CLA CASE ANALYSIS: DEEP DIVE
Zambia's Community-Led Total Sanitation Program

DEEP DIVE SUMMARY INFORMATION

Sector	WASH
Type of Intervention	Community-Led Total Sanitation Program (CLTS), supplemented by a Mobile-to-Web (M2W) application and close collaboration with traditional leaders
Country/Region	Zambia / Southern Africa
Size & Scope	Akros, funded by the United Kingdom's Department for International Development (DFID) and in partnership with UNICEF and the Government of the Republic of Zambia (GRZ), implemented the M2W monitoring component of a Community-Led Total Sanitation (CLTS) program in Zambia as part of the Zambian Sanitation and Health Program (ZSHP), beginning with a few pilot districts, then expanding to all rural counties.
Funded Activities	In partnership with UNICEF and the Zambian government, Akros developed a Mobile-to-Web (M2W) application using the open-source District Health Information System 2 (DHIS2) software that allowed real-time monitoring of latrine construction and sanitation improvements at the community level across 68 rural districts in Zambia. Akros subsequently also developed a "Chief App," an Android-based widget that enabled key visualizations to be shared with traditional leaders. The app allowed chiefs and their headmen/women to have access to the data from the wards in their chiefdom as well as the surrounding chiefdoms to help traditional leaders track sanitation progress in their areas. Akros also led trainings and orientations for traditional chiefs and other leaders. Toward the end of the program, Akros contributed to sanitation initiatives in schools.
Research Materials and Methods	Eight key-informant interviews, plus 59 documents, including seven scholarly articles related to CLTS, seven methodological articles, two program evaluations, 16 reports, 10 articles from the press, six blogs, and three press releases.
CLA Integration	**COLLABORATION:** The Community-Led Total Sanitation (CLTS) approach involves working closely with community members, fostering self-reliance by encouraging them to take on the responsibility of making their community Open Defecation Free (ODF) without any outside funds for latrines or hand-washing stations. UNICEF and Akros improved the efficacy of this approach by working closely with traditional chiefs, government officials, schools, researchers, the media, and other community groups.
	LEARNING: Akros developed a Mobile-to-Web (M2W) application using Zambia's open-access District Health Information System 2 (DHIS2) software that allowed real-time monitoring and quick feedback loops. Headmen/women were able to see how they were doing compared to their peers. Akros also worked closely with a variety of researchers and evaluators to generate evidence about the effects of using the M2W app with the traditional leaders.
	ADAPTING: The program first used the M2W application using DHIS2, Zambia's health information system, with the idea that government officials would use that data. Galaxy smartphones were initially used, but when it became apparent that these phone impeded data collection, Akros switched to simple feature phones. Akros also first relied only on government officials, but realized that traditional leaders such as chiefs and headmen/women were change agents who were crucial to the continued success of the program. Akros then designed a "Chief App" to facilitate better utilization of the data using tablets given to the chiefs. Using the M2W data to track the performance of their headmen/women's villages, the chiefs adjusted their visits, thereby using their scarce fuel more efficiently. UNICEF started targeting hand-washing stations after data showed that these were the most challenging ODF components to establish and maintain.

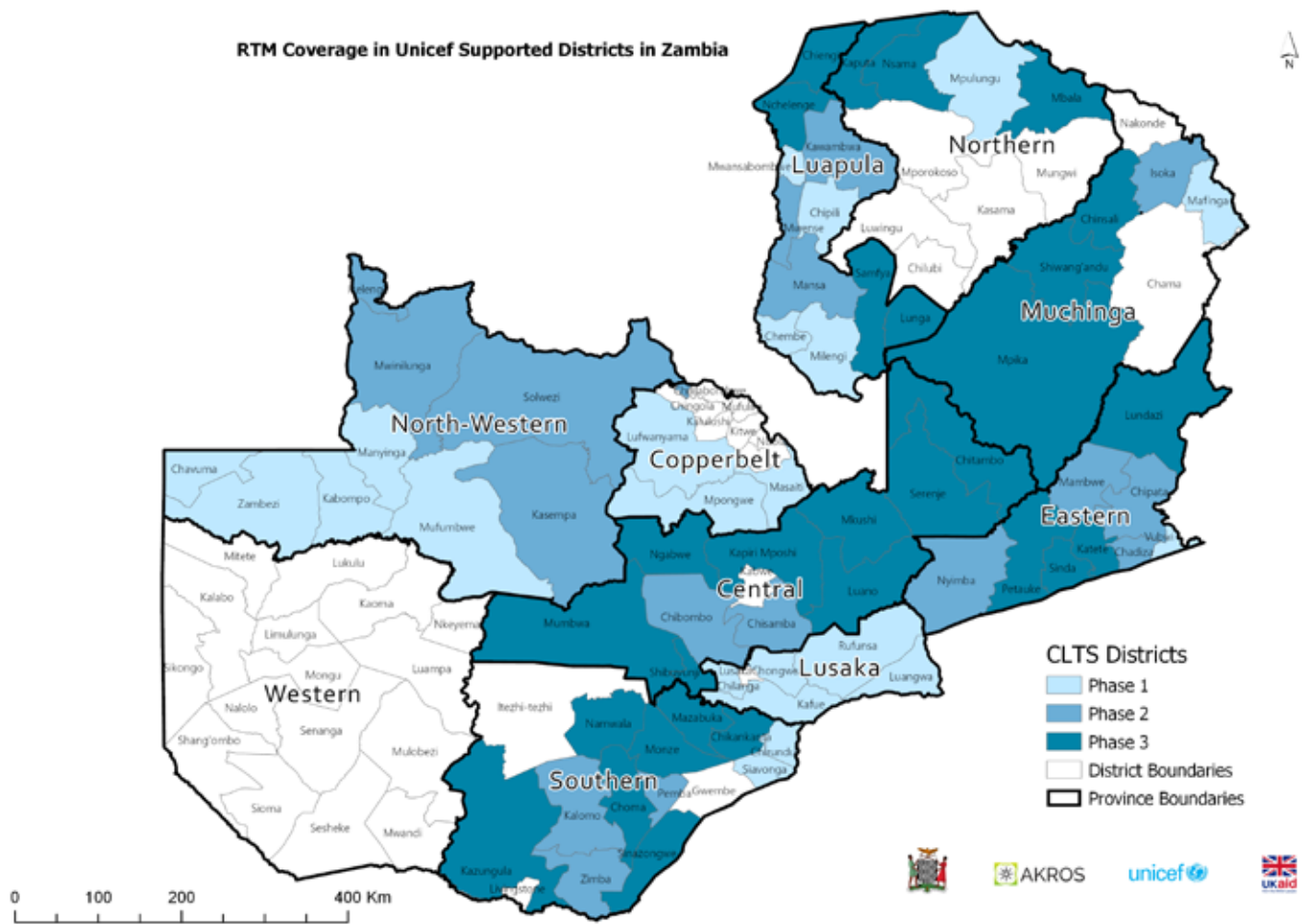|	
Enablers	• Sociocultural norms related to respect of traditional leaders. Chiefs and other traditional leaders had already been identified as strong supporters of other development initiatives because of their high social capital and ability to offer incentives and/or penalties for behaviors. • Akros' openness to local insights and willingness to manage adaptively. • Flexibility on the part of the donors and partners (UNICEF, DFID, and the Zambian government). • Effective media engagement. • Willingness of community members, leaders, and Akros staff to engage with, and act upon, digital data. Mobile phone towers had been built near all chiefs' houses, facilitating their access to M2W monitoring data. • Willingness of the Zambian government to invest in CLTS, including the M2W app, as a way to improve rural sanitation outcomes and meet Sustainable Development Goal #6. Working closely with UNICEF, Akros successfully transitioned all 68 of the targeted rural M2W districts to the Zambian government by the end of the project and encouraged them to include the elimination of OD in their strategies and budget.
Barriers	• Sociocultural norms—especially taboos against using the same latrine as in-laws, members of the opposite sex, or different generations. • Demands placed on Community Champions (CCs) sometimes exceeded their skills and capacity. CCs had difficulty with some tasks, such as accurately validating and documenting household spot checks. Akros eventually discontinued this task, relying instead on spot checks conducted by chiefs and surveillance officers. • Country-wide scale of the effort. The distances that needed to be covered across the 68 districts were challenging, as were the absence of a country-wide Management Information System (MIS) and the fact that other sector partners used different systems not in sync with DHIS2/M2W. • Sustainability and behavior change challenges common to many programs. • Logistics and infrastructure issues, including limited internet access (though mobile phone coverage was good), initial hardware costs for simple feature phones and chiefs' tablets, and poor soil quality. • Health data and sanitation data are captured in different systems by different ministries, making it difficult to analyze the datasets together. The Ministry of Health gathered health data, and the Ministry of Local Government and Housing (which was later replaced by the Ministry of Water Development Sanitation and Environmental Protection) measured sanitation outcomes. There were additional challenges because of the need to engage with other Zambian government ministries such as the Ministry of Chiefs and Traditional Affairs and the reorganization of the ministries midway through the program.
Key Lessons about CLA	• Close collaboration with community members and their traditional leaders can foster local ownership and self-reliance. • The effectiveness of adaptations is enhanced by identifying local change agents, such as traditional leaders. • Carefully designed M2W apps for real-time monitoring can facilitate quick feedback loops, continuous learning, and adaptive management. • Intentionally building pilots and other learning opportunities into program design can facilitate adaptation.

FIGURE 1. Akros/UNICEF support for Real-Time Monitoring (RTM) in Zambian districts. (Source: Akros)

OVERVIEW

Open defecation, which can lead to serious infectious diseases across the population and to stunting or even death in children, continues to be a problem in many countries, especially in rural areas. One approach to helping communities become Open Defecation Free (ODF) is Community-Led Total Sanitation (CLTS), which eschews subsidies in favor of motivating local residents to take control of their own sanitation needs. In Zambia, the Ministry of Local Government and Housing (MLGH)[1] embraced the CLTS approach, and with support from UNICEF and the UK's Department for International Development (DFID), set out to implement CLTS across the country's rural districts.

Akros, a Lusaka-based organization, came on as an implementer of Zambia's Sanitation and Health Program (ZSHP) in 2014.[2] Using CLTS, an approach developed by Kamal Kar (Kar and Chambers 2018) and aligned with the principles of collaborating, learning, and adapting (CLA), Akros developed a Mobile-to-Web (M2W) application that facilitated real-time monitoring of progress and began to collaborate more directly with traditional leaders such as chiefs/chieftainesses and headmen/women. While Akros employees did not explicitly set out to incorporate CLA per se into their programming, the M2W component of the CLTS program in Zambia, which was funded by UNICEF and not USAID, nevertheless integrated CLA principles in the following ways:

COLLABORATING: In collaboration with UNICEF and the Government of the Republic of Zambia under the CLTS program, Akros worked closely with community members, especially Community Champions (CCs) and Sanitation Action Groups (SAGs), encouraging them to take on the responsibility of making their community ODF without any outside funds for latrines or hand-washing stations. Akros improved the efficacy of this approach by working closely with traditional leaders, government officials, schools, researchers, the media, and other community groups.

