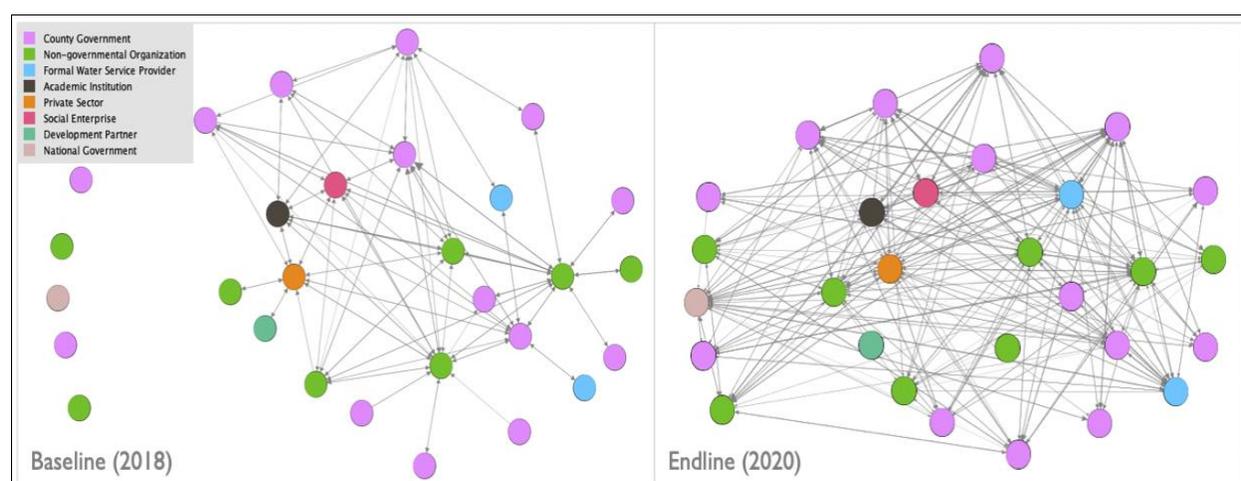


Figure 34. Overall Network Ties at Baseline ONA in 2018 (Left) and at Endline ONA in 2020 (Right)

As of 2020, the KCG now dominated skills transfer relationships and wielded authority and influence over other actors, a position that NGO actors in Kitui held in 2018. This points to progressive emergence of the KCG to take a lead role in the WASH sector with the support of other actors (see Figure 35 below). Of note, only 44 percent of county WASH actors held the same role or remained at the same work station as in the baseline. The main causes of these changes were transfers for county government staff and for non-governmental actors, short-term in-county presence of organizations linked to project duration, or job transition. SWS found that closeout of NGO programs caused instability in the network, which highlighted the limitations of short-term projects or programs in creating long-term and sustainable change.

Almost all donors to the county WASH sector remained under-represented in the local WASH forum. By endline, actors presented a lower tendency to work with like-minded actors, which may imply a greater diversity of ideas, as well as a lower tendency of actors to form sub-groups within the larger Kitui County WASH Forum that are organized by shared priorities. Sector priorities had changed for roughly half of the actors, with fewer actors prioritizing the coordination or professionalization of how rural water supplies are managed. Actors prioritizing scheme management coordination and professionalization remained well-connected from 2018 to 2020, potentially enhancing their ability to advance their agenda. In 2020, more actors prioritized strengthening of the community management model, driven by funding agendas, knowledge gaps, and political dynamics, but the ONA found this sub-

group to be less connected than in 2018 (see Figure 36 below). As in the baseline ONA, priorities of county government actors in management or at the head office still clash with those of the county’s field offices or sub-counties, indicating competing and changing agendas.

The endline ONA report identifies future opportunities for: (1) institutionalizing the WASH forum network within water policy or law to play a stronger vertical and horizontal coordination role in the sector; (2) strengthening monitoring and reporting capacities to facilitate information and skills relationships within the network; (3) streamlining sector funding to ensure clear strategies for supporting universal water access in rural Kitui; (4) aligning programming and funding to ensure consistency with identified sector priorities; (5) influencing subsidiary networks, including donors and political networks and other government offices, for mutually reinforcing investments/programs and narrative; and (6) improving access to knowledge and toolkits on models for professionalizing rural water service delivery.<sup>31</sup>

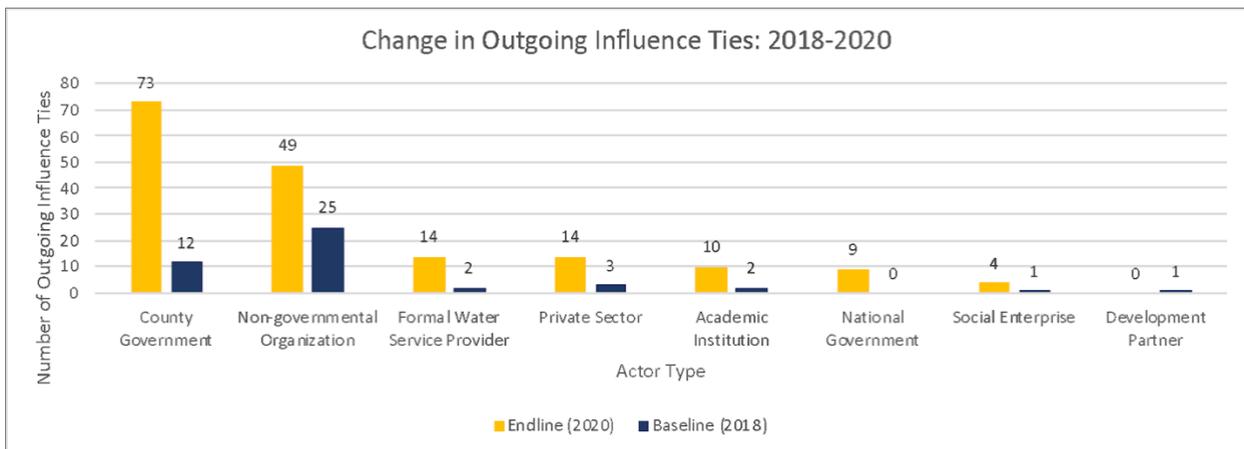


Figure 35. Change in Number of Outgoing Influence Ties

<sup>31</sup> McNicholl, D., Nyaga, C., AND Pugel, K. 2021. Understanding Changes in Coordination in Kitui County’s Water Sector 2018–2021. Available at: <https://www.globalwaters.org/resources/assets/understanding-changes-coordination-kitui-countys-water-sector-2018-2021>

