

Mikaela Engnell  
Winterset High School  
Winterset, IA  
Ethiopia, Factor 2: Water Scarcity

### **Ethiopian Water Scarcity: The Saving Power of Passion and Compassion**

The average family in the US has access to water, illustrated by the fact that each citizen uses about 80 - 100 gallons of water per day, seventy-five percent of which is used in the bathroom “Waste in America...”). Though water is essential to survival in America, it is used unwisely, especially in the light of the knowledge that developing countries are desperate to have even one-quarter of the amount of clean water that America has at its disposal. The presence of safe, drinkable water in the US is essentially obsolete in comparison to the issue of the absence of water in other countries, given that twice the population of the United States lives without access to safe water (“Water in Crisis...”). Among countries where there is little access to clean water for drinking or maintaining healthy personal hygiene habits, Ethiopia is ranked second in Africa (“Combined Global...”). Though many organizations and nonprofits are attempting to solve the issue of water scarcity in Ethiopia, such as the Water Project, LifeStraw, and LifeSack, the country is still hindered immensely by water scarcity, which affects the country’s agricultural production in rural areas and the basic ability of families to survive.

In the developing country of Ethiopia, located in sub-Saharan Africa, the population has quintupled to 97 million citizens in the last 70 years (Shamanski, Sonia). On average, families are composed of one male parent, who leads the household through patriarchal practices, one female parent, and approximately five to six children per woman. According to Paul Rauber, a writer for *Sierra* magazine, the average life expectancy for an adult is approximately 48 years of age, though one in eight children will die before reaching the age of five. Of the Ethiopian children that do survive, over half are malnourished. Given that most citizens are living on less than \$1 per day (“FAO Country...”), diets mainly include grains, corn, root crops, and oil seeds. Despite the large amount of livestock raised in rural areas, the production and consumption of products from the animals is very limited. In regards to Ethiopian education, seventy-seven percent of women and sixty-two percent of men have no education, while only three percent of men and one percent of women have completed primary education or secondary education or higher (“Combined Global...”). In addition to poor diets and education, the Ethiopian health care system is dangerously underdeveloped, as it is unable to provide healthcare for more than half the population. Approximately seventy-five percent of urban and forty-two percent of rural households are within walking distance to a health facility (“WHO”), though only fifty percent of citizens receive health care services at all. In an Ethiopian health facility, employees are staffed with low qualifications, and medication and clinical supplies are often unattainable in times of need. Ailed by HIV, malaria, tuberculosis, intestinal parasites, acute respiratory infections, and diarrheal diseases, citizens are in dire need of adequate health care, which happens to be incredibly unavailable to them. While each family is suffering due to malnutrition, water scarcity, and lack of health care, the average farming families are doing what they can in order to solve the problems of hunger and dehydration.

Approximately eighty to eighty-five percent of Ethiopians are engaged in the field of agriculture. However, thirty-five percent of the population does not receive enough nutrients through their food (“Farm Africa’s Work...”). The issues with farming continue, due to the fact that farmers are inadequately equipped and trained, and there is poor access to markets, resulting in difficulties for the

farmers to earn an income. Because Ethiopia is landlocked and suffers from severe droughts, agricultural production is greatly hindered. However, in spite of the obstacles, agriculture is the country's most important economic activity. In fact, in 1988, it composed forty-six percent of Ethiopia's GDP and eighty percent of exports, including coffee, leather products, legumes, oilseeds, beeswax, and tea. In spite of the fact that coffee plays the most integral role in the agricultural field of Ethiopia, the economy is balanced in a precarious position. For example, if there were a drought that destroyed the crops and livestock, export earning would suffer. In addition to crops and plants, Ethiopia's livestock population, 75 million heads, has given the county the largest concentration of livestock in Africa. Most livestock is used for consumption purposes because most Ethiopian citizens practice subsistence farming, only providing for themselves and their families. Nevertheless, environmental factors contribute to depleted production, thus worsening the ability of Ethiopians to farm effectively. For example, deforestation, overgrazing, soil erosion, and desertification decrease the efficiency of farming, given that only twelve percent of all land is arable and one percent of which is used for permanent crops such as cocoa, coffee, and flowers. In regard to livestock, forty percent of Ethiopian land is used for permanent pastures. Overall, the environmental problems in Ethiopia are causing famines, decreasing the success of agriculture, and undermining the actions citizens are taking to improve their country, especially since numerous droughts are simultaneously causing an alarming amount of water scarcity ("Ethiopia Agriculture...").

