

Chad Water Wells Needs Analysis



ACCORDING TO THE WORLD BANK,

CHAD IS THE FIFTH LARGEST COUNTRY IN AFRICA



WITH A POPULATION OF 7 MILLION PEOPLE, BUT IT IS ONE OF THE WORLD'S POOREST.

Chad is the fifth largest country in Africa with a population of 7 million people, according to the World Bank, but it is one of the world's poorest countries. The country's per capita GDP was just \$657 in 2017 (World Bank), placing it in the bottom 15 of that metric globally.

Issues that surround Chad include:

- Poverty
- Conflict
- Climate crisis
- Hunger
- Environmental degradation
- Rapid deforestation



As a large majority of the population depends on farming and livestock to live, many face regular disruptions to their labor caused by sporadic rain patterns and a lack of clean water, which makes it difficult for them to cultivate food. According to the World Bank, **about 40% of children under the age of 5 suffer from stunted growth which is due to chronic malnutrition**, furthermore, basic education is limited.

According to UNICEF, quarters – villages that are on the outskirts of the capital – do not benefit from the utility grid so they have to “rely on shallow wells or, if they can afford it, water vendors,” with no guarantee that the water is sanitary to use and drink (Hubbard). This leads to a plethora of illnesses, diseases, and malnutrition. UNICEF also reports that in 2011, over 17,000 people contracted cholera in Chad (Hubbard). Cholera is a disease that is transmitted by water or food that has been contaminated by unsanitary water.



Embrace Relief conducted various water questionnaires in Chad to find out more information about the needs of the people in the villages. **These surveys were conducted in the regions of Tileh, Regat, Tinetbaya, and Zawiya.**

We were able to collect information about their:

- Nearest water source and traveling distance and time
- Length of their dry and rainy seasons
- Demographic information
- Thoughts on how their lives could be improved by a community clean water source



The surveys highlighted how much the rainy season and lack of potable water affected them. According to participants' responses, the average dry season lasts 10 months a year, from October to July. Respondents noted that during the two months of the so-called "rainy season," they typically receive only a light drizzle. Because these villages are not served by clean water infrastructure like water wells, **the lack of rain limits the supply of usable clean water for everyday drinking, sanitation and meal preparation needs.** Additional complications from a lack of clean water include difficulties in growing agricultural crops, greater spread of disease, and effects on children's education. All of these issues are existential to the safety and prosperity of their communities, and could be alleviated significantly by building water wells.

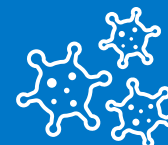


According to participants' responses, the **average dry season lasts 10 months a year, from October to July.**

Additional complications from a lack of clean water include **difficulties** in:



GROWING AGRICULTURAL CROPS



GREATER SPREAD OF DISEASE



EFFECTS ON CHILDREN'S EDUCATION

The development of villages like the four surveyed is severely limited by insufficient access to clean water sources such as water wells, which improve public health, promote agriculture, provide sanitary drinking water, and aid in meal preparation. Based on various water well questionnaires collected from villages in Chad, Embrace Relief was able to create a water well needs analysis.

OBJECTIVES

THE ACTIVITY HAS 3 MAIN OBJECTIVES:



Improving the quality of water for communities.



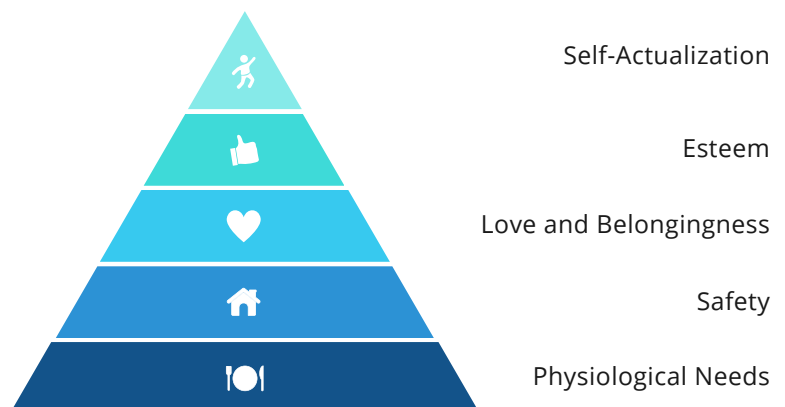
Increasing awareness of the impact that water has on economic development.



Promoting health and sanitation to prevent contamination from water related diseases.

HUNGER AND MASLOW'S THEORY

Abraham Maslow developed his theory, Maslow's Theory, in 1943 in his paper "A Theory of Human Motivation." He suggested that his theory, known as Maslow's Hierarchy of Needs, explains the different levels of needs that are necessary to accomplish to survive as a species. There are five categories which are, from bottom to top:



For those in poverty, each level is progressively more difficult to achieve. Without fulfilling one's basic needs, one is unable to reach self-actualization. Without access to the basic needs of food and water, people are not able to stay healthy enough to attend school, get a job, and bring home an income. Without an income, people are unable to ensure their own safety and housing, start and provide for their families, and continue pursuing self-actualization. Though it has critics, the hierarchy can be used to explain the chain of poverty over generations in many countries in Africa such as Chad.

ECONOMIC DEVELOPMENT



EDUCATION AND ECONOMY

Without clean water, economic development cannot proceed. This is in part due to the reality that children's education is severely impacted by a lack of clean water. In surveyed villages such as Algiten and Andournouk, collecting water has hindered children's ability to get an education. Instead of going to school, children have to often go with their mothers to distant villages to collect water.

Based on the surveys, Embrace Relief was able to see that nearly all of the villages have a significantly large child population. **An example is Ngardi, where the child population is 1,850 and the adult population is about half of that amount.** Only 7 out of the 27 villages reported that children attend school, emphasizing the need for education in those villages. Mothers are not able to bring home an income because their days are spent traveling to the nearest water source, exhausting their time and energy just to obtain a basic human right. From the information from the surveys, **Embrace Relief was able to determine that most villagers lived a distance of 3 to 5 kilometers (1.8 to 3 miles) from their nearest water source, with the travel time ranging from 30 minutes to more than 4 hours.** During these daily journeys to fetch water, women and children face dehydration and physical injury from carrying heavy water cans, and are also at risk for animal attacks and sexual abuse. Water wells would make it easier for women and children to bring home water and have time to focus on their own educational and career development.

7 OUT OF THE 27 VILLAGES REPORTED THAT CHILDREN ATTEND SCHOOL, EMPHASIZING THE NEED FOR EDUCATION IN THOSE VILLAGES.



MOST VILLAGERS LIVE A DISTANCE OF 1.8 TO 3 MILES FROM THEIR NEAREST WATER SOURCE.



TRAVEL TIME RANGES FROM 30 MINUTES TO 4+ HOURS.

HEALTH AND ECONOMY

Poverty and disease, especially waterborne diseases, are closely linked, researchers have found. In water-scarce areas like the Chadian villages Embrace Relief surveyed, villagers must make use of whatever water they can find around them. Often, this water is found in rivers, lakes, ponds, and watering holes that are not protected from human and animal waste and runoff. **Many are thus drinking contaminated water full of dangerous bacteria, and at significant risk for waterborne illnesses like cholera, typhoid, and dysentery.** In impoverished areas like those surveyed, healthcare infrastructure is lacking, and many would be unable to afford treatment regardless. These illnesses, and the death and injury they cause, become a fact of life – increasing misery, harming families, and deepening the cycle of poverty. A lack of sanitation has similar effects; a common story in this region sees many young girls drop out of school because of nonexistent sanitation facilities.

Giving priority to obtaining and maintaining clean water can help to stop the cycle. **Clean water is extremely important in maintaining good health to continue education and jobs.** Good health can provide a path to greater economic development. When it comes to a basic right such as water, there should not be a gap between the rich and poor. Everyone should be able to obtain clean water and the benefits it provides. Those who have stronger economic sources can obtain clean water, stay healthy, continue their education, and contribute to their country's economy through their job. On the other hand, the poor are unable to maintain any hope in educational and economic advancement, as they are constantly battling with diseases from contaminated water or a lack of it.



Water wells would improve the lives of many villagers by allowing them **the time and opportunity to promote their economic development.**



HEALTH AND SANITATION

Chad contains districts such as Yao and Danemdaji which have the country's lowest access to WASH (Water, Sanitation and Hygiene) services. In these two districts, less than half of the population have access to clean water, and less than 7% of people have access to adequate sanitation in both districts (See "More than"). WASH initiatives are programs established and mandated by the United Nations in 1981 and 2010 that help developing countries. Being a focus of the Sustainable Development Goal 6, WASH promotes public health, primarily in rural African villages. They focus on including governments, nonprofit organizations, and their partners in support of providing rural villagers with tanks to store clean water in their homes, an effort that significantly benefits locals. These measures have provided communities safe water and hygiene education, leading to a reduction of illnesses and deaths and improved socio-economic development.

Without water wells, villagers have to rely on drinking water from unprotected dug wells and springs, surface water from rivers and canals, tanker truck water, and vendor-provided water. Water from these sources is contaminated and brings along major infectious diseases such as cholera, Guinea worm disease, typhoid, and dysentery. Amongst these diseases also includes salmonella, hepatitis A and hepatitis E (see "Water"). Unimproved sanitation facilities do not prioritize hygiene by not separating human excreta from human contact, according to the World Health Organization. The organization listed unsanitary methods such as pit latrines without slabs, open pits, hanging latrines, bucket latrines, and open defecation in fields, bushes, bodies of water or other open spaces, or discarding human feces along with other solid waste (see "Water Sanitation Hygiene"). All in all, the importance of sanitation lies beyond diseases and can affect a child's ability to go to school and continue their education, reducing social and economic development.



**IN YAO AND DANEMDAJI ,
LESS THAN HALF OF THE
POPULATION HAVE ACCESS
TO CLEAN WATER**



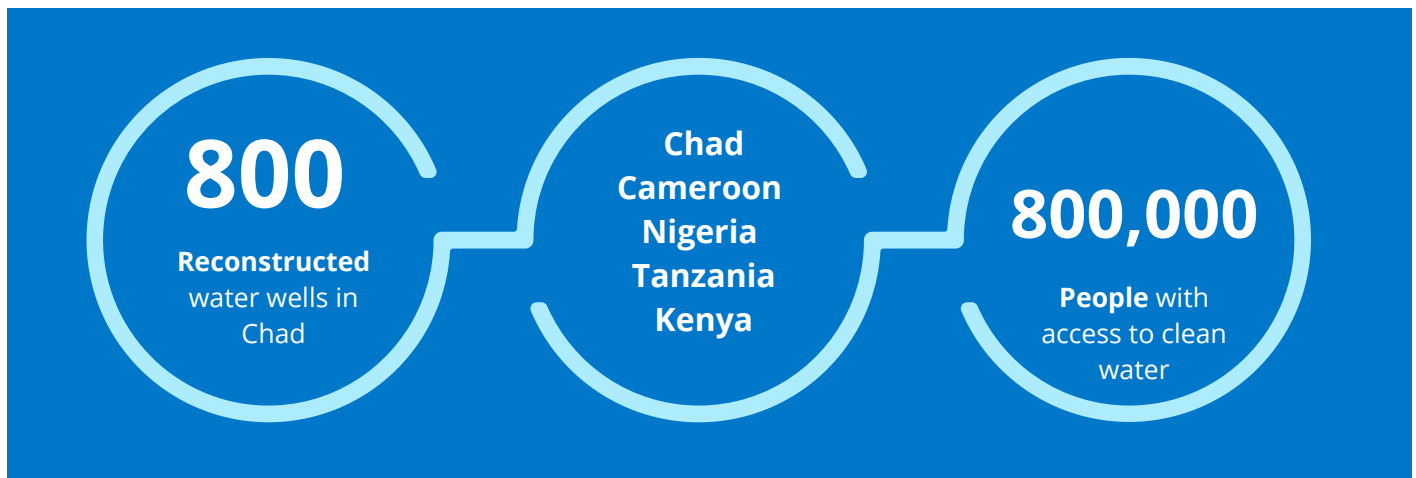
**LESS THAN 7% OF PEOPLE
HAVE ACCESS TO ADEQUATE
SANITATION IN BOTH
DISTRICTS**



Introducing and encouraging WASH principles can, along with clean water from water wells, improve the world's social, economic, political, and educational development. In rural, impoverished, and water-scarce communities like the surveyed villages of Chad, these practices can reduce and prevent disease, provide an enormous boon to agricultural and economic production, and help end cycles of poverty. By distributing our world's water resources equitably and managing them properly, the world can focus on all aspects of development.

OUR APPROACH

Water scarcity is prohibiting the opportunities of the youth and community, emphasizing the need for water wells in the area. Since 2013, Embrace Relief is directly addressing this issue by building and reconstructing more than **800 water wells in Chad**, as well as other African countries including Cameroon, Nigeria, Tanzania, and Kenya. These projects have provided approximately **800,000 people with access to clean water** and all of the associated benefits to health, education, agriculture, and the local economy. These wells are the product of lengthy field research to help us evaluate the precise depth at which a water well should be built to ensure the sustainability and safety of the communities served. **Our water wells are built at least 45 meters below ground level, deep enough to reach the water table and pump out water free of surface contaminants.** A deep well is strongly recommended to ensure a drought-resistant water supply, because the well can instead utilize the vast stores of underground fresh water located in this part of the world.



From water well questionnaires, Embrace Relief learned that villagers in Chad face a constant struggle against a 10-month dry season, and an inconveniently accessible supply of dirty, contaminated water. This is causing widespread malnutrition, a