LEARNING: In order to facilitate continuous learning about progress on the ground, Akros developed an M2W application built using Zambia's open-access District Health Information System 2 (DHIS2) software. The M2W app allowed for real-time monitoring and quick feedback loops. Akros led many orientations for chiefs/chieftainesses and headmen/women, at which the headmen/women were able to see how they were doing compared to their peers, and the chiefs/chieftainesses were able to track the progress of the headmen/women who reported to them. This led to healthy competition among village leaders to make their communities ODF in as little time as possible. Akros also worked closely with a variety of researchers to generate evidence about the effects of using the M2W app with the traditional leaders.

ADAPTING: Akros incorporated innovative real-time monitoring into the CLTS program using its M2W app when data indicated a need for quicker and more accurate feedback loops compared to the paper and pen data collection methods used previously. Akros also designed the "Chief App" to facilitate better utilization of the data by traditional leaders, who accessed the information using tablets and a simplified dashboard designed especially for them. Galaxy

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1   The Ministry of Local Government and Housing was later replaced by a new unit, the Ministry of Water Development, Sanitation, and Environmental Protection.

2   The Zambian government implemented the Zambian Sanitation and Health Program (ZSHP) through the Ministry of Local Government and Housing in partnership with UNICEF, the UK's Department for International Development (DFID), and other cooperating partners, including Akros. ZSHP started in November 2012 and was to end in March 2016 with an initial funding of £20.5 million with DFID contributing £19 million and UNICEF contributing the remaining £1.5 million. In July 2015, the program end date was extended from March 2016 to September 2018 with an additional budget of £4.1 million from DFID (Boston University 2017; Patrick Sijenyi interview). Akros was one of UNICEF's implementers and focused mainly on the M2W app as well as engagement with traditional leaders. The analysis in this report focuses mainly on these activities, but some of the sources cited here refer to broader ZSHP activities.

smartphones were initially used, but when it became evident that these phones impeded data collection, Akros switched to simple feature phones. Akros also first relied mainly on government officials but then realized that traditional leaders such as headmen/women and chiefs/chieftainesses were crucial to the continued success of the program, so they adapted their programming to include orientations and trainings for traditional leaders. Using the M2W data to track the performance of their headmen/women's villages, the chiefs/chieftainesses adjusted their visits to villages, thereby using their scarce fuel more efficiently. UNICEF also started targeting hand-washing stations after data showed that this was the most challenging ODF component to establish and maintain.

By collaborating strategically and intentionally with an array of stakeholders, learning from real-time data, and adapting when the evidence called for it, Akros, in partnership with UNICEF and the Zambian government, contributed to substantial improvements in Zambia's sanitation conditions and health outcomes:

In districts where the real-time monitoring M2W app was introduced, **83%** of people had access to improved toilet facilities in 2016, compared to only **75%** where the real-time monitoring M2W app had not been introduced.

Boston University's impact evaluation survey results indicated that use of improved toilet facilities increased from **64%** to **80%** between 2013 and 2016 in CLTS districts.

Although the prevalence of diarrhea in children younger than five did not show any significant decrease, the rate of stunting decreased from **32%** to **18%** and the rate of wasting decreased from **14%** to **7%** between 2013 and 2016.
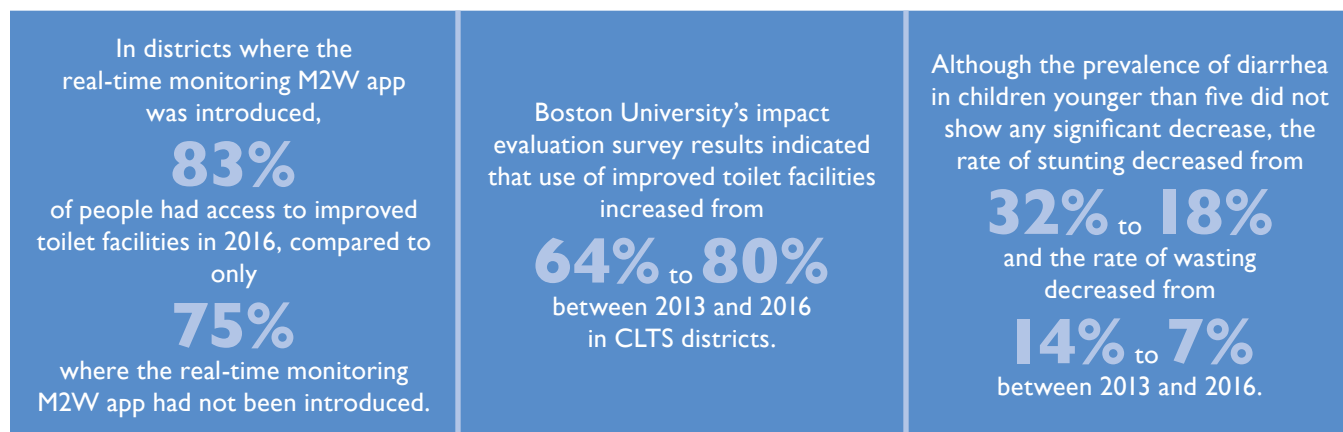
FIGURE 2. Results from Boston University's 2017 impact evaluation of the Zambian Sanitation and Health Program overall (Boston University's Center for Global Health and Development and Zambia Center for Applied Health Research, 2017, pp.37, p.ix-x).

2007 — Government of the Republic of Zambia begins CLTS implementation in 12 communities

2008 — Kamal Kar, the pioneer of the CLTS approach, visits Zambia to lead workshop for Plan and Government of Zambia staff

2009 — First sub-national unit (chiefdom) declared ODF

2010 — 751 communities declared ODF

2011 — CLTS included in national strategy. Zambian Sanitation and Health Program (ZSHP) begins in November 2017 with large-scale implementation of CLTS in rural areas, funded by the Government of Zambia, DFID, and UNICEF

2012 — Standardization of approaches begins

2013 — National monitoring system starts. Akros develops Mobile-to-Web (M2W) data collection system for UNICEF-led CLTS project

2014 — Through a pause and reflect process, Akros realizes results of M2W approach could be improved by working with traditional leaders. Orientations, "Chief App," and informal competition among traditional leaders begin

2015 — Akros submits CLA Case Competition entry describing M2W approach with traditional leaders. UNICEF asks Akros to scale the M2W system to 46 districts. First full district declared ODF. National target for ODF set

2016 — 10,081 communities declared ODF. Expansion of UNICEF's efforts from rural to urban areas. UNICEF asks Akros to scale the M2W system to 68 districts total

2018 — Close-out of ZHSP, and Akros ends its program; Government of the Republic of Zambia takes over CLTS activities
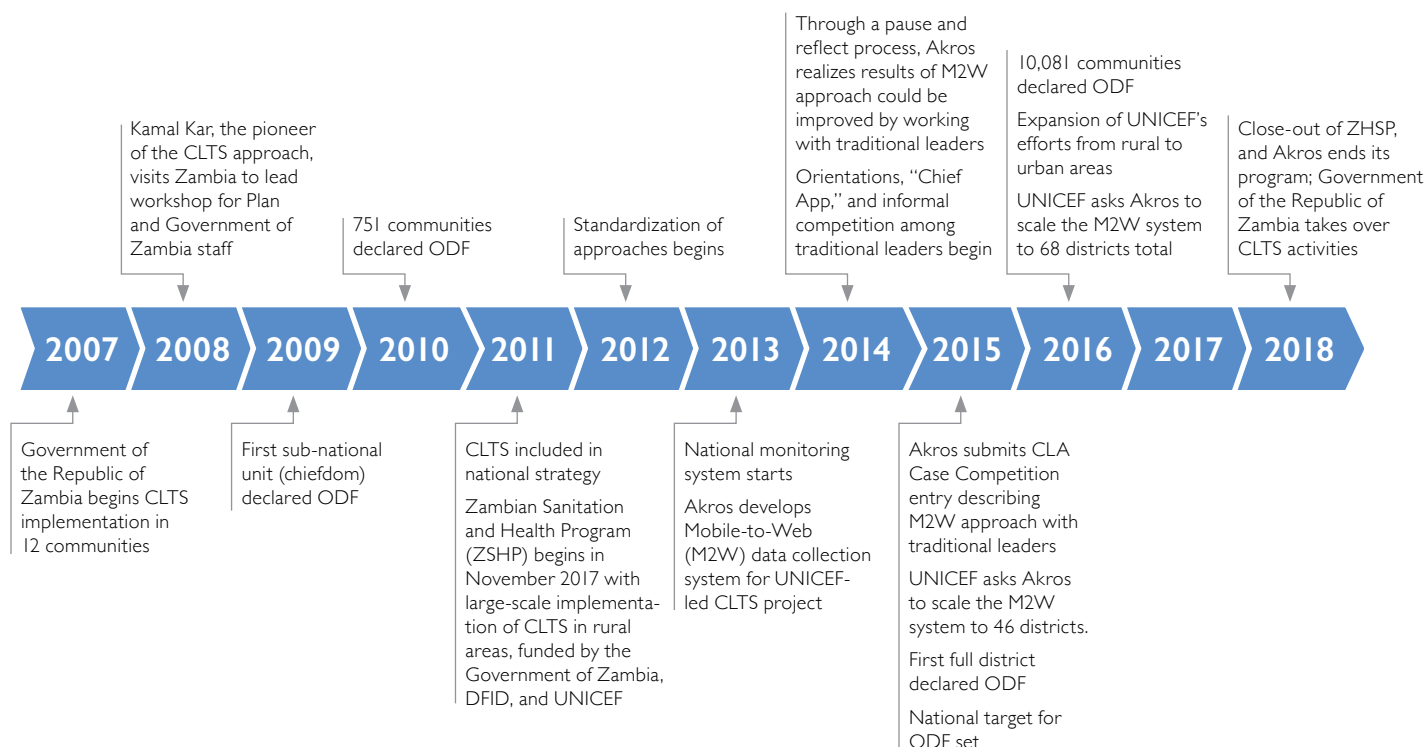
FIGURE 3. Timeline for the implementation of Zambia's CLTS program, including UNICEF's and Akros' involvement, based on UNICEF (2017) and on interviews.

METHODS

This case study focuses on Akros' CLA-aligned approach to improving sanitation in Zambia, conducted as part of the Zambian Sanitation and Health Program (ZSHP) in partnership with UNICEF and funded by DFID from 2012 to 2018. Akros' involvement began in 2014 with its introduction of a Mobile-to-Web (M2W) application to the CLTS process in a small number of pilot districts. Upon successful completion of these pilots, Akros scaled the M2W application to 68 rural districts. Akros eventually incorporated into its intervention close collaboration with traditional leaders.

As part of USAID's efforts to build the evidence base for CLA and one of two Deep Dive case studies (the other concerns Global Communities' response efforts to the Ebola outbreak in Liberia), this analysis seeks to assess evidence about whether intentional, systematic, and resourced approaches to CLA made plausible contributions to development outcomes in this case. If so, how? And under what conditions?