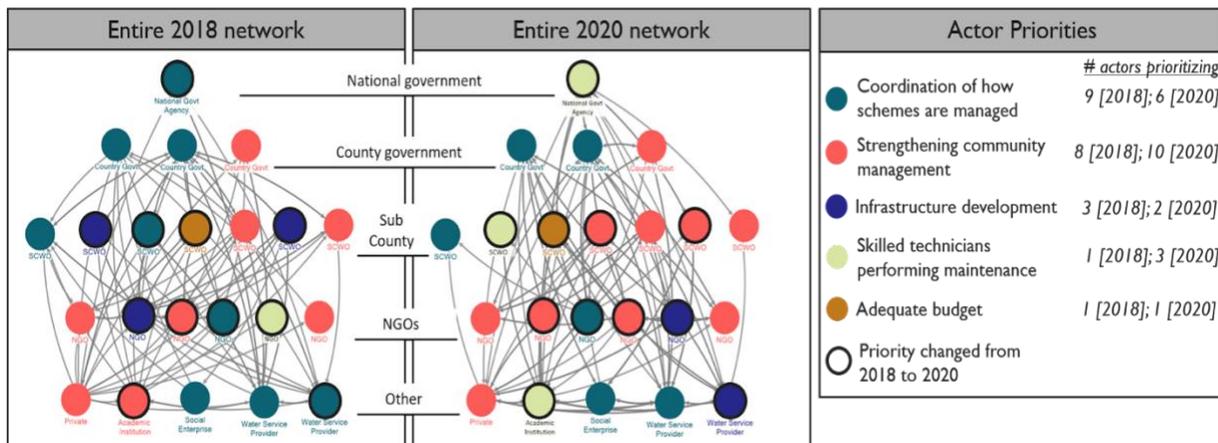


Figure 36. Shifts in Actor Priorities from 2018 to 2020; Network Map Reports on Skill Ties and Is Arranged by Actor Type and Colored by Actor Priority

## Reflections and Conclusions on Systems Strengthening

### *Learning Coalition: The WASH Forum*

Nascent coalitions such as the Kitui County WASH Forum require handholding, with the lead organization(s) playing a more hands-on role, such as direct support for administration. Nonetheless, this support should avoid creating dependency and instead focus on (1) establishing the structures required for long-term effectiveness of the coalition and (2) building capacities of the government and coalition actors to take on those roles in the future. Depending on the maturity of the coalition, lead organization support may entail some the following activities supported by SWS for Kitui:

- Direct logistical support for meeting planning in the early days, including sending out invitations, reminders, documentation of meeting discussions (minutes), and their distribution/follow-ups.
- Funding of meetings costs, which may include facilitation of government officers to participate in cases where a budget line to support the coalition has not yet been identified.
- Direct funding of some of the priority activities that the coalition has identified to unlock progress, while identifying ways to leverage or adapt existing budgets and/or plans.
- Exchange visits to a similar coalition for benchmarking on best practices. For instance, SWS shared approaches (on leadership, agenda, and documentation of meetings) that the Turkana County (WESCORD) forum has adopted.
- Facilitating design of the coalition's governance structure with actors, while deliberately establishing reporting or advisory links to government. For Kitui, a short-term measure entailed the appointment of an informal secretariat, with the long-term goal of institutionalizing it within the county water law.
- Monitoring actors' behavior and priorities and seeking feedback to continually inform improvements to the forum. For Kitui, this involved regular surveys, interviews, and observation of actor behavior, which for instance informed the introduction of a session at the forum on sector innovations (technology and models) for service delivery.

- Support for a standardized meeting agenda and inclusivity. For Kitui, the forum later invited the participation of actors from the education, health, and sanitation sectors.
- Support on drafting and debating reporting templates to encourage and improve information-sharing practices among actors.

The COVID-19 pandemic has revealed new risks to the Kitui County WASH Forum, mainly the inability of the network as a whole to sustain the engagement via online platforms. This highlights the need to further adapt for resilience.

#### *WASH Database and Monitoring System*

Operation of a complete online monitoring database comes with significant costs, and rollout of monitoring databases for governments needs to consider resources allocation. For Kitui, this entails budgets for field travel, communication, staffing, and external technical support in order to ensure successful implementation.

Interviews and discussions at review meetings and the WASH forum indicated the lack of transport and communication facilitation (or centralization of KCG's budgets) as an impediment to the ability of sub-county water officers (responsible for water point level operations data collection) to audit rural water points. In the early phases, securing budgets may be difficult until there is demonstration of value of the database to key decision makers, in which case prioritization of data collection and metrics may be necessary to strike a balance between information needs and resources available.

Success hinges heavily on the ability to integrate data collection and database reports into the day-to-day workings and decisions of government in order to catalyze rapid uptake. The data collection forms and reports generated by the monitoring system must respond to information needs of the government to generate interest. Further roles and responsibilities, staff capacities, and (dis)incentives of the monitoring team would need to be evaluated to ensure they align with the monitoring objective.

Data availability and quality improvement is progressive and occurs over time and therefore needs to integrate flexibility. For Kitui, SWS observed low prioritization of the key performance indicator of water quality monitoring. At the WASH forums, the level of detail reported by each sub-county region using the standard key performance indicators varied across the board, as did the quality of data, and SWS observed the need for tailor-made capacity support for different staff. Further, some of the information on assets such as pumps and boreholes could not be accessed due to lack of records at both the community and government level. To avoid this, rollout of databases needs to be multi-faceted and include WASH sector coordination mechanisms to ensure in future that all water systems by various actors are comprehensively registered and monitored in the database.

#### *Network (WASH Forum) Analysis*

Application of the ONA study methodology in similar contexts to the Kitui WASH sector should take into account some of the observed limitations. One limitation is the non-representation of key donors to the sector and of politicians, yet these provide substantial funding for WASH services and wield a

strong influence on the sustainability agenda. Another limitation is that not all actors that have joined the network at one time will participate in the ONA. These limitations raise the issue of generalization.

ONA results also need to be interpreted with respect to a particular network or coalition's working context, and an open conversation with actors is key to explaining results and identifying strengthening actions. For Kitui, discussion of ONA results with actors in validation workshops explained: conflicting priorities, especially for various actor groups; competing interests; instability due to actor turnover; knowledge and capacity gaps placing constraints on sector professionalization; and more.

### Learning on Likelihood of System Sustainability

SWS aimed to support FundiFix's transition from maintaining rural hand pumps to also include small piped systems. This work contributed to KCG's responsibility since 2013 to manage all water supply infrastructure in the county. Given that existing policy and practice across Kenya adhered to community management after installation of the infrastructure, this was a major shift; with no existing playbook, it presented significant challenges for the newly formed county governments.

SWS's theory of change hypothesized that learning from a new, rural water maintenance service provider (Fundifix) would shift systems sustainability from a dominant focus on building infrastructure to maintaining infrastructure sustainably. Further, learning based on the performance of Fundifix would stimulate emergence of appropriate institutional roles and policies, as well as legal, political, and financial enabling environments, to support service delivery. SWS designed the following second contextualized learning questions and sub-questions for Kenya to test this hypothesis:

How do selected approaches increase the likelihood of service sustainability?

- A. What impacts did the interventions have on influencing policy change?
- B. Have policies emerged that obligate monitoring, financing, and rural water service maintenance?

### Kitui County Water Sector Progress

SWS applied an "outcome mapping" tool to track targeted changes in the decisions and behaviors of Kitui WASH forum actors. SWS used outcome mapping to monitor sector progress with respect to the goal of influencing actors' policies and investments on rural water maintenance and monitoring. This meant keeping a journal in which SWS recorded small and big changes observed through regular SWS and sector interactions.

The Kitui County WASH Forum set the sector progress indicators or milestones broadly to be: (1) actors consistently and meaningfully engaging in dialogue and collectively influence the adoption of approaches that contribute to sustained service provision; (2) service providers gaining the capacity to provide maintenance services and using a unified reporting system to inform maintenance decisions; (3) actors generating information on the status of rural water services and transferring that information to the county government for management; and (4) KCG using a unified reporting system to inform policy and budget decisions.

