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Malawi, Droughts

Malawi's Chance to Thrive During Droughts

The droughts ravaging through the world's fifth-poorest country are unrelenting. The severe and adverse effects of climate change seen in Malawi's decreased agricultural production and economic productivity present to the rest of the world the harm climate change incurs. Malawi's battle against droughts is one that cannot be won by Malawi alone. As long as the rest of the world's population continues their unsustainable and detrimental habits, Malawians will be forced to learn to live with worsening drought conditions. There is no solution to creating a drought-free Malawi without worldwide habit-shifting and cooperation, something that is unlikely to take place. The current state of selfishness in many of the world's countries is not conducive to saving the planet, its organisms, and the struggling citizens of some of the world's poorest countries. While no realistic solution to the droughts in Malawi exists, Malawians have a fighting chance at creating a life void of malnutrition and a country that is economically independent.

Malawi is located in southeastern Africa where the majority of the country relies on agriculture as their main source of food and as the basis of their economic productivity. According to Habitat for Humanity, Malawi's population is just under 18 million. Of the aforementioned 18 million, Worldometers' estimates that roughly 81% to 84% of the population lives rurally. Malawi's relatively one-sided distribution of its people between cities and rural farming communities directly reflects the Malawian people's extreme dependence on agriculture to sustain themselves and their families. Jenna Chrol, a contributor for The Borgen Project, states that "the country is primarily dependent on the agricultural sector which employs close to 80% of the population and remains predominantly rural." Malawi also relies on the agricultural sector to produce the majority of their exports. Due to Malawian's lack of financial security, most families grow their own food as they are unable to afford to purchase food from local markets. The United Nations' Food and Agriculture Organization (UNFAO) estimates that the average farm size in Malawi is 4.1 acres. Compared to family-run farms in other countries, family farms in Malawi are exceedingly compact.

In addition to understanding the population distribution of people in Malawi, it is crucial to take a more in-depth look at the typical Malawian family and their way of life. According to the UNFAO, the typical diet of a Malawian person primarily consists of maize, potatoes, cassava, and plantains. Malawian's diets are generally made up of the same crops that they grow. Access to fish, fruits, and other vegetables is limited due to their price and the lack of suitable growing conditions. As previously mentioned, many Malawians lack sufficient financial resources. Habitat for Humanity says that just over half of Malawian citizens live below the country's poverty line. Twelve million Malawians live on less than the international poverty line ($1.25 a day), and another two million live on less than $2.00 a day, per The Borgen Project. When crops can be successfully grown in Malawi, they usually yield a quantity of food that is roughly enough to feed the families who grow them. The DHS Program states that there are, on average, four-and-a-half people in a typical Malawian family. Unfortunately, due to the dependence on locally produced crops for survival, droughts lead to starvation since many Malawian subsistence farmers are unable to purchase food when their crops fail. Droughts and resulting food shortages harshly impact the everyday lives of almost all rurally living Malawians.

Successful agricultural production sustains Malawian people. The people's ability to sustain themselves is seriously threatened by the crop-destroying effects of droughts. According to the United States Agency

