

Intersections

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In July 2017, when reporting on global progress towards the Sustainable Development Goals (SDGs), the United Nations Secretary General stated that “Access to safe water and sanitation and sound management of freshwater ecosystems are essential to human health and to environmental sustainability and economic prosperity” (UN, 2017). Water is a basic human need. Both during emergency responses and in longer-term development efforts, securing access to safe water and improving sanitation for vulnerable populations are top priorities. Communities affected by emergencies and poverty are generally more susceptible to disease and illness than other populations. Much of this increased vulnerability can be attributed to lack of access to safe water for drinking, cooking and washing, which contributes to poor sanitation and hygiene.

Unfortunately, UNICEF (2015) reports that the two- to five-year failure rate of water and sanitation projects is 30-50%. Research indicates that this failure rate can primarily be attributed to lack of effective sustainability planning, including community participation in planning and implementing these initiatives, rather than to the technical dimensions of the projects. Successful water, sanitation and hygiene (WASH) responses build on the capacities of communities and local governments to ensure safe, sustained and equitable access to appropriate and adequate WASH services (Sphere, 2018.) Other factors that improve success rates of WASH projects include an understanding of the socio-political, cultural and economic contexts of participating communities on the part of organizations carrying out WASH projects. Strong community participation and involvement of local structures and experts improve long-term outcomes.

MCC and its constituents have long championed the importance of assisting vulnerable communities with safe water and sanitation. MCC records indicate that the first multi-year project to address the provision of safe drinking water took place in 1964 in Grande Riviere du Nord, Haiti. In the project, MCC workers collaborated with the community to tap a natural spring and pipe its clean water to the village. Working to connect communities to clean water and to support community efforts to improve sanitation and hygiene have remained vital MCC initiatives over

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more

The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response. 2018. Available at <https://handbook.spherestandards.org/>.

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“ The work of fetching water and accessing poor sanitation facilities can also put women and girls at risk for violence.”

the ensuing half century. MCC supporters, meanwhile, have demonstrated a persistent and growing interest in WASH-related projects. This issue of *Intersections* offers articles examining different ways in which MCC and its partners are responding to needs in Kenya, Uganda, Nepal, Nicaragua and Haiti for safe, potable water, improved sanitation and hygiene promotion. Taken together, the articles underscore the need for strong community participation and for considering the distinct needs of women and girls to achieve successful implementation of WASH projects.

Beth Good is MCC's representative for its Kenya program and lives in Nairobi.

Sanitation for women and girls in Nairobi's informal settlements

Walking in the informal settlements of Mathare, Korogocho and Viwandani in Nairobi, one is confronted with a disturbing smell of human waste mixed with raw sewage and rotten garbage. Within the first few minutes, the Kenyan heat acts to intensify these smells which burn the eyes and nose. Amidst all this waste, the streets are busy with women, men, girls and boys living and tending to their everyday lives. Within these settlements, access to safe water, sanitation and hygiene (WASH) is a challenge. Lack of awareness of safe water, sanitation and hygiene practices can affect all members of the family, both adults and children. Women and girls, meanwhile, have distinctive sanitation needs: WASH programs designed to address these needs make vital contributions to the overall empowerment of women and girls (WaterAid 2018).

Women in Kenya typically have the responsibility for both procuring and using water for their households. A woman who cannot clean her house, provide food and keep the water pot always full of drinking water is scorned and loses the trust and love of her husband. Due to this cultural norm, women struggle to find water at any cost and may end up providing their families with water from questionable sources. Women in informal settlements are disproportionately affected by the lack of access to water and sanitation, with challenges ranging from unsafe drinking water and absence of proper sanitation to lack of hand washing facilities. The work of fetching water and accessing poor sanitation facilities can also put women and girls at risk for violence.

Conversations with women in these informal settlements revealed how they cope with lack of toilet facilities. During a focus group discussion, women confided that they find it difficult to go to the toilet, especially at night, due to fear of being raped while walking to a distant toilet facility. To mitigate the danger of leaving the safety of their homes at night, women have resorted using the "flying toilet" method of disposing of human waste. This practice requires one to defecate in a plastic bag and throw it as far as possible from the house, usually in the late night or early morning hours. This practice exacerbates the problem of poor sanitation within the settlements.

Women also reported that finding water to prepare food, wash family clothes and clean the house is a challenge. Without access to city-supplied water, women depend on vendors who unscrupulously break into the water pipes that pass through the informal settlement and steal water, which is then sold to residents of the informal communities at exorbitant

prices. Due to this practice, women with limited income find it difficult to cope with household water needs.

Households in informal settlements routinely buy food from street vendors because it is quick and easy, requiring minimal energy of preparation. Families also save on fuel, time and water for washing up the dishes when they buy food from street vendors. However, the hygienic practices of the street vendors are questionable at best. Purchasing this convenient food on the street can contribute to illnesses within the family.

The WASH challenges facing households in Nairobi's informal settlements are varied and numerous. One way that MCC and its partners seek to address the WASH challenges faced by these households—and especially by women and girls in these households—is through school-based initiatives that focus on the distinctive hygiene needs faced by adolescent girls and that increase access to safe drinking water.