SWS achieved the following progress with respect to the milestones above:

1. Coalition members regularly attended WASH forum meetings and sent mid- to senior-level actors or representatives from their organizations; average seniority score for forum participants, based on an SWS-designed rubric, was 1.90–2.0. In each forum, roughly 49–67 percent of the actors had participated in at least two successive forums, with a gradual increase over time.
2. Kitui WASH forum actors prioritized water services monitoring and included a session for reporting on sector performance in the meeting agenda. Actors also agreed on priority key performance indicators and a standard format, which sub-county water officers now use for quarterly reporting.
3. The preferred reporting architecture required all actors to funnel their program reports through the sub-county water officers, who in turn would accumulate these to present overall sub-county status to the coalition for county-level aggregation. However, the reporting was mostly paper-based due to delayed rollout of an online system.
4. As of the end of SWS, the KCG had not identified a clear strategy and budget for county-wide monitoring. Kitui County’s contributions toward database implementation was mostly indirect (bundled sub-county allocations for staff salaries, office overheads, and field travel). SWS expects that enactment of the water bill will legally require the county to provide a specific budget line for supporting sector monitoring.

SWS made limited progress on the following outcomes:

1. Delayed rollout of the database did not allow a definitive assessment of WASH actor behavior in respect to using outputs of the unified reporting system for planning, budgeting, and adaptive management of activities.
2. Delayed rollout of the database also did not allow validation of the assumption that actors would carry out maintenance programs in response to a unified monitoring system.
3. More time would be required to corroborate that the Kitui County WASH Forum will use the unified reporting system to influence national and county government-level debate on sustainability of rural water services.

### **Likelihood of Sustainability**

SWS applied a “likelihood of sustainability scorecard,” allowing assessment of sector progress toward improving the likelihood that effective WASH services will be sustained. The scorecard is organized by the WASH Alliance FIETS measures of WASH sustainability. For each of these key areas of sustainability, SWS determined a score of low, medium, or high based on a criterion and then calculated an overall score composed of an unweighted average of all five indicators.

For Kitui, SWS noted improvements in the areas of financial, institutional, and social sustainability, while environmental and technological sustainability remained unchanged (Table 14 below). Overall, SWS assessed a low to medium shift of sector-wide sustainability, mostly driven by the Kitui Water Bill process and the associated reforms expected if enacted into law. The Kitui County Assembly or Parliament controlled this process, so it fell outside of the control of SWS from early 2020.

Table 14. Summary Likelihood of Sustainability Scorecard for Kitui

Area of Sustainability	2017	2021
Financial	Low	Medium
Institutional	Low	Medium
Environmental	Medium	Medium
Technological	Medium	Medium
Social	Low	Medium
<b>Overall Sector Score</b>	<b>Low</b>	<b>Medium</b>

*Financial Sustainability.* SWS observed medium progress on financial planning and funding availability. The KCG allocates budgets for maintenance, but feedback in the planning process is lacking. Consequently, KCG has repeatedly allocated 40–60 million Kenyan shillings annually (\$369,651–\$554,477) in the last 3–4 years toward repair and maintenance of rural water infrastructure, despite the fact that the cost of maintaining full functionality is estimated to be at least triple this amount. Further, the KCG’s current approach of direct expenditure on rural water maintenance is inefficient, with SWS’s preferred model of funding being through performance-based contracts with service providers. Nonetheless, SWS supported the development of the first County Water Bill, which, if enacted, will establish a Kitui Water Services Fund to fund rural water repairs and maintenance, to be seeded annually with a 10 percent contribution from the county’s water development budget.

*Institutional Sustainability.* SWS observed medium progress of the sector with respect to definition of roles and responsibilities, staffing gaps, accountability, and growth of local expertise.

The KCG acknowledges responsibility for delivery of universal water services in addition to supporting functions such as monitoring and reporting on service performance. Regarding staffing, it has employed a technical team to lead all aspects of rural water service provision. However, these teams are under-resourced, because management of finances, logistics, and procurement remains very much centralized at the county headquarters. Therefore, there is room to improve the team’s capacity to engage in rural water support functions, e.g., performance monitoring, coordination, compliance, and governance support. Regarding accountability, demonstration of the FundiFix model has provided an alternative accountability approach between users and service providers. However, the limited operational scale of FundiFix means adoption is not county-wide yet.

SWS supported development of the policy environment for stronger accountability through development of the first water law for KCG with WASH actors, which aims to clarify rural water performance requirements, monitoring roles, reporting roles, and compliance requirements for community-managed water supplies. The bill may also formalize the WASH forum, allow funding support for consumer groups, and provide a mechanism to escalate service-quality-related complaints by users. With respect to local expertise, the KCG has directly funded trainings for all community water schemes in partnership with a local water institute, with further NGO and development partner efforts documented through the ONA study. Demonstration of the FundiFix model has seen the emergence of other local maintenance groups, albeit at a small scale, with the sector conversation currently shifting toward professionalizing rural water service delivery. However, the county WASH sector’s long-term

appetite and support for private sector entities has not shifted significantly and will require further effort to mobilize.

*Environmental Sustainability.* SWS did not observe significant sector changes for this indicator. The mandates are clear; the responsibility for water resources monitoring and regulation remains a national function in Kenya, with some management aspects — such as soil and water conservation — devolved to KCG. However, under-resourcing of national functions has led to weak monitoring and regulation of water resources county-wide. On the other hand, the KCG has not prioritized resource management due to its unique location as a downstream county and a heavy reliance on groundwater. There is an opportunity, through the water bill, for KCG to support monitoring and conservation of in-county water resources and to finance community conservation group-implemented activities.

*Technological Sustainability.* SWS assessed a medium score for this area, with room to improve quality of water infrastructure installations in Kitui County, often caused by weak supervision of installations during construction and a lack of standardization to guide minimum quality thresholds in support of repair and maintenance. Other factors contributing to poor-quality installations relate to ad hoc (rather than scheduled) maintenance schedules, with “fix after fail” being the default approach. While spare parts are readily available in the market, lengthy county government procurement processes and irregular flow of public or national government allocations to KCG means that acquisition of parts for repairs is often delayed. Nonetheless, through the FundiFix model, SWS demonstrated an alternative approach to maintenance service delivery, with new opportunities for scale-up and likely emergence of similar enterprises if the KCG Water Bill is enacted.

*Social Sustainability.* SWS observed an improvement, from a low to a medium score, driven by sector investments in resolving rural water functionality, which has prevented reliable water access and is a key first step in reducing the time and health costs of unsafe water use. Still, many women and girls in rural Kitui disproportionately bear the burden of fetching water, and therefore greater efforts are needed to scale up maintenance services. The KCG already acknowledges responsibility for water service provision to households, schools, and health care facilities. This is part of an ongoing conversation on how to expand maintenance models, such as FundiFix, to serve institutions. SWS generated a rich body of evidence on WASH access for Kitui schools to catalyze and inform a program of change.

As regards culture and religion, the KCG’s investments have continued to acknowledge agropastoralism as a key part of rural livelihood and is investing in the development of unimproved sources yearly, e.g., earth dams and sand dams for runoff harvesting, to support livestock keeping. The KCG’s agricultural extension services department has also been supporting community trainings, access to inputs for productivity, and linkage to markets. Religious considerations in rural water service delivery in Kitui are limited.