for International Development (USAID) Malawi Climate Change Fact Sheet, "...temperature increases and changing precipitation patterns are harming agricultural growth." Other contributors to droughts include anthropogenic carbon emissions and El Niño. El Niño is defined as the warming of the Pacific Ocean and the subsequent changes in rain and other weather patterns. In Malawi, the effects of El Niño are seen when rain is scarce, something that happens quite often. The USAID Malawi El Niño Mitigation Fact Sheet states that "...the ongoing El Niño has resulted in a severe drought, and led to many failed crops for many subsistence farmers. Due to its poverty levels, increasing population, and advanced environmental degradation, Malawi is especially vulnerable to climatic shocks and hard-won development gains are fragile in the face of climatic shocks such as those caused by El Niño." According to the Center for Strategic and International Studies (CSIS), the droughts Malawi experiences have worsened in the past couple of years and the ever-changing climate and resulting droughts are causing a country-wide crisis unlike any other. Additionally, The Borgen Project states that "unconfirmed estimates are that food production in the 2017/2018 growing season is going to be reduced by less than 50 percent." Although the 2017/2018 season is in the past, drought conditions have only worsened since then. Scarcity of rainwater (not necessarily clean drinking water) results in lackluster crop production, food scarcity, and economic instability as Malawi is unable to produce enough crops to feed themselves, let alone export food for money. Irrigation systems in Malawi are virtually nonexistent, and they are far too expensive to develop given the current economic situation. Traditionally, when sufficient rainfall was present, feeding the Malawian population was a somewhat feasible endeavor due to respectable annual yields. However, when long periods of droughts occur, the majority of the Malawian population cannot afford to purchase food from markets, causing malnutrition to wreak havoc on those who cannot afford to eat. Unfortunately, the current state of Malawi's agricultural productivity is stalled due to climate change-induced droughts. Additionally, the primary crops currently grown across Malawi are not drought-resistant due to the time it takes to develop drought-resistant crops and the hefty price tag they carry. There are few, if any, non-GMO, drought-resistant crops that can withstand the lack of precipitation Malawi experiences each year. Because drought-resistant crops are GMOs, they are far too expensive for Malawi to purchase on their own for widespread and efficient distribution, especially given the current state of Malawi's economy.

Efforts to grow drought-resistant crops have been attempted in the past, but such crops were not implemented country-wide. In June of 2020, the IAEA published an article discussing the development and distribution of different varieties of drought-resistant cowpea seeds to Zambian farmers. The seeds were given to farmers who attempted to grow crops in areas of Zambia threatened by drought. According to the article, 800 Zambian farmers were to be given the drought-resistant cowpea seeds. The seeds were likely planted in November and December of 2020 and harvested between April and June of 2021. It is estimated that yields increased this season for the 800 farmers, but there are no reliable public sources that verify any increase in output.

The solution to Malawi's drought-caused agricultural failure lies not in an attempt to end droughts, an impossible endeavor, but rather in an attempt to help Malawians create a chance to thrive during times of agricultural turmoil. Such a solution can be laid out and implemented in three phases. Before phase one of the plan begins, education of Malawian farmers about conservation agriculture and minimizing soil disturbance when farming must occur. Organizations must provide this education to teach Malawian farmers different and potentially unfamiliar techniques to allow the solution to be sustainable. Preventing further environmental (particularly soil) degradation is vital to the success of the plan to save Malawi's

farmers. The plan to help alleviate Malawian's drought-induced agricultural failure begins with the initial widespread distribution of drought-resistant crops (primarily maize) to both subsistence and commercial farmers. The phases will collectively last about eight to ten years. Each phase will take different lengths of time, and the recommended eight to ten years aside an extra two years should a problem arise. The widespread distribution of drought-resistant crops is the first phase of the solution to create a self-sufficient Malawi. Initially, the distribution of these drought-resistant crops will be supplied to Malawi by organizations like the World Bank. The World Bank states that "[it] is a leading financier of agriculture." Thus, the World Bank can distribute financial and agricultural resources to Malawians. However, the research and engineering of drought-resistant crops, like maize, is done by food and crop scientists. Following the World Bank's support, different organizations such as the United Nations and other nonprofits would need to supply additional funding to realistically facilitate widespread distribution of drought-tolerant (DT) seeds. The World Food Programme (WFP) would also be a potential candidate to help with the logistics of large-scale aid distribution until the phase of initial aid removal begins. The WFP explains that they serve "small-scale farmers…[who] rely on modest gardens to feed their families, yet they lack basic modern resources to make the most of their crops." The solution to Malawi's agricultural turmoil falls in line with the WFP mission statement, and Malawian farmers are the perfect example of the people the WFP aims to serve.