Pertaining to an average Ethiopian family, each member faces obvious, individual hardships based on gender, due to certain aspects of Ethiopian culture. For example, women are conditioned to believe that they are inferior to men, who have the freedom to treat their wives however they deem acceptable. Men are tasked with being the "breadwinner" of the family, feeling the pressure of growing crops and providing food and nourishment for both their children and their wives. Sons, who begin training from their fathers at the tender age of six, are raised to become the traditional hard-working man by helping in the gardens, cultivating land, and caring for livestock. Being the more privileged gender, studious sons with good character are admired, and they are able to choose their own wives at a minimum age of eighteen. Daughters work and train with their mothers in duties such as sweeping, cleaning, and fetching water. Due to the Ethiopian belief that women are the lesser sex, girls are admired for their abilities in crafts, cooking, and cleaning, resulting in the potential to be married at the minimum age of ten. Girls will always stay under family control after marriage, with no voice in choosing a husband ("Children in Ethiopia"). However, regardless of individual strife, the family as a whole faces problems larger than cultural discrimination: water scarcity and famine. With the countless droughts plaguing Ethiopia, families are barely able to find enough water for themselves, let alone for crops. With a population of 97 million and growing, families are living in a landlocked, overpopulated country that is unable to meet their hygiene and nutritional needs. Confronted with illiteracy, extreme poverty, and malnutrition, problems for the average family are becoming increasingly worse in the face of population growth and as resources become even more scarce, especially the Ethiopian water supply.

In the various countries of Africa, especially Ethiopia, water scarcity is an aspect of the environment that is impacting citizens in all areas, given that proper hygiene and clean water is unavailable. Worldwide, one in nine people do not have access to clean drinking water, and the lack of water in Ethiopia is causing problems regarding agriculture and citizen's health, as well. The average family relies on wives and daughters, who are twice as likely to be responsible for fetching water under the age of fifteen in comparison to men ("Water in Crisis"), to bring water from ponds, rivers, and wells located as much as six hours away at walking distance. Water sources are often shared with animals, contaminated with wastes that have been washed from surrounding areas. The water jugs that women carry are nearly forty pounds, which increases health issues in women that are frequently near the water. In addition to women's strife, recurring droughts have caused an innumerable amount of famines and food shortages. Given that Ethiopia's economy depends heavily on agriculture, years in which crops are destroyed by

droughts are terrible in the already-developing country. Especially in times of lack of rain, up to eighty percent of citizens acquire water-related diseases, given that the remaining surface water sources are contaminated by human and animal wastes because the springs and ponds have dried up. Often, the polluted water is festering in bacteria and remaining stationary, which is a breeding ground for mosquitoes. Droughts are also the cause of personal hygiene issues, as the lack of water results in the absence the ability to bathe regularly. Poor hygiene in Ethiopia results in scabies, eye infections, and diarrhea, which is only made worse when citizens are forced to forgo hand washing after defecation or before meals in an effort to conserve water (“Drinking Water...”). Water scarcity will continue to worsen if global and local organizations do nothing to improve programs, if citizens in developed countries do not donate to the cause of abolishing water scarcity, or if systems that would efficiently and effectively destroy the water crisis aren’t established in Ethiopia. Naturally, a plentiful water source would not only improve Ethiopian citizen’s health, but their field of agriculture as well. Ethiopian residents would no longer be exposed to contaminated water, thus ending water-related diseases and deaths. Crops would become prosperous, allowing animals and humans to thrive with full stomachs. Though, how can enough donations ever allow scientists to manipulate the *climate* to the point where it will allow ample rainfall and eradicate droughts?