The questions guiding this analysis include:

1) In what ways and to what extent was CLA integrated (i.e., intentional, systematic, and resourced) in the Akros case, whether it was referred to as "CLA" or not?

2) What key factors supported or challenged the successful implementation of CLA? What factors, other than CLA, influenced the implementation and outcomes of this project?

3) What kinds of evidence/key sources of learning most influenced decisions that led to changes in project strategies and activities?

4) What kinds of organizational changes and development outcomes resulted from this project? What evidence is there of CLA's contribution to these changes? How does actual evidence of contribution compare with expected evidence?

5) What are the key lessons from this case that can guide integration of CLA into the design, implementation, and evaluation of future development efforts?

6) To what extent does this case demonstrate that CLA approaches made a plausible contribution to development outcomes?

The analysis was based on a review of 59 documents, including seven scholarly articles related to CLTS in Zambia, seven methodological articles, two program evaluations, 16 reports, 10 articles from the press, six blogs, and three press releases. Nineteen of these documents were provided by Akros; the rest were located by the researchers. In addition, researchers conducted one-hour phone interviews from April to June 2018 and/or written email exchanges from March to May 2019 with the following key informants:

Caroline Delaire, Aquaya Researcher

Julie Doherty, Akros Zambia Country Director

Elizabeth Jordan, USAID/Washington, Water and Sanitation Advisor, Office of Water within the Bureau for Economic Growth, Education and Environment

Laurie Markle, Akros Client Relations Lead

Annie Martin, Akros Research Associate

Greg Saili, USAID/Zambia, Deputy Team Leader/Governance Advisor and Foreign Service National

Jesse Shapiro, USAID/Washington, Environmental Health Team Lead, Senior WASH Advisor, Sanitation Focal Point, Bureau for Global Health

Patrick Sijenyi, UNICEF WASH Specialist

The research team adapted its data collection and analysis methods from Contribution Analysis (Mayne, 2012), Process Tracing (Befani & Stedman-Bryce, 2016; Bennett and Checkel 2012; Collier 2011), and Outcome Harvesting (Wilson-Grau & Britt, 2013,) as described in the research team's Deep Dive Methods. Key informant interviews and other data sources are quoted extensively in the report to illustrate analytical points and ground the qualitative analysis in the data.

This case study was designed to facilitate better understanding and assessment of the claims regarding the contribution of CLA to the success of Akros' interventions. Both this analysis and the companion analysis of Global Communities' response efforts to the Ebola outbreak in Liberia may help inform and strengthen programmatic and policy decisions related to the use of CLA for USAID staff, implementing partners, and other development actors.

COMMUNITY-LED TOTAL SANITATION (CLTS) IN ZAMBIA

According to the World Bank's statistics from 2015, almost a billion people globally practice open defecation, leading to serious public health issues, including stunting in children and serious infectious diseases (Tiwari 2017). The United Nations Sustainable Development Goal #6 seeks to achieve access to adequate and equitable sanitation and hygiene for all and to end open defecation by 2030.

Zambia hopes to achieve this goal even sooner, as indicated by its "Open Defecation Free (ODF) Zambia 2020 Strategy." In order to work toward this outcome, the Zambian government implemented the Zambian Sanitation and Health Program (ZSHP) through the Ministry of Local Government and Housing in partnership with UNICEF, DFID, and other cooperating partners, including Akros. ZSHP started in November 2012 and was to end in March 2016 with an initial funding of £20.5 million with DFID contributing £19 million and UNICEF contributing the remaining £1.5 million. In July 2015, the program end date was extended from March 2016 to March 2018 with an additional budget of £4.1 million from DFID (Boston University 2017).

ZSHP involved a variety of sanitation interventions, the cornerstone of which was Community-Led Total Sanitation (CLTS), an approach that was made popular by Kamal Kar as a result of his work in India. In his *Handbook on Community-Led Total Sanitation*, Kar (along with his co-author, Robert Chambers) describes how CLTS works through "triggering":

> *Triggering is based on stimulating a collective sense of disgust and shame among community members as they confront the crude facts about mass open defecation and its negative impacts on the entire community. The basic assumption is that no human being can stay unmoved once they have learned that they are ingesting other people's shit. The goal of the facilitator is purely to help community members see for themselves that open defecation has disgusting consequences and creates an unpleasant environment. It is then up to community members to decide how to deal with the problem and to take action (Kar and Chambers, 2008, p.20).*

In Zambia, CLTS was adapted to local circumstances and sociocultural practices. At the ward level, Community Champions (CCs) were trained to facilitate triggerings, which were two- to three-hour processes, including a "walk of shame" around the village to identify the locations where open defecation occurred. There would also be interactive exercises to help the communities realize that "they eat their own shit" because of a lack of hygiene and sanitation in their community. The village residents were encouraged to view open defecation not as an individual choice but instead as a problem that had serious health implications for all community members. Following the triggering, communities would usually decide to create a Sanitation Action Group (SAG), build their own latrines, set up hand-washing stations, and improve their overall waste management. **No subsidies are provided for latrine construction under the CLTS approach, as it is designed to foster a sense of ownership and self-reliance among community members.** It is important to note, however, that when Akros traveled to communities for supervision visits, they did provide per diem and reimbursement to community members for their time.

AKROS' CLTS INNOVATIONS

UNICEF brought Akros on as an implementer of CLTS for ZSHP in 2014 in 16 pilot districts in order to test out a DHIS2-based Mobile-to-Web (M2W) application. Akros had been successful in using DHIS2 earlier to monitor the prevalence of malaria, so they hypothesized that access to digital data about CLTS would similarly speed up the feedback loops between community members and government officials, leading to increased construction and use of latrines and hand-washing facilities. These 16 pilot districts were so successful that UNICEF eventually asked Akros to expand its M2W activities across all 68 CLTS rural districts in Zambia. A UNICEF report describes how the M2W application was utilized in a way that led to greatly improved outcomes:

> The M2W monitoring system has been a critical element for CATS[3] success from the start. The system has increased accountability, enabled feedback and course correction, and generated healthy competition between chiefs and districts. Accountability has increased because it is now evident which community champions (local volunteers) are consistently following up with their communities, and which ones may be inactive and may need support or replacement.

> Verification rules are also built into the system: a warning signal is sent if the data entered appears incorrect, helping to hold government staff accountable for maintaining data quality. The information helps identify districts and provinces that are not making good progress on sanitation, so that they can be prioritised[4] for further support. As the data is made available to the various levels of implementation, actors at all levels of the system can see more easily where to concentrate their efforts.

> The M2W monitoring system has also helped generate competition among communities, through its visualisation tools, as people can see how they rank compared to others across the country. In Chiengi district for example, chiefs saw that their communities were performing poorly in sanitation compared to other chiefdoms in Zambia. This galvanised them to take action: they took personal charge to improve their sanitation results until the entire district reached ODF, increasing sanitation coverage from 12 per cent to 100 per cent in just one year (UNICEF 2017:59-60).

Prior to the development of the M2W application, tracking the sanitation status of households in communities that had experienced CLTS triggering was quite onerous. Each household's information would be written down, then these papers would be collected by a government Environmental Health Technician (EHT) and delivered to the District Officer, who would be tasked with entering all the data into Excel spreadsheets and sharing the information back out to EHTs and community members. (See Figure 4.)

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3   CATS stands for Community Approaches to Total Sanitation and is how UNICEF refers to CLTS activities in this report.

4   Original British spelling is used throughout for direct quotations.
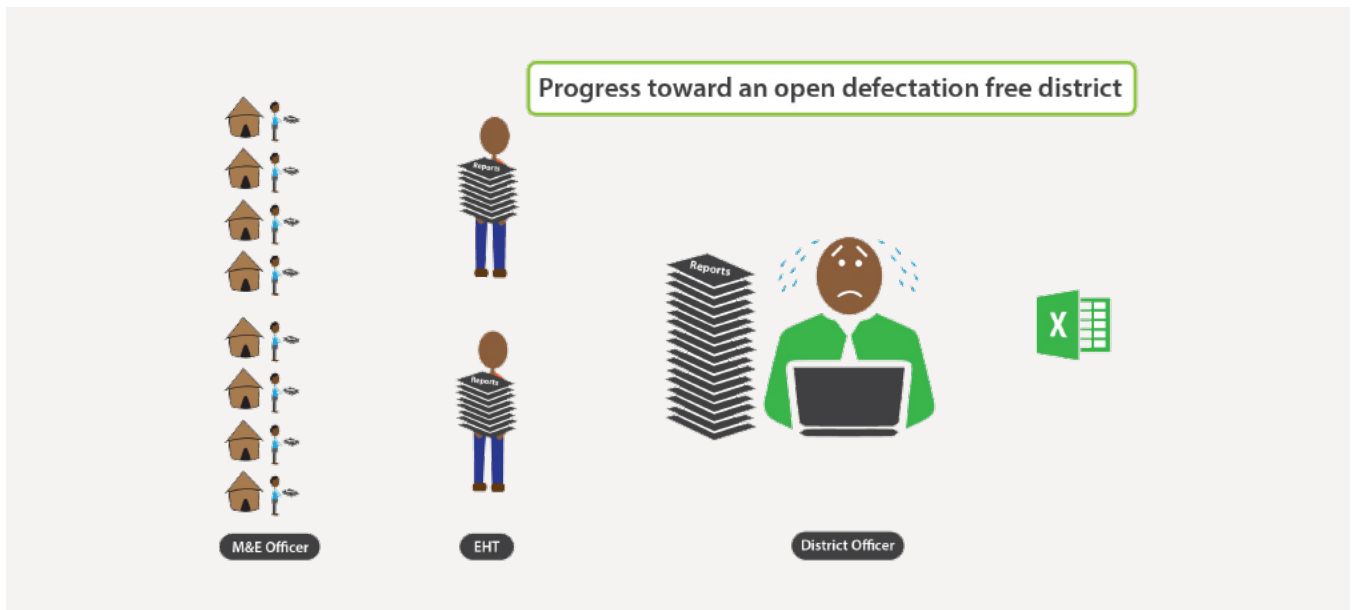
FIGURE 4. Previous paper-and-pen system for collecting monitoring data. (Source: Akros 2017 PowerPoint)

