

Evangelos Theoharis
Cedar Creek High School
Egg Harbor City, New Jersey,
Chad, Factor 2: Water Crisis

Chad: How the Country's Water Crisis Affects Their Food Shortage

Chad is a developing country, and very struggle with poverty, food security, and water issues like most other developing countries. Chad was ranked as the fourth hungriest country in the world, as of October 11th 2021 (These). Recently water has become less and less available for the people of Chad due to the extreme weather conditions and polluted environment causing lack of rain and the depletion of Lake Chad. These water issues cause problems for Chad's farmers, as the lack of water lowers the production of usable crops as there is less water to what are the fields. The people of Chad are also in desperate need of drinking water as some people go a full day without drinking due to the lack of the resource in their area. Lastly these Water Crisis cause issues with available bathing as most water is conserved for drinking and farming that many people go days without bathing causing a lack of sanitation. Chad's average lifespan is one of the lowest in the world at only 50.5 years, and one of the major causes of this is their current Water Crisis. Chad ranks as one of the countries at the lowest accessibility rate clean water. This forces people to either go without water what can lead to dehydration, and in their hot climate can cause illnesses that may result in death, or drink dirty water if that is even accessible to them, this dirty water can cause other sicknesses such as diarrhea, which due to the lack of food may result in malnutrition due to the lack of available food and also eventually cause death.

Chad is a landlocked Northern Central African country that shares a border with six other countries. Chad's capital is its largest city, N'Djamena home to 1,605,696 of Chad's total 16.43 million residents. Out of the 16.43 million residents of the country "76.48%" of people live in rural areas and "23.52%" of people live in urban areas (tradingeconomics.com). N'Djamena is Divided into 10 separate districts, and is known for its Regional markets that contain many assorted Goods including fruits, grains, and livestock. Chad's official languages are French and Arabic, and the country's currency is the Central African franc. Chad's government is classified as both a Unitary state and a presidential system. Unitary state government is when most or all of the power resides in the centralized government. A presidential system government is where most of the government power is in the hands of the president, not separate branches of government. 39% of Chad's total land is considered agricultural land, with 80% of that land used for food crop farming. The most common agricultural crops grown in Chad are cotton, gum arabic, and sesame. The average Chadian Farm is about 3-5 acres in size which is equivalent to the size of about three football fields. Chad is home to a very hot climate which creates harsh working conditions for its farmers, especially with the lack of water to drink and bathe in. Chad has two very distinct dry and rainy seasons, but the dry seasons can provide especially harsh conditions for farming which caused a lack of food crops, making the country very hungry, and a lack of cash crops providing no source of income for these rural workers, increasing poverty levels throughout the country. The lack of rain in the dry seasons dries out the farming soil making it difficult for the farmers to grow any crops leading to shortages of food and materials.

A typical family and Chad consists of eight or nine people, two of which being parents and six or seven of which being children. These families live in circular huts made of Dried clay walls and Adobe bricks, with tall triangular shaped straw roofs. A typical family diet consists of grains, Fruits, vegetables, and of a variety of meats. Most farms in Chad grow a variety of grain crops including millet, sorghum and rice. Okra is another commonly grown crop in Chad as it is used as a sauce or a main ingredient in many Native dishes. Sorghum balls with dried okra sauce is one of Chad's most well-known dishes. Goat is the most common meat consumed by the people of Chad. Most rural households raise goats on their Farm to

later be slaughtered and used as meat to either consume directly or sell off for money needed for other essentials. Along with having their meat consumed, goats are also used to produce goat milk which can either be used to drink, cook with, or sell at local markets. Although the people of Chad have a variety of different foods and dishes in their diet they're not able to eat very often. Most families will only eat once in a day and sometimes if there is not enough food to feed everybody adults may go many days without food, Especially women, so that the children and Farm Workers are fed. The diet of a person living in Chad consists mostly of fresh produce grown on their own family farm but meat is normally cooked over a small indoor fire. Street Markets are a large part of the food and income Culture in Chad. These markets can be used to either buy food from others Farms, livestock, farming essentials, or other products created by the people in the local town. These creations include things such as hand-woven rugs, cotton cloths, cooking materials, knives, and pottery. Like most other developing countries the majority of workers in Chad work as labor workers on either their own Farms or larger scale agricultural operations. About "85%" of workers are considered labor workers that work on Cotton manufacturing plants and other agricultural farms (Working). In terms of American dollars the average monthly wage in Chad rounds out to about \$62 per month which means that the average person earns only \$740 per year. These low wages contribute to the high poverty rate calling Chad to be one of the hungriest countries in the world. Most families have to live without the benefit of healthcare as access to it is very limited and even the accessible Healthcare is basic.