In addition to water scarcity, Ethiopia is facing issues with population growth. With 97 million people located in 426,400 square feet of land, the population growth rate is about 3.6% (“Major Problems...”). The population of Ethiopia is 1.35% of the whole world’s population (“Ethiopia Population...”), resulting in Ethiopia being the second most populated country in all of Africa, only following Nigeria, which has a population of about 178 million. Given that the population is continuously growing, water scarcity and population growth connect in ways that negatively affect citizens of Ethiopia: not enough food can be produced to feed the increasing number of mouths. Ninety percent of Ethiopians live below the poverty line, resulting in an inability to obtain or buy food. As the population grows, deforestation is increased due to the building projects that destroy the rural farms needed desperately to grow crops. Throughout the years, forest coverage decreased from forty percent in 1941 to only three percent today (“Population, Development...”). Without forests or farmland, there is no firewood to burn for cooking scarcely-available meat, so some resort to cooking animal feces, only adding to the personal hygiene issues and diseases that are acquired by Ethiopian citizens. In addition, the absence of trees is causing soil to erode, which is leading to dry, barren farmland that will be unable to produce crops for the natives of Ethiopia. With inadequate farmland, the soil quality will only worsen, thus heightening the effects of droughts that are caused by the absence of rain. No matter what actions are taken to decrease or control the population or to solve the Ethiopian water crisis, children are still being born, which results in 2 million new people added to the population per year. If there continues to be an increase in mouths to provide food and water for, there is no way that food can be produced or water can be purified fast enough. Water scarcity and population growth are interconnected topics that affect each other in ways that are dangerous and unpredictable for suffering citizens.

Across the world, programs and projects are being constructed in order to solve the issue of water scarcity in Ethiopia. With an emphasis on the Water Project, actions are being taken that would improve the quality and quantity of Ethiopian citizen’s access to water. On the homepage of the Water Project’s website, the organization states its purpose, as well as what people around the world can do to help eliminate the water crisis in Ethiopia, priding itself on the fact that it is one of the only organizations to provide detailed documentation of their progress. According to “Water in Crisis - Spotlight Ethiopia”, if one person would donate only \$1 toward funding the construction of dams and rain catchment systems, there would be a return of \$3 - \$34 in economic growth. With a focus on sub-Saharan Africa, the Water Project has currently constructed 1,303 wells, which tap into the reservoir of water located just beneath the surface of Ethiopia. The Water Project is adamant on making an impact in the lives of African citizens

by not only establishing wells, but by creating the wells to be reliable and sustainable. Through the use of donations, the Water Project is implementing new technologies alongside the wells in order to involve donors. In spite of all the proactive and effective ways that the Water Project is utilizing its donations, there is currently not enough money available for them to expand in establishing more projects. Due to geology, climate, and technology, the cost of an \$11,000 Water Project in one village might cost \$27,000 in the next village. Linked and pasted all over the Water Project's website are redirections to pages in which visitors can learn more about becoming members, starting personal fundraisers, and how to take action. Most of the nonprofit's income results from the donations of socially aware citizens who are able to spare money, though there are many alternatives that the Water Project welcomes, with an emphasis on starting personal campaigns.