In a survey carried out in an informal community in Nairobi, a group of 25 schoolgirls aged 12 to 15 years highlighted the challenges these girls face regarding menstrual hygiene and the negative impact these challenges have on their schooling. Up to 60% of the girls found it difficult to come to school during menstruation and stated that they missed an average of 36 days of school in a year. The girls attributed their absences to cramps, the lack of a place to dispose of sanitation materials and not having proper sanitary towels to protect them during the day at school. Several of MCC's partners are addressing the need for schoolgirls to have access to menstrual hygiene supplies by providing reusable and disposable sanitary pads. These projects are recording a decrease in absenteeism for girl students, a decrease attributed to the girls' access to sanitary products.

MCC funding also makes it possible for Kenyan organizations to increase access to safe drinking water for households in the informal settlements by training children and families how to purify drinking water using the Solar Disinfection (SODIS) method. This method uses transparent PET (polyethylene terephthalate) bottles and the sun's ultraviolet rays to purify water. SODIS represents a low-cost solution that even economically marginalized families can use. WASH teams organized by MCC's Kenyan partners offer training to introduce the SODIS method and provide ongoing follow-up to support families as they begin using this sustainable water purification method.

These school-based WASH initiatives emerged after listening to women and girls about what challenges they face when it comes to ensuring their families have clean water and to meeting their hygiene needs. Both the menstrual hygiene and the solar disinfection programs have contributed to significant improvements in the lives of students and the broader population of Nairobi's informal communities. School teachers, administrators and parents have all bought into these initiatives and testify to their impact. The community- and family-based ownership of these WASH initiatives will help guarantee the sustainability of the positive impacts of these efforts to assist Nairobi's informal communities in having adequate water, sanitation and hygiene resources.

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School WASH clubs in Uganda

Flooding is not only dangerous, but also dirty, particularly when the area flooded is underdeveloped and densely populated. High waters flush sewage, refuse, corpses and general debris back up into inhabited areas. Regaining access to clean water and sanitary living conditions after a flood takes significant time and resources. It can be easy to forget that dirty water is simply a fact of life for many rural communities, with or without the complication of flooding, and progress toward better water access is usually fragmented and slow. When the need is as broad as in rural Uganda, finding a place to begin is one of the biggest challenges, and one emergent pattern of development, more pragmatic than philosophical, is that long-term visions often get their footing as relief aid. In Western Uganda's Kasese district, in the foothills of the Rwenzori Mountains that divide Uganda and the Democratic Republic of Congo, the catalyst to begin addressing widespread water, sanitation and hygiene (WASH) concerns in rural schools was disastrous flooding, which in May 2013 wiped out the health stability of several primary schools and their communities.

“ To counter the spread of waterborne illnesses, MCC and SRD focused at first on improving the WASH infrastructure at the schools, supporting the construction of latrines, washrooms, hand-washing facilities and water tanks to collect rain runoff from the school roofs, ensuring that this project met the standard humanitarian guidelines for the infrastructure required to meet the water, sanitation and hygiene needs of students at the schools.”

MCC works through partnership with local organizations which have the experience and connections to effectively navigate the local economic, political and cultural considerations that any relief or development project must address. MCC's partner in Kasese is the development department of the Church of Uganda's South Rwenzori Diocese (SRD). After reaching out to MCC in 2013, SRD conducted surveys of the area, looking for schools most impacted by flooding. SRD staff found high incidence of disease among students, mostly typhoid, cholera and dysentery from untreated drinking water further contaminated by flooding. The flooding had also destroyed many existing drainage systems, resulting in more stagnant breeding pools for malarial mosquitoes. The immediate concerns caused by the floods also highlighted endemic health issues at the schools, such as inadequate and under-maintained washing and toilet facilities and no established practices or systems to purify drinking water. MCC and SRD agreed on a short-term relief project, running from January through August 2014, that focused on returning identified flood-affected schools to a baseline of operation through the provision of food, school supplies and counseling to help students continue studying despite having lost homes and possessions. This partnership for limited relief activities opened the door for an ongoing partnership with SRD to address the WASH needs in these rural schools.

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Another club activity is to make ‘talking compounds,’ which are signs that are displayed in the schoolyard that share short health concepts such as “menstruation is normal.” Students and teachers are also provided with training on how to purify drinking water and maintain personal hygiene. Students learn to making ‘tippy taps,’ simple and inexpensive hand-washing stations consisting of a small jug of water suspended from a wooden frame: WASH clubs construct such stations throughout the school compound. Children are in turn encouraged to bring these techniques to their homes: follow-up visits by project staff have found that students have in fact begun erecting tippy taps in their homes and communities.

Perhaps the most progressive and promising aspect of the school WASH project is the provision of materials and training to young women to make re-usable menstrual pads (RUMPs). In many places, girls have a disproportionately low rate of school completion due to absenteeism because they have no simple and effective way to manage menstruation. The project staff provided training and materials to assist girl students in production and use of RUMPs. The entire school, including staff, receives education on menstrual hygiene to help break the pervasive stigma that menstruation is dirty and shameful. The project has resulted in reduced absenteeism, increased completion rates and improved performance for girls in the schools where SRD and MCC have introduced RUMPs.