## **Other Indicators of System Sustainability**

*Learning Question 2A.* What impacts did the interventions have on influencing maintenance policy change?

Sector-wide promotion of rural PPPs boosted the conversation on the potential role of the private sector in rural water service delivery, as did the publication of new Water Services Regulatory Board

guidelines for water service delivery in rural and underserved areas that recognize service models such as FundiFix. FundiFix is a privately registered company operating in the rural water maintenance domain as a social enterprise.

SWS continued support for delivery of the FundiFix model in order to learn with the WASH forum about opportunities and challenges of scaling up. In Kitui County, FundiFix restricted its operations to Mwingi North Sub-County, with a client base of 54 communities comprising 24 active piped schemes and 30 active hand pumps (November 2021). This infrastructure served an estimated population of 60,000 people. FundiFix's technical performance remained above sector benchmarks, with more than 350 repairs completed in all registered communities annually, and 95 percent of these fixed within 3 days. However, user payments (tariffs) consistently remained insufficient to cover FundiFix's direct operating costs, with average working ratios of 8 to 19 percent (local revenues/local direct costs) over the SWS period. Therefore, considering tariffs only, FundiFix operations were financially unsustainable, with the operating deficit underwritten by a Kitui Water Services Maintenance Trust Fund (the Trust Fund).

To explore financial and functionality implications of scaling up FundiFix, SWS implemented systems dynamic modeling research applying the Stella Architect Model. Results indicated that:

- Intermittency of national government funding allocations to the county affected the county's ability to repair and maintain broken schemes, causing extended periods of downtime when breakdowns occurred. This reaffirms the rationale of the Trust Fund as a ring-fenced mechanism within the county for securing funding for rural water maintenance.
- Lack of feedback between government repair activities and the budgeting process created conditions of inadequate resources, delayed repairs, and a reduction in functionality rates over time.
- Piped schemes receiving maintenance services from FundiFix experienced less-severe breakdowns, enabling shorter downtimes, less costly major repairs, and higher overall functionality.
- Resource levels (from user payments and trust fund subsidy) were insufficient to sustain scale-up of the service beyond 15 percent of all county schemes without compromising the 3- to 5-day repair time commitment to users.

Complementary analysis applied a conceptual framework outlining how returns from improved maintenance improve reliability of services, lower unit costs, and reduce inequalities. The key findings suggest that:

- Over a 10-year period, rural users are likely to spend cumulatively more on alternative water sources when hand pumps and kiosks fail than was spent on capital expenditure for the infrastructure.
- Women and girls bear the brunt of infrastructure breakdowns, because they are more likely to have to fetch water from alternative sources such as surface water bodies or water scooped from river beds, which are often located at a great distance.
- In the event of a breakdown, any switch to an unimproved alternative happens sooner for poorer hand pump users because they have lower storage capacity.

- For both hand pump and kiosk users, the related expenses associated with alternative sources constitute a significantly higher proportion of overall expenditure for poorer households.
- Governments and donors can pay three times more per liter of water from emergency water trucking compared to the cost of water provided by a functioning kiosk.

SWS observed acceptance among actors of evidence on how to improve maintenance and functionality of rural water infrastructure. However, for many actors, the private sector was associated with for-profit operations, not performance-based services. FundiFix's operations in Kitui are supported by results-based funding to underwrite a funding gap from inadequate user payments. As a result, it makes no profit and is never likely to do so.

In addition to FundiFix, SWS observed some development of private sector actors, including nascent maintenance start-ups in Kitui East and South Sub-Counties, but most lacked an enabling environment for scaling. In the later stages of SWS implementation, the KCG joined an EU-funded program with the Water Sector Trust Fund and SNV that sought to set up operator contracts for full management of community water supplies. In 2021, the KCG, a Finnish reverse osmosis technology company, the Dutch Fund for Climate and Development, Epicenter Kenya Ltd., and SNV were designing a new private sector-based program to install and operate desalination plants at community piped schemes with high salinity levels.

SWS hoped to attract KCG's in-cash contribution through the Trust Fund for a stable funding or subsidy stream, but this objective was not achieved. To support FundiFix activities, the KCG mostly provided in-kind support in the form of repair equipment and staff. SWS observed reluctance to inherit an existing Trust Fund and concerns over lack of a legal framework to mandate funding. Most of the progress made toward securing government funding for maintenance was through the County Bill and Policy activity reported below.

*Learning Question 2B.* Have policies emerged that obligate monitoring, financing, and rural water service maintenance?

Through the Kitui County WASH Forum, actors identified the absence of a policy framework as a key impediment to sustainability of WASH services. Subsequently, the KCG submitted a request to SWS and the USAID-funded KIWASH Program in Kitui for support to the technical drafting of a Bill and Policy. The WASH forum constituted a technical working group to lead the bill development by nominating 35 actors drawn from local NGOs, private sector, civil society, and government (both national and county, with representation from the Ministries for Water, Education, Health, Agriculture, and Environment).

SWS developed a first draft of the bill authored based on evidence generated from SWS interventions, past Oxford University research, and national and international best practices. Thereafter, the technical working group reviewed the draft bill in biweekly meetings attended by 30–35 actors over a 6-month consultation period. In these biweekly meetings, SWS contributed to the process by providing evidence generated through SWS interventions, including lessons from demonstration of FundiFix (service provider and funding model) and other systems analysis activities. Further, SWS did the following: (1)

convened a session for a respected legal expert in Kenya to address various contested clauses, after which resolutions were adopted in the bill; (2) facilitated consultations with the county lawmakers (Kitui County Assembly's committee for water and agriculture) to integrate their feedback on the different sections of the draft bill; and (3) supported public participation forums to integrate feedback from county residents.

The participatory process provided a pathway to institutionalizing lessons learned and initiatives demonstrated through SWS. The Bill and Policy, if enacted as is, will:

- Institutionalize the Kitui County WASH Forum as a platform for sector coordination linked to the County Ministry for Water, with leadership, representation from all relevant county sectors, and funding through the KCG's budget.
- Expand space for enterprise growth in the rural services sector through various models, while providing for service standards, performance and compliance requirements, contracting/service areas, economies of scale, funding and technical support, monitoring, and reporting arrangements.
- Affirm government incentives for service providers, especially those working in rural and marginalized areas where commercial viability may not be feasible, aligned to Article 94 of the National Water Act (2016).
- Enable KCG to replicate the Trust Fund model of funding services by establishing a Kitui Water Services Fund to be seeded by the KCG annually with 10 percent of the Water Ministry's development budget. If the bill is enacted, at least 50 percent of the fund's budget will be funneled toward rural water maintenance.

As of end of SWS, the bill was under legislation at the county parliament; if enacted as is, these measures may support the sustainability of the rural water system in Kitui.

## **Reflections and Conclusions on Systems Sustainability**

### *Bill and Policy Process*

Generating empirical evidence that is credible to actors based on findings from the systems-analysis activities and a demonstration project (Fundifix) provided a high-level focus that proved critical in shifting the dialogue from infrastructure focus and ongoing activities to debate on what needs to change for sustainability. During the bill and policy process, SWS's role increasingly became to facilitate actors to reflect on the available evidence of various systems analysis completed by SWS.

