Impact of Limited Mechanized Systems on Health Facilities and Communities

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Executive Summary

Water Access remains one of Ghana's significant challenges to achieving SDG 6 (Clean Water and Sanitation). For Instance, 6 million people in rural areas rely on surface water (i.e., lakes, streams, rivers) which causes waterborne diseases. (Tesfaye, A. T., Egan, A. E., & Chambwera, M. C., 2019). Twenty-one percent of health facilities lack access to basic water sources resulting in the prevalence of maternal and newborn infections (Ghana Statistical Services, and Ministry of Health, 2017). The achievement of SDG 6 is inextricably linked to improving quality water access, especially in rural communities. Despite this, the government of Ghana's spending on Water, Sanitation, and Hygiene has waned from 1% in 2017 to 0.4% in 2020 (USAID Ghana, 2020).

Therefore, efforts to improve water access by organizations such as Water Access Now (WAN) and Catholic Relief Services (CRS) are vital for Ghana's sustainable development. WAN is committed to bringing sustainable water to villages in Ghana that need it the most. Through strong local partnerships, WAN has helped 259,237 people by providing over 200 improved water systems. WAN continues to improve the lives and uphold the dignity of people, one borehole at a time.

Introduction

Africa and Water

There has been a significant increase in the coverage of safe drinking water for people in Africa between 2000 and 2020. In 2020, 69% of Africans had access to basic drinking water (water from an improved source with a collection time not more than 30 minutes for a round trip), and 39% had access to safely managed drinking water (water that is accessible on the premises, available whenever needed, and free from contamination) (UNICEF & WHO, 2022). Therefore 31% of Africans are living without access to basic drinking water. However, it is projected that a four times increase in current rates of progress on basic drinking water and 12 times increase in current rates of progress on safely managed drinking water are required to achieve 100% coverage by 2030 (UNICEF & WHO, 2022).

There is a huge disparity in access to basic and safely managed drinking water between African countries and other countries and within countries in Africa. About 411 million people still lack a basic drinking water source in Africa (UNICEF & WHO,2022). In rural areas, 58% of people have access to basic drinking water, whereas 91% of people in urban areas have access to basic drinking water. Moreover, 16% of people in rural areas have access to safely managed drinking water, whereas 34% of people in urban areas have access to safely managed drinking water.

A Situation Analysis of Healthcare in Northern Ghana, in Rural Areas, as it Pertains to Water Access

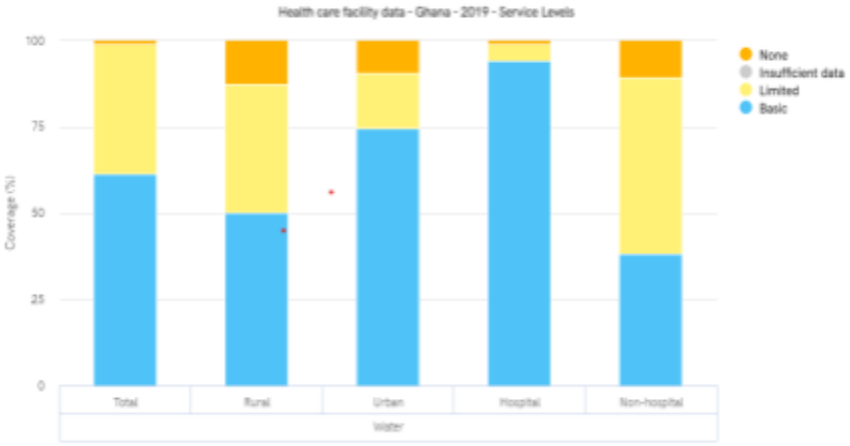

Figure 1: Data on water services available in Health care facilities in Ghana in 2019.

Source: JMP

Ghana has 25% coverage of basic drinking water (WHO/UNICEF Joint Monitoring Program database). Close to 6 million people in rural parts of Ghana rely on surface water, which puts them at risk of water-borne illnesses such as cholera, typhoid, and diarrheal diseases (Tesfaye, A. T., Egan, A. E., & Chambwera, M. C., 2019). In Ghana, diarrheal diseases are one of the leading causes of under-five deaths (Apanga, P.A., Kumbeni, M.T., 2021).
The poorest people in Ghana are 20 times more likely to spend 30 minutes or more fetching water than wealthier people (UNICEF, Ghana). Households in the Northern part of Ghana bear the highest-burden in terms of the time spent fetching water because of the water scarcity in these regions. For instance, people in Northern Ghana are 16 times more likely to spend over 30 minutes collecting water compared to people living in Accra (UNICEF, Ghana). This strong correlation between poverty and water collection

times emphasizes the wide inequalities in water access between people living in rural and urban areas in Ghana.

In Africa, 46% of rural health facilities have basic water services (WHO & UNICEF, 2019). Twenty-one percent of health facilities in Ghana lack basic water sources, which contributes to maternal and newborn infections (Ghana Statistical Services, and Ministry of Health, 2017). As of 2019, only half of the health facilities in rural parts of Ghana had basic water services, and 47.6% had limited water services (a water source within 500m of the premises, but does not meet all the requirements of an improved water source) (Figure 1). A situational analysis conducted by Water Aid in two districts in the Upper East Region of Ghana showed that only 17% of health facilities where women go to give birth had access to water via indoor plumbing, 52% of health facilities used hand pump boreholes, and 3% used hand-dug wells with hand pumps (Water Aid Briefing Note). Another study in Northern Ghana found that out of 14 rural health facilities, only two had a source of clean water (Dalinjong et al. 2018).

