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### **Fighting water scarcity and safety and educating Ethiopians of water-borne diseases**

Would it be different if 16,000 children were murdered every day before the eyes of human kind? One child every five seconds dies from a hunger related cause, and most people in the world innocently cover their eyes and turn the other direction, pretending not to see this injustice. Nobel Peace Prize winner Norman Borlaug once stated that “the first essential component of social justice is adequate food for all mankind.” The earth is capable to producing enough food for all, so why are people still hungry? And why isn’t this news at the top of the headlines every day?

While the majority of fortunate Americans worry about housing, cars, new technologies, gas prices, and taxes; the other 925 million, or 13.6 percent of the world’s population, are undernourished (WHES). Their only concern is that they have enough food to keep themselves and their family healthy and alive. Every person has felt hunger before, but most of the time we are satisfied immediately or within a couple of hours. Constantly craving for food without being satisfied is a foreign concept and having access to food is a privilege we often take for granted. Only when a disaster or famine appears on the news do we take notice and think of those who are less fortunate than us. In reality, there are always hungry people. To be more exact, there are more hungry people in the world than the combined populations of the United States, Canada and the European Union (WHES). In the second most populous country in Africa, Ethiopia, about 12 million people are currently facing food security problems and 38 percent of the people live below the poverty line (Rural Poverty Portal).

Although Ethiopia is famous for the discovery of the oldest skeletal fossil known, it is also known for its sources of water, as it is where the Blue Nile begins (Blue Nile). Occupying the Horn of Africa on the east as a land-locked country, Ethiopia shares a border with Sudan, South Sudan, Kenya, Somalia, Djibouti, and Eritrea. With 90,873,739 people currently living in Ethiopia, it is the second most populous in the continent of Africa and thirteenth in the world (CIA World Factbook). Ethiopia is also the twenty-seventh largest country by area in the world, and is a little less than twice the size of Texas. Located within the 426,373 square miles are diverse natural wonders such as mountains, caves, volcanoes and waterfalls (CIA World Factbook). The Great Rift Valley that runs across eastern Africa has a significant impact on the terrain and physical features of Ethiopia. The diversity of the landscape is fundamental to the climate, agricultural practices and the lifestyles of the Ethiopian people.

Agriculture is the foundation of the economy in Ethiopia, employing about 80 percent of the Ethiopians; but only 10.01 percent of the land is arable (CIA World Factbook). Even though the growth of the gross domestic product has been one of the fastest in the world, averaging about 10 percent for the past three years, Ethiopia remains one of the poorest countries in the world, with about 25 percent of the people living on less than 1 US dollar per day and ranking 157<sup>th</sup> out of 177 countries in the Human Development Index (UNDP). The country has experienced major obstacles with unfavorable climates and conditions such as periods of severe drought, which has been worsening over the last few decades.

A typical subsistence farm family in Ethiopia is often large, including not only the immediate family, but also members of the extended family. There are usually five to six kids in the family with one or multiple guardians (USAID Health). The fertility rate is one of the highest in the world with an estimate of 6.02 children born to each woman. As a result, the population rate is growing at 3.194 percent (CIA World Factbook). The diet of the Ethiopian people lacks diversity; the families consume a diet consisting mostly of cereals such as sorghum and maize, tubers and root crops such as potatoes, and oil seeds. Meat consumption is rare especially in impoverished families due to the limited availability of livestock, but

some families are able to drink milk. The nutritional values in these foods are not acceptable and about half of all Ethiopians are undernourished. Unlike salt in the United States, salt in Ethiopia does not include iodine and therefore iodine deficiency is a problem in many people, resulting in goiters and thyroid gland problems. Iron deficiency is also an ongoing problem due to the lack of animal products consumed and many are likely to be anemic. Children under five years of age are most affected by this problem. Because of the lack of varied foods and the need for more food in general, the growth of children are stunted, both mentally and physically – some never reach their full potential.

In the midst of unfortunate circumstances, some children are able to obtain an education. 35 percent of the children in Ethiopia receive primary school education and 25 percent continue to receive secondary school education. The literacy, or a measurement of people over 15 years of age that are able to read and write, for the total population is 42.7 percent, with men at 50.3 percent and women at 35.1 percent (CIA World Factbook). The average number of years of schooling is around 8. After obtaining the 8 years of schooling, most children quit school and are needed to help the family. This could mean performing farm chores or for girls, fetching clean and usable water for the family.

Another basic need and right of Ethiopians that has not yet been fully worked out is health care. Currently, the government is mainly in charge of the health care system. Life expectancy in Ethiopia is 56.19 years on average, but is expected to decrease to 46 if present health risks still remain. The risks for infectious disease are considered high (CIA World Factbook). There are 75 million people in Ethiopia with poor health, and the health care system is one of the least developed in Sub-Saharan Africa (CNHDE). Malaria is the most prevalent problem and other infectious diseases such as HIV/AIDS and water-borne diseases are also common. These diseases are not only a burden to the individual and his family, but also limits the abilities and potential of that individual to work and feed himself. Poor health leads to hunger and hunger leads to poor health. Although 92 percent have the potential to obtain health care, only a third of those actually use the health care system. Actions can be taken to prevent poor health because of infectious disease and malnourishment by providing better health care systems to the country (AMREF).

Many families in Ethiopia are subsistence farm families and therefore only produce enough food to feed their own families, leaving no extra crops to sell for profit. There are many smallholders in Ethiopia, many farming 2 hectares or less (Rural Poverty Portal). They mainly grow wheat, coffee, pulses, oilseed, and many varieties of cereals. Although the majority of Ethiopians are involved in agriculture, the agricultural practices of these farmers are still primitive.