SWS's activities stimulated a window of opportunity as the coalition debated the policy gaps in the sector. Availability of SWS funding proved critical in convening the WASH forums and accelerating the technical development of the bill; a good working relationship with the USAID/KIWASH Program allowed SWS to fund the water bill, with KIWASH supporting the water policy. Finally, the water policy change process takes time and is subject to wider influences, including red tape and politics. For Kitui, administrative processes (post-drafting legislation by the county assembly) have taken a much longer time than the technical process of drafting the bill with actors.

### *FundiFix Model*

The FundiFix maintenance work affirmed that it is technically possible to improve functionality to downtimes of fewer than 3 days for rural water points, across both hand pumps and small piped schemes.

Commercially, user payments covered a maximum of 19 percent of the direct operating costs of delivering the above repair time. Tariffs were therefore inadequate to cover the operating cost of delivering a reliable water service, and FundiFix required a subsidy. Without external funding support from the Trust Fund, the impact would have been limited, despite interest. In the long-term, stable government and public funding of rural water maintenance through taxes is required to guarantee the financial sustainability of service providers like FundiFix.

Providing exclusive service areas to promote economies of scale and long-term contracts could improve commercial performance of FundiFix or other professionalized maintenance service providers. Further, a government-led (top-down) process of scaling up professionalized maintenance service coverage would prove more effective (time and cost) in rapidly achieving scale than a “bottom-up” approach in which FundiFix develops by engaging further individual communities.

**The presence or absence of legal frameworks may strongly influence the government’s response to professionalized models.** For Kitui, the water policy review proved to be a key step in establishing a long-term enabling environment for maintenance service providers, including ring-fencing funding support for service providers. During the SWS period, the absence of a policy framework limited the county government’s ability to support FundiFix. The reform process required addressing political interests, such as equality, because the county assembly indicated a strong geographical equality criterion during the bill design process.

For Kenya, sector funding did not shift significantly during the SWS implementation period. FundiFix noted reluctance from other county governments, NGOs, and leading donors to substantially fund non-traditional approaches. Short-term project finance still dominated the sector, but enterprises and several county governments in Kenya are slowly shifting behavior based on the early adopters.

## Final Conclusions

SWS work in Kitui County has contributed to new understanding and approaches to improve sustainable WASH systems in Kenya. SWS identifies three key findings from this work: (1) the context and role of partnerships, (2) objective evidence to promote collaborative decision making, and (3) the boundaries and limits of WASH systems.

On the first point on partnerships, SWS joined an established partnership between UNICEF, the University of Oxford, and Rural Focus Ltd., which have worked collaboratively in Kitui County since 2011. This work established the FundiFix model, which started to operate in 2015 maintaining rural hand pumps in communities. UNICEF’s work to promote and fund a WASH

forum reflected wider sector thinking and provided a loose coalition of partners who met with a common purpose and without a shared agenda. After 10 years, much has changed in the county, with the decentralization of drinking water services being a legal responsibility of county governments since 2013. SWS played an important role as one of many partners with a focus on (1) strengthening and evaluating quarterly WASH forums, (2) supporting FundiFix's transition to maintain small piped schemes and evaluating school water systems, and (3) developing a database to share and debate the performance and progress of rural drinking water services.

In combination, the Kitui County WASH actors, with a better understanding of the factors, created a means to collaborate in the design and drafting of the county's first Water Bill. Trust and expertise from multiple actors allowed national and international experts from the University of Nairobi, the University of Oxford, and other stakeholders to identify new and pragmatic steps in charting the future of water management and services in the county. This work will be shared and debated across Kenya with one of its lead authors, Albert Mumma, also one of the lead authors of Kenya's National Water Act of 2016. SWS funded key parts of the policy design and participatory processes, which would likely not have happened otherwise. The Water Bill reflects a pragmatic and evidence-based approach that reflects the social, economic, and environmental context of a large, low-density county with slightly over 1 million people living with multiple deprivations. The approach may have value for other arid and semi-arid counties in Kenya but will not be applicable to the many high-density, higher-rainfall, and higher-welfare counties. What is critical to note is the decadal time frames for progress and that work on sustainability requires patience and multiple partnerships to increase chances of progress.

Second, SWS created a team and culture to share and debate evidence emerging from the FundiFix model based on operational and financial data from one of the eight sub-counties. As one of a cohort of professional maintenance providers emerging across Africa, FundiFix acted as a policy experiment sharing otherwise commercially sensitive data to promote sector understanding and policy design. The SWS work demonstrates important lessons for the sector, including: (1) major social and economic hardships faced by rural communities and schools can be avoided with professional maintenance service contracts; (2) social and political resistance or acceptance is challenging after water supply infrastructure installation, making a clear case for maintenance contracts and funding before installation; (3) a subsidy is required and necessary for point (2); and (4) a flexible Trust Fund model permits (3) to be executed effectively to ensure (1) is reduced or minimized.

While SWS did not fund or support the Kitui Water Services Maintenance Trust Fund, the fund has been instrumental in reducing the share of the donor-funded model (largely the UK Foreign, Commonwealth & Development Office) and attracting a majority of private sector funding over the last 5 years. This has been a major contribution to the likely sustainability of professional service delivery in Kitui County and informed wider work in Africa. The SWS modeling analysis of financial flows confirms the significant advantages of embedding a subsidy in rural water supply infrastructure investments. The sustainability challenge is that most large donors operate within 3- to 5-year time frames and therefore limit sustainability in their design. This requires new

thinking on how to catalyze more flexible funding approaches and how to ensure that perverse outcomes from large- and short-term donor projects do not undermine sustainability.

Third, the boundaries and limits of WASH systems need to be recognized. This work focused on drinking water maintenance for rural hand pumps and small piped systems. There was no work on hygiene or sanitation, nor on environmental systems or any significant gendered analysis, though complementary work has been undertaken on rainfall, groundwater quality, and water safety. Defining a system and its boundaries is both helpful and necessary to understand risks and priorities. For example, rainfall and dry spells have major implications for groundwater recharge and the availability of water in school water supplies, which relies heavily on rainwater harvesting. SWS work contributed to this new understanding in over 1,800 schools in the county, which is shaping a new program of work with the national Ministry of Education. SWS's work revealed new insights by including schools as part of the system. It is common in Kenya, as in many other countries, that rural water infrastructure is shared between schools and communities. This is poorly reflected in policy and practice. The COVID-19 pandemic revealed the intersections between water, health, and climate, with SWS providing evidence to shape more sustainable practices in the future.

## Other Opportunities for Future USAID Investments

First, future USAID investments could focus on piloting performance-based models for rural water service delivery with governments with aspects of local enterprise development. This may require incubation of new and/or further development of existing enterprises to serve the rural WASH market.

Second, SWS has identified significant challenges and gaps in school water systems. Given climate and COVID-19 priorities, there are now evidence and models to apply performance-based models to the national scale.

Third, USAID has significant comparative advantage and headquarters staff in new approaches to sustainable finance, including WASH finance. This work has largely been urban focused, including in Kenya. Global data show urban subsidies running to \$300 billion per year without including India or China. There is a compelling case that USAID could direct some effort and funding to rural water funding models.

Fourth, USAID now has compelling evidence that building new rural water infrastructure without a long-term maintenance system in place wastes money and has limited social impact. Given its global convening power, USAID has the opportunity to guide global and national policy and practice to avoid repeating the same mistakes and direct scarce funding more effectively to improving sustainable water systems for the poorest.