There are immeasurable consequences of lacking water in health care facilities, especially in rural areas. Health care facilities and Community Health Planning and Services (CHPS) compounds (health service delivery points) that provide primary health care services in small communities are usually the first places people in rural areas in Northern Ghana seek care (WHO & UNICEF, 2015). Therefore, the scarcity of water in these facilities can jeopardize the provision of quality health care services and increase the rates of infections (WHO & UNICEF,2015). Approximately 15% of hospitalized patients develop at least one infection during their stay at health facilities (Allegranzi et al, 2011). Newborns and their mothers are at a higher risk of health facility-related infections (WHO & UNICEF, 2015). People in poor resource settings are 34 times more likely to experience complications from infections (sepsis) which is one of the global leading causes of death annually (OZA et al., 2015). In Ghana, 10% of maternal deaths are attributed to maternal sepsis (Ghana Statistical Service & Ministry of Health,2017). The lack of water also deters health staff from choosing to live and work in rural areas, which affects health care delivery in these areas.

Limited access to water in health facilities can deter women or cause a delay in seeking skilled birth assistance, which can increase the rates of maternal and newborn deaths in rural areas. Additionally, providing clean water for rural health facilities in Northern Ghana will help control and stop the outbreak of healthcare-related infections (WHO & UNICEF, 2015). Providing clean water to health facilities also prioritizes safety and upholds the dignity of health care staff and patients seeking health care services (IRC).

Partnerships for Sustainable Change

The mission of Water Access Now (WAN) is to provide clean and sustainable water to rural communities in Ghana whilst Catholic Relief Services aims to tackle the root causes of poverty holistically, and promote maternal and child health. With a shared vision, both organizations have established an alliance to solve one of Ghana's biggest challenges; the lack of access to clean water for people living in poverty since 2007.

Water Access Now (WAN) and Catholic Relief Services (CRS) are advancing access to improved water sources for health facilities in Northern Ghana by providing mechanized boreholes. WAN with the expertise of CRS has provided four limited systems (LMSs) to three health facilities in 2021 (Gbani, Nangodi, and Zanlerigu) and one in 2020 (Kpatia) in the Upper East Region of Northern Ghana. This report highlights the impacts of the limited mechanized systems on the health facilities and each community, gathered from real-life stories and experiences of community members, district, and health staff.

Before the mechanization of the boreholes, CRS met with members of the District Assembly and other partners to inform them about their plans. In the case of the LMS, Ghana Health Service was a major stakeholder since the LMSs were to be installed at the health facilities. These meetings were essential because the District Assembly and Ghana Health Service are critical players in ensuring the sustainability of the project. Although they are not always capable of providing financial support, they can give technical assistance. For instance, the District Assembly has a works engineer, the lead person in the District Water Sanitation Team (DWST). The district's works engineer is available to provide technical support and supervision during the construction of the systems. They are also available to provide technical assistance in case the system requires repairs and routine maintenance. CRS provides six-month defect liability support to health facilities, but after six months, communities and health facilities are solely responsible for maintaining the systems. The District Assembly provides the community with technical assistance after this period.

CRS met with community members and opinion leaders to sensitize them about the benefits of the LMSs, and their role as owners after construction. Taking responsibility and ownership of projects by the communities is imperative to ensuring long-term sustainability.

Under the guidance of CRS, community members in each of the four communities selected nine people to be part of the Water and Sanitation Management Team (WSMT). The WSMT is made up of a chairperson (someone who is well respected in the community), a secretary (someone who can read and write), a plumber, a community mobilizer, two revenue mobilizers, two hygiene promoters, and a caretaker. CRS provided extensive training for the WSMT. The training sessions were to ensure that WSMT were aware of their duties in owning and maintaining the LMSs. They were trained on community and revenue mobilization, organizing meetings, taking minutes, hygiene promotion, and community ownership. The training sessions were provided in the hopes that WSMT would extend whatever information and knowledge they acquired to community members.

Community Profiles

Zanlerigu

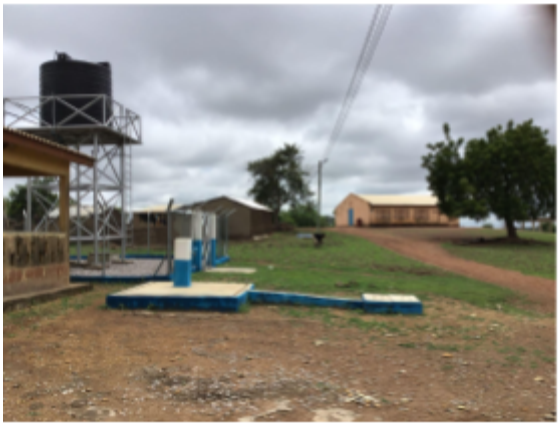

Photo by WAN Intern

Photo 1: Zanlerigu

Zanlerigu is in the Nabdam District in the Upper East Region of Ghana, has a population of about 3,289, and is a settlement that is described as scattered. There are 7 communities, 276 houses, 412 households, 3 schools,9 boreholes, and 5 toilet facilities. The languages spoken are Nabit, Gurune, Twi, and English.

The three main religions practiced are Traditionalism, Islam, and Christianity. Zanlerigu shares boundaries with Talensi District to the South, Pelungu to the East, Zuarungu to the West, Moshie to the South, and Akayoga to the North. People in Zanlerigu depend primarily on farming and harvesting termites to feed fowls for income generation. People get around by walking, riding bicycles, or motorbikes. The health facility serves about 7770 people. There are 20 health care workers at the CHPS compound. However, some people still rely on traditional healers; there are 8 traditional healers in Zanlerigu.

