

Olivia Welsh  
Edgewood-Colesburg High School  
Edgewood, IA  
Zimbabwe, Deforestation

## **Zimbabwe: Set Limits, Plant Trees, and Create Available Electricity**

### Introduction

Deforestation is a major problem in the country of Zimbabwe. (Major problems facing Zimbabwe today", 2019) Zimbabwe is a country slightly smaller than the state of California (Infoplease, 2017), with a population of approximately 14,030,368. Thirty-two point thirty-two percent of the population living in urban areas; whereas, the other 68% lives in rural areas. ("Zimbabwe", 2019) These people live under a parliamentary government led by the present leader named Emmerson Mnangagwa. The people of Zimbabwe farm on the 162,000 square kilometers of land that is cultivated. Tobacco, maize, cotton, wheat, sugarcane, peanuts, and coffee are the main crops grown in this area. The average farm size for an A1 farm is 91.5 acres and the average A2 farm size is 785.8 acres. Farming is different in every part of Zimbabwe due to climate and geography. Zimbabwe has a mild climate, but temperatures decrease as the altitude increases. Also, there are many different land types such as plateaus, mountains, kopjes, rivers, forests, and waterfalls. ("Zimbabwe", 2019)

Differences in land types cause every family to have to accommodate to their surroundings. Families in Zimbabwe have an average of four children per household; the size of family greatly depends on location within the country. Rural families tend to be larger than urban families. Polygamy, having more than one wife or husband, was common within families but is becoming less common due to the spread of economic problems, AIDS, and improved education levels. The families in Zimbabwe live in different homes, depending on their wealth and place of living. Urban homes are difficult to obtain and the poorer neighborhoods have a greater population. In these poor neighborhoods, single-room shanties made of wood and/or plastic and roofed with corrugated steel are the common homes for the population. Communities like these share boreholes, which are similar to wells, or a water tap and toilets. Urban wealthier families live in single-family detached homes made of concrete and tile roofs. These homes usually have running water and electricity. ("Zimbabwe", 2019)

Rural homes of the wealthy are similar to the ones of the urban wealthy homes, but the poor homes are not as alike. Poorer families live in rondavels, one-room huts made of mud and dry vegetation roofs. One family's home would consist of multiple huts, each serving a different purpose. Most homes have a tree branch fence surrounding the property and rarely use electricity. Water is retrieved from a communal borehole or from a nearby river, usually a distance away. The land families live on is, the majority of the time, owned by the families and is passed down through the family to the sons, who divide it up among themselves. One son gets the family home and the others get plots of land. Daughters are to marry and live on their husbands' families' land. The children work on neighboring farms or selling items at roadside stands. The entire family works to provide for each other. ("Zimbabwe", 2019).

### Body of Research

Deforestation is a cutting issue in Zimbabwe and has been for a number of years. Deforestation includes the act of chopping and clearing a wide stretch of trees and vegetation. Zimbabwe lost approximately 327,000 hectares, 808,034.6 acres, of forest from 1990 to 2010 (Moyo, 2019). The once famed forests are now being destroyed by tobacco farmers attempting to expand their farms. Zimbabwe currently has 88,167 tobacco growers. Curing tobacco requires a large amount of wood each year. If this trend is to continue at the rate of which it is now, the lush forests that once thrived and supported life will be a complete desert within thirty-five years. (Moyo, 2019)

Developing countries depend immensely upon firewood. Decreasing the use of firewood by the locals is hard due to the fact that this resource is readily available to these people for heating and cooking in their homes. In sub-Saharan Africa, around 52% of all energy sources are originating from firewood and brush piles. Around 90% of the population in Africa uses firewood and brush for living needs. In 1980 to 1990 was a decade of destruction (Moyo, 2019). A study by the Food and Agriculture Organization (FAO) proved that 15.4 million hectares, 37,065,807.22 acres, of the world's tropical forests have been diminished. That was a .8% annual deforestation rate. In this decade, the amount of land cleared is equivalent to three times the size of France. The absence of electricity is really taking a toll on the forest. Even with a few parts of Zimbabwe having electricity, it does not help decrease the number of trees being wiped out. This is because of the state-owned Zimbabwe Electricity Supply Authority (ZESA) not being able to meet the demands for electricity and people are resorting back to firewood. (Moyo, 2019)

As the economy of Zimbabwe declines, timber merchants are accelerating to try to make a living. Environmentalists are blaming the timber merchants for feeding the deforestation issue. Timber merchants and villagers say that it is difficult for them to cease the extermination of trees due to the weakening economy. They feel as if they have no choice. As more people move out into rural areas, more firewood is needed. These merchants do not spare the forests of Zimbabwe because to them they view forests as easy cash. Zimbabwe's National Statistics Agency (ZimStat), reported that there were approximately 66,250 timber merchants last year alone nationwide. Other sub-Saharan countries, not only Zimbabwe, are struggling with deforestation problems as well. United Nations and the African Union run a panel that has shown illegal evidence of Mozambique having thousands of unreported logs exported to China. (Moyo, 2019)