The choice of where to direct resources is never easy, and sometimes commitment to a new development project needs the motivation and tangible impact of a relief effort to gain traction. In one region of Uganda, MCC and a church partner were able to build on a disaster relief response to address longer-term health needs in the community. Initial results from the construction of WASH infrastructure and the mobilization of WASH clubs show promise in preventing the spread of waterborne illness and reducing absenteeism and increasing school participation, including by adolescent girls.

Joshua Kuepfer was a SALT participant with MCC Uganda for 2017–2018.

The impact of a school WASH project in Kenya

After many years of supporting water, sanitation and hygiene (WASH) activities in Kenyan schools, MCC asked one school, Mukuru Mennonite Academy, located in an informal settlement of Kenya’s capital, Nairobi, what impact its WASH program has had on the broader community. The school serves over 350 students from kindergarten through eighth grade. Most pupils live in rented, makeshift houses that have poor ventilation and lack water and sanitation facilities. Seventy-five percent of homesteads in the settlement use community pay toilets. Some have private toilets and others use the “flying toilet” method of defecating in a plastic bag and then throwing it out into the alleyway. Almost all (98%) inhabitants use community pipes for their water supply. Residents buy this water from the Nairobi city water supply and the pipe infrastructure is fraught with leaks, often passing through open sewer ditches. According to the local Rueben Health Center, more than 30% of common recurrent diseases that they treat are water- and sanitation-related.

The long-term goal of the WASH program at Mukuru is that “the Mukuru community will be healthier with children having fewer incidences

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of diseases caused by poor personal and environmental sanitation. In addition, good hygiene practices will become a social norm within the Mukuru community.” Specific goals of the program include: educating community members and school children on methods of treating their drinking water; educating households on the importance of proper human waste disposal; facilitating community clean-up days to remove litter and clear drainage ditches; and increasing the attendance rate at the school by reducing waterborne diseases.

“ Together with the Kenyan government, Mukuru WASH promoters also observe international Water Day, Handwashing Day and Toilet Day. During these celebrations, community members are encouraged to actively improve hygiene and sanitation by physically opening drainage system, collecting litter and constructing ‘leaky tins’ or ‘tippy taps’ for improved handwashing.”

In responding to the question of what impact the WASH program has had on the community, the WASH promoters tell stories of improved relationships—both relationships between the school and students’ parents and relationships between the school and community leaders (clan elders and chiefs). One component of this WASH program is that every three months the WASH promoters visit the household of each pupil. The benefit of these household visits has gone beyond the original goals of educating the family on WASH practices. As the promoters visit parents, they develop a trusting relationship with them, fostering a feeling among parents that the school is concerned about the well-being of their child, not simply managing the school for personal gain. This has improved the engagement between parents and the school. Often during these visits, curious neighbors come and join the visit and learn about WASH practices as well. An additional benefit of this relationship between parents and the school is a high retention rate of pupils. In this densely populated community, there are many schools (most of them private) to choose from and it is not uncommon for a student to stay at one school for only one year or one term before changing to a different one. When WASH promoters regularly visit pupils’ homes, the opportunity for that student to succeed in school is greatly improved.

Another positive outcome of the household visits by the WASH promoters is an increased security in their community due to the positive relationship between the community administrators and the school. The community administrators see the promoters educating parents in their homes, regardless of what family or tribe they are from, and appreciate that the school is actively promoting community health. This positive relationship bears fruit when the community administration calls for community clean-up days where the whole community works together to clean out drainage ditches, pick up litter and learn more about environmental sanitation. Since the WASH promoters have been training on the importance of good hygiene and sanitation, more people participate in the clean-up days. The promoters also note that as they build rapport in the communities, more families welcome them into their households for training.

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The respectful relationship between parents and WASH promoters can help dispel some commonly held myths. One myth that some families believe is that young children get diarrhea because their teeth are coming in. This leads parents to not intervene when a child gets diarrhea, leaving

the child vulnerable to dehydration and malnutrition. A second myth is that children's feces are safe, and one cannot get diseases from them. This can lead families to not properly dispose of a child's feces because they believe they contain no pathogens. During the WASH visits, myths like these can be discussed and parents learn healthy WASH behaviors. WASH promoters report that parents have increased their practice of WASH behaviors and they have become a regular part of their lifestyle. For example, the number of families using flying toilets has decreased by 34%. The Mukuru WASH promoters attribute the success of behavior change to the consistent follow-up visits within the community and the WASH-related murals painted at community gathering points. Parents self-report that they are washing their hands after using the toilet and overall toilet usage has increased by 78%. Households have also reported improvement of garbage disposal habits.

Promoters report that 233 families of students are treating their drinking water and 182 families use the Solar Water Disinfection (SODIS) method for improving the safety of drinking water. Promoters report that a few households (5%) have installed a 'leaky tin' handwashing station at their homes to encourage more frequent washing of hands as well as to conserve water. Mukuru Mennonite Academy has several of these leaky tins installed at their school where children wash their hands. Parents also report that they spend less time taking their sick children to medical facilities and less money on medicine. This change is attributed to practicing WASH behaviors.

