

Andrea S. Bailey  
Central Campus High School  
Des Moines, IA  
Central African Republic, Factor 11

### **Issues and Improvements to Central African Republic's Water Supply**

One million Central Africans in 2008 did not have access to sanitary water and therefore were highly vulnerable to deadly waterborne diseases. In 2002, 650 people died every day in Africa because of diarrhea caused by a water-borne disease. Most were under the age of five. Water cleanliness is not only important for drinking, but also for reducing the impact of disease and bacteria transmission to food. In order for drastic changes to be made regarding water safety, the people of Africa need to be provided with a better education on proper hygiene and food preparation techniques. These are problems poor areas in Africa face every day, especially those living in Central African regions. A typical rural family in the Central African Republic has eight people who live in a hut, made from mud and thatch, with no running water, electricity, or sanitation. They grow bananas, yams, and some vegetables, and their livestock consists of a few chickens and perhaps a goat. They once had cattle, but those and the men of the family were all killed by bandits. Families that do have quite a bit of livestock are leery of rebels who commonly steal livestock and food. Raising livestock was the family's main source of food and income, but now most of the family's meat comes from fishing or hunting. Their food covers most of the calories needed to survive, but they are still at severe risk of malnutrition because they lack animal protein. Sanitation is a big issue for the family because they have no toilet and often defecate in the river in which their water supply comes from. They live in crowded conditions and often have to share living space with their livestock. They have no regular healthcare, so when they do become ill through their unsanitary situation, finding treatment is very difficult and rare.

Lakes and rivers of Central Africa are used for multiple purposes. Transportation, animal and human defecation, washing clothes, bathing, and irrigation are all uses of lakes and rivers. They all have the potential and take part in polluting the waters with bacteria and sicknesses. These bodies of water are the village's main source of food preparation and drinking water, resulting in human consumption of countless unhealthy contaminants. This makes the inhabitants very vulnerable to sickness. Many families do not have healthcare, so when someone does get sick, it's hard to find treatment. Central Africa's healthcare system can be described as very dysfunctional for many reasons. There is a huge lack of doctors, nurses, infrastructure, equipment, medicines, and financial resources that could help relieve the situation. Statistics say that only 37 percent of Central Africa inhabitants lived within seven miles of the nearest healthcare center, and that there is one doctor for every 3,000 people and one nurse for every 1,000. According to the United Nations website, "With such a limited availability of care, those Central Africans that are least able to fend for themselves are hit the hardest: more than 10 percent of babies die during childbirth or shortly thereafter, and almost 20 percent of children die before the age of five. The maternal mortality rate is a staggering 1,102 per 100,000 births." Overall, the average life expectancy is 43 years. This is a huge concern. The problem with little healthcare service partly starts from a severe funding gap. The Central African Government spends only 1.5 percent of GDP on public health. Recently, targets have been set to raise it to 15 percent, a 10 percent increase. However, even with a substantial increase in government funding, much of this increase will require substantial outside help from the region.

The Central African Republic is one of the least developed countries in Africa. The average income per person is \$700 per year. The country is landlocked and borders on Chad in the north,

Sudan in the east, the Democratic Republic of the Congo in the south, and Cameroon in the west. The Central African Republic is essentially right in the center of the African Continent. The total land area is about 240,000 square miles with a population of about 4.4 million people. There are more than 80 ethnic groups in the country, each with their own language which makes communication and education very difficult in the country. The country became independent in 1960, and started a long process to its first multi-party democratic elections in 1993. All of the neighboring countries have problems as well, so help needs to come from other countries and organizations.

Agriculture is critical to Central Africa, in order to develop both economically and socially, and to move forward with rural development. Even though that is the case, only a few percent of the people in Central Africa have the technology or livestock to do so. Changing climates, diverse soils and a high volume of pests are all barriers to improving agriculture productivity. Most of Central Africa relies on rain-fed agriculture. This makes farming susceptible to the drastic climate changes and precipitation patterns. One-third of the income in Africa is achieved by agriculture. Crop production and livestock management account for about half of households' income. The poorest households of Central Africa are those who are reliant on agriculture for jobs and income. Climate alterations also have critical health problems that come with it. Changes in rainfall will affect the attendance of water-borne pathogens and it is expected that slight changes in temperature and rainfall will raise the amount of disease-carrying mosquitoes and result in increased malaria inhabitation. Barren areas of Central Africa have supported migrant civilizations that evacuate in response to annual and seasonal rainfall changes. However, the continued drying act has shown the accountability of such groups to climate adjustments. They cannot simply pack up and move to the moistened side, when it is already over-populated. The result of unaccommodating weather patterns has been prevailing loss of human life and livestock, making it hard to move forward in agriculture productivity.