Akros, an organization that, according to its website, "establishes data-driven systems to improve the health and well-being of disadvantaged communities," noticed these inefficiencies and suggested to UNICEF that they be funded to test out a M2W application in a few districts. They proposed having Community Champions aggregate household sanitation data using DHIS2 on their mobile phones, then upload it into the cloud-based database. At the time, Akros believed that government officials would use the quicker and more accurate data to direct their resources toward the areas with poor performance. Figure 5 provides a visual for how this was supposed to work, and Figure 6 depicts Akros' initial (implicit) theory of change.
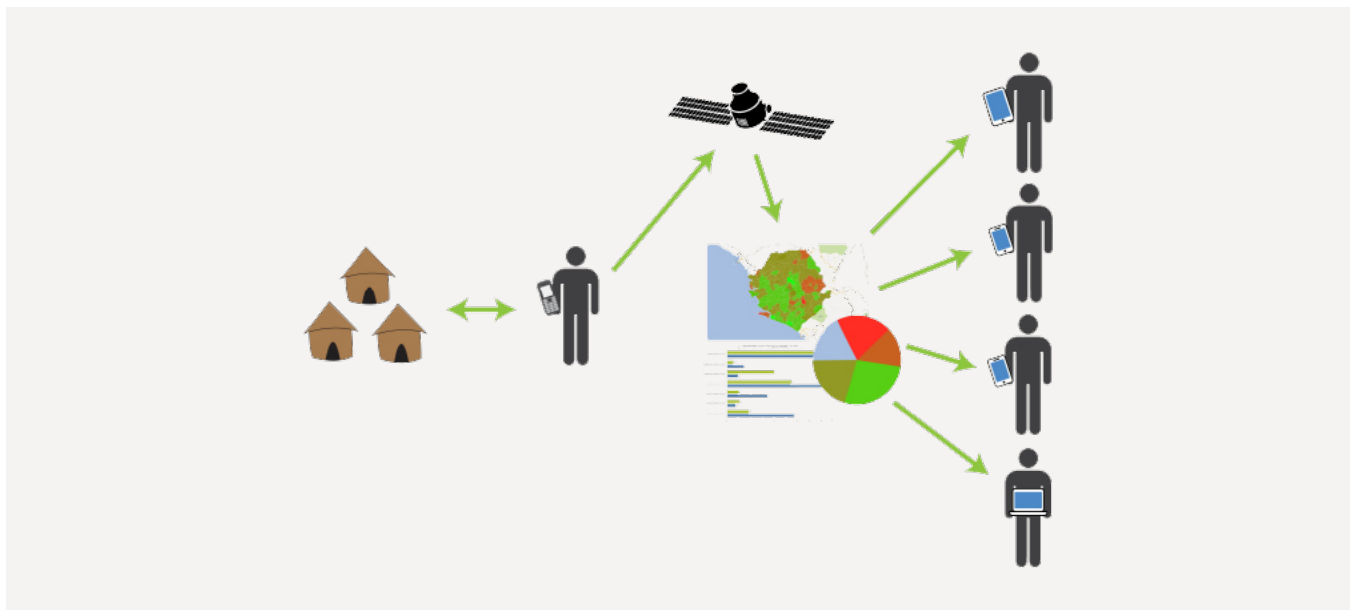

FIGURE 5. Akros' M2W app for collecting and sharing sanitation data. (Source: Akros)

Community Champions Gather Data with Mobile-to-Web App	Community Champions Upload Digital Data to DHIS2	Government Officials Use Improved Knowledge to Target Poor-Performing Areas	More Villages Become ODF

FIGURE 6. Akros' initial theory of change as inferred from documents

The innovative M2W platform introduced by Akros worked well at first in the pilot districts. But as Akros scaled the M2W application throughout the 68 CLTS rural districts of Zambia, they realized that the improvement they had seen initially was not continuing. The program had reached a plateau, and something would need to change in order for UNICEF, Akros and the Zambian government to reach their goal of more ODF districts.

The change that Akros and UNICEF made was to start collaborating with traditional leaders more intentionally and effectively. Unbeknownst to Akros staff members, UNICEF had engaged with traditional leaders earlier in the ZHSP program but only at the national level, as an Akros staff member explains in this email:

> We did not know about other engagements with traditional leaders happening around the globe. UNICEF's Chiefs' engagement was limited to partnering at the central level with MOCTA [Ministry of Chiefs and Traditional Affairs] until following the initial chiefdom orientations coordinated by Akros. Once UNICEF saw the success of the program, they picked up sponsoring chiefdom orientations throughout paper-based districts as well, but these orientation protocols were different from our own. UNICEF continued to rely solely on the principles of CLTS, while Akros' orientation involved sharing printouts of the latest data sets for each village so that the headmen, in front of the chief, were able to see how their village was performing compared to their peers (Akros staff email, October 10, 2018).

Eventually, Akros developed a special "Chief App" and gave each chief a tablet with a simple dashboard showing the progress toward ODF status of each of the villages under that chief's jurisdiction. According to Akros, the data from the dashboard helped the chiefs allocate their scarce fuel wisely to visit the villages that were not doing so well. The chiefs and headmen also felt a sense of healthy competition with their peers to be the first in their area to achieve ODF status. In some cases, according to some reports, the chiefs consulted the Chief App directly, while in other cases they were informed of the status of their villages by others who shared the data with them. The combination of access to real-time monitoring of data for continuous learning and adaptation on the one hand, and the identification of appropriate stakeholders to collaborate with on the other led to unprecedented success in their CLTS efforts. (See Figure 8 for a depiction of Akros' revised theory of change as inferred from documents.)
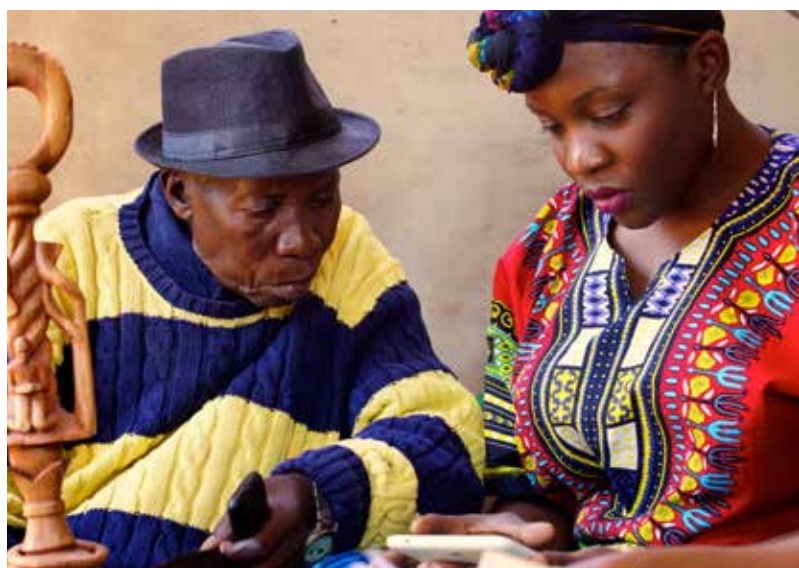

FIGURE 7. Mumbwa chief learns how to use 'Chief App' on tablet. (Source: Akros) Photo credit: Andrew Prinsen
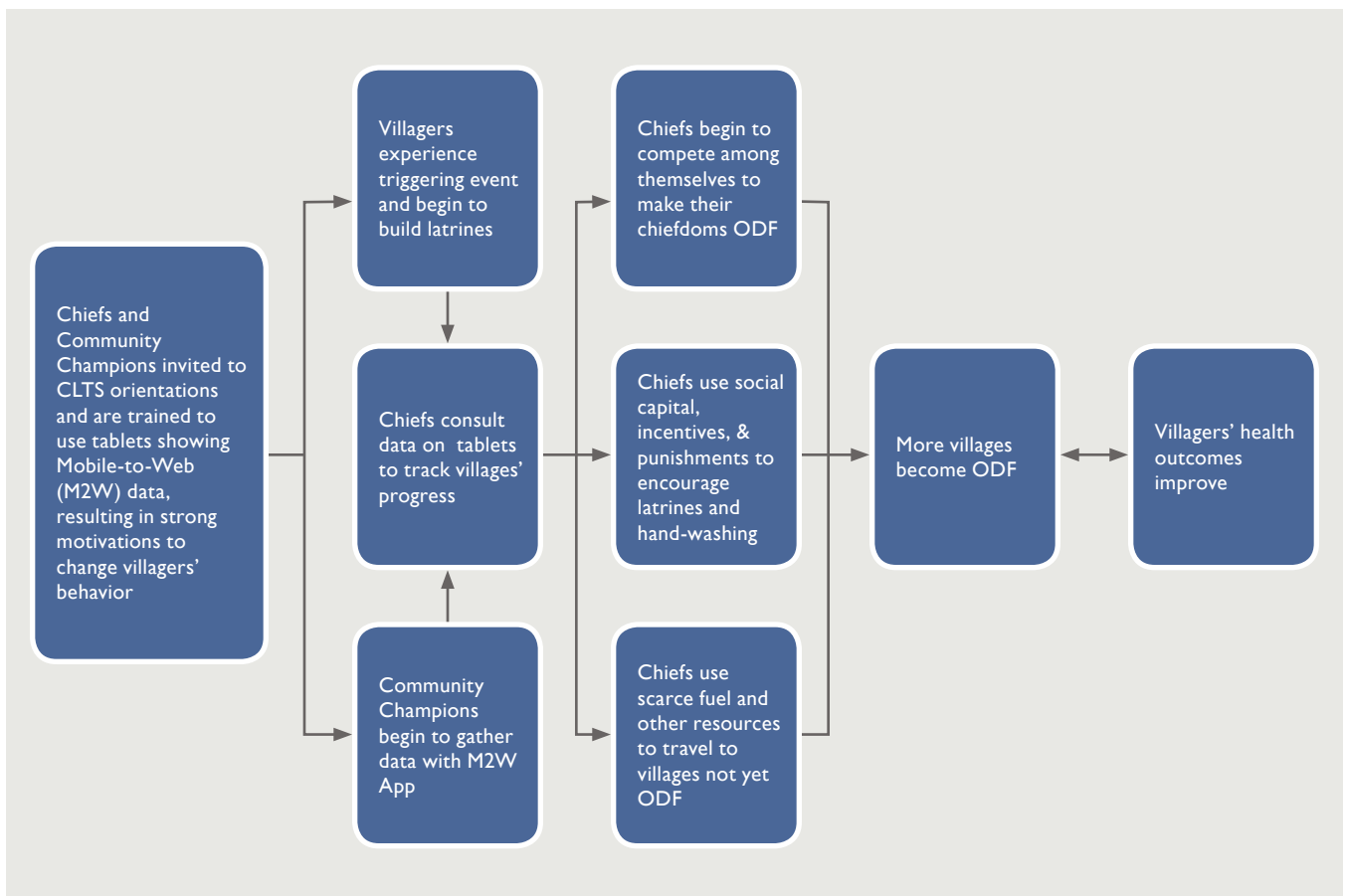
FIGURE 8. Akros' revised theory of change.

CLA INTEGRATION INTO THE INTERVENTION

In 2015, Akros submitted an entry to USAID's CLA Case Competition entitled "Empowering Chiefs and Traditional Leaders Revolutionizes Sanitation Program." In the entry, Akros described the role CLA played in its program. While Akros did not explicitly name CLA as a rationale for its actions, the way in which Akros emphasized community-led approaches exemplified CLA and embodied the organization's core principle of collaborating closely with the local community and government in the work (Akros 2015:2). This study uses a CLA lens to examine Akros' use of an innovative M2W application and its engagement with community members and others, especially traditional leaders, in order to shed light on how CLA was integrated into Akros' work and how it may have contributed to development outcomes in this case.

CLA Framework

Organizations need both integrated CLA practices appropriate for their context and conducive enabling conditions to become stronger learning organizations capable of managing adaptively. The framework stresses the holistic and integrated nature of CLA.