The private schools in the community belong to a cluster of schools that meet together regularly to collaborate. Mukuru Mennonite Academy administrators noted that as they adopted WASH behaviors on their school grounds, other schools followed suit as they were able. For example, now some schools have installed one toilet and one handwashing station model for their students to use during the school day when previously there had been no facilities available. And now some schools are purchasing water for their students to drink after learning from Mukuru Mennonite Academy about the importance of water for one's health.

The WASH program has achieved a positive impact in the community. This has been a result of good relationships within project staff and beneficiaries. Relationships have led to open discussion of good WASH practices and helped in tackling myths which sometimes prevent adoption of good hygiene and sanitation. The participants share challenges as they brainstorm together for concrete solutions to the problems they experience while trying to maintain good hygiene and sanitation. As the health goals are being realized in Mukuru Mennonite Academy, the WASH program has also created peaceful and trustful relationships between the school, students' parents and the community.

Krista Snader is a service worker with MCC Kenya working with WASH projects. The Mukuru Mennonite Academy WASH team is an MCC Kenya partner.

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WASH as part of an integrated community development plan in Nicaragua

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In 1984, a group of Nicaraguan university students who felt called to emphasize their faith in action founded the organization Acción Médica Cristiana (AMC). This group of doctors and other health professionals started out by sharing their gifts in medicine through mobile medical care in the rural, war-torn areas of Nicaragua. In October 1988, after its humanitarian response to Hurricane Joan, AMC began a more permanent presence in the Caribbean regions of the country. Initially, AMC's response to health needs was primarily clinical, but as time passed the organization recognized the need for a more holistic community development model, and in 1990 AMC shifted toward community health prevention and promotion. Addressing the basic need for clean water and sanitation was a central part of this shift. AMC leaders and staff observed that, without clean water, medical care was only a short-term solution for communities. In the years that followed, AMC leaders included water, sanitation and hygiene (WASH) interventions in the organization's strategic plan. AMC uses a holistic approach that integrates WASH projects into its larger community development strategies. An additional principle for AMC is for WASH education and infrastructure to go hand-in-hand. AMC has both enjoyed successes and faced challenges as it incorporates WASH strategies into its health and development outreach.

Over the past thirty years, AMC has focused mainly on rural communities in the Autonomous Caribbean Regions of Nicaragua. These regions are home to many of the poorest municipalities in the country, where drinking water and sanitation systems are limited. The root causes for malnutrition and dehydration in the regions include waterborne illnesses, making WASH interventions essential. AMC has expanded into other areas of development beyond WASH, but with the ongoing limited availability of drinking water and sanitation infrastructure, AMC has worked to keep WASH in its strategic plan. At the same time, AMC collaborates and advocates closely with local and municipal governments in WASH initiatives as more government regulations are put in place and as access to clean water and sanitation becomes a priority within the public sphere, stressing that the success of WASH initiatives is crucial to the overall success and sustainability of general health outcomes.

AMC's philosophy that WASH projects are a basic community development strategy has led the organization to incorporate WASH into various levels of their work. AMC uses a holistic model in which infrastructure, education, peacebuilding and spirituality are intertwined. Currently MCC is partnering with AMC in both WASH and education projects in and around the city of Bluefields in the South Autonomous Caribbean Coast Region. AMC's focus is to invest at the community level, especially in schools. Support for education without any assistance to address school infrastructure is often received by communities as shallow and insufficient since the schools in this region of Nicaragua have substantial infrastructure needs, including WASH infrastructure, such as wells for schools to access potable water. At the same time, building wells without education has led to contamination and disrepair. From AMC's perspective, infrastructure and education must go hand in hand.

AMC works hard to integrate and involve community members from project design through to implementation, monitoring and evaluation. AMC's experience shows that community participation is fundamental to the success any development project. This involvement ensures ownership by the community. AMC also works together with the community to ensure that whatever system or tool is being offered is appropriate for the location. For example, a community with only sporadic electricity may benefit more from a hand pump on a well than an electric one.

Community members are also involved in the actual manual labor of the project. Gerardo Gutierrez, AMC Project Director, tells the story of one community where the men were not interested in helping with the project because the water storage system was located up a large hill and they felt the work was too intense. The women, however, felt the need for clean water in the community was great, since they were the ones who walked for kilometers to the river to collect buckets of water for daily chores. The women started taking the plastic pipes one by one up the hill and digging trenches. The men felt ashamed to be outdone by the women and children and decided in the end they should join in as well. The water system was completed and the project has been administered exclusively and successfully by the community for 20 years, demonstrating the community ownership of the project.

The community is also empowered as it makes decisions about the design, the education process and the community potable water committee that functions after the official projects have ended. With increased community participation, AMC has used input from the community to develop gravity-based water systems, hand-dug and -drilled wells and water treatment systems using filtration, chlorine, ozone or ultraviolet treatment, depending on the context and need. AMC also has ample experience in the construction of different types of latrines based on the geographic and cultural conditions in the area.