Gbani

Photo by WAN Intern

Photo 2: Gbani

Gbani is a community tucked in the hills of the Talensi District in the Upper East Region of Ghana. It is located 10km from the district capital, Tongo. The CHPS compound was established in 2012 and has six staff. It serves about 3026 people. Gbani CHPS compound offers outpatient consultation and a range of maternal health services. The primary language spoken is Talene. The three main religions are Islam, Christianity, and Traditionalism. People in Gbani depend primarily on farming for income generation.

Community Profiles

Kpatia

Photo by WAN Intern

Photo 3: Kpatia CHPS Compound

Kpatia is located in the Nabdam District of the Upper East Region of Ghana. Kpatia CHPS compound serves about 2347 people.The Kpatia CHPS compound has one midwife, two enrolled nurses, and a community health nurse. There are 17 functional and 2 non-functional non-mechanized boreholes, 2 mechanized boreholes, 2 primary schools, 1 junior high school, and 2 toilet facilities in the community. The primary language spoken is Talene. The three main religions practiced are Islam, Christianity, and Traditional religion.

Nangodi

Photo by WAN Intern

Photo 4: Nangodi Health Center

Nangodi is situated in the Nabdam District in the Upper East Region of Ghana. It has population of 5105. It is surrounded by four communities. The health facility serves about 8707 people. There are 30 staff at the health center including 3 midwives, and 7 community health nurses. Nangodi has 3 primary schools, 1 junior high school, 7 non-mechanized, and 1 mechanized borehole. The primary language spoken is Nabt, The three religions practiced are Christianity, Islam, and Traditional religion. People in Nangodi are mostly farmers.

Description of the Limited Mechanized Systems

Photo by WAN Intern

Photo 5: 10,000L Storage Tank at the Nangode Health Center.

Photo by WAN Intern

Photo 6: Solar Panels and Mechanized Pump at the Nangode Health Center.

Photo by WAN Intern

Photo 7: Community taps at the Nangode Health Center.

The WAN LMSs are equipped with a centrifugal submersible pump. At the heart of the centrifugal pump is an impeller, a round metal object fitted with rotating blades. The impeller is covered in a casing with an exit route for water pumped. The impeller works by pumping water outward while rotating, using centrifugal force. The pump draws the water out using mechanical energy with a power of 2.4 hp (horsepower).

The mechanical energy that powers the pump is derived from solar energy. Each LMS generates solar energy by eight solar panels; a two-by-four connection (two parallel, four series). The solar panel's open-circuit (parallel) operates at 45.6 volts, and the close-circuit (series) operates at 37.3 volts. Pumptech Limited, Ghana installed the LMSs.

Each pump head is installed at the site of the former non-mechanized borehole. The solar panels and pump heads are housed in a fenced area with a gate that stays locked until the pump needs to be turned on. Another component is a ten-thousand liter overhead tank usually elevated above the health facility's buildings to allow gravity to aid the distribution of water to the various access points.

Water is pumped at a maximum rate of 40 liters per minute. Water is accessed through indoor plumbing via sinks, toilets, and showers within the health facilities and staff quarters. Each facility also has two standpipes outside; one for the health facility and the other for the community. The community standpipes consist of water troughs that collect excess water for animals to drink.

Benefits of the Limited Mechanized Systems

The accessibility to clean water is essential to protecting health and wellbeing and promoting the dignity of people. There will be no healthy communities without clean and accessible water. Water Access Now in collaboration with CRS is playing a massive role in achieving Sustainable Development Goal (SDG) 6 (Clean Water and Sanitation) by making water available and accessible to people living in vulnerability. Moreover, by providing clean water to remote communities, WAN and CRS are addressing SDG 1 (Eliminating Poverty), SDG 3 (Good Health and Wellbeing), SDG 4 (Quality Education), and SDG 5 (Gender Equality), all of which are central to human development. The provision of mechanized systems by WAN is also adding value to CRS' signature WASH (ICOWASH) and maternal health (REST4D) projects, and helping CRS achieve its goals of improving sanitation and maternal health for sustainable development.

Improved Healthcare Delivery

The installation of the mechanized system has improved the quality of health delivery in all four health facilities. Clean, running water has helped in facilitating the work of health staff. They no longer have to spend a lot of time fetching water for the health facility. Nurses and midwives now have enough time to focus on attending to patients promptly, writing reports, and ensuring that activities at the clinic run smoothly. Furthermore, running water in the consulting, delivery, and labor rooms via multiple access points is enhancing sanitation and hygiene practices at health facilities. For instance, hand hygiene has improved among staff and patients. Patients no longer practice open defecation while visiting the clinics because toilets can be used and flushed easily. Also, there is enough water available for regular cleaning and disinfection of rooms in the clinic. Because of this, health staff rarely record health facility-related infections.

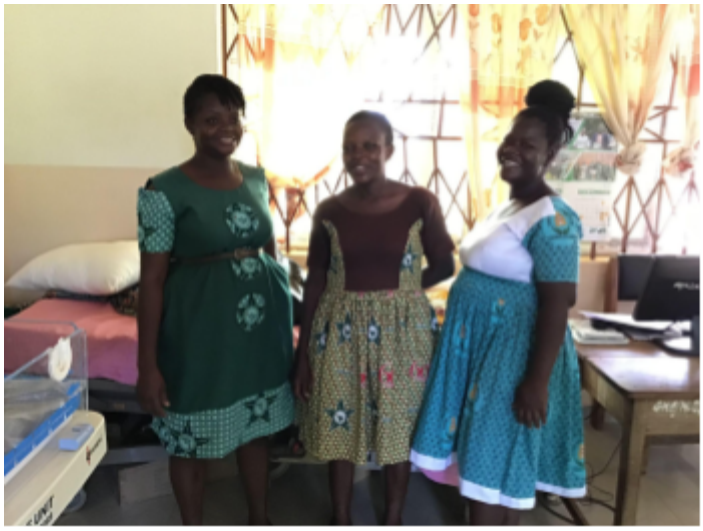

Photo by WAN Intern

Photo 8: Midwives at the Nangode Health Center.