Deforestation also greatly impacts the climate and environment of not only the place where it is occurring, but the whole world too. This crisis not only changes the levels of carbon dioxide drastically, but it also influences the water recycling, soil degradation, and extinction of plants and animals, aquifer depletion and causation of serious flooding (Hilderman, 2010). Photosynthesis is the process of trees and other vegetation absorbing the carbon dioxide out of the atmosphere. Then the process continues as plants provide sunlight with the necessary materials to produce oxygen, to discharge back into the atmosphere, and food for itself. The vital photosynthetic activity is reducing due to the cutting down of trees. The impact of less photosynthetic activity is resulting the rising amounts of carbon dioxide. Not only is there more carbon dioxide from less trees to absorb and use it, but also they hold their own organic carbon, which is released as carbon dioxide when the trees are burned as a way of clearing. These rising levels of carbon dioxide in the atmosphere are contributors to ocean acidification and global warming. Global

warming does not have to do with only the temperature but also it impacts the human race itself directly. It changes the climate which affects food production, water supplies and more. All of which is needed to live and survive. (Hilderman, 2010)

The water recycling is another devastating issue due to deforestation. The movement of water from the forest to further inland land masses is called water recycling. The forest canopy, the uppermost layer of the forest, catches the water from rainfall and some of this water is evaporated or transported to return again to the atmosphere. The rest of the water is returned to a body of water. Three-fourths of the water caught by a healthy forest canopy is returned to the atmosphere, which then converts to rain and move inland. In the lands where deforestation has stricken, only one-fourth of the water that has fallen is returned to the atmosphere as it should be; and by this action taking place, the air mass has less moisture. The air mass having less moisture leads to less rainfall for the inland land causing it to become dry and possibly wasteland. (Hilderman, 2010)

Forests stockpile nutrients essential for plant life. Soil degradation is caused by the lack of forests providing these necessary nutrients. Tropical vegetation holds almost all nutrients because tropical soil is unable to do so and has few nutrient storage capabilities. If and when tropical forests are cleared and used for farming land, the crops grown there will only grow for a few years before the land becomes wasteland from the depletion of nutrients. Deforestation in the tropics not only ruins the land, but it also generates extinction for the plants and animals that called the place home. Seven percent of the world's land is tropical forests and that 7% holds over half of the worlds plants and animal species. With the tropics being wiped out at an alarming rate, there will only be approximately one half of them left. With the disappearing tropics will also go 5-10% of all species on the planet. (Hilderman, 2010)

Deforestation causes serious flooding and aquifer depletion. As a result of deforestation leaving little to no vegetation where forests once lived, it is hard for that ground to hold heavy rains causing serious flooding issues. This incapability can result in mudslides as well. Both extreme flooding and mudslides can destroy more vegetation and homes of people and animals. Since the ground can not hold moisture, instead of it soaking into the soil and replenishing the aquifers, all of the excess water from the flooding becomes runoff into oceans and bodies of water. As the human population continues to rise, so does the need for freshwater and without the ability for the earth to replenish its aquifers, there is no way to get more freshwater. (Hilderman, 2010)

Although many issues are being formed due to the enormous amount of deforestation happening, there are ways to fix this issue: ways like replanting trees, getting electricity, and setting laws about how many trees a person can cut a year. The great thing about these solutions is that they could all be happening at the same time and work together to drastically improve the forests.

By setting a limit on the number of trees taken from the forest, the rate of deforestation will drastically decrease, leaving a positive outcome for the ecosystem. These limits will force people to be more conservative with the wood they already have, instead of wasting extra trees that they will end up not needing. Also, the limits will give the forests more time to replenish themselves. Leaving more trees alive, allows those plants to create seeds which can be dropped and replace the lost trees. Replenishing trees in this way will take more time due to how long a tree needs to grow, and this process would not be

100% effective because not every seed has the potential to grow. This process will at least give the seed a chance to grow and leave more trees standing at the end of the year, compared to before there was a law. The law should state how many trees each person gets and how many trees each tobacco farm gets as well. It will be hard to find set numbers because if you allowed too little of a number of trees then the farms could fail and people could suffer. Also, allowing too many trees to be cut down is not solving the original problem efficiently.

To start implementing these ideas, a meeting with the head government officials would be required. A full plan including the ratio of tree cut down yearly to amount standing, fines for people who disregard the laws, and set number of trees allowed cut should be brought to this meeting. To educate people about the new expectations, the plan is to send out government workers to every town to inform Zimbabwe citizens on the expectations. Every town will have a different time and/or day their required meeting will be held.