COLLABORATING: Because the CLTS approach is inherently collaborative, Akros engaged with many different stakeholders from the start of its involvement in ZSHP. Once Akros realized that its M2W app enabled it to achieve only a certain level of uptake, it reflected on other possible stakeholders. Throughout the program, Akros, in coordination with UNICEF and the Zambian government, collaborated with many different groups to improve the uptake of its M2W app, therefore, including:

- Sanitation Action Groups (SAGs), comprised of volunteers who oversaw the construction of latrines and hand-washing stations at the grassroots level and tracked progress in their village.

- Community Champions (CCs), who aggregated the SAGs' data using the M2W app. They were mostly volunteers, receiving only some token "talk time" on their phones for gathering monthly data from an average of 10 villages each.

- Government officials from the Ministry of Local Government and Housing[4] and other Ministries, who worked with Akros and supported the DHIS2 system.

- District and village-level government officials, who were invited to orientations and data presentations.

- Environment and Health Technicians (EHTs), who helped collect and verify the data.

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4   The Ministry of Local Government and Housing was later replaced by the Ministry of Water Development, Sanitation, and Environmental Protection.
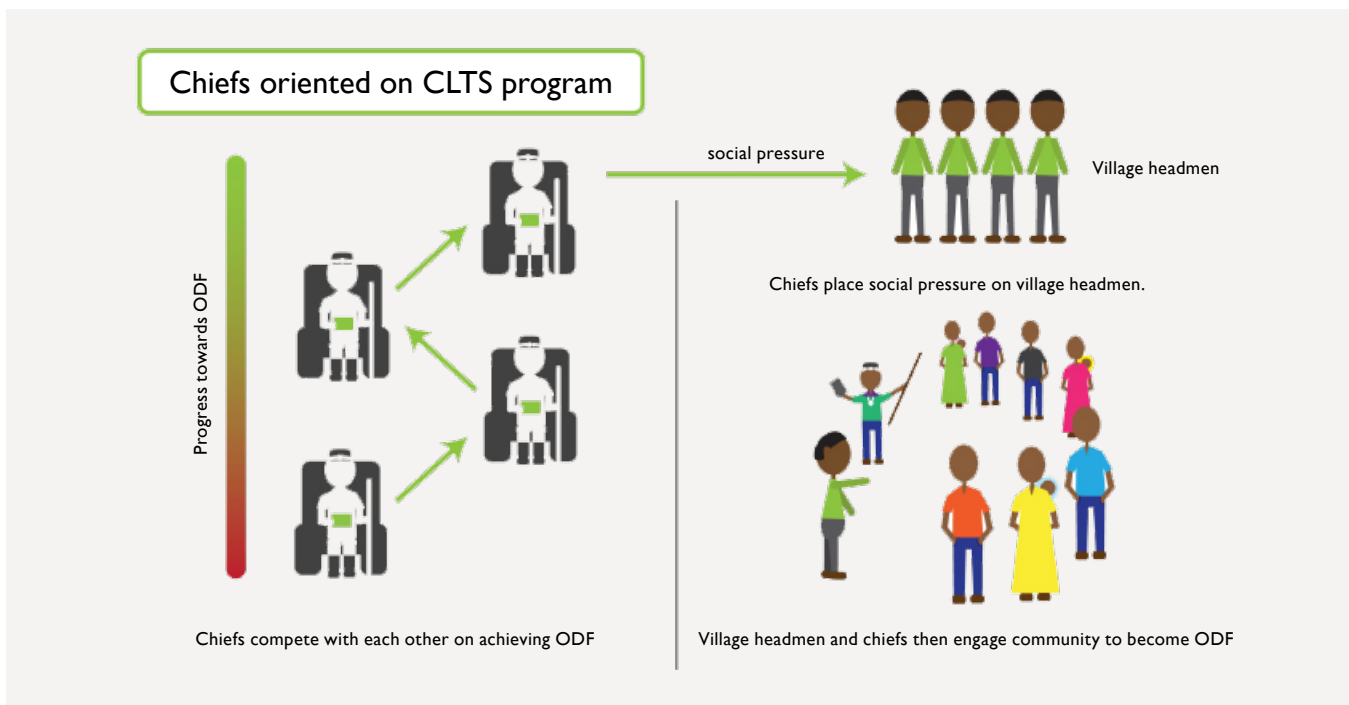
FIGURE 9. Depiction of how chiefs/chieftainesses and headmen/women exert social pressure on community members to abandon open defecation. (Source: Akros)

- Traditional leaders, such as headmen/women and chiefs/chieftainesses, who played a central role in motivating villagers to build and use latrines and hand-washing stations.

- Researchers from Zambia and overseas, including evaluators from Boston University and the Zambia Center for Applied Health Research, who were interested in learning more about the success Akros reported.

While collaborating with all of these stakeholders contributed to development outcomes, engaging with both formal government leaders and traditional leaders turned out to be especially effective.

Active involvement of government agencies at different levels of the political and health system as well as Chiefs, their Royal Council, and the village headmen in their traditional leadership catchment areas leads to a higher chance of success in achieving the goals of the sanitation and hygiene program (Boston University impact evaluation, p.60).

Across chiefdoms, the ability to compare and cross check performance on progress also provided an opportunity for peer learning/review, and positive competition. The ability to collaborate with, learn from, and adapt interventions to suit the communities that were being targeted with CLTS is the primary reason for the programme's success. The dramatic outcomes from the CLTS intervention demonstrate the impact that can be made when organizations use a CLA approach (UNICEF staff interview, May 2019).

Involving all the relevant government ministries and ensuring that CLTS is government-owned and led is critical to the success of CLTS in Zambia. This is the function of the JMPT [Joint Monitoring Programme Team], which brings together representatives of government ministries, as well as elected and traditional leaders. Chief Macha is chairman of the Choma JMPT and all stakeholders in the district report to him on sanitation matters. This structure has been replicated in all the districts with great success. If the chairmanship were to be given to the head of a government department they would be unlikely to have the same position of influence as a chief (Zimba, et al., p.135).

'[Hierarchical pressure] does work as well … there was a time when the headmen themselves didn't have pit latrines, but when you involve them and they see the benefits, they would put by-laws within the villages that one who doesn't have a latrine will [have a penalty put in place] … and then referral to the Chief. And the Chief is very influential in that he doesn't spare them. Just mention that you will be taken to a chief then someone will get scared.' (Champion, female, Southern Province) (Lawrence, et al., p.556).

Chieftainess Nkomeshya has made it her personal goal to make her chiefdom ODF…She initially met all zonal leaders, who represented multiple community headmen, to receive an update on the sanitation status of each zone, and each zonal leader developed a plan to achieve ODF. Thereafter, she followed-up with each community headman and conducted house to house monitoring visits across her chiefdom, even after nightfall. She also holds CCs accountable to following up with their respective communities. Public places including restaurants and bars are included in Chieftainess Nkomeshya's follow-ups; if after multiple warnings a toilet is not constructed in a public facility, the facility is locked until a toilet is constructed. She has also placed a community headman in jail for failing to support ODF, showing that sanctions were an option she was willing to use if people neglected their responsibilities on ODF. As well as urging others to use and build a toilet, the Chieftainess also built toilets in her home, to be a positive role model for others. Sanitation was also worked into her traditional ceremonies, where demonstration toilets from the sanitation marketing programme were built on-site, for people to use during and after the ceremony (UNICEF 2017:61).

As the program approached close-out, Akros collaborated even more intensively with government and local counterparts in order to facilitate sustainability and foster self-reliance. An Akros staff member was seconded to the Ministry of Local Government and Housing (MLGH) at 80% LOE during the transition.

Once the protocol was complete, Akros member Rabson Zimba was seconded to MLGH at 80% LOE to expand the capacity of the MER [Monitoring, Evaluation, and Reporting] unit for DHIS2 usage, data interrogation, drive the transition agenda throughout the MLGH hierarchy, and escalate transition-related tasks on an as-needed basis. With Rabson's support, a critical task list for transition-related activities was designed, a budget was submitted from the MER unit to the Ministry of Finance for approval and a Surveillance Visit protocol for Central-MLGH staff was drafted (Akros 2015, p.1).

It remains to be seen how the Zambian government chooses to use the M2W app in the future.

LEARNING: The M2W app that Akros developed allowed for quicker feedback loops, as government officials and traditional leaders were able to monitor progress. Akros also learned from a number of other sources, including two evaluations, studies conducted by researchers (both internal and external to Akros), and staff members' day-to-day experience.

Akros learned that their M2W app not only facilitated quick feedback but also provided a cost-effective way to conduct M&E:

This approach has not only driven a data feedback cycle, which improves data quality, but has also established a cost-effective, sustainable solution to CLTS monitoring and evaluation that requires minimal third party investment. According to an internal UNICEF estimate, across Zambia's non-M2W districts in 2014, the average cost per new sanitation user reached was US$2.50; in M2W districts, new sanitation users were reached at an average unit cost of US$1.65 (Markle, et al., 2017, p.2).

Community members, traditional leaders, and government officials all learned alongside Akros as the program proceeded. The Boston University impact evaluation states:

*Notably the successful elimination of open defecation in Chiengi District was facilitated by the use of RTM [Real-Time Monitoring] data, using a mobile-to-web platform, on the status and progress of program implementation. We feel that the use of RTM data by implementers and beneficiaries can serve as motivation to improve performance. **Based on our analysis, this strategy was associated with a significantly greater construction of improved toilet facilities by households in areas where RTM was implemented** (Boston University impact evaluation, 2017, p.60; emphasis added).*

ADAPTING: The learning and feedback loops that characterized CLTS work in Zambia led to adaptations on the part of community members and traditional leaders, as well as UNICEF, the Zambian government, and Akros staff members. The triggering events that Community Champions facilitated led in at least some cases to dramatic behavior change on the part of community members and their leaders. A Peace Corps Volunteer working with Akros describes the actions of one Community Champion named Chris Malambo:

We arrived in the village and, after all the formal introductions so important in Zambian culture, Chris convinced everyone in attendance—almost 150 village headmen and ward councilors—to do what we refer to as 'the walk of shame,' that is, strolling around the village until we find a fresh pile of human excrement … It didn't take long to find the fetid pile, and after Chris had convinced a reluctant crowd to gather around, he took a freshly baked loaf of bread from his bag. He tore off some small pieces, passed them around to some of the leaders in the audience and waited while they enjoyed the treat. He then took what was left of the loaf and set it down near the pile of feces. The crowd watched as flies swarmed back and forth between the feces and the bread—back and forth—carrying with them disease-causing bacteria…After a minute or so, Chris used a stick to skillfully scoop the bread onto a clean piece of paper then again offered it to the leaders in attendance, who unanimously refused. Chris then explained that without an adequate latrine flies are free to go between your feces and your food, contaminating what you eat with your own excrement. He then said plainly, 'You are all eating your own feces. Even the Chief is himself eating his own and everyone else's feces.' That moment was extremely powerful, and later that day the Chief, with all of the headmen, committed to becoming 100% open defecation free (ODF) in just two months (Russpatrick blog, 2014).