Nurses and midwives in some of the facilities are observing that women are more inclined to seek skilled birth assistance during pregnancies and deliveries because of the availability of clean and accessible water at the health facilities. Skilled birth attendance is critical in preventing maternal deaths (WHO). Therefore, the limited mechanized system is advancing the accessibility, equity, and quality of maternal health services in rural communities, thereby reducing maternal mortality; one of Sub-Saharan Africa's major global health challenges.

Health Staff Retention

The easy access to water at health facilities is also helping these rural communities retain health workers. A significant challenge to accessibility and equitable distribution of quality health care services in rural areas in Ghana is the unwillingness of health staff to live and work in rural communities. This is usually due to a lack of basic amenities, especially clean water, in rural areas, which makes these communities difficult and unappealing for health staff and their families to live in. However, with easy access to clean water, health workers no longer feel reluctant to live in and serve these communities. CHPS compounds and rural health centers are essential for providing primary and emergency health services to people who otherwise will have no access to these services, especially in life-threatening situations. Therefore, nurses and midwives need to be present at these rural clinics all the time, hence the need to make it easier and more convenient for them to want to work and live in rural communities.

A Means for Change

Although the LMS directly serves the health facilities, the community members also enjoy the benefits since many households rely on it for domestic and commercial purposes. The provision of clean water has improved sanitation; water and sanitation go hand in hand. Improved sanitation has lessened the burden of water-borne diseases, especially diarrheal-related illnesses that mostly plague children under five has reduced due to the presence of clean water for the communities.

The presence of water has become a means for changing behaviors toward good proper hygiene and sanitation. Disease control officers and health promotion officers can do their jobs more efficiently because of the presence of clean water. For instance, when health promotion officers go into the communities to educate people on proper hand washing for infection prevention, they have clean water to demonstrate. Moreover, community members are not only made aware of appropriate handwashing methods, but they now have the resources to practice.

Photo by WAN Intern

Photo 9: Women fetching water from the community taps at the Zanlerigu Health Center.

Bridging the Gender Equality Gap

An accessible water source is a means to bridge the gender inequality gap and empower women in rural communities. Women and girls are usually responsible for fetching water and doing other household chores. Because of this many girls are unable to go to school, or if they do, they end up being too tired to pay attention in class. This eventually increases the disparity in access to education between girls and boys. Also, since women end up spending most of their time fetching water in addition to taking care of their families, it is challenging for them to tend to their businesses. However, with easy access to water now, women and girls no longer have to walk miles to collect water.

The LMS has lessened the burden of fetching water on girls, so they can go to school and focus on getting an education. Women also have more time to grow their businesses to generate income for themselves and their families. The LMS is helping community members financially because water is a vital resource for a lot of commercial activities that women are involved in such as: animal and plant farming, cooking to sell, brewing pito for sale (a locally widely consumed drink), making shea butter and other oils, etc. The appreciativeness of community members, district assembly staff, and health staff for how WAN/CRS is improving the quality of their lives through their work is palpable. WAN and CRS are promoting equity and upholding the dignity of people in rural areas in Northern Ghana, one borehole at a time.

Case Study 1

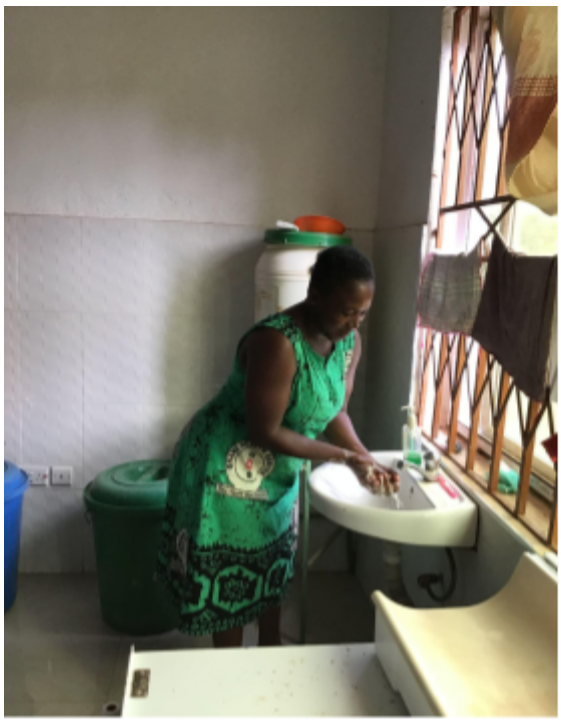

Photo by WAN Intern

Photo 10: A midwife washes her hands at the sink in the delivery room at the Nangode Health Center.

In Nangodi, the capital of the Nabdam constituency is a health facility that serves about 11 surrounding communities. The Nangodi health facility sits along the side of the road leading to Bawku, 13 miles from Bolgatanga. As you walk in, you cannot miss the sight of the limited mechanized system that was provided by WAN. The midwives, nurses, and the community members we met cannot stop singing praises to CRS and WAN for the life-giving experience of having clean running water at the health facility. “Now, water flows all the time, no matter the time of the day. Midnight, daytime, we do not have to worry anymore,” says Georgina Abayamne a midwife and public health nurse at the facility.

Prior to the mechanization of the borehole, the midwives and nurses had to share the community borehole with the community members, a few meters from the health facility. They had to wake up earlier than they usually would to avoid queuing with community members, to fetch water multiple times from the borehole. Part of their daily responsibilities included carrying water back to the health facility where they filled the buckets in the labor, delivery, and consulting rooms for cleaning, handwashing, and other activities. Afterward, they would fetch more to fill the buckets in the staff quarters for bathing, cooking, washing clothes, and drinking. “Carrying water made us too tired to work even before our clients came in.” (Anafo Winifred, a nurse at the health facility).