In most Central African societies, women have the leading responsibility for the care and handling of the household water supply, sanitation and health. Therefore, it is important for the women to have a good education on how to properly prepare food, have good hygiene and use proper sanitation techniques to prevent sickness. Although education plays an important role in teaching these women and keeping Central Africa's water sources clean, it is sad to say that only about 50% of kids in Central Africa are enrolled in primary school. The other half of these children do not have an education due to poverty or because there are no teachers or materials to administer a school. There is only one teacher for every 92 kids at the primary level and the teachers either have very little training or none at all. This is why it is important for the women especially, to learn about sanitation techniques, so they can pass what they have learned to the next generation. Although this is important, there are many disadvantages for women of having the primary responsibility to teach the kids sanitation rules and to gather water. Some include women spending long hours walking each day to collect and carry water which results in health hazards for pregnant women carrying heavy weight, risk of drowning during flood periods, and less attendance for girls in school. It is also common for women to run into harassment issues. A particular risk for women fetching water is becoming victims of marauding gangs. Cases of abduction and rape are often documented. A solution that would greatly help this problem would be to build closer water sources. For example, water wells could be built nearby. This would result in more time to grow food which would produce more income. Although changes need to be made, women don't have much say in those decisions. Despite their meaningful, important roles and responsibilities in relation to water and sanitation, women often have no voice and no choice in decisions about the kind of services they need or are receiving. Involving both men and women is very important in the process of making decisions regarding water sanitation and usage.

It is very difficult to insure the health and safety of visitors and workers in the country. Armed rebel groups, bandits, and poachers aren't the only dangers to travelers and citizens. Waterborne diseases are the number one cause of illness to travelers in Central Africa. Diarrhea is the most frequent health problem and can be caused by viruses, bacteria, or parasites which are found throughout the region. This illness is most often spread through contaminated food or water. Diarrhea kills four to five million children in developing countries every year and contributes to malnutrition. Trachoma, another waterborne disease affects 500 million people at any given time, often causing blindness. Parasitic worms infect nearly half of the population of developing countries and can lead to serious side effects, such as schistosomiasis. This is an example of a water-based disease which is transmitted when larvae is consumed with drinking water or when they penetrate the human skin. These diseases take a high toll in human life and suffering and are all water-related. Without hygiene education, especially for women, the benefits of a safe water supply and sanitation that are essential to basic health are limited.

A lack of education for women in Central Africa is a big issue that needs a solution. Luckily, there are organizations to help with transferring useful information on water sanitation and hygiene to women so they can pass it on to their kids. For example, Women to Women International help with educating women and improving their awareness of their rights. They believe that when women are healthy and more self-sufficient, they are more likely to defend their rights. Being a part of the program helps women deal with conflict such as lack of food, water, medicine and other necessities. While continuing to receive this organizational support, women also participate in the Renewing Women's Life Skills Program that provides them with rights awareness, leadership education and vocational and technical skills training. Women build upon existing skills and learn new ones in order to regain their strength and stability on the path to becoming active citizens. CAMFED, another helpful organization, believes every child has the right to an education. The community picks out girls who are in the most need of help, and then the organization helps support these girls. They provide the child with books, school fees and help her throughout her development, from her elementary school years until adulthood. When women are properly informed and educated, their kids are more likely to go to school and their family as a whole makes healthier food and water decisions. These are the kind of organizations we need to expand to bring about change in Africa. Local decision making and planning of water improvement is essential in order to satisfy the whole region. Agenda 21, United Nations Conference on Environmental and Development says, "Local communities must participate in all phases of water management, ensuring the full involvement of women in view of their crucial role in the practical day-to-day supply, management and use of water". If local participation is not involved, beneficial programs may not continue after international organizations leave the area. In the past, many constructive organizations have taken over to help environmental issues, but did not have any local involvement, and therefore the new systems discontinued once the organization departed.

Safe drinking water for all people in the Central African Republic should be our mission. To achieve this goal, we will need many organizations such as CAMFED and Women-to-Women International to join together and help with providing the basic technology needed to access clean and safe water. Organizations can help with building closer water sources such as water wells for the women. This would result in less injury, harassment, and more time for women and children to attend school. Tools and agriculture supplies are also needed. Fencing supplies would help with the prevention of livestock and food burglaries. My hope for the future would be that the typical family will have easy access to safe drinking water and perhaps have a more advanced irrigation system so there is more time for them to spend on other important issues such as education. This would allow them to be more productive economically, which would lead to better and more advanced healthcare options as well.

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