## What Comes Next?

Nationally, the SWS work is informing a proposed schools' pilot to demonstrate and determine the cost for a professional service delivery model. Subject to Ministry of Education support and a favorable election environment, this work will begin in 2022 in around 40 schools.

The KCG will continue to lead the WASH forum and will take responsibility for funding, which is also explicitly stated in the Water Bill and Policy. FundiFix will continue to participate in the WASH forum as an actor and to contribute to the sustainability dialogue.

FundiFix operations in Kitui will continue, supported by other sources of funding, pending enactment and implementation of the Water Bill and Policy, which may potentially provide funding for maintenance. In the meantime, FundiFix will explore other pathways to scale up, including by (1) establishing new partnerships with other counties in Kenya, (2) expanding services to include institutions, and (3) influencing design of rural water programs to rethink maintenance approaches.

Support for implementation of the mWater database will continue post-SWS, with funding and technical support from a local NGO implementing a systems approach (Welthungerhilfe). In the long-term, SWS anticipates that the county government will allocate budgets in support of county-wide service monitoring.

## Monitoring, Evaluation, and Learning (MEL) Plan Report

This annex summarizes progress toward SWS performance indicator targets. Between 2017 and 2021, SWS reported on nine indicators on a semiannual basis.

### Percent of Coalition Participants Reporting an Improvement in WASH System Understanding

This indicator measured the percent of coalition members demonstrating an improvement in their understanding of the WASH system. A coalition is a group of local stakeholders collaborating as members of a collective action approach. SWS partners conducted written surveys with coalition members immediately after major dissemination events to determine if their understanding of the WASH system improved as a result of SWS activities. An improved understanding of the WASH system may refer to its individual parts, interconnections between those parts, the role of an organization within the network, etc.

The life of project (LOP) target was to have an average of 90 percent of coalition members report an improvement in WASH system understanding after major dissemination events. Figure 37 shows that on average, 75 percent of coalition participants reported an improvement in WASH system understanding over 5 years of implementation.

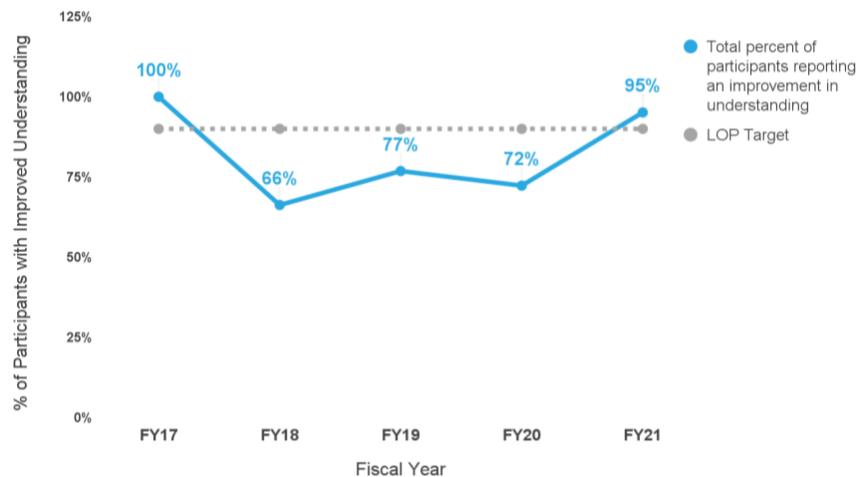


Figure 37. Percent of coalition participants reporting an improvement in WASH system understanding

### Number of Analyses Conducted to Improve Understanding of WASH Systems

This indicator measured the number of systems analyses SWS partners conducted to improve stakeholder understanding of WASH systems. SWS conducted a total of 64 analyses, exceeding the LOP target of 40 analyses. Analyses were counted per type and iteration and included factor mapping, asset

inventory, life cycle cost analysis, sustainability checks, building blocks assessments, and more. Figure 38 shows the cumulative number of analyses conducted over the LOP, disaggregated by type of analysis.

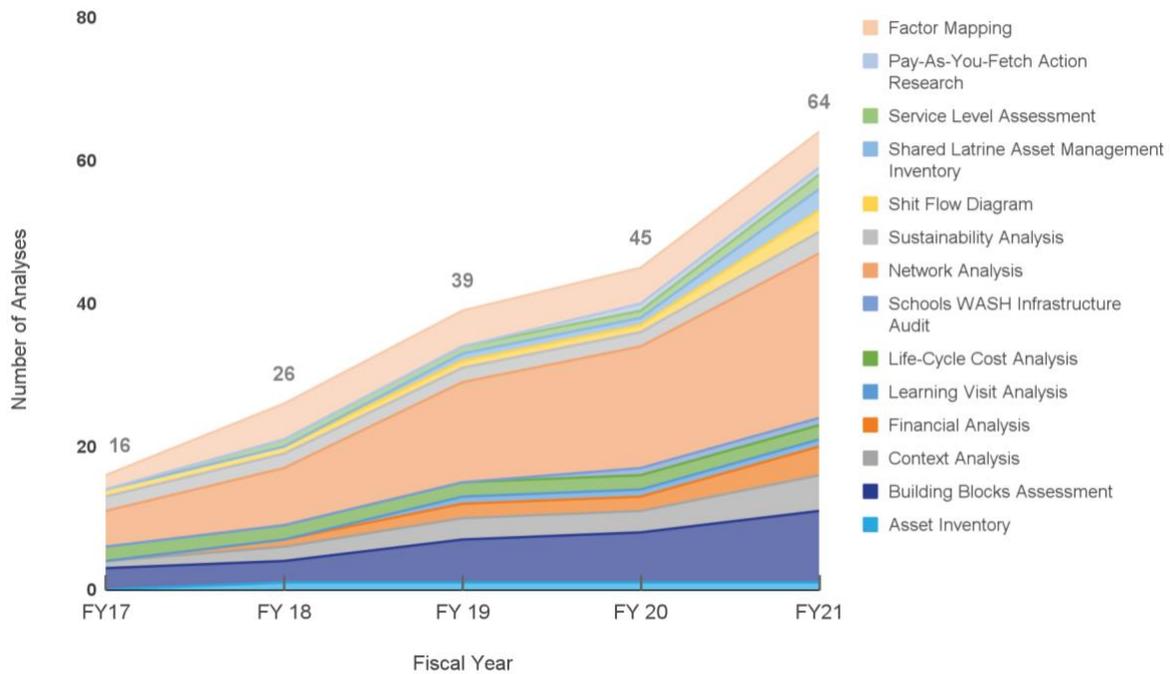


Figure 38. Cumulative number of analyses conducted to improve understanding of WASH

## Number of Stakeholders Reached with Findings from Systems Analyses

This indicator measured the number of actors reached with findings from analyses undertaken by SWS partners to improve actor understanding of WASH systems. An “actor” is defined as someone who contributes to WASH service delivery in an SWS–supported geography, such as a water point operator or water committee member.

Over the course of the project, SWS reached a cumulative total of 1,194 stakeholders with findings from systems analyses, which is 68 percent of the LOP target of 1,750. This might be due to COVID-19 restrictions, which limited in-person events and activities. For example, between the fiscal year (FY) 2018 and FY 2019 SWS recorded a 46 percent increase in total actors reached, whereas from FY 2019 to FY 2020 (the onset of the pandemic) that measure increased only 15 percent.