Water in a few buckets around the health facility for handwashing, disinfecting instruments, delivering babies, and administering medicines was definitely not enough, so whenever the midwives run out of water, they had to leave laboring women unattended to fetch more. During peak seasons, when the midwives were inundated with clients, they would have to pay community members out of pocket to fetch more water. Sometimes, the laboring women were responsible for bringing water for their deliveries. Given that this was not safe for the laboring women, this responsibility fell on their relatives, which eventually caused tension between midwives and patient relatives because some patient relatives were offended by being asked by the midwives to fetch water: “you know, when we used to ask relatives to fetch water, they did not like it” (Georgina). Winifred emphasized that laboring women need relatives with them during delivery. In case of an emergency, relatives are the ones who consent to refer patients to bigger health facilities in the city and are responsible for organizing these referrals since

laboring women are not capable of making decisions at that point. However, because relatives were made to fetch water for women, some avoided coming which was dangerous for pregnant women and unhelpful for midwives.

Clementia, another midwife said: “The LMS has come and taken all of our troubles away. All we need to do now is turn the tap and the water will start flowing through the sinks, and showers.” Georgina mentions that she no longer has to leave her clients in labor unattended. She can also clean their maternity unit properly and disinfect instruments thoroughly unlike before the LMS.

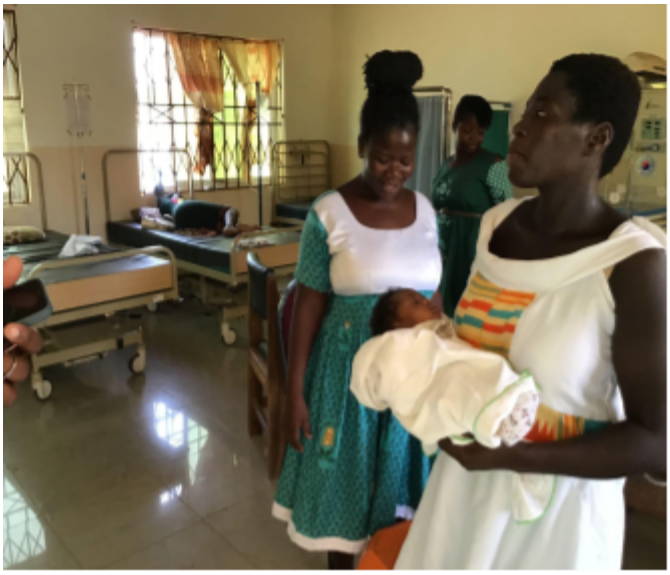

Photo by WAN Intern

Photo 11: A midwife attends to a woman who just had her baby at the Nangode Health Center.

> *“The LMS has come and taken all of our troubles away. All we need to do now is turn the tap and the water will start flowing through the sinks, and showers.”*

Also, the presence of running water has improved hand hygiene since nurses and midwives can turn around and wash their hands in the sink after attending to patients: “we don’t have to economize the water and compromise on washing our hands properly since there is enough water readily available for us,” says Maxwell the nurse in charge. Children who experience convulsions from high fevers can be given sponge baths immediately to save their lives; “at first, when a child is convulsing, that is when you will now be looking for someone to go and fetch water for you to sponge the child” (Maxwell). Patients do not have to worry about having money to buy clean water for drinking and taking medicines during clinic visits because they can drink clean, cool water from the taps.

The presence of clean running water at the facility has improved the uptake of services for the Nangodi health facility. Prior to the installation of the LMS, women preferred having their babies at home or seeking the help of unskilled birth attendants; however, the health facility has seen an improvement in the uptake of delivery services since the mechanization of the borehole. Although no formal research has been conducted, nurses and midwives observe lesser health facility-related infections (infections acquired at the health facility) and delivery-related infections.

The LMS at Nangodi not only serves the health facility but serves about 6,000 people within and outside the community as well. It is rainy season now, and there is usually a line of donkey carts parked by farmers to fetch water on the way to their farms. Apart from the community members, you will also see truck drivers occasionally stopping to drink some water from the taps outside after a long drive to and from Bawku. Groups of children also stop by to fill their bottles before heading to school.

Case Study 2

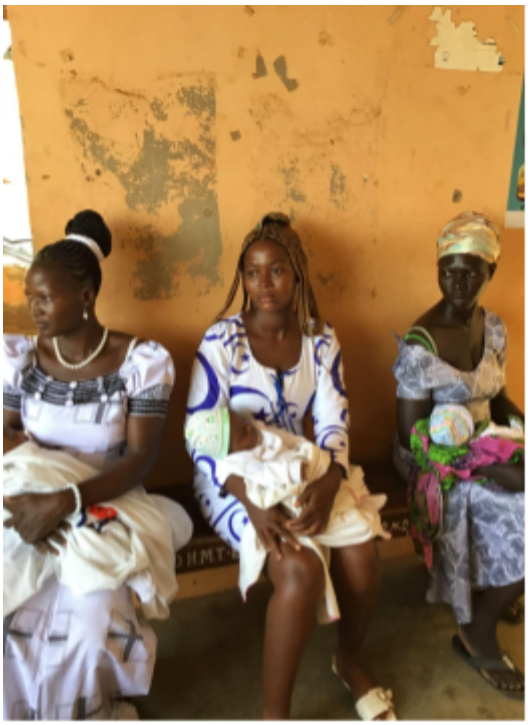

Photo by WAN Intern

Photo 12: Women waiting in line during their postnatal visit at the Zanlerigu Health Center.