Replanting trees is another option for improving deforestation. This could be happening at the same time as the law is being put into place, and both suggested solutions could work side by side to create forests that reproduce in a quicker manner, by planting new infant trees in replacement of the chopped down ones. For every tree chopped down five more could be planted. Once again, not every tree will grow but it is more likely to reproduce more trees when more are planted because there is a higher success rate. Once the forests are starting to get back to the way they need to be, the ratio of cut down trees to the number of trees planted to replace it could decrease as needed. These newly planted trees could be kept in tree farm and/or in the same place the older ones once thrived. Maybe a new business of tree farming could bring about new jobs for the people of Zimbabwe.

The idea of creating tree farms could be discussed in the same meeting that is being held for the tree cutting limits. In order to get infant trees, seeds could be collected from trees of the forest and grown in a safe, protected enclosure. Once the trees have grown to a substantial size, they are to be relocated within the boundaries of the of the woodlands. A mission trip could be held so that others, who care about this matter and want to make a difference, would be allowed to help the forest. The volunteers would relocate the trees and replant new. This would allow people from all walks of life to come together and make a life changing difference. Once the trees are placed within the forest, they are not to be cut before they are of adult size and people who overlook this law will be fined.

Bringing electricity to as many people as possible would decrease the need of firewood. Although getting electricity is not easy, it can be done. Windmills are one of the most eco-friendly ways to create energy. The windmills seize the kinetic energy from the air and convert it into electrical power. The blades on the windmill are connected to a generator through gears and a shaft. When the blades turn, the shaft turns which causes a coil of wire to have magnets rotate about it. All of this action together creates an electric current because of electromagnetic induction. This energy then travels to a transmission substation where it is transformed into excessively high voltages somewhere between 155,000 to 765,000 volts (Owen, 2019). These volts now travel on a transmission grid constructed of a series of power lines connecting the demand centers to the power sources. The high voltage power that has come from the transmission grid is modified into a lower voltage power around 10,000 volts at the power grid within the demand center (Owen, 2019). The electricities' last move, before it is at consumer use, is to a smaller distribution grid that is connected through transmitters to the consumers. This is the last conversion that lowers the voltage

to the desired rate. Windmills could be the future of Zimbabwe. If thousands were placed all around the country, energy could be harnessed from the wind and stop deforestation in its tracks. (Owen, 2019)

The average windmill is \$8,000-\$12,000 US dollars for a small set up for only a few homes. For a commercial size windmill system, the cost is \$1.2.4 million US dollars (Raghuvanshi, 2019). A commercial size would be able to power a whole town and more. Funding would be required to implement windmills in communities. One form of getting funding could be through a GoFundMe page. Setting a page up would allow people all over the world to donate money in order to save the trees. Another idea would be to set up a foundation. Word about this foundation could be spread through social media and Zimbabwe's government. Once the government is educated on the importance of the need for electricity/deforestation issue, they may be willing to contribute to the foundation. All of this being successful depends on how well the government is willing to work with new ideas.

Deforestation is a cutting issue that needs to be stopped. Once the forests are gone, what will be left? When forests are destroyed, it impacts every aspect of the ecosystem. The consequences are felt not only in the surrounding areas but within the whole world. By limiting the number of trees taken and replanting once they are removed, will help save the forests and the Earth. Electricity to all would be another amazing breakthrough that would benefit the forests. These ideas implemented could drastically alter the alarming future that Zimbabwe's woodlands could face.

Sources Cited

Deforestation in Zimbabwe. (2015, April 15). Retrieved March 7, 2019, from <http://chitsidzomuchabayiwa.blogspot.com/>

Hilderman, R. (2010, December 27). The Effect of Deforestation on the Climate and Environment. Retrieved March 8, 2019, from <https://www.motherearthnews.com/nature-and-environment/the-effect-of-deforestation-on-the-climate-and-environment>

Major problems facing Zimbabwe today. (2019). Retrieved March 1, 2019, from <https://www.africaw.com/major-problems-facing-zimbabwe-today>

Moyo, J. (2019, March 6). Zimbabwe's Famed Forests Could Soon Be Desert. Retrieved March 7, 2019, from <http://www.ipsnews.net/2015/02/zimbabwe-s-famed-forests-could-soon-be-desert/>

Owen, M. (2018, March 13). How Does Electricity Move From the Wind Turbine to the Businesses and Communities That Buy It? Retrieved March 8, 2019, from <https://sciencing.com/electricity-move-wind-turbine-businesses-communities-buy-it-21904.html>

Raghuvanshi, K. (2019, April 29). How Much Does Wind Energy Cost? Retrieved July 30, 2019, from HelpSaveNature website: <https://helpsavenature.com/how-much-does-wind-energy-cost>

Zimbabwe (2019). CultureGrams Online Edition. ProQuest. Retrieved from [http://online.culturegrams.com/world/world\\_country.php?cid=180&cn=Zimbabwe](http://online.culturegrams.com/world/world_country.php?cid=180&cn=Zimbabwe)

Zimbabwe. (2017). Retrieved February 28, 2019, from <https://www.infoplease.com/world/countries/Zimbabwe>