Phase two calls for about half of the current financial aid being supplied to Malawi to be withheld, contingent upon whether or not Malawian exports of crops increased during phase one. While a dollar amount is hard to estimate, the project would be quite expensive. Roughly 11 million Malawians participate in subsistence farming, so distributing such a great volume of drought-resistant seeds will carry a significant price tag (New Agriculturalist). The USDA says that in 2016, "the average cost of a bag of corn seed with DT...traits was $264." The weight of a bag of corn seed varies, depending on the seed supplier. As a result of Malawi's more successful yields of maize, the plan, even during phase one, asks Malawi to set aside any excess maize to be used as exports for money. Stockpiling excess maize is next to impossible due to Malawi's lack of available land area and infrastructure for storage; therefore, exporting any excess maize makes sense. As every farmer collectively places their excess crops towards a country-wide pile of maize for exports, there will be a large quantity of harvested product to sell. As Malawian farmers continue to have successful yields of drought-resistant corn, they will set some aside after each harvest to be used as exports for the benefit of Malawi as a whole.

Increasingly successful yields bring Malawi to phase three, the complete removal of aid. The exports from Malawi won't bring wealth directly to individual farmers. Said exports will, however, put more money in the hands of the Malawian government who, if they care to benefit agricultural and economic growth, will reinvest that money back into the research, development, and funding/purchasing of different variations of crops that can tolerate even less water (because of worsening drought conditions). Additionally, the Malawian government can begin to direct some of the money made from exports into the research, development, and implementation of new irrigation techniques to provide more water for crops. The Malawian government is generally quite stable, so it would be likely to do what is in the country's best interest. Investments in better irrigation practices could eventually be where much of the export money is spent, rather than on newer variations of drought-resistant maize. By the end of the third phase, Malawi will have created a continuous cycle that purchases, grows, harvests, exports, and reinvests completely on its own. From the time aid is first given to Malawi to the time it is completely withheld,

Malawi will be able to successfully grow crops, export crops, and put money back into the project on its own. The goal of the solution is to slowly provide less aid to Malawi as they become increasingly able to use their own [country's] money to fund what was once funded by aid. The maize exports likely won't fully make up for the decrease in financial aid, but they will still provide a stream of money coming into Malawi. This will allow for Malawi to begin to fund their own projects, even if the money coming in is less than the aid that was previously provided.

As droughts across Africa worsen, the demand for drought-resistant seeds will be higher than ever; there is no denying the effectiveness of using drought-resistant maize to increase yields in Sub-Saharan African countries. In an article published by the International Maize and Wheat Improvement Center (CIMMYT), the CIMMYT states that "a groundbreaking impact study six years ago demonstrated that drought-tolerant maize significantly reduced poverty and food insecurity, particularly in drought years." The article also mentions that "a new study from CIMMYT and the Center for Development Research (ZEF) in the main maize growing areas of Zambia confirms that adopting drought-tolerant maize can increase yields by 38% and reduce the risks of crop failure by 36%...another study on drought-tolerant maize adoption in Uganda estimated...good yield increases and lower crop failure risks by 26 to 35%." Scientific research has proved the effectiveness of planting drought-resistant varieties of maize in other Sub-Saharan African countries experiencing drought conditions similar to those in Malawi.

The power the Malawian people and government hold in the success of this plan is monumental. Without support and action from farmers, the plan will not work. Getting Malawian farmers motivated about this plan is where the road to a better life begins. The amount of pressure on the Malawian government to use the money made from exports to create a self-sufficient economy must not go unnoticed. Certain policies must be adopted by the Malawian government that pledge and directly explain where the money made from new agricultural exports will be spent. It is important that the Malawian government makes sure that the money made from exports is put back into the same project. If it is not, Malawi will struggle to fund this project on its own, and more aid might become necessary. Moreover, if the Malawian government refuses to direct the money made from exports towards its agricultural success, Malawi will be unable to become agriculturally self-sufficient.

It must not go unnoticed that the potential solution laid out above is only a reaction to one of many problems Malawi faces today. Infectious diseases won't be cured, and children's education won't be improved. This plan simply provides Malawi with an opportunity to live with droughts rather than fight them. The solution aims to help Malawians thrive during periods of limited precipitation. The blueprint above will not take Malawi off of the top-ten poorest countries list; it will not lift Malawians out of extreme poverty; it will not turn Malawi into a developed country. It will, however, give Malawians one less obstacle to overcome in their quest for a better way of life.

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