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Mali, Factor 9: Water and Sanitation

### **Mali: Exploring Challenges and Potential Solutions to Water Access and Sanitation**

Mali is among the world's largest countries, ranking 24th in terms of total land size. Mali is landlocked in West Africa and two-thirds of the country is comprised of a desert, namely the Sahara Desert. Mali has a population of 15.1 million people and approximately 55% of the population is well below the international poverty line (earning less than \$1.25 a day). In fact, Mali is one of the world's poorest countries ("Empower Mali"). This poverty is difficult to overcome. Water access and sanitation can particularly be challenges in rural areas and only eighteen percent of the population lives in urban locales ("Countries and Their Cultures"). Bamako is the largest city and the capital of Mali with 1.8 million people, but water access is also an issue in this metropolitan area. The official language of the country is French, but Bambara is more widely spoken along with other indigenous languages. Part of the Moussa Traoré dictatorship until 1991, Mali converted to democracy and has held elections, which are believed to be free and fair. The first elected leader, Alpha Oumar Konaré, fought corruption and worked for improvement of living conditions, inspiring his predecessors ("\_\_\_ Mali"). Nevertheless, Mali faces issues on many fronts. A lack of water and sanitation, high poverty rates, and little access to formal education are some of the most important and worrisome concerns for the future. Among the numerous issues and concerns present in Mali, one must consider the lack of systemic water sanitation that is largely provoked by water shortages. Malians often lack access to clean water. With limited access to clean water, Malians will struggle to overcome poverty and create better living conditions ("Wateraid"). When they do have access, they may have to walk long distances to obtain water, which means they have less time to continue their education. Malians have built strong homes and familial ties, but often have difficulty receiving education and healthcare. Agriculture is a way of life and farming, which employs much of the population, and is being greatly affected by the lack of water. The lack of water has decreased the importance of sanitation, leading to more illnesses and death. Since many Malians cannot access safe water, they often turn to contaminated water sources. Solutions are difficult to implement because of water scarcity and Malians lack of access to contaminated water. Organizations and foreign aid have helped improve sanitation, however, more help is needed to continue to increase sanitation practices and access to water. Water will continue to be a scarce resource; therefore, using water carefully will become an absolute necessity for survival. By improving access to water and sanitation, more Malians will be able to receive a formal education, transcend poverty, elevate living conditions, and sustain farming and agriculture (Mali).

Home life for Malians consists of a strong family and basic houses made of an earth and cement mixture. There is a variety of home styles and buildings, but most have fancy doors (Imperato). Most of the population lives in the southern region of the country in developed, rural communities and villages. These developments are generally ruled by a chief or elder to keep order ("Food and Daily Life"). A typical Malian family is very large and has strong bonds. A family, often consisting of parents, grandparents, and children, will all live together. Families work together to farm, obtain water, and complete household tasks. Children help around the house and, when they are old enough, they can find jobs to increase the family's income. Meals often consist of grains common to the area served in a porridge. There are different types of porridges and sugar and sauces can be added for more flavoring. Grains are becoming less prevalent because of the drop in food production. Malians eat more vegetables and fruits than meat, which is very expensive. Some eating centers around recreational and belief-based events. Soccer is a popular sport in villages while many members of the upper class prefer to watch. Ten percent of the population follow indigenous religions while the remaining ninety percent are Muslim ("Empower Mali"). "Despite being an Islamic country, alcohol is not prohibited and many Malians drink millet beer"

("Food and Daily Life"). Women work arduously for long hours; many of those hours are spent seeking water. Maintaining appearances is also very important and can take time. Malian women often wear a boubou, the traditional robe dress ("Food and Daily Life"). Women often have to serve ill village residents. Health care professionals and workers have limited training and generally work in cities, making it difficult for rural villages to receive aid. Hospitals are very expensive and the doctor to patient ratio is about one for every 20,000. Many health centers also lack water access and sanitation. Training new medical aid workers is difficult and medical centers in the country need more training to enhance sanitary and hygienic practices. Education is also challenging for some Malians because of a lack of access. Mali has a literacy rate of thirty-one percent ("Empower Mali"). Schools are often far away and children in rural communities do not have much time for an education as they spend their time working and acquiring water. Despite low education and healthcare access, Malian families work hard to sustain themselves and survive.

Since the economy is based on agriculture and farming, this sector employs nearly 80% percent of the population ("Empower Mali"). Cotton exports comprise the major foreign exchange product ("Encyclopedia of the Nations"). Farming has been difficult due to soil deterioration and water scarcity. Grain production has plummeted and food is scarce at times due to issues in production mostly based on the lack of water. The best farming areas are along the river deltas because, when it floods, they receive water. However, the lack of rainfall has reduced flooding and production of crops. Soil has also lost its fertility, which is affecting the lives of farmers ("Mali"). "The average farm size for crop-based farming is 4.7 hectares, with one third of households farming less than one hectare. Fewer than 5% of households have landholdings more than 20 hectares. Land preparation is carried out using animal traction for more than 70% of cropped area compared to just 1% using mechanized power" (Boughtan). The lack of rainfall has also affected livestock farmers. The livestock population has plummeted because the animals have gotten sick, starved, and died. "Eight out of 10 people in northern Mali raise and breed cattle to survive" ("Mali: More aid"). The government has helped by subsidizing farming. Malians still do not have the means to procure food because there is trouble raising and growing it. It is a vicious cycle that can only end with more water being available to boost production.