While AMC staff are positive about their efforts, they also face many challenges. They continually work to be culturally sensitive in a region with substantial cultural diversity. They also face challenges to foster community participation when other groups, both nongovernmental and governmental, come in and do projects for free or even pay beneficiaries, while failing to slowly build community ownership for WASH initiatives. A serious concern in the region where AMC operates is climate change that is increasing the already heightened risk for disasters, especially flooding, which contaminates soils and destroys infrastructure. Despite this, AMC has witnessed the improvement of health, education and community organization, all as a result of making WASH part of an integrated community development model.

MCC has been privileged to work with AMC over the past thirty years. We as an organization have learned from their experiences in community development and specifically WASH projects. AMC's collaboration with the community has been especially meaningful as it aligns with MCC's own values as an organization and provides evidence for the benefits of community involvement in projects.

Rebekah Charles is the MCC Nicaragua representative. Jeannette Kelly is AMC's project coordinator in Bluefields, while Gerardo Gutierrez is the AMC Project Director.

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Drinking water user committees: sustaining impact in Nepal

“ Stories of dilapidated water taps, broken pipes and rusted equipment with no means for repair are common in the development world. To help ensure the lasting impact of water, sanitation and hygiene (WASH) initiatives, incorporating community-level mechanisms for long-term monitoring and maintenance into project design is critical.”

Stories of dilapidated water taps, broken pipes and rusted equipment with no means for repair are common in the development world. To help ensure the lasting impact of water, sanitation and hygiene (WASH) initiatives, incorporating community-level mechanisms for long-term monitoring and maintenance into project design is critical. In Nepal, government and nongovernment actors collaborate to create village user committees that provide technical support for WASH initiatives, systematically collect money for repairs of water infrastructure and cultivate community ownership of drinking water and sanitation schemes.

The village of Kupchet—the northern-most community in Dhading District before reaching Nepal’s mountainous border with the Tibetan region of China—presents one example of a community that has developed a user committee to sustain drinking water schemes supported by MCC and its partner, Shanti Nepal. While another organization had previously built several water taps in the village, years of use, compounded by Nepal’s shattering earthquake of 2015, left the taps largely dysfunctional. With technical input and survey work initially conducted by the Shanti Nepal team, Kupchet now receives water from a clean source atop the steep hill towering over the village. Water flows through 230-meter long pipes connected to a cable suspended across a deep, rocky valley, an engineering feat deemed impossible in prior surveys. The subsequent formation of a drinking water user committee now allows for ongoing impact in an isolated community that is several days’ walk from the nearest road. Kupchet’s story highlights key best practices and learnings from Shanti Nepal’s many years of engaging with drinking water user committees.

First, user committees offer a local, immediate and cost-effective means of technical support. Shanti Nepal paid for two people on Kupchet’s seven-member committee to attend a basic course in construction and water pipe repair. These members were selected based on their prior relevant experience related to construction. The two trainees then led the new water system’s construction and installation processes, following the design of Shanti Nepal’s lead engineers and technicians. Active engagement from the very initial stages of project implementation allows user committee members to more deeply understand the purpose and design of water and sanitation schemes, develop a keen eye for regularly monitoring infrastructure and gain critical skills in maintenance and repair. Repairs beyond the scope of the user committee members’ skill sets may receive support from Shanti Nepal or be outsourced to other technicians. In such instances, user committees play a key role in connecting to local government bodies (in Nepal’s case, ward and municipality offices) that may contribute toward major repairs.

Second, user committees ensure proper infrastructure maintenance through the regular and systematic collection of fees from all households that benefit from water and sanitation schemes. In Kupchet, all 67 households contribute Rs. 100 (approximately US\$1) per month to the user committee. This fund covers the cost of basic repairs as well as regular monitoring of the water system. Unlike other tax collection systems—the benefits of which may be less visible to a remote village family’s eye—

local-level collection ensures greater accountability and a more direct cost-benefit relationship.

Finally, the influence of user committee members builds momentum toward an entire community's collective ownership over water and sanitation projects. Dr. Krishna Man Shakya, executive director of Shanti Nepal, researched WASH projects for his doctoral studies in public health and explains that, "user committees institutionalize the community's involvement and contribute to leadership development as well." In the case of Kupchet, the influence of the user committee resulted in 65 people from the village participating in the installation of the water system's pipes. Lined up along a precarious trail, these 130 hands grasped the cable and pipes as they were swung across a gorge and attached to cement pillars. Tak Tamang, chairperson of the drinking water system user committee, shares that there were many torn palms, but no one complained. There was a deep sense of pride and ownership in having installed a much-needed system through the village's collective strength.

As in other community-based organizations, the selection and diversity of WASH user committee members is key to impact. While Shanti Nepal aims for 30-40% of committee members to be female, those with appropriate technical background tend to be male. Tak Tamang explains that women too can play important roles on committees, such as treasurer and secretary, thus contributing toward greater gender equity.