It is Wednesday, a busy day for the clinic since today is antenatal care (ANC) day. Pregnant women are coming in for their routine checks. Women who have recently delivered are also coming in for postnatal checkups and immunizations for their babies. About 15 women are waiting to be attended to by two midwives. Sitting in line waiting to get a BCG and oral polio vaccine for her newborn baby boy is Irene. She is a mother of three. Irene mentions how easy her stay at the hospital was this time compared to her previous pregnancies a few years ago when there was a borehole with a regular handpump. “When the borehole was not mechanized, you had to fetch water for yourself if you did not have a relative. When I had my second child, no one came with me. Imagine carrying a bucket of water from the borehole to the maternity unit just after pushing a baby out. Where is the strength?.” After this experience, Irene dreaded having her second child at the clinic.

However, after accompanying her friend during her delivery at the Zanlerigu health center, Irene noticed how much things had changed since she had her second child. “It was such an easy experience for my friend. I went with her to help her, but the only thing I had to do was be there for her and help her carry her baby home. I did not have to fetch water for her to bathe because she could walk into the bathroom and take a shower and fetch water from the sink for drinking”. For her third delivery, Irene was no longer anxious about having her baby at the health center because the borehole is now mechanized with access points in the labor and delivery rooms.

Sitting next to Irene is Ayinpoka. She is 8 months pregnant and is here today for her sixth ANC visit. Ayinpoka is about to take her sulfadoxine-pyrimethamine (IPT-SP) (used for intermittent preventive treatment of malaria in pregnancy). “When I had my first child before the mechanization of the borehole, the midwife would give me a container to go out and fetch water from outside to take my malaria medicine”. But now, I need to walk to the sink and fetch water to take my medicine”. When asked whether they will encourage other women to come here and deliver their babies, the women said: “Our eyes have seen and our ears have heard about the benefits of the mechanized borehole. Why will we not want others to experience it too?”

The health staff at Zanlerigu recorded a lot of treatment failure cases (patients coming back after a couple of weeks for the same illnesses because they did not take their medicines according to the right dosage). The number of treatment failure cases was high because before the installation of the LMS there was no water in the consulting rooms. As a result, nurses and midwives gave the medicines to patients to take home, so there was inadequate supervision. Patients ended up taking the medicines incorrectly or not taking them at all. On days when there was no long line of waiting women, the midwife asked the women to fetch water from outside and bring it back into the consulting room to take SP under supervision. “Sometimes, this led to contamination of the water because they’ll bring the water all the way from outside the facility. It also increased the risk of infection transfer because we had only one container that all the women had to share if they had no money to buy sachet water (Freda, midwife).”

Photo by WAN Intern

Photo 13: Two women fetching water from the community taps at the Gbani CHPS compound.

SP is critical to safe deliveries, so taking it incorrectly could lead to adverse congenital disabilities; however, with running water in the consulting room, nurses and midwives can administer the medicines and ensure that patients take them correctly. “We have seen that treatment failure has reduced because we now have clean water in the consulting rooms for our clients to take their medicines properly, in front of us,” (Ibrahim Razak a staff nurse). According to Laari, another staff nurse; “Having running water has had massive impacts on our health facility. We had two of our clients who got worse after being detained here for two days. Upon referral, we were told that they had acquired infections at the health facility in addition to the illnesses they came with”. There is now an abundance of water to help thoroughly disinfect all the rooms to prevent infections.

The LMS has also been highly beneficial for the people of Zanlerigu. Most people prefer to come to the health facility to fetch water from the taps because it is faster, even when they have non-mechanized boreholes close to their houses. “A woman can come and fetch water quickly and go back to whatever work she was doing. She can put food on fire, come and fetch water and when she goes back, the food won’t even be burnt” (Paul health committee member). Also, the mechanized borehole is a lot safer for children since they don’t have to pump: “A parent sent a child to the borehole to fetch water and the child’s finger got stuck in the pump and snapped. We had to send them to the regional hospital. But this one is safer to use” (Laari). “Now the community has ease of access to clean water. You don’t need manpower to pump water anymore. You just turn it on and there is water. The people are really enjoying” (Laari)

Case Study 3

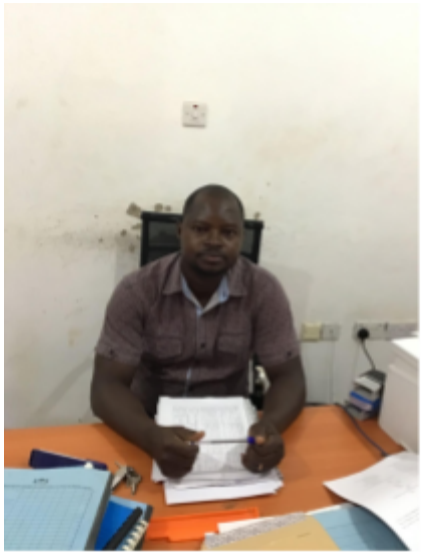

Photo by WAN Intern

Photo 14: Simon Akasuya Nabdam District Works Engineer.

"As an engineer, I know that the cost of the mechanized system can build about seven non-mechanized boreholes. However, the LMS is worth it because healthcare is not something that we can compromise on so any amount is worth it" (Simon Akasuya, Nabdam District Assembly Engineer). Simon describes the benefits of the LMS as overwhelming compared to the point sources, given that the LMS has so many sources of access. Therefore, it is more efficient and serves a larger population. The quality of the water is also better because it is easier to filter out impurities at the outlets of the tank. Moreover, there is no pollution of the water since it comes through a filter in the tanks straight into the health facility.