Through the use of social media, the Water Project has raised awareness of the pressing issue of water scarcity in sub-Saharan Africa, though it still has strides to make. Most teenagers today, or adults for that matter, do not browse through the Internet explicitly looking for colossal problems in the world that they would like to solve. However, if an individual were to visit the Internet platform that the Water Project has created, he or she would be in awe at the ample amount of ways that have been outlined to encourage taking action. Though the organization has both a Twitter and a Facebook account, it could most certainly benefit from a wider social media base that would appeal to those who are so engrossed in Instagram or SnapChat. Appointing a social media consultant who would regularly post relevant, educational, and appealing material on platforms that students routinely visit would draw in a larger group of young people, invigorated by the idea of helping out. By using more technology-focused apps, such as QR code, people who download the app can follow along with the progress of the project they helped fund. An app similar to ThinkDirty could be implemented into Ethiopian communities, in which the citizens could scan the water water they were drinking to determine the precise level of purification to make sure it is safe to drink. In addition, it would be beneficial for the Water Project to consider investing a portion of donations into advertisement, whether it be via commercials on television or on the radio. By experimenting with their approach, appealing to compassion through commercials like that of the SPCA (Society for the Prevention of Cruelty to Animals) or by appealing to adventure and excitement brought through the eyes of those working on the project, the Water Project could reach more people, and consequently, entice individuals into assisting in their efforts. More meetings could be made with major corporations, such as National Geographic, in which the Water Project could give interviews and information on their efforts. If an advertisement encouraging donations for the Water Project were to arise in the New York Times or the Smithsonian Magazine, more well-educated, socially aware citizens would be inclined to help out, given that they were provided means to become aware of the Water Project's efforts.

Furthermore, an organization similar to that of the Water Project is Charity: Water, which has funded 6,945 projects, served 2,126,679 people, and invested \$60,952,706 in an effort to eradicate water scarcity in Ethiopia since 2007. Through the implementation of programs designed to dig beneath the surface of the earth to tap into the water, Charity: Water has been able to change the lives of Ethiopian citizens regarding education, household income, and gender equality ("Ethiopia"). In various locations within Ethiopia, Charity: Water has utilized seven solutions: piped systems, hand-dug wells, drilled wells, rainwater catchments, gravity fed systems, spring protections, and latrines, each with an intent to improve water quality, quantity, and availability. The progress of Charity: Water is demonstrated all over their website through the use of videos and pictures that depict their progress through the eyes of the individuals directly affected by their advancement. For example, in September of 2016, Charity: Water donors aided in the funding of a new drilling rig that would allow more efficiency when drilling for water. However, the three rigs that were already drilling at full capacity were unable to keep up with the demand of the Ethiopian citizens, given that they were yearning for water. Charity: Water proposed that donors assist them in raising \$1.2 million to fund a new drilling fleet that could drill 80 new wells per year, thus

helping 40,000 more people. At the end of the campaign, over \$2.4 million was raised, and an anonymous donor shipped the rigs to Ethiopia for free. The first rig in the fleet was implemented in Merara Village, where 450 people live. Clean water was located 150 feet beneath the surface of the earth, resulting in an entire village being able to drink clean, safe water. Amazing testimonies and videos illustrate the progress that is being made in Ethiopia, with smiling faces and tears found in response to what Americans have available to them in the next room: water.

In addition to the projects dedicating time and money in order to fund projects that would increase water supply, the Ethiopian government is able to help as well. By decreasing taxes and using a portion of the budget to build dams, wells, and water catchment systems, the government leaders in Ethiopia, however corrupt the systems and beliefs may be, will be able to decrease the 440 million school days lost every year to sickness and the deaths of 1 in 5 children under the age of 5, due to dirty water (“Water in Crisis...”). As the strides that organizations are taking to eliminate water scarcity are proving to be effective, with 57% of citizens able to access safe drinking water, the Ethiopian government is determined to increase citizen’s access to safe water and basic sanitation in both rural and urban areas (“[Water | Ethiopia | ...”). Through the use of proactive programs such as the One WASH National Program (OWNP), the Ethiopian government is taking the steps necessary to eradicate their country’s lack of water. The specific intent of OWNPN is to refashion the way that both water and sanitation are delivered to Ethiopian citizens, which would simultaneously decrease high school dropout rates and increase the effectiveness of OWNPN’s finances. To effectively implement OWNPN’s principles, the government would encourage households and aid organizations in improving lavatories. The total budget of OWNPN is assigned to be approximately \$2.41 billion, forty-seven percent of which is to pertain to the rural water supply. Within the proposed budget, thirty-six percent is to go towards software and planning, while sixty-four percent is allocated to implement hardware, such as well linings or pumps. Regardless of the corruption of the Ethiopian government, leaders within the country are determined to improve citizens’ quality of life.