In the world, 20 percent of children die from a water-borne disease (The Water Project). In Ethiopia, only 25 percent of the people have access to safe, clean water. Many sources of water are contaminated by human excrete and animals. Lack of access to usable water and periods of severe droughts contributes to the large number of hungry people in Ethiopia. Many crops may fail if a severe drought persists. In addition, water-borne diseases may be transmitted from one individual to the next, weakening the person's immune system and disabling him or her from doing farm chores or obtaining clean water. Water scarcity not only affects hunger directly; 443 million school days are lost each year due to water related diseases (The Water Project). Water scarcity also prevents toilets from being established in rural parts of the country. Many girls typically drop out of school when they reach puberty because of the lack of access to sanitation facilities. Water scarcity leads to decreased education. Education is important for maintaining a balanced economy and for workers in agriculture related fields to have a better quality of life.

Recently, there has been a drought in Somalia, bringing a major famine; it has greatly impacted countries in the Horn of Africa, including Ethiopia. About 10 million people have been affected by the drought (BBC News). Many are hungry and exhausted from the drought, and have fled their towns and homes in

search for food to keep their families alive. If water scarcity was eliminated or decreased, people in Ethiopia, Kenya and Somalia would not have to suffer this fate.

Women especially deal with water scarcity more severely than men. Since household chores that involve water such as cooking, cleaning, and washing are directed to women, they are usually the ones to find a water source and bring the water back to her family. About 64 percent of households depend on women to fetch water each day (The Water Project). In countries such as Bangladesh, putting irrigation systems have increased income levels of women by as much as ten percent.

There is great potential for the situation of water scarcity to be improved. Ethiopia actually has the second largest water source in the continent of Africa. However, the sources are not evenly distributed across the country. Irrigation systems are underdeveloped, and safe water is difficult to find. Some may have to walk 20 kilometers or about 12 miles just to find clean water and transport it back to her family; the water buckets weigh about 40 pounds when filled with water.

If the problem of water scarcity was fixed, farmers would not have to worry in times of drought. Irrigation would help bring water to the crops; the family would be able to have enough food and hunger would decrease across the country and in other places with similar problems. Safe water decreases the chances of infectious diseases; therefore, many people will be healthier, stronger and more able to perform farm chores and to feed themselves. Having access to clean and safe water also means fewer school days missed due to disease and a decrease in number of school closings due to drought. In addition, women would not have to drop out of school to help obtain clean drinking water for the family; they would be able to receive an education and provide a better quality of living for themselves in the future.

Although water scarcity and education about sanitation and hygiene is essential for decreasing hunger in Ethiopia, climate change also has a significant impact. Unusual weather and patterns of rainfall have been impacting Ethiopia since the late 1900s, causing famine and devastation across the country and killing many people. One of the worst famines was the famine in 1984. A death toll of 1 million resulted from the famine and 8 million were on the brink of starvation. A severe drought was the cause of this famine. In order to solve this problem, water scarcity needs to be solved and more research needs to be done regarding drought resistant crops. Population growth has also been a problem around the world. Since Ethiopia is the second most populous nation in Africa, enough water should be provided for everyone to decrease conflict. Pollution is also a contributing factor to unsanitary water. If pollution continues to increase in the future, the wellbeing of the community will most likely decrease and more people will be susceptible to disease.

In September of 2000, 189 nations gathered from around the world to make a promise to help underdeveloped countries (UNDP). One of the goals was to eradicate extreme hunger and poverty in the world. Although Ethiopia's growth and development throughout the last few years have been impressive, in order to eradicate hunger by year 2015, the number of malnourished children needs to be significantly decreased, unemployment needs to decline, and other systems put in into the country to make agriculture better and more efficient. In order to do this, increasing access to safe, potable water supplies and providing education on proper sanitation/hygiene and food preparation techniques to reduce the transmission of food and water-borne disease are needed. Although many humanitarian organizations have provided food aid, the most important step is to develop Ethiopia so that it becomes a country that can feed its own people and have a better standard of living for everyone in the country. Although providing food aid is essential and urgent, it will not solve the problem of dependency. More funds should be going to irrigation systems and education. Irrigation systems need to be more developed and more readily available throughout the country in order to reach the millennium development goal. In times of unnatural weather such as a severe drought, the crops are less likely to fail and the people less likely to

starve. This would also increase education on how to best prepare food to reduce water-borne disease, allowing more people to become self-sufficient and to produce enough food to feed their families.

One specific method of water harvesting is desalination of sea water. Since Ethiopia is in close proximity to the large bodies of water to the country's west, water from the oceans could potentially be brought into Ethiopia, purified, and made available for use. A canal or man-made saline water river could be constructed through one of the neighboring countries of Ethiopia such as Djibouti or Eritrea. The salt-rivers could lead multiple man-made salt lakes and into desalination plants to purify the saline water into fresh water for daily use. This way, Ethiopians would be able to have access to clean and safe drinking water. Although costly, this method could be attained by donations from wealthy countries across the world.

The United Nations should be more dedicated to help building irrigation systems, constructing needed infrastructure, reducing pollution, and educating the general public in Ethiopia. Research agencies should continue to develop more efficient crops for the climate change so that they can yield more. Humanitarian organizations should set aside some money for food aid, but also donate other funds to helping Ethiopia become a more developed nation. In order for this plan to work, urban families should continue working to stimulate the economy and rural farmers should work with the government and other organizations to improve their own situation.

Ethiopia is not the only nation or place in the world facing issues with hunger and poverty. All over the world, people are suffering and dying from preventable causes. In this era, not taking action when one is able is frowned upon. Everybody, from organizations devoted to solving problems of hunger to influential thinkers and celebrities to everyday people, needs to realize that they have a responsibility and a role for ensuring that all mankind at least have enough food to put in their mouths.

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