Of the stakeholders reached, around 1 in 5 (22 percent) identified as women, although stakeholders were not disaggregated by gender in every analysis. Figure 39 shows the cumulative number of actors reached across nine SWS coalitions.

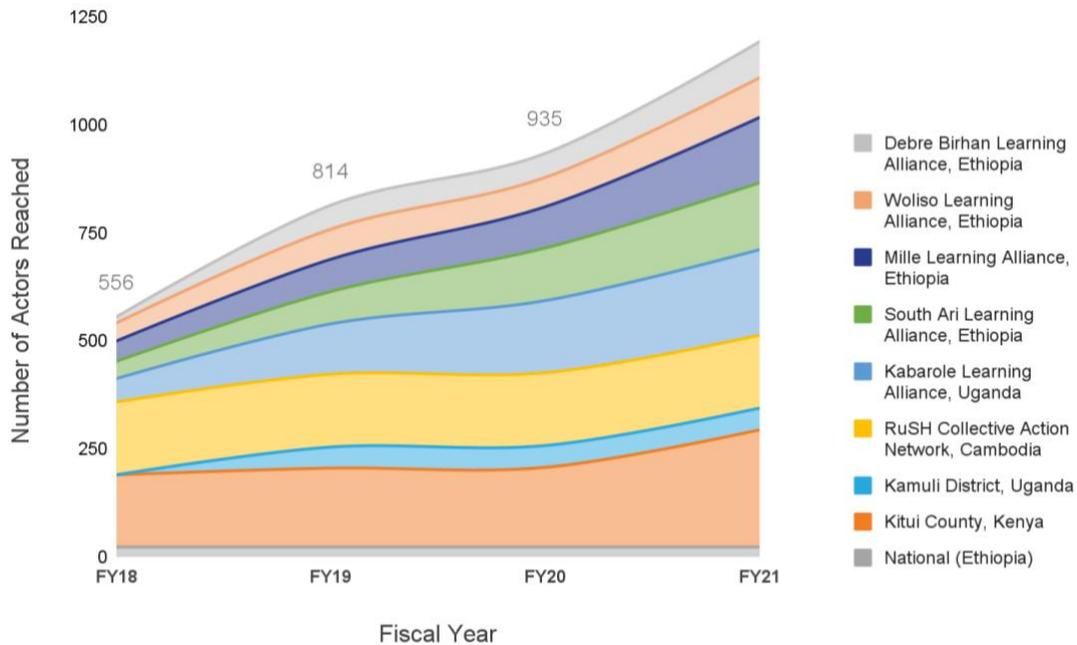


Figure 39. Number of actors reached with findings from systems analyses

## Percent of Coalitions That Have an Agreed-Upon Set of Needs and Priorities

All SWS coalitions met the LOP target for this indicator as of Q1 of FY 2019, as they adopted an agreed-upon set of needs and priorities. No team reported negative changes.

## Percent of SWS Geographies Showing an Improvement in WASH Network Strength

This indicator measures the percentage of SWS geographies showing an improvement in key attributes of network strength. SWS partners self-determine “improvement in network strength” based on an assessment of ONAs conducted during the reporting period as compared to an initial (baseline) analysis and/or midline analysis. These analyses evaluate improvement on key metrics of network strength such as: the size of the network, the density of the network, the extent to which an actor interacts with others in the network, and reciprocity of information sharing among actors. SWS aimed to see an improvement in WASH network strength in 100 percent of geographies. Of the seven geographies that conducted ONAs, five demonstrated an improvement in WASH network strength or 72 percent.

Table 15. SWS geographies reporting an improvement in network strength

Improvement in WASH Network (Yes/No)		
Geography	Midline	Endline
Woliso, Ethiopia	Yes	Yes
Debre Birhan, Ethiopia	Yes	Yes
Kamuli, Uganda	N/A	Yes
Kitui, Kenya	N/A	Yes
Kabarole, Uganda	N/A	No
South Ari, Ethiopia	Yes	Yes
Mille, Ethiopia	No	No

## Average Rating for Each Coalition Progress Marker for their Vision of More Sustainable Services

Progress toward a coalition’s vision was reported with outcome mapping forms. Each form consisted of 7 to 15 progress markers that were categorized by actions and interrelationships the teams would expect to see, like to see, and love to see. Bi-annually, teams rated the degree of achievement toward each progress marker as low, medium, or high and provided justification for each rating. The methodology is detailed in the SWS report, “Measuring Systems Change in WASH Programming: A Practical Application of Two Tools.”<sup>32</sup>

Figure 40 shows the cumulative progress according to each coalition’s vision — where a positive step denotes movement in a positive direction (e.g., from low to medium) and a lost step denotes movement in a negative direction (e.g., from high to medium). For example, between Q2 and Q4 of FY 2019, the Woliso Learning Alliance reports a positive step for progress marker 5, “Learning alliance members regularly report monitoring data at meetings.” This progress marker was rated low at the beginning of the FY. In the second half of the FY, the team reports a positive shift in the score and provides a medium rating. The team elaborates on the reasoning behind this shift, explaining that the learning alliance provided training for communal latrine management committees and created a data collection format that stakeholders used for regular reporting during meetings. This example indicates a positive step in Figure 40.

<sup>32</sup> Available at: <https://www.globalwaters.org/resources/assets/sws/measuring-systems-change-wash-programming-practical-application-two-tools> (accessed December 8, 2021).

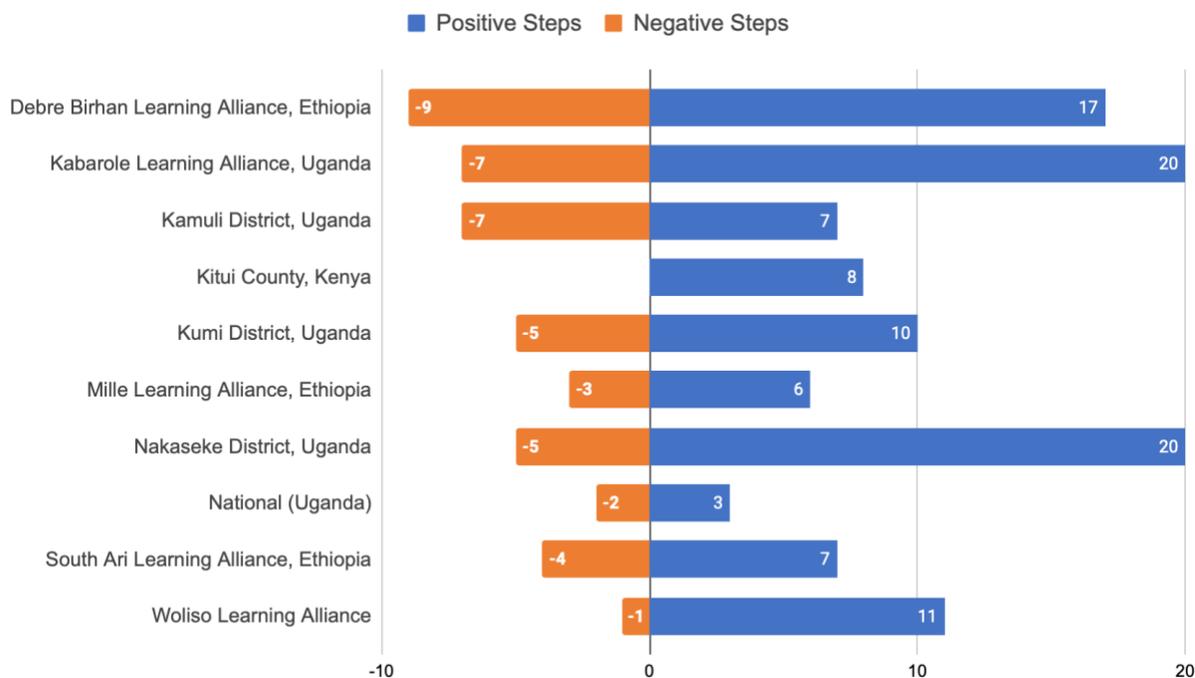


Figure 40. Positive and lost steps toward each coalition’s vision of more sustainable services