Among the numerous problems Mali faces, the lack of sanitation due to water scarcity is the most threatening. In 2011, Mali was only using about .2 percent of its potential water sources. Mali has two major water sources, the Niger River and the Senegal River. These rivers provide much of the water used in agriculture, but due to the drought they too also have less water ("Water Related Illness"). Since less water is in the rivers, their delta floodplain area is also reduced and farmers face more challenges growing crops. The water tables are dropping low and Malians often cannot access the water ("Mali: Water has"). Water scarcity is not only due to the drought, but also wells that are dysfunctional and in need of repair (Schlein, 2013). Since water is difficult to access, Malians often turn to easier sources, which are often contaminated. With water in high demand and short supply, the importance of sanitation often is unnoticed. This leads to many problems. In particular, women and children walk many kilometers daily to reach water that might not be safe ("Proyecto").

The effect of the lack of water sanitation is devastating. "Over 15,000 children die every year from diarrhea caused by unsafe water and poor sanitation in Mali" ("Wateraid"). Health centers also suffer from not being able to access safe water and maintain sanitation; they struggle to help patients. Mothers and children are at great risk of illness during labor because health centers lack basic sanitation and clean water. "In Mali, just twenty percent of health facilities provide clean water. The ability to keep a hospital or clinic clean is such a fundamental basic requirement of healthcare that...[one] has to question whether a facility without clean running water or basic sanitation can adequately serve its patients" (Lamble). Health centers need water access and sanitation so they can better serve their patients. The lack of water sanitation does not only affect health centers, it also applies to homes and cooking. When people drink contaminated water at home, they often become ill with no means of healing. Village residents have been

taught basic water purification techniques and water hygiene that has helped to drop the illness rate (“Mali: The Trickle-down Effect”).

WaterAid is one of the organizations helping Malians access safe water and using better sanitation skills. In the last year, WaterAid workers helped 37,000 Malians access safe water and 49,000 Malians improve sanitation. They are striving to continue raising awareness of the importance of water sanitation. The mission of WaterAid is to improve lives through increasing water access and sanitation, which makes the organization successful. The organization continues to search and ask for donations in order to keep doing the work it does around the world (“WaterAid”). WaterAid must begin to enhance partnerships with governmental agencies and locals. A feasible and realistic solution for Mali to improve water access and sanitation is to form groups that are equipped with the means and skills to help villages have safe sustainable water. Such groups should include non-profit experts, local Malians, and government officials. Finding a truly equitable and functional solution involves merging theory, technology, and practice. This is the type of collaboration that is synergistic in nature and recognizes that stakeholders from numerous backgrounds in Mali need to participate to find the best solution for specific families, neighborhoods, regions, and cities.

To implement an effective solution, it is important to note that several factors must be considered. It is critical to contemplate and research numerous perspectives and levels of support for both access to water and improvement of sanitation. While focusing on technology for water access and sanitation is critical, one must also consider means creating change through education and habitual modifications to means of accessing water. It is also significant to note that one should be able to develop a stable means of financial support and local expertise. These groups could be from or be sponsored by nonprofit organizations, such as: WaterAid, Edge Outreach, Charity: Water, and the power of the United Nations (“Organizations Involved”). The groups would have the ability and knowledge to access safe water and know how to teach good health and sanitation practices. Each group would need to have individuals that speak the national language, French, or indigenous languages, such as Bambara, to communicate effectively. The group would also ideally be well-versed in Malian culture to enhance overall communication.

The groups could also be made up of volunteers from an organization and Malians who have been taught water purification techniques and how to improve water access. By involving more locals while working with villages communication would be easier and the Malians would be more cooperative with having strangers trying to teach them things about their water. The groups would have to work hard to help villages implement a water system and purification techniques in order to help to improve the health of all Malians. For example, access to water can be improved by the group implementing a water collection system such as rainwater harvesting, gravity systems, and using wells. Rainwater harvesting works by collecting rain runoff off of roofs through a catchment system and storing it in large containers. Rainwater is a very clean source of water for areas that can't access groundwater or surface water easily but the issue with rainwater is when it is the dry season and there is no rain. This type of system is also cheap to set up and has low maintenance costs (“Rainwater Harvesting”). Gravity systems are also a possible way to access safe water. Despite high construction costs, these systems have low maintenance and running costs and can provide a constant supply. The system works by using gravity to move water through a pipe system from a source down to a village. This saves the villagers time from having to go collect water and the water is easier to access (“Gravity-fed Schemes”). Another option involves using wells and pumps.