While the engagement of drinking water user committees brings many benefits, there are challenges that may impede project impact if left unaddressed. According to Dr. Shakya, these challenges may include: motivating committee members to consistently monitor water schemes, teaching them to handle funds transparently and mobilizing all users to feel a long-term sense of ownership over the scheme in order to keep up with repairs. As with any infrastructure scheme, community drinking water systems may create or exacerbate conflicts related to water use, drainage and maintenance. While a thorough conflict analysis in the project design phase helps reduce this risk, user committee members may find themselves challenged to treat all users with fairness and equity. Despite these challenges, Shanti Nepal and MCC have found that, when coupled with well-thought-through project design and appropriate levels of support, WASH user committees that monitor drinking water systems at the community level in Nepal significantly contribute toward the long-term use and maintenance of water systems and the sustainability of sanitation and hygiene outcomes.

Daphne Fowler serves as MCC's representative for its Nepal program and lives in Kathmandu.

Successfully adapting "Community Led Total Sanitation" to the Haitian context

Despite decades of targeted foreign aid, Haiti has struggled to make significant progress on curbing infectious waterborne diseases or improving basic water, sanitation and hygiene (WASH). While official statistics (WHO/UNICEF, 2017) report that 24% of Haitians have access to latrines or other improved sanitation (similar to the global average

 **User committees ensure proper infrastructure maintenance through the regular and systematic collection of fees from all households that benefit from water and sanitation schemes."**

“ While direct causality is impossible to prove, the rates of infectious waterborne disease, including cholera have plummeted in the project catchment area since this WASH intervention began. In the 18 months prior to the project’s start, this area saw 1,818 cases of cholera. The 18 months following implementation have seen zero.”

for low-income countries), in most rural areas where MCC works, less than 5% of households have latrines, open defecation is commonplace, handwashing with soap is rare and people are dependent on untreated surface water sources for drinking and washing. This combination of challenges has led to persistently high rates of infectious waterborne diseases (including cholera), high rates of malnutrition and stunting and high mortality. According to the World Health Organization (2016), 41% of Haiti’s total disease burden is due to poor WASH infrastructure and practices (the fifteenth highest in the world). One of the promising innovations in WASH programming globally has been ‘Community Led Total Sanitation’ (CLTS). This approach has been imported to Haiti by major funders in recent years with mixed success. Following Hurricane Matthew in 2016, MCC, along with its local partners in the Artibonite region, piloted an adapted version of CLTS that has been extremely successful, leading to zero new cholera cases in the implementation area in nearly two years since the project began (compared to an estimated 1,818 cases over the prior 18-month period).

CLTS was developed in 2000 by Kamal Kar in rural Bangladesh. The approach was a response to decades of failed WASH programming, which tended to assume that WASH problems could be solved simply by installing infrastructure (latrines, water systems, etc.) along with education by non-local experts on WASH topics. This approach all too often led to extreme waste of resources, underuse/nonuse of latrines and WASH infrastructure and deepening dependence on outside resources and expertise. CLTS works at the community level to facilitate a locally-led analysis of WASH problems leading to a community commitment to ending open defecation and a plan (sometimes with outside subsidy) to develop and install appropriate sanitation infrastructure (latrines, handwashing stations, etc.) and enforce new norms of behavior based on community priorities. When it works, CLTS has been demonstrated to generate community ownership for WASH problems and solutions, be cost-effective from a donor/NGO perspective, create rapid change in health outcomes and produce durable behavior change at the community level. These very positive findings from early CLTS projects have resulted in the approach being zealously promoted by most major health-focused international groups in over the last 15 years.

Unfortunately, CLTS has not proven to be the panacea its promoters hoped for. In many contexts, it has been very challenging to implement and has faced deep cultural resistance from local communities. This resistance is generally produced by the way in which CLTS facilitators mobilize communities and use the power of group norms to push change. Specifically, CLTS relies on strong negative emotions, including guilt, disgust, shame and fear to ‘trigger’ and galvanize communities to eradicate the ‘bad’ behavior of open defecation. In some documented cases this has included shouting insults at and humiliating ‘violators’ for endangering the community. As the CLTS manual explains, the approach specifically “shocks, disgusts, and shames people” as it believes this is more effective than non-judgmental or positive health messaging (Kar 7). This approach is controversial, and in some contexts a cultural non-starter. Additionally, in cases of extreme poverty and immediate post-disaster rebuilding, the demands for locals to bear full responsibility for the costs of WASH changes may be unrealistic, unnecessarily slow the pace of change and potentially humiliate and further marginalize the most vulnerable who are the least able to make the necessary investments.

Haiti is a good example of CLTS failure in recent years, despite millions of dollars in international resources supporting the model. Since 2010, the list of organizations promoting CLTS in Haiti touches all the major players, from various ministries of the Haitian government, to United Nations agencies, to large international non-governmental organizations. However, the vast majority of these efforts have had disappointing results. A Plan International evaluation in 2015 found that only 8% of communities achieved their goals of ending open defecation and/or achieving near universal latrine access. A similar UNICEF evaluation in the Artibonite region (the same area as MCC's work, described below) found only 15% success in achieving its goals. Both evaluations noted strong resistance from local leaders, local government officials, local health workers and participant communities to the shame and disgust-based approach to motivating change. Others noted that while top governmental and NGO leadership in Haiti's capital of Port-au-Prince had read the CLTS literature and signed on to the approach, local implementation was weak, and communities refused to enforce the negative norms as required by the model. A UNICEF evaluation team in 2012 concluded that "the key learning here is that a more nuanced understanding of community and individual motivation is required to implement CLTS programmes in future [in Haiti]. A solution to this difficulty has not yet been identified" (Plan International Haiti, 2012).