Akros reports that many chiefs followed through on their ODF commitments, using the data in their "Chief App" to guide how they should use their scarce fuel, and how they should dole out rewards or punishments. Follow-up phone calls and visits also encouraged the chiefs to identify villages to prioritize:

The Chief's Orientations that UNICEF and Akros facilitated led in dramatic behavior change on the part of community members and their leaders. Many chiefs followed through on their ODF commitments made at the Chief's Orientations, using the data in their "Chief Visualizer App" to guide how they should use their scarce resources, and how they should dole out rewards or punishments. UNICEF bought tablets for chiefs and locked them down, so they couldn't be used for anything else, then showed them how to use the tablet and the information provided. Efforts were made to make the visualizations as easy to understand as possible with color coding and simple maps. The chiefs were oriented on these tablets. The community change agents (community champions, district water and sanitation staff) were provided relevant information in a culturally sensitive manner. (Akros staff interview, May 2019).

Another adaptation that was made involved the M2W app for Community Champions. At the outset of their work in Zambia, Akros was relying on smartphones for their M2W app. They soon adapted, however, switching to simple feature phones:

In sum, due to their limited battery-life, fragile screens, interface complexity and highly coveted appearance, smartphones had to be replaced. Low-tech yet robust feature phones that could run DHIS2 Java-based applications were introduced. Reporting soon rocketed as a result of this turnaround and the progress of the WASH program instantly improved (DHIS2, 2015).

BARRIERS AND ENABLERS TO COLLABORATING, LEARNING, AND ADAPTING IN THIS CASE

This section briefly explores some of the contextual factors that facilitated or impeded CLA integration into the M2W implementation under the ZSHP Programme. The three main CLA approaches used by Akros were (1) the overall CLTS aspect of the UNICEF- and Zambian government-led program, which fostered self-reliance through close collaboration with ordinary community members as they took responsibility for the sanitation of their communities; (2) the M2W app, which allowed for adaptive management based on real-time learning from monitoring data; and (3) involvement of traditional leaders, which enabled Akros to draw on their high status, strong local networks, and influential relationships. Barriers and enablers to these three CLA approaches are described below.

Enablers

- **SOCIOCULTURAL NORMS:** Respect for traditional leaders such as chiefs/chieftainesses and headmen/women provided important support for Akros' and UNICEF's efforts. Children also acted as effective agents of change in some Zambian communities.

  Involvement of traditional leaders through chiefdom orientations and the app enabled them to draw on their high status, strong local networks, and influential relationships. Due to sociocultural norms related to respect of traditional leaders, it was found that the chiefs were just incredible agents of change in Zambia—in some cases much more than government officials. Some chiefs showed exceptional levels of engagement with the program and offered to undertake periodic review through the tablet (Akros staff interview, May 2019).

  Traditional chiefs are increasingly being recognized as potential champions for development in areas such as land rights, sanitation, mining company MOUs, etc. They are especially useful in attempts to influence behavior change. Traditional chiefs have been most successful allies around early marriage (USAID staff interview, April 2018).

  Children appeared to act as agents of change within their communities both during and after triggering in the CLTS process. Several participants reported that children use peer pressure (sometimes to the extent of ridicule) to influence peers to use latrines and practice other sanitation behaviors … Finally, children often influenced their parents to improve sanitation behaviors by reminding them of things they had learned from CLTS, school, and their peers (Lawrence et al., 2016, pp.557–8).

- **OPENNESS TO LOCAL INSIGHTS.** When Akros realized it had reached a plateau and would be unlikely to make further progress without a course correction, it reached out to local leaders and community members— listening, learning, and looking for new opportunities.

  Through the mobile-to-web app, chiefs and chieftainess were able to access information on sanitation and hygiene data (e.g., status of latrines, handwashing facilities, report submission rates by community champions, etc. within respective chiefdoms). Consequently, a key outcome of this engagement/collaboration was that chiefs across the country embrace the open defecation free campaign for the communities and chiefdoms. The presence of the M2W system therefore played a catalytic role in the realization of the gains reported under the ZSHP (UNICEF staff interview, May 2019).

While this application was originally envisioned as a tool for Ministry officials to monitor progress and allocate resources accordingly, the early gains during the pilot phase seemed to plateau when the programme was scaled up. Based on the data collected in the M2W system, an initial surge in improved sanitation (20–30%) was observed, but what ended up happening was that the data appeared to stagnate for five months. Upon reflecting on the data and based on feedback from the field, it was decided to involve the traditional leadership. Discussions were subsequently held with the central council of chiefs and then trainings were started for headmen where the real-time data was shown to the headmen on how their villages were doing. It drove a lot of healthy competition (Akros staff interview, May 2019).

- **FLEXIBILITY ON THE PART OF THE DONORS (UNICEF AND DFID).** The CLTS program was funded by DFID and UNICEF. It was implemented by several partners, including Akros, which eventually scaled up the use of its M2W app into all of Zambia's rural districts. Akros credits UNICEF, its main donor, with openness and flexibility, which allowed Akros to pilot the M2W app as well as the deeper engagement with traditional leaders.

  Yes, we did feel we could be adaptive. We had a cooperative agreement, and UNICEF was great. The theory of change behind all of this is a virtuous data cycle. If data is sent back to someone who makes use of it, then they are more likely to contribute better quality data. You get better quality data over time without having to invest heavily in DQAs [Data Quality Assessments]. So mid-contract we asked for a few extra thousand dollars to try this out, and UNICEF said yes (Akros staff interview, May 2018).

- **WILLINGNESS TO INVEST IN CLTS ON THE PART OF DONORS AND THE GOVERNMENT OF ZAMBIA.** UNICEF and DFID made a ten-year commitment to funding CLTS in Zambia, and from the start they and their implementing partners (such as Akros) worked closely with government ministry officials to foster self-reliance in this sector once donor funding ended. They were successful in encouraging the Zambian government to include the elimination of OD in their strategies and budget, as rural sanitation outcomes were recognized as key to the achievement of Sustainable Development Goal #6.

  The Government's 7th National Development Plan (2016–2021) includes the target of ending open defecation in rural areas by 2020, and a national ODF strategy is now in place. The elimination of OD is also embedded within the 'National Rural Water Supply and Sanitation Program' for 2016–2030 (the NRWSSP). Eliminating OD is also included in the Zambia Vision 2030 strategy, which aims to achieve at least 90 per cent sanitation coverage by 2030. In 2013, a formal budget line for sanitation was included in the Ministry of Finance budgeting template so that districts and provinces could request funds specifically for sanitation. Financing for sanitation from partners has also increased in recent years, as the Government prioritised sanitation…In addition, the costs of increasing access to sanitation has been observed to reduce as the CATS programme went to scale—going down from $8.30 per person to $3.40 per person (UNICEF 2017, p.57).

- **EFFECTIVE MEDIA ENGAGEMENT.** ZSHP incorporated an effective media strategy from the start, mobilizing radio and newspapers to spread the word about the need to end open defecation.

  Behavior change messaging disseminated through hygiene promotion activities and various media outlets have reached 6,670,914 people in the 68 districts as well as Lusaka. UNICEF has entered into a new partnership agreement with Zambia Institute of Mass Communication Trust (ZAMCOM) covering the period 2016–2018. During this period, ZAMCOM will carry out ODF messaging through media channels such as radio, newspapers, TV and social media, as well as capacity building support to community radios to improve coverage quality of ODF, sanitation and hygiene issues. ZAMCOM will also support messaging on platforms that are youth-friendly in order to target the messaging at a demographic most likely to take up new behaviors (Boston University impact evaluation, 2017, pp.50–1).

- **WILLINGNESS TO ENGAGE WITH DIGITAL DATA.** Across many different groups of stakeholders—from Community Champions to government officials to chiefs—Zambians evinced a willingness to learn new skills and engage with digital monitoring data.

  The village-level data is then compiled across districts and provinces, for which management meetings are held to discuss and feedback sent to community champions and SAG members. Meetings are held regularly between EHTs and community champions to review data submitted and provide support and between community champions and SAG members to review the feedback. Feedback are [sic] also sent to Chiefs to help them mobilize their communities to improve on their performance (Boston University impact evaluation, 2017, p.6).

  Some chiefs have shown exceptional levels of engagement with the program and have offered to provide spot-checking services through the tablet (Akros 2017, p.3).

Barriers

- **SOCIOCULTURAL NORMS:** Many Zambians are reluctant to share toilets with in-laws or others. These taboos can be deeply ingrained and can affect the success of the program.

  Overall, reported latrine usage was high after CLTS triggering. Virtually all participants reported that they used a latrine every time or nearly every time they defecated, like most other community members. However, several inhibiting factors were discussed (Lawrence, et al., 2016, p.557).

  Particularly influential is the long-standing taboo that people should never use the same toilets as their in-laws, members of the opposite sex, or different generations within a family. This belief has produced a formidable barrier to toilet use in many communities. About half of the Lundazi IDI [in-depth interview] participants, one-third of the Choma IDI participants, and one-fifth of those in Lufwanyama reported that people still refuse to share toilets with their in-laws (Lawrence, et al., 2016, p.557).

- **DEMANDS PLACED ON COMMUNITY CHAMPIONS SOMETIMES EXCEEDED THEIR CAPACITY.** Community Champions had difficulty with some tasks, such as accurately validating and documenting household spot checks. Akros eventually discontinued this task, relying instead on spot checks conducted by chiefs and surveillance officers.

  Despite continued training to report quality checks (pass and fails) correctly, CCs continued to struggle with understanding quality checks and reporting their findings accurately. Many factors contributed to the removal of monthly household spot checks. Poor data quality not only consumed valuable district and partner time cleaning reports, but it also consumed much of our efforts during supervision visits. Rather than reviewing the principles of the program, or sharing best practices, surveillance officers were spending their time cleaning reports with CCs explaining the house checking process on repeat. Beyond unproductive efforts at training, the demands on CCs for reporting were growing as the program expanded to include water access monitoring and school-based sanitation monitoring. In practical terms, the CLTS/SAG Data Collection Form was running out of room and CCs were becoming overwhelmed with the amount of time a single village visit required (Akros 2017, p.3).

- **SCALE OF THE EFFORT.** The scale of the CLTS program presented challenges of coordination with other donors, government officials, and interventions, some of which were operating at cross-purposes to the ZSHP.

  [T]here may be overlap with other programs that might interfere with CLTS operation. For example, one program in Eastern Province encouraged community members to plant trees and offers to build latrines as a reward for tree planting. This directly contradicted the grassroots and unsubsidized approach used in Zambia's CLTS initiatives (Lawrence et al., 2016, p.559).

- **SUSTAINABILITY CHALLENGES.** It will be challenging for the government to locate funding to continue devoting resources to CLTS now that donor funding has ended.

  [There is] limited funding in the sector to devote to the building of a sector wide management information system and to continue supporting the districts in the manner that the ZSHP project supported the districts (Akros staff interview, May 2019).

- **BEHAVIOR CHANGE CHALLENGES.** Even with the shock value of triggering events, some Zambians continued their open defecation practices out of habit and out of a preference for defecating out in the open.