Additionally, some programs are focused on improving the sanitation of water in Ethiopia, through the implementation of education and the eradication of the practice of “open defecation.” Rather than establishing large sanitation facilities that purify water through the use of chemicals and technology, organizations, such as UNICEF, are determined to improve water quality by creating facilities designed to be readily available to separate human waste from human contact (“UNICEF - Ethiopia...”). Given that there is already so little water in Ethiopia, it would prove futile to attempt to technologically sanitize the water before it would be evaporated into the air in the dry Ethiopian climate. UNICEF has determined that the most efficacious way to sanitize water is to not make it dangerously unsafe to utilize in the first place. The lack of water within Ethiopia has resulted in the practice of “open defecation,” which is the custom of utilizing fields, forests, or bodies of water to excrete waste into, rather than using a toilet. Open defecation increases the likelihood that an individual will come into contact with human waste, which could potentially result in dangerous ailments, such as cholera, typhoid, and hepatitis. To eradicate the impurities of polluted water, UNICEF has proposed WASH, an initiative that is designed to improve the aspects of Water, Sanitation, and Hygiene in developing countries, given that an improvement in one area will improve the quality of the other two areas due to their interdependence. By encouraging governments to implement WASH, UNICEF becomes involved with improving technologies, ensuring affordable toilets, and that each latrine meets efficiency and sustainability standards. If the genesis of water sanitation problems is completely eradicated through the use of proper sanitation facilities, mechanically filtered water in treatment centers will be rendered unnecessary.

Similarly, organizations, such as LifeStraw and LifeSack, are working to purify water with a method that does not result in monetary resources. LifeStraw has committed to making clean water available in

virtually every country by simply providing straws to citizens. A LifeStraw is a straw that was engineered to filter out the microorganisms within drinking water. If a citizen of Ethiopia were to own a LifeStraw, he or she could readily drink out of the water supplies shared with animals, given that the LifeStraw would filter out all of its impurities, making it completely safe to drink. Originally designed to filter out Guinea worm larvae, the LifeStraw team has made momentous improvements within the last 20 years: new products include a community purifier, designed to eradicate bacteria for large institutional settings, such as schools or workplaces (“LifeStraw...”). Similarly, the LifeSack is a product that, if made readily available to Ethiopian citizens, could completely revolutionize access to clean water. The LifeSack is a backpack that filters water through the use of UVA radiation and thermal treatment, which would work together to kill bacteria. Given that the LifeSack is made easily transportable, as it is in the form of a backpack, those who travel to water supplies would be able to carry the water in a way that does not cause health issues. Food could also be carried in the LifeSack, so as to make shipment simpler (Rotsky, Nikita). Rather than creating large purification facilities on the land that Ethiopians cannot afford to spare, LifeStraw and LifeSack are completely changing the way singular Ethiopians have access to clean water on an individual level.

However, regardless of whoever is performing the actions necessary to eradicate water scarcity, two variables are necessary to fully begin the reformation of proper water access in Ethiopia: activists and money. Activists are the people that would personally travel to Ethiopia and learn about the problems from citizens and those experiencing the suffering first-hand. Those who are passionate about saving Ethiopian culture by preserving its people are the ones that will be present for the construction of structures that will sanitize and stockpile water, enabling the citizens to drink healthily. In addition, money is an unpredictable variable that hinders both the Water Project and the Ethiopian government. Regardless, the Water Project is constantly looking for donors and laborers that would aid in speeding up the process of cleaning and saving water. The government is able to use some of the budget to build technology that would better Ethiopian society, though lowering taxes while embarking on the project would prove difficult. As well as the Water Project, the Ethiopian government may want to look into donors that would love to sponsor projects that would lead to healthy, prosperous, and thriving Ethiopian citizens.