Following Hurricane Matthew in 2016, MCC began a series of pilot WASH projects in the Artibonite Department of central Haiti. These projects used many CLTS elements but built on the positive Haitian cultural tradition of *konbit* (a rough equivalent to the Amish barn raising tradition) to build positive and inclusive community engagement rather than taking a negative, shame-based approach. The focus on WASH programming was driven by the communities themselves, who identified the eradication of cholera and other deadly diarrheal diseases as their number one priority for MCC accompaniment. Community-led mapping was done to identify the catchment areas that would maximize impact on community-selected WASH outcomes (in this case prioritizing communities living near to and uphill from shared community water sources). Neighbors were organized in groups of 10 to 15 to jointly contribute the labor for latrine construction (digging the holes, transporting materials and collecting locally available materials such as wood, water, stones and sand), which allowed for disabled, elderly and single parent families to fully participate. Local leaders, government officials and health professionals volunteered to work with MCC staff to facilitate community meetings on latrine construction and maintenance, water source protection, hygiene, disease prevention and the importance of complete community engagement in the project. MCC contributed local staff to lead trainings and conduct home visits and subsidized the purchase of some latrine supplies (cement, metal roofing and piping).

This phase of the project expanded several times, as neighboring communities asked to participate after seeing the plummeting infection rates and strong community engagement. Noting the success of this work, a follow-on project working at the commune level (equivalent to a county in the United States) brought together volunteers from the local hospitals, local water authority, public health department, all local primary schools, local disaster response committees and the local government to implement a larger scale version of this work. This second phase of the project used a similar approach to the prior projects, but



Kar, Kamal, and Robert Chambers. *Handbook on Community-Led Total Sanitation*. London: Institute of Development Studies, 2008.

Bongartz, Petra, Naomi Vernon and John Fox. *Sustainable Sanitation for All: Experiences, Challenges, and Innovations*. Rugby, Warwickshire, UK: Practical Action Publishing, 2016.

Plan International Haiti. *Water, Sanitation and Hygiene in 60 schools and 60 Communities in the North-East and South-East Haiti: Narrative Report*. Port au Prince, Haiti: Plan International, 2012.

World Health Organization (WHO). *Global Health Observatory: Mortality and Burden of Disease from Water and Sanitation*. Geneva, Switzerland, 2016.

WHO/UNICEF. *JMP Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and SDG Baseline*. Available at <https://data.unicef.org/topic/water-and-sanitation/sanitation/#data>.

also included getting the voluntary support of all 213 primary schools in the commune (representing 26,068 students) to install sanitary handwashing facilities and filtered drinking water stations and provide recurrent education to students on WASH topics.

While direct causality is impossible to prove, the rates of infectious waterborne disease, including cholera, have plummeted in the project catchment area since this WASH intervention began. In the 18 months prior to the project's start, this area saw 1,818 cases of cholera. The 18 months following implementation have seen zero. By adapting the CLTS approach to the local context and listening to the local cultural priorities of respect, inclusiveness, positive group engagement and mutual solidarity, the project achieved rapid success in making durable change, gathering strong community support and participation, keeping costs low and promoting stronger community cohesion and cooperation. As organizations look to implement 'best practice' models like CLTS, the lesson from Haiti has been to take the cultural context seriously and adapt thoughtfully.

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Sand dams: providing clean water?

Located in the semi-arid region southeast of Nairobi, Kenya, the region known as Ukambani maintains a substantial maize-growing agricultural population. However, inconsistent and low rainfall presents challenges to providing enough water for crops, livestock and household usage. Communities and organizations have adapted by building thousands of sand dams and taking advantage of the region's conditions (sandy soil, variable slopes and defined rainy and dry seasons) to harvest and store water in seasonal riverbeds for later use.

Part of the attraction of sand dams as a solution in this region lies in their purported ability to filter rainwater as it percolates through the sand pores, providing not only a consistent source of water, but one which is safe to drink. However, this is an assumption which had gone untested. Recently, MCC Kenya engaged with two partners, Utooni Development Organization (UDO) and Sahelian Solutions Foundation (SASOL), to test the water harvested from the sand dams to see if it was indeed clean and safe for drinking. Contrary to expectations, water from scoop holes had consistently high levels of fecal coliform bacteria. This finding spurred a recognition that additional efforts are needed to ensure safe use of water from sand dams. This experience with UDO and SASOL underscores the importance of rigorously testing assumptions about project effectiveness: doing so can reveal previously unrecognized conditions, which can then in turn spur action to achieve better project outcomes.