"As an engineer, I know that the cost of the mechanized system can build about seven non-mechanized boreholes. However, the LMS is worth it because healthcare is not something that we can compromise on so any amount is worth it"

"When it comes to the health of a community, hygiene is key" (Nabdam District Health Director). According to the Disease Control Officer, when there was no running water to flush toilets at the health facility, patients had to go out and defecate even when the health facility had water closets. This put community members at a higher risk of diseases such as diarrhea, typhoid, and cholera. However, the water closets are being used now because there is running water available. "We are observing fewer cases of diarrhea and other water-borne diseases" (Disease Control Officer). The Health Promotion Officer highlights that the LMS came just in time for them to be able to observe proper handwashing during the COVID-19 pandemic: "As an HPO, one of the principles of health promotion is a supportive environment. When you go into a community to talk about hand hygiene to prevent diarrhea and COVID-19, they'll ask you where is the soap and where is the water? Now I can say here is the soap and here is the water. So it is a supportive factor that has really enhanced my work."

"Clean water at the health facility is one of the most essential incentives for our health staff to stay at the staff quarters and take care of the community as a whole" (Nabdam District Coordinating Director,government official). The absence of running water at health facilities has been a key impediment to staff retention. Midwives and nurses are required to stay close to the health facilities to be able to provide skilled birth attendance at all times; however, they avoided staying in staff quarters because there was no running water.

With the LMS, nurses and midwives feel more comfortable staying in the staff quarters: “I interacted with some of the midwives and they have admitted that it makes things a lot easier for them” (Health promotion Officer, Nabdam District). Midwives no longer have to carry soiled linen home to wash or use lack of water as an excuse to be absent from work. Also, because of the easy access to water, nurses, and midwives bring their children to stay with them comfortably during school breaks, rather than having to desert their posts to be with their families. “Now, having water on the premises has made staff absenteeism reduce. The benefits are manifesting” (Health Promotion Officer).

The LMS also has financial benefits for the District Assembly. The coordinating director emphasizes how grateful they are for the help that WAN and CRS have given them: “ If we had to depend on only the District Assembly, we would be incapable of financing a mechanized borehole for the health facilities even though they are highly beneficial. WAN and CRS have really taken a load off of us. We hope that we can get more limited mechanized systems for our other rural communities. Like Oliver Twist, we will always want more.”

Case Study 4

On our visit to Gbani, we visited Azumah at her home a few meters away from the health facility, at the base of a hill. Azumah sells food for hungry patients at the clinic: “Sometimes patients have to take medicines but haven’t eaten, so they need food to be able to take their medicines.”

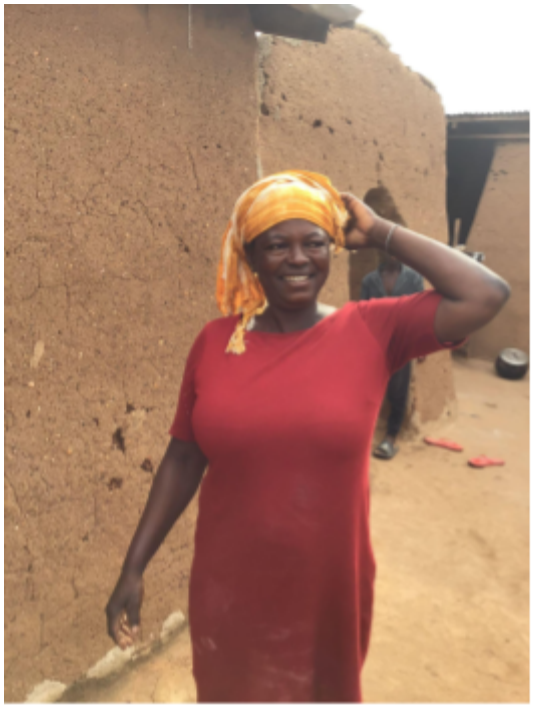

Photo by WAN Intern

Photo 15: Azumah was inspired by the LMS to start her food business.

Azumah has been selling food for about a year now. She started her business around the same time the LMS was constructed at the health facility. Azumah’s community relies solely on the taps at the health facility for water for their daily activities. According to her, the LMS was her inspiration to start her food business and has improved her life and the lives of other households in her community.

She saw a need for the availability of food at the health facility; however, the thought of climbing up the hill every day to pump enough water for large-scale cooking using the handpump deterred her. “When I was planning to start my business, I was worried about going to pump water every day for cooking a lot of food. Look at me, I am old and I don’t have enough strength. With the mechanized borehole, I just go and turn the tap on and save my energy for carrying it home” (Azumah). Azumah is currently running a successful food business. Thanks to the easy access to running water, she is making money to support her family.

> *“When I was planning to start my business, I was worried about going to pump water every day for cooking a lot of food. Look at me, I am old and I don’t have enough strength. With the mechanized borehole, I just go and turn the tap on and save my energy for carrying it home”*

Across the four communities where WAN has installed LMS in health facilities, a lot of businesses are relying on them for commercial use. For instance, in Kpatia private schools in the community fetch water for cooking, drinking, and other activities. Children with no money to buy sachet water or whose parents have no money to buy them water bottles run to the taps to drink water during their break time. “The LMS is helping some of our children stay in school. Previously, children claimed to run home to drink water and never returned to school. Now, they just come here and drink and go back to school” (Lamisi, community member).