## Percent of SWS Geographies that Demonstrate an Increased Likelihood of Services Being Sustained

SWS tracked high-level changes in key areas of sustainability for each SWS geography (small towns, districts, or national-level) on an annual basis using sustainability scorecards. The scorecards comprise of five key areas: Financial, Institutional, Environmental, Technological, and Social. Each of these key areas contain sub-indicators that were ranked “low,” “medium,” or “high” based on criteria provided in the scoring sheet. The overall score cannot be higher than the lowest sub-indicator score for each aspect of sustainability. For example, to be given a medium score, each of the sub-indicators needs to meet the criteria to be scored a medium. If two of the sub-indicators are ranked medium and one is ranked low, the overall score is still low.

To determine the overall likelihood of sustainability score of each geography, SWS calculated the unweighted average of all five key areas of sustainability. Overall sustainability scores were depicted on a scale from 1–3, where 1 indicates “low” likelihood of sustainability and 3 indicates a “high” likelihood of sustainability. SWS recorded baseline values in Q4 of FY 2018 and endline values in Q4 of FY 2021. Geographies with an improved score at the endline are counted for this indicator. The methodology is detailed in the SWS report, “Measuring Systems Change in WASH Programming: A Practical Application of Two Tools.”<sup>33</sup>

<sup>33</sup> Ibid.

At the endline, five out of nine geographies, or 55 percent, reported an increased likelihood of sustainability. There was an average 38 percent increase in likelihood of sustainability across all geographies from FY 2018 to FY 2021.

Figure 41 shows the scores for the nine SWS geographies over the life of the project. In FY 2018, the overall sustainability score averaged 1.6; in the final year of reporting this increased to 1.9.

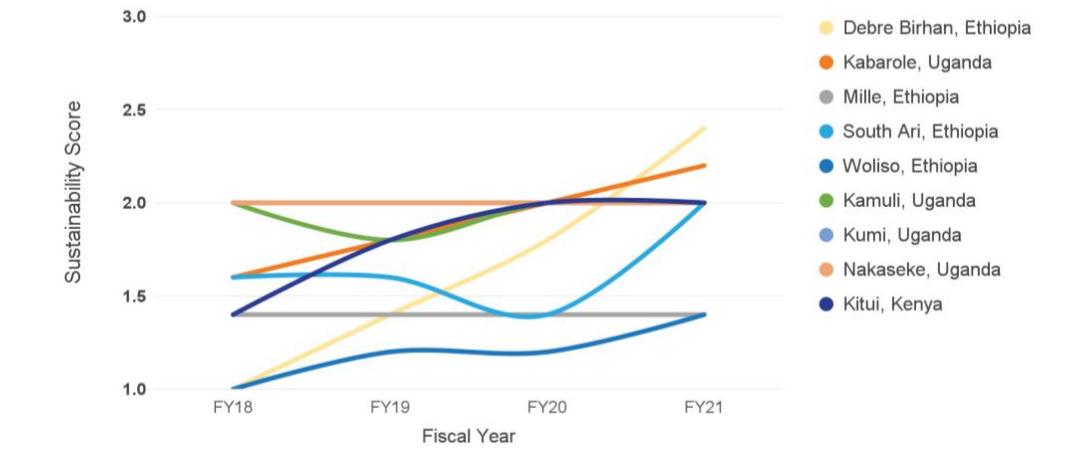


Figure 41. Sustainability scores of geographies that demonstrate an increased likelihood of services being sustained

## Number of Knowledge Products and Presentations by SWS Partners

SWS produced a total of 209 knowledge products and presentations, significantly exceeding the LOP target of 85. This number will continue to increase as additional products are finalized and published during the project closeout period. “Knowledge products” refer to technical documents that are underpinned by data and analysis and offer insights or solutions to a problem.

Figure 42 shows the number of presentations and knowledge products disaggregated by type: published literature, grey literature, and verbal presentations. Published literature refers to manuscripts that are accepted for publication in a peer-reviewed periodical, including books and journal articles. It does not include documents that are published informally (e.g., a report published by an SWS partner on their organization’s website). Grey literature is a broad category referring to documents published in formats that are not controlled by the commercial academic publishing industry. Examples include magazine articles that are not peer-reviewed or the web-based publication of case studies, best practice guidance documents, conference proceedings, government papers, etc.

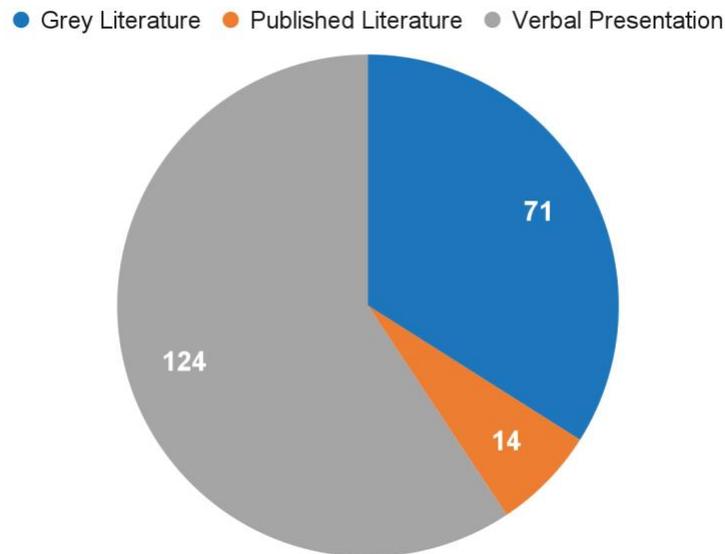


Figure 42. Number of knowledge products and presentations by SWS partners

### Number of WASH Sector Actors that Apply Methods and Findings

This indicator tracks uptake of SWS tools and approaches by quantifying the number of WASH sector actors that adopt WASH programming practices learned from methods and findings developed and/or documented by SWS. Exposure to SWS learning and knowledge products could be through direct technical assistance, stakeholder engagement, and/or communications activities and dissemination events coordinated by the project. In Q4 of FY 2021, SWS distributed a survey to 1,100 individuals asking whether or not they have applied SWS information or knowledge in their work. Thirty individuals responded to the survey and 60 percent of the respondents indicated that they have applied SWS information or knowledge in their work. For example, one respondent indicated that he/she used SWS knowledge products to inform the work-planning for his/her current project. Other respondents stated that they found SWS products useful to strengthen components of their WASH programs.

To learn more about the Sustainable WASH Systems Learning Partnership, visit: <http://www.globalwaters.org/SWS>



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