In Ethiopia, the average family is hindered by the absence of water in the household. Water scarcity is causing diseases and damage to land and people, consequently eliminating crops and culture. Drought and famines have resulted in citizens dying or acquiring life-threatening diseases due to unsanitary water that they have been forced to drink and use for personal hygiene, given that the only other option would be to die. Without water, crops wither in the land that they are rooted in, thus decreasing economic prosperity and the quality of the food that Ethiopian citizens have to eat. The decrease in quality, quantity, and accessibility to water in Ethiopia is being addressed by donors and the Water Project, which is hoping to construct dams, wells, and water catchment systems that will clean and store water needed for proper Ethiopian hygiene and health. As a citizen of the world, awareness of problems, such as that of water scarcity in Ethiopia, will aid in solutions that are designed to allow Ethiopian citizens the ability to simply survive.

- 
- "Children In Ethiopia". Tulane.edu. N.p., 2016. Web. 24 May 2016.
- "Combined Global And African Ranking - 25 Country Populations With The Least Sustainable Access To Improved / Clean Water Sources". Africa Public Health.Info. N.p., 2011. Web. 24 May 2016.
- "Drinking Water, Sanitation And Hygiene In Ethiopia". We Are Water. N.p., 2016. Web. 24 May 2016.
- "Ethiopia". *Charitywater.org*. N.p., 2017. Web. 27 June 2017.
- "Ethiopia Agriculture, Information About Agriculture In Ethiopia". Nationsencyclopedia.com. N.p., 2016. Web. 24 May 2016.
- "Ethiopia Population (2016) - Worldometers". Worldometers.info. N.p., 2016. Web. 26 May 2016.
- "FAO Country Profiles:Ethiopia". Fao.org. N.p., 2016. Web. 24 May 2016.
- "Farm Africa's Work In Ethiopia". Farmafrica.org. N.p., 2016. Web. 24 May 2016.
- Inc., Good. "Think Dirty App." *Think Dirty*. N.p., 2017. Web. 27 July 2017.
- "Lifestraw - We Make Contaminated Water Safe To Drink.." *LifeStraw*. N.p., 2017. Web. 27 July 2017.
- "Major Problems Facing Ethiopia Today". TesfaNews. N.p., 2014. Web. 26 May 2016.
- "Population, Development, And Environment In Ethiopia". Wilson Center. N.p., 2011. Web. 26 May

2016.

Rotsky, Nikita. "The Life Sack: Providing Access To Improved Water Globally." *The Borgen Project*. N.p., 2017. Web. 27 July 2017.

"Sanitation". *UNICEF*. N.p., 2017. Web. 27 June 2017.

Schmanski, Sonia. "Population, Health, Environment In Ethiopia: "Now I Know My Family Is Too Big" | New Security Beat". *New Security Beat*. N.p., 2008. Web. 24 May 2016.

"UNICEF Ethiopia - News And Events - Ethiopia Launches ONE WASH National Programme (OWNP)". *Unicef.org*. N.p., 2017. Web. 27 June 2017.

"Waste In America: Statistics And Facts On Food & Water | Soundvision.Com". *Soundvision.com*. N.p., 2016. Web. 24 May 2016.

"[Water | Ethiopia | U.S. Agency For International Development". *Usaid.gov*. N.p., 2017. Web. 27 June 2017.

"Water In Crisis - Spotlight Ethiopia". *The Water Project*. N.p., 2016. Web. 24 May 2016.

"WHO | Ethiopia". *Who.int*. N.p., 2016. Web. 24 May 2016.