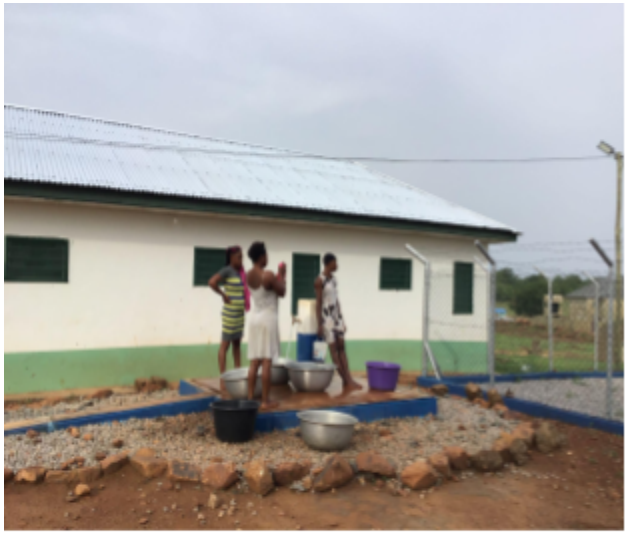

Photo by WAN Intern

Photo 16: Women fetching water from the tap at the Gbani health facility.

In these communities, women and girls are mostly responsible for fetching water. Now, most girls don't have to walk far to fetch water, so they have time to go to school and get an education. Furthermore, women have more time to focus on their businesses and raise their families instead of spending so much time fetching water. There is a lower risk of violence because girls are less susceptible to being harassed and abused because they had to walk far distances early in the morning or late in the evening to fetch water. Overall, the quality of life has improved in these communities due to the presence of clean and accessible drinking water.

What is Not Working Well

Revenue Mobilization

In spite of the huge benefits, there have been a few challenges related to sustainability. The main challenge in every community has been revenue mobilization for the maintenance of the LMS. The LMS is a more complex system, hence requiring high-level maintenance and more costly repairs, unlike the nonmechanized boreholes; “Community members are yet to appreciate this fully, and raise their contribution accordingly” (Emmanuel Narimah, WAN project officer).

Raising enough money from community members to maintain and repair the system has been difficult. So far, Zanlerigu is the only community that has been able to consistently raise money in various forms for the maintenance of their LMS. Although, they still struggle to raise enough money to finance repairs in an event of the system’s breakdown. The Zanlerigu WSMT raises money by taxing every household that comes to fetch from the taps monthly. The midwives have a jar at the clinic in which women who come for ANC visits and deliveries drop whatever money they have. People who fetch for commercial purposes are taxed differently.

So far, there has been no major damage to any of the mechanized systems. At Zanlerigu, there have been broken tap heads and broken locks to gates leading to the solar panels at Kpatia which have been replaced by contributions from health facility staff and some WSMT.

The WSMT has had a difficult time raising money from community members. People are not keen on paying their monthly dues. In Nangodi, no money has been raised since the installation of the LMS. For this reason, in case of a breakdown, the health staff will be responsible for the repairs. Therefore, they lock the taps occasionally to prevent community members from fetching in order to “reduce the pressure on the borehole to prevent it from breaking down” (Maxwell). The WSMT has to go from household to household to collect monthly dues but is met with many excuses from community members. Some community members do not see it as their responsibility to contribute to the systems’ maintenance because they believe that CRS/WAN will step in when there is a crisis. Other community members think that the WSMT is collecting the money for personal reasons because they are not aware of their role in contributing to the systems’ upkeep.

The responsibility of repairing broken mechanized systems will eventually fall on the health staff, the District Assembly, and Health Directorate. The Nabdam District Coordinating Director emphasizes the commitment of the district to ensure the proper maintenance of the system in case of a breakdown. The Talensi District Health Director also highlights the commitment of her district to maintain the LMS in all the facilities. However, she talks about the challenges involved in relying solely on the District’s funds. The health facilities are funded by the health directorate, which depends on reimbursements from the National Health Insurance Scheme (NHIS). The payments from the NHIA are usually delayed, thereby, leaving health facilities without money for prolonged periods. So if the system breaks, and the health directorate has not received money from the NHIA, there will be no money to support the health facilities to repair the system.

The WSMT in all four communities does not meet monthly as specified during the training sessions. Although they expressed their commitment to working with the rest of the community

to ensure proper maintenance of the system, revenue mobilization has been a major obstacle. One thing that seems to be going well in all four communities according to the WSMT is the occasional cleaning of the surroundings of the taps. Community members gather around from time to time to scrub the cemented areas and weed around the taps to keep the surroundings clean.

WSMT Attrition

Another challenge that CRS has noticed is WSMT attrition for the health facilities with LMSs. Nurses and midwives from each health facility are selected to be part of the WSMT. Due to the prevalence of health staff reshuffling among health facilities within the district, some WSMT members are transferred to other facilities. In situations like these, nurses and midwives who are part of the WSMT are responsible for finding and conducting step-down training sessions for new people to take over their previous positions in their absence. But most of the time, this does not happen, thereby affecting WSMT functionality. The loss of WSMT can jeopardize the community and CRS' plan for sustainability in the long run.

Moving Forward

The mechanized borehole has tremendous benefits for health facilities and all four communities. There have been positive impacts on the quality of health delivery, sanitation, and hygiene. The mechanized boreholes have also contributed to equity in education between girls and boys and have significantly empowered women by reducing the burden of unpaid time spent fetching water for their families. Moreover, women have more time to attend to their businesses to generate income to support their families. Water from the borehole is also a critical resource for some businesses.

It is impossible to have healthy communities without clean and accessible water, hence the need to ensure that the mechanized systems are well kept. Here are some ways that the challenges mentioned above can be addressed:

- CRS should check in with WSMT intermittently after training them to see what is working and what is not working in terms of revenue mobilization. Together with the committee and community members, revise fundraising strategies by tailoring new strategies to fit within the context of each community.

- During community entry, health directorates and district assemblies should be encouraged to allocate funds monthly to support health facilities and CHPS compounds toward the maintenance of the LMSs.

- Organize refresher training sessions and frequent monitoring of WSMT to keep track of activities and the state of the group, especially the first few months after the training sessions.

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