  'CLTS—for now, I can say that it has tried [to mobilize communities to become ODF], but not completely because some are still defecating in the bush, while others have stopped, they now have their own latrines. They are concerned and now realize that they should not defecate in the bush.' (Champion, male, Eastern Province) (Lawrence, et al., 2016, p.560).

  The Boston University impact evaluation found that at baseline in 2013, 64.1% of households reported using an improved toilet facility as compared to 80.0% in the end-line—and yet, the same survey found no significant difference between baseline and endline numbers of households that reported that no member of their households had ever practiced open defecation (Boston University impact evaluation, 2017, pp.26–7).

- **LOGISTICS AND INFRASTRUCTURE:** Because cell phone coverage is spotty in some rural areas of Zambia, Akros made sure that its M2W app allowed for data to be entered into Community Champions' phones and saved until the data could be uploaded when back in an area with cell phone coverage. In addition, transportation was a challenge for some SAG members, CCs, and Akros staff members. And finally, sandy or hard soil and the lack of availability of building supplies made latrine construction challenging and led to the collapse of many latrines.

  The most common challenges were transport (named by over one-third of officials in Lufwanyama, almost half of those in Lundazi, and one-fifth of those in Choma) and a lack of resources. Many key personnel intimately involved in CLTS implementation, such as champions, headmen, and CLTS coordinators, lacked access to a vehicle or bicycle. This made it difficult to cover large distances between rural villages and spread critical messages about sanitation and hygiene (Lawrence 2016, p.558).

  For some, additional factors preventing latrine construction included insufficient access to necessary materials (such as 'strong logs') for building permanent toilet structures and poor soil conditions (either rocky soil that inhibits pit digging or sandy soil that predisposes latrines to collapse) (Lawrence 2016, p.557).

- **GOVERNMENT REORGANIZATION.** The Water Supply and Sanitation Department under the Ministry of Local Government and Housing was transitioned to the Ministry of Water Development, Sanitation, and Environmental protection, which affected and delayed the handover and adoption of the system at national level.

  Lastly, some ministries still simply do not always see WASH as a big enough priority. For example, although the Ministry of Health staff are key actors in the rural sanitation programming (including the formal role of the National CLTS Coordinator), in practice they are not always allowed the time to work on sanitation. (UNICEF 2017, p.4).

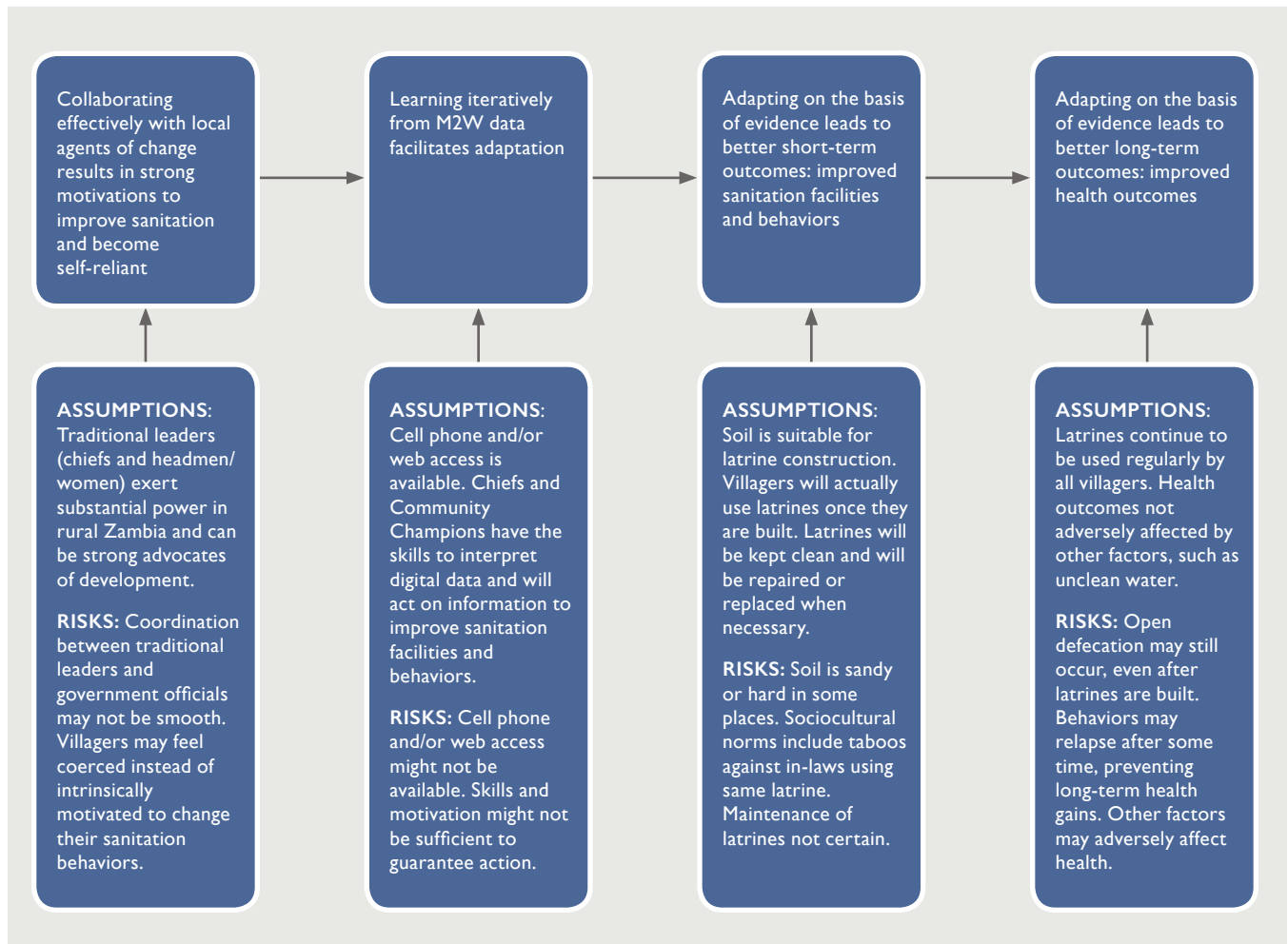# CLA-RELATED INTERVENTION LOGIC AND THEORY OF CHANGE IN AKROS' CLTS PROGRAMMING

Collaborating effectively with local agents of change results in strong motivations to improve sanitation and become self-reliant	Learning iteratively from M2W data facilitates adaptation	Adapting on the basis of evidence leads to better short-term outcomes: improved sanitation facilities and behaviors	Adapting on the basis of evidence leads to better long-term outcomes: improved health outcomes
ASSUMPTIONS: Traditional leaders (chiefs and headmen/women) exert substantial power in rural Zambia and can be strong advocates of development. **RISKS:** Coordination between traditional leaders and government officials may not be smooth. Villagers may feel coerced instead of intrinsically motivated to change their sanitation behaviors.	**ASSUMPTIONS**: Cell phone and/or web access is available. Chiefs and Community Champions have the skills to interpret digital data and will act on information to improve sanitation facilities and behaviors. **RISKS:** Cell phone and/or web access might not be available. Skills and motivation might not be sufficient to guarantee action.	**ASSUMPTIONS**: Soil is suitable for latrine construction. Villagers will actually use latrines once they are built. Latrines will be kept clean and will be repaired or replaced when necessary. **RISKS:** Soil is sandy or hard in some places. Sociocultural norms include taboos against in-laws using same latrine. Maintenance of latrines not certain.	**ASSUMPTIONS**: Latrines continue to be used regularly by all villagers. Health outcomes not adversely affected by other factors, such as unclean water. **RISKS:** Open defecation may still occur, even after latrines are built. Behaviors may relapse after some time, preventing long-term health gains. Other factors may adversely affect health.

FIGURE 10. Akros' CLA-related intervention logic and theory of change.

Examining the Evidence: Expect-to-See vs. Actual Evidence

RESULTS CHAIN	EXPECT-TO-SEE EVIDENCE	ACTUAL EVIDENCE	SOURCES
Collaborating with local agents of change results in strong motivation to improve sanitation ↓	Evidence of collaboration with local agents of change	• Akros reached out to traditional leaders when progress in their CLTS program stalled. • Community Champions were identified, trained, and supported in their data collection work. • Akros worked closely with UNICEF and with national and local-level Zambian government officials in the Ministry of Local Government and Housing.	• Akros CLA Case Competition entry • Both evaluations • Scholarly articles by Markle, Lawrence, Tiwari, Zimba, and Zulu, et al.
	Evidence of local ownership and self-reliance	• Villagers formed Sanitation Advisory Groups (SAGs) in each village after CLTS triggering to oversee construction of latrines and hand-washing facilities. • Akros formulated detailed transition plan upon completion of its cooperative agreement in order to facilitate turnover of the CLTS program to the district officials.	• Akros (2015, 2017) • Osbert (2015) • Mujica (2015) • Winters & Larson, Huffington Post (2017)
	Evidence that local change agents inspired others to feel motivated to improve their sanitation facilities	• According to Tiwari, et al., a survival regression analysis indicates that where chiefs were oriented and mobilized in CLTS, the likelihood that a village would achieve 100% coverage for adequate sanitation increased by 23% (p=.003) compared to places where chiefs were not involved. • Tiwari, et al. also conclude from an interrupted time series analysis that there was a 30% increase in individuals with access to adequate sanitation following chiefdom orientations. • Lawrence, et al. conclude from 67 in-depth interviews and 24 FGDs that, "New sanitation behaviors were also encouraged by the hierarchical influences of traditional leaders and sanitation action groups and by children's opinions." (p.553). • Greg Saili, USAID/Zambia Governance Advisor, stated that traditional chiefs are increasingly being recognized as potential champions for development in areas such as land rights, sanitation, mining company MOUs, etc. He also mentioned that they were especially effective in attempts to influence behavior change.	• Tiwari, et al. article • Lawrence, et al. article • Many reports • Interviews • Media reports • Both evaluations • Akros CLA Case Competition entry • Akros blog about Chief Mukobela
Learning iteratively from M2W data facilitates adaptation ↓	Evidence of M2W use	• The program first just used paper and pen to collect monitoring data, then created a M2W app for Community Champions to use based on DHIS2, Zambia's health information system. When sanitation outcomes plateaued, Akros designed the "Chief App" in order to facilitate better utilization of the data. • Some chiefs went above and beyond the call of duty with regard to their "Chief App," asking Akros to load extra spot check forms onto their tablets so they could provide real-time reports on the sanitation status of the villages in their chiefdoms. • UNICEF and Akros reports and blogs contain photos of Community Champions and chiefs using the M2W app on their phones or tablets.	• DHIS2, Zambia WASH report • Markle, et al., and other scholarly articles • Interviews • Both evaluations • Blogs