Along with being one of the hungriest countries in the world Chad's Water Crisis is at an all-time high. As climatic conditions continue to worsen in Chad their Water Crisis also continues to worsen. A prime example of this is the reduction of water from one of Chad's primary water sources, Lake Chad. Since the 1960's Lake Chad has Diminished by about 90% due to the changing climate and overuse from the population. The people who used like Chad as their primary source of water now do not have an easily accessible way to get water for their families, and are now in search of a new source provide them the water that they need. This also gave rise to conflict between herders and farmers as both felt they needed the water more than the other. This image shows the shrinkage of Lake Chad from 1960 to today.



Since the 1960s Chad has been plagued with an increased number of droughts causing a lack of rainfall to reach agricultural soil, therefore causing low food supply.

The problem that Chad runs into when trying to solve their water issues, is how poor of a country they are. This means that other than any basic solution that costs virtually nothing to create will need to be partially funded by international organizations. As climate conditions in Chad continue to worsen due to pollution, there needs to be a way to make sure the water they get is not wasted. I believe that the best and most efficient way to preserve their water is by introducing rain water collection systems. As mentioned before the country is very impoverished, and rainwater collection is fairly cheap to institute at only about \$2500 USD per system (fixr.com). With these systems implemented up to 550 gallons of rainwater can be collected per every 1000 square feet of collection land (pccd.org). This rain water can then be distributed to areas nearby that are in need of water for both drinking and agricultural reasons. The water can also be distributed to areas like Lake Chad that are in need of replenishment, which may also allow more access to water for the people in the surrounding areas of the water bodies. Along with short-term basins that could be accessed quickly there would need to be a long-term holding center as water should be preserved from the wet season until the dry season when it is hotter, because that is when people will need more water and there will be less of it naturally occurring. These long-term basins may require more money to create as they will need to be larger and have filtration systems to keep the water clean so that it can still be used later on. Another benefit to having these rainwater collection systems is the regulation of the water usage. With some sort of system either government or whoever controls how the water is dispersed it can be easily decided on the amount of water that goes to certain areas. This way the issue of overuse of areas like Lake Chad and other water bodies will not have to be a major problem because there is some plan to regulate the amount of water being used.

One project I believe that Chad is doing right to help preserve water is the diverting water from areas around Lake Chad to try and replenish it. This is known as the Lake Chad Replenishment Project. This is done by diverting water from the Congo River basin to Lake Chad to replenish the lakes water supply. To divert the water part of the tributaries in the Congo River are damned so that the water will flow into Lake Chad instead of following its natural path. This is done by using a canal from the Chari River basin. To divert the water from the Congo River from flowing to its basin, and instead flowing into Lake Chad. I believe that this is a good plan help replenish the Lakes water supply and it will provide the people that once depended on Lake Chad as their primary water source with a more consistent way of getting water, and it will hopefully stop any more water from depleting from the lake. I think a way to make this an even better process would be to enlist the help of surrounding countries Niger, Nigeria, and Cameroon. If these countries could work together there may be a way to strike a deal that could allow Chad to flow water from those countries Rivers into Lake Chad, to hopefully allow it to regain its original capacity. Cooperation from the countries could benefit all parties involved as it gives Chad an increased source of water along with improved country relations between the group.

Another reliable way to increase water supply in Chad would be the creation of Wastewater plants. Although I believe that wastewater treatment plants would be a more reliable and

consistent option for conserving water in Chad, it presents its own challenges. Unlike rainwater collection wastewater treatment plants are much less affordable. When it comes down to cost you're looking at only \$2,500 for a rainwater collection system while you're looking at about a \$1,000,000 for a wastewater treatment facility. This is due to the increased size of a wastewater treatment facility along with the more advanced and expensive technology that goes into building it and operating it. This brings us back to the issue of how poor of a country Chad is. I think that it's reasonable to believe that Chad does not have the resources to pay for wastewater treatment facilities on their own. This is a project that would need funding from outside organizations along with money provided by the country itself. Organizations such as the United Nations the world food project and other nonprofit organizations would have to step in to either promote or help pay for this project. I believe that this solution has the best outcome for Chad but it also presents the most overall challenges and has the least chance of being a reasonable solution to accomplish in the short term.

In conclusion Chad is in very poor conditions at the moment. Their impoverished, have a low food supply, and lack of availability of clean water. Chad is in desperate need of solutions and I believe that with the ones I have come up with on the improvements to the existing ones I think that they may be able to provide their people with a more livable environment. The solutions should increase water usage for agriculture and cooking providing more food for people of the country therefore causing less disease and increasing lifespan of the average person.