Using wells and pumps is a definite way to access groundwater. Wells can be hand dug or drilled but some sort of pump is needed to bring the water to the surface. Hand dug wells are often unstable but are cheap to put in (“Hand-dug Wells”). Drilled wells are more expensive to put in because of the equipment required, but are much more stable and less prone to contamination. Handpumps are needed to bring the water to the surface. With numerous types of handpumps available finding one to fit a particular well's dimensions is easy and because a cover slab is required for the well in order to run a pump the risk of

contamination is decreased. Handpumps can be tedious to maintain because some parts are not local and mechanics are needed to repair broken pumps. Although, if maintained, a hand pump can have a long working life for a village (“Handpumps”). Sanitation can be improved by using many types of latrines or by using techniques to purify water. There are many types of latrines such as the community or compost latrines that help increase sanitation and prevent contamination of water sources. A community latrine is used by the village and requires organization for it to be maintained and a worthy investment. Compost latrines are very beneficial to Malians because they provide compost for agriculture. Latrines can be expensive to build and maintain but immensely improve the sanitation of Malians (“Construction of”). Other sanitation techniques include teaching Malians to boil contaminated water to purify it and to treat questionable water so that it is safe. By having groups from organizations visit the villages it would allow for each village to have individualized instruction- it wouldn’t be a one size fits all solution. The group can help develop a system that works for each village, which would allow each village to develop its own techniques to keep the water safe and sustainable. If groups worked together and worked to help each village individually develop proper water care and sanitation many Malians would benefit. Then Malians will have increased access to safe water and will develop techniques to improve and keep their water uncontaminated.

Now, more than ever, is the time for Malians to focus on increasing water access and sanitation measures as well as utilizing existing initiatives because “in the wake of the most recent uprising, Tuareg groups called for more concessions from the government in Bamako” (“Mali’s Tuareg Rebels”). The Tuareg are rebels whose goal is to free the northern region of Mali because it is the origin of their nomadic civilization (Peyron). As of the summer of 2015 peace negotiations began and peace treaties were signed helping the country to move forward. Much of the fighting has kept organizations such as WaterAid or the United Nations from forming groups to teach Malians about ways to effectively find and use water.

Government agencies also have the power to immensely impact Malians by not only focusing on creating new groups and programs, but also working with existing initiatives that connect stakeholders from all backgrounds and regions in the nation. The Malian Ministry of Health and Environment and Sanitation has already partnered with UNICEF in a program that centers on handwashing known as Community-Led Total Sanitation or CLTS. This program directly focused on impacting approximately 1500 villages and educating 70% of Malians by utilizing campaigning and advertising in media markets. (Cross and Coombes 55). A follow-up study updated on June 29th, 2015, indicates that the CLTS system worked well because it focused on behavioral development and training that led to better sanitation in Malian villages. Latrine quality also significantly improved by including more material to wash hands and more efforts in cleaning the latrines themselves (“Impact Evaluation of CLTS in Rural Mali” <http://www.communityledtotalsanitation.org/resource/impact-evaluation-clts-rural-mali>). The Malian Ministry of Environment and Sanitation could continue to encourage centers to be Open Defecation Free or have ODF clearance by encouraging the use of latrines and requiring a means of handwashing (Cross and Coombes 55). Another key government-sponsored program in Mali that has enhanced sanitation by encouraging the type of synergistic partnerships mentioned above includes a water, sanitation, and hygiene or WASH program that has become a national focus for the Malian government as well as partnerships with nonprofits across the globe (“Enabling Policy”).

Among the numerous issues and concerns present in Mali, one must consider the lack of systemic water sanitation that is largely provoked by water shortages. It is a constant hazard that cannot be stopped without synergistic collaboration. The lack of water access can be attributed to many factors, such as drought, broken pumps, and wells that are contaminated or not deep enough. Without adequate water and sanitation, illness and death rates increase. Since water is difficult to find, women and children spend hours a day walking and obtaining water to use. This water is not always safe, but it is all they can find or access. Some villages have learned sanitation techniques that have made the water safer and improved the health of the Malians. Agriculture is also being affected by the lack of water. Crop production is down

and livestock cannot access water, reducing the amount of food being produced. Organizations and groups that range from non-profit entities to government agencies are helping Malians to improve their sanitation skills and access clean, safe water. These organizations have helped thousands of Malians have a better life. The lack of water and sanitation and the poverty rate are directly related. "This extreme poverty has a direct impact on the population's sanitation and hygiene practices. Of all deaths in Mali, over 20 percent can be attributed to inadequate water, sanitation and hygiene" ("Mali Water and Sanitation"). By improving sanitation, the rates of illness and death will decrease. With over half of Mali's 15.1 million citizens below the international poverty line, getting Malians out of poverty is crucial ("Empower Mali"). So one of the most logical ways to help alleviate poverty is by improving water and sanitation access. If groups worked together and worked to help each village individually develop proper water care and sanitation many Malians would benefit. The groups would have the skills and means to improve water access and teach proper water sanitation. By improving water access with gravity flow systems, rainwater collection, or wells and improving sanitation with latrines, Malians will have better access to safe water and will develop techniques to improve and keep their water uncontaminated. With peace talks taking place, now more than ever is the time for Malians to improve their access to water and sanitation because of new policies and programs. In conclusion, although it is difficult to identify Mali's most grave problem, it is necessary to tackle the lack of water and sanitation as a means of holistically improving health and living conditions in the country.

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