With a rapidly increasing population putting pressure on water supplies, sand dams can be an elegant and effective solution to providing water for communities in semi-arid regions such as Ukambani. The principles of sand dam function are conceptually simple to understand, and the results can be dramatic. Concrete dams constructed across seasonal streams cause coarse sand to accumulate behind the dam, and pore space in the dam then holds water which can be accessed by the community for many subsequent months of dry seasons.

“ Why would the water from sand dams not be clean? A quick perusal of the surface of sand dams gives the observer clues to this unexpected result—the area on and around most sand dams is usually littered with animal dung. While the intention at sand dams is to limit livestock access to water sources in order to avoid contamination, in practice this seems difficult to maintain.”

In well-functioning dams, a patch of emerald green vegetation flourishes at the dam site well into the dry season, and visitors to the region can easily find examples of communities with thriving grasses and grain, vegetable gardens and orchards that depend on water from sand dams. A recent evaluation undertaken by MCC Kenya, in collaboration with UDO and SASOL, added to the body of evidence outlining the various benefits of accessing this water source. Community members identified benefits that varied dramatically with gender and age. Men and boys near sand dams stressed that water from sand dams was beneficial for brick-making. Girls, meanwhile, noted that better access to water allowed for better sanitation and hygiene, which in turn led to improved school attendance. Women, for their part, cited the benefits of reduced time needed to fetch water.

Sand can be an effective filter, and in fact sand filter technology is one of the WASH solutions widely adopted in WASH projects around the world. Water clearly does filter through the sand into scoop holes (simple holes in the sand, which are the most common method used by communities to access the water), suggesting that sand dams could provide a purifying role for the water held in the dams. With the help of a donation of bacterial testing materials from an MCC constituent with extensive experience in water testing, we went about testing this assumption. Kenyan partner staff and local university students received training in techniques needed to answer if sand dams do in fact purify water held in the dams. We then randomly selected sites from a list of existing dams and evaluated a combination of biophysical and social parameters related to water quality at each of these sites.

The results of this study were clear: 84% of dams in the dry season had more than 100 fecal coliform colonies per 100 ml. This is well above the World Health Organization standard for fecal coliforms (zero), and in the high- to very high-risk category. Surprisingly, it was not statistically different from surface water (nearby areas that had standing water on the stream or dam surface). These results were consistent with a study by another group in the region, which likewise found consistently high fecal coliform levels in scoop holes. Together, these studies point to a previously unrecognized health hazard.

Equipped with the knowledge that untreated water from sand dam scoop holes presents a health hazard, MCC and its partners have worked to identify potential solutions. One approach is to change the method of water harvesting by relying on sealed pump wells rather than scoop holes, a solution that had already been implemented by SASOL in some areas. Water from pump wells was in fact much cleaner on average, but still showed fecal coliform contamination in 25% of cases; this approach also suffers from well-known challenges of maintaining the pump wells.

For its part, UDO responded to the finding of contaminated scoop hole water by implementing a pilot water, sanitation and hygiene (WASH) program in three communities aimed at identifying locally appropriate approaches to improve health measures associated with water quality, including water purification. Over a one-year period, UDO staff worked with 177 households to offer training in and support for improved WASH facilities and practices. Some WASH behaviors did improve during this period, such as the percent of households practicing water treatment, which went from 31 to 76%.



Quinn, Ruth, Avis Orlando, Manon Decker, Alison Park and Sandy Cairncross. "An Assessment of the Microbiological Water Quality of Sand Dams in Southeastern Kenya." *Water* 10 (2018): 708-722.

Kostyla, Caroline, Robert Bain, Ryan Cronk and Jamie Bartram. "Seasonal Variation of Fecal Contamination in Drinking Water Sources in Developing Countries: A Systematic Review." *The Science of the Total Environment* 514 (May 1, 2015): 333-343.

Why would the water from sand dams not be clean? A quick perusal of the surface of sand dams gives the observer clues to this unexpected result—the area on and around most sand dams is usually littered with animal dung. While the intention at sand dams is to limit livestock access to water sources in order to avoid contamination, in practice this proves difficult to maintain, and the distance from animal dung to the scoop hole typically is not far. Although we could not specifically test whether dung was the source of the contamination, we hypothesize that contamination originates with this livestock, just as it does in waterways in Canada and the United States where livestock access is not controlled.

Perhaps more puzzling is the question of why it was assumed and reiterated by villagers and promoting organizations alike that water from sand dams was clean. Our survey of communities that utilize sand dams indicated that in 74% of communities, most or all believed that the water was clean, and in 71% of communities, most or all did not treat water before drinking. This does not imply people are willfully ignoring the problem, or that there is a lack of expertise on the part of villagers or organizations. It does point towards the power of narratives. Indeed, the assumption of clean water fit well into a narrative of sand dams providing multiple benefits that were well-suited to local conditions. The known effectiveness of sand filters also provided a powerful analogy, and it was logical to assume that sand dams would function in a like manner to these sand filters. These biases led to untested assumptions, and points to the importance of experimental investigations. By rigorously testing our assumptions about development projects, we can uncover areas where our biases and perceptions might lead us to erroneous conclusions.

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