RESULTS CHAIN	EXPECT-TO-SEE EVIDENCE	ACTUAL EVIDENCE	SOURCES
Learning iteratively from M2W data facilitates adaptation ↓ *(continued)*	Evidence of effects of using M2W platform	• According to the 2017 evaluation of Zambia's sanitation and hygiene program, "Households in communities where RTM [real-time monitoring using the M2W app] was implemented showed a significant increase in both access to improved sanitation facilities and improved 'not shared' facilities and a decrease in the proportion of households that did not have toilet facilities and therefore continued to practice open defecation. The RTM strategy appears to have contributed to the successful attainment of ODF status for Chiengi District in Luapula Province" (p.53). • Chiengi District's success in being declared Open Defecation Free (ODF) has been attributed in large part by Zimba, et al., and others to the use of the "Chief App" by the chiefs in that district. • Other sectors are planning on developing similar apps for their sectors.	• 2017 Boston University impact evaluation • "WASH MIS: Are the Numbers Real? Prove It" article • Akros CLA Case Competition entry • Zimba, et al. article • Interviews with Akros staff
	Evidence that monitoring data led to adaptations	• Monitoring data alerted Akros to the fact that progress had plateaued, which led the staff to pause, reflect, and try something new: reaching out to traditional leaders. • Galaxy smartphones were initially used, but when monitoring data indicated that people were having trouble using them, Akros switched to simple feature phones. • Using the M2W data, the chiefs adjusted their visits to villages, thereby using their scarce fuel more efficiently. • Akros started targeting hand-washing stations after data showed this was the most challenging ODF component to establish and maintain.	• CLA Case Competition entry • Multiple reports and articles • Interviews • Akros blogs • DHIS2, Zambia WASH report
Adapting on the basis of evidence leads to better short-term outcomes: improved sanitation facilities and behaviors ↓	Evidence that more Zambians had access to improved sanitation facilities after CLTS intervention	• According to the 2017 evaluation of the ZSHP program, at baseline in 2013, 64.1% of households reported using an improved toilet facility as compared to 80.0% in the end-line survey in 2016. • Using an interrupted time series, Tiwari, et al. found a 30% increase in the number of individuals with access to adequate sanitation following chiefdom orientations.	• 2017 Boston University impact evaluation • Tiwari, et al., and other scholarly articles • Interviews • Blogs • Media reports
	Evidence that more districts and chiefdoms became ODF after CLTS intervention	• Zimba, et al., report that, "One year after the implementation of a mobile-to-web monitored CLTS intervention, Chiengi District, Zambia, was verified as open defecation free with complete 100% coverage of household-level latrines. Chiefs and traditional leaders led the achievement" (p.925). • Using a survival regression, Tiwari, et al. found that where chiefs were oriented and mobilized in CLTS, the probability that a village would achieve 100% coverage of adequate sanitation increased by 23%.	• Zimba, et al., Tiwari, et al., and other articles • Many newspaper reports • Blogs • Interviews

RESULTS CHAIN	EXPECT-TO-SEE EVIDENCE	ACTUAL EVIDENCE	SOURCES
Adapting on the basis of evidence leads to better short-term outcomes: improved sanitation facilities and behaviors ⬇ *(continued)*	Evidence that behaviors changed as a result of the CLTS intervention	• Somewhat mixed reports regarding behavior change. • According to the 2017 evaluation of ZSHP, at baseline in 2013, 58.0% of households responded that no member of their household had ever practiced open defecation compared to 62.0% in the end-line. This difference was not significant. Similarly, 16.8% of households in the baseline survey as compared to 14.2% in end-line reported that a member of their household practiced open defecation on a daily basis.	• Lawrence, et al., article • 2017 Boston University impact evaluation • Blogs • Interviews • Reports
Adapting on the basis of evidence leads to better long-term outcomes: improved health outcomes ⬇	Evidence that latrines continue to be used	• Boston University's impact evaluation reported a high rate of latrine utilization. • Nevertheless, in-law taboos and other cultural preferences kept Zambians in some areas practicing open defecation. • Reid, et al. found that even though 70% (28 of 30) of the Zambian households they studied had access to a latrine, human feces were found in 67% of homestead yards.	• 2017 Boston University impact evaluation • Lawrence, et al. • Reid, et al. • Interviews
	Evidence that health outcomes improved	• The 2017 evaluation found that, "Despite evidence of improved sanitation and access to improved drinking water (which was not a component of this program), there was no evidence of an impact on the reported two-week prevalence of diarrhea. However, the program showed impact on measures of child nutrition. There were significant reductions in stunting, severe stunting and wasting" (p.61). • Lawrence, et al. found that individuals who had experienced the CLTS intervention attributed positive health outcomes to it. One interviewee reported, "'There has been great improvement in that there are less diarrheal diseases. The clinic people are also thankful for the work that we [do] here. They could not facilitate and make people understand [the importance of sanitation], but with the coming of CLTS they are grateful that people now have toilets.' (Champion, male, Eastern Province)" (p.560). • According to Mujica, diarrhea morbidity in children under five decreased from 20.4% to 16.3%.	• 2017 Boston University impact. evaluation • Lawrence, et al. • Reid, et al. • Mujica report • Interviews
	Evidence that the program received external recognition	• Chief Macha of Choma District was awarded the Order of Distinguished Service, Third Division, and the African Ministers' Council on Water (AMCOW) awarded Chief Macha its top Prize for Leadership for his CLTS work, which resulted in his district being declared ODF. • Media reports in Zambian and international outlets, including the Huffington Post, National Public Radio, the Zambia Daily Mail, and the Washington Post.	• Multiple media reports • Blogs and websites

ALTERNATIVE EXPLANATIONS FOR OUTCOMES

The interviews and materials reviewed provided strong evidence for the CLA-related program logic or theory of change for Akros' M2W programming in collaboration with traditional leaders. A couple of alternative explanations deserve mention, however, and help to place into context the contributions that intentional, systematic, and resourced CLA can make to development outcomes.

- **OTHER INTERVENTIONS.** As reinforcement for the Chief App, Akros staff members sometimes called or visited chiefs to help them interpret and act upon the data on their tablets. It is not clear how often this happened or to what degree chiefs obtained information from Akros staff members rather than from the Chief App directly. Either way, however, the chiefs clearly took action based on the data. In addition, other programs sometimes included latrine construction among their interventions. These latrines may have contributed to the outcomes reported in the evaluations and other reports. They could just as easily have undermined ZHSP's CLTS efforts, however, since CLTS as an approach prohibits subsidies for latrine construction. The ability of Zambians in some locations to have their latrines funded and built by other programs could have made them less motivated to participate in the ZHSP program.

- **EFFECTS ON HEALTH OUTCOMES.** Although there is substantial evidence from other parts of the world of positive health outcomes resulting from the cessation of open defecation, it is difficult to draw a direct causal arrow from ODF communities to better health outcomes in Zambia. There is indisputable evidence that many more Zambians (more than 3 million by some counts) now have access to latrines and hand-washing stations, thanks to ZHSP. It is less clear, however, that those latrines and hand-washing stations are being utilized regularly enough to reduce serious illnesses (Reid, et al. 2018). According to the Boston University impact evaluation, there was no significant difference between 2013 and 2016 in incidences of diarrhea in children under five in the areas they surveyed. There was, however, a significant reduction in both stunting and wasting in children. This could be interpreted in several ways. Extraneous factors, such as increased access to high-quality nutritional foods, could be contributing to the reduction in stunting and wasting. Similarly, other sources of diarrheal diseases, such as unclean water supplies, could explain the continued incidence of diarrhea in children despite increased utilization of latrines and hand-washing stations. The Boston University analysis also notes that there is evidence from other studies that the use of recall for two-week prevalence of diarrhea may yield data that differ substantially from one point in time to another. It is also possible that it takes more time for improved community sanitation practices to result in improved health outcomes.

- **THE ROLE OF PER DIEMS FOR COMMUNITY MEMBERS.** While no subsidies for latrine construction were provided, when Akros traveled to communities for supervision visits, they did provide per diem and reimbursement to community members for their time. It is possible that this gave community members an incentive to participate in the program and/or to inflate the sanitation rates in their area.

- **M2W APP MIGHT MERELY DOCUMENT, NOT INCREASE LATRINE USAGE.** It is possible that the M2W app merely improved the documenting of the intervention outcomes rather than the outcomes themselves. There is no way to know this without intensive additional research, but since the M2W app was preceded by paper documentation, the main effect of introducing the M2W app was in speeding up the feedback loops so as to enable nimbler course corrections.

VERIFICATION AND LIMITATIONS

Multiple sources of evidence—including seven scholarly articles, two evaluations, numerous reports, eight first-hand interviews, and wide coverage in the media—support the contention that Akros' use of intentional, systematic, and resourced CLA through its M2W app and collaboration with traditional leaders contributed to improved development outcomes in the form of increased construction of latrines and hand-washing stations.

Nevertheless, the analysis was limited in several ways:

- **DATA SOURCES:** While researchers were able to interview Zambian staff members at UNICEF and USAID/Zambia as well as non-Zambian Akros staff members, they did not have access to any Zambian Community Champions or chiefs, except through secondary sources. Also, while several excellent peer-reviewed scholarly journal articles have been published, all have at least one co-author who was directly involved in the Akros program. Of the two evaluations, one was independently conducted in 2017 by Boston University and the Zambia Center for Applied Health Research, while the earlier one (2011) was conducted by the Zambia Ministry of Local Government, Housing, Early Education, and Environmental Protection and UNICEF.

- **METHODS:** As noted in the first CLA Deep Dive, about Global Communities' response efforts to the Ebola outbreak in Liberia, the adapted contribution analysis and process tracing methods for assessing causal claims in this study are, by definition, linear and sequential, making it difficult to capture non-linear, iterative, and systems interactions relevant to CLA approaches. Akros' CLTS work in Zambia took place in a complex cultural, political, and economic context in which many other donors and NGOs were working. Tracing linear processes in such a context can be a useful analytical exercise, but there are important limitations.

- **GENERALIZABILITY:** The findings of this study may be applicable to other contexts, especially in terms of the three main CLA areas emphasized in this report: (1) the CLTS approach; (2) incorporating digital data for more timely and effective adaptive management; and (3) collaboration with traditional leaders like chiefs. Each situation will differ, however, requiring context-sensitive adaptations.

CONCLUSIONS

This deep dive into CLA integration, implementation, and impact in CLTS efforts in Zambia yields a number of insights into the specific contributions CLA made to the response. It suggests that strategic collaborations with government officials, traditional leaders, and community members led to greater feelings of local ownership, self-reliance, and in many cases, effective behavior change. An important dimension of this shift was rooted in CLA's focus on social inclusion and facilitating diverse, culture-specific adaptations. Enabled by donor flexibility, and strengthened by a broad range of leadership support and participation, CLA approaches in this case incorporated innovative digital monitoring using the M2W app that led to better quality data and speedier feedback loops. Chiefs/chieftainesses and headmen/women were also involved in ways that supported development outcomes, thereby demonstrating how traditional leaders can be constructive agents of change rather than anachronistic obstacles to development.

This case study utilizes and adapts innovative methods for assessing the contribution of CLA to intervention outcomes through process tracing and contribution analysis. Drawing on numerous sources of evidence, the study provides detailed descriptions of how CLA was integrated into program activities, which may inform future program design and implementation of CLA approaches for USAID staff, implementing partners, and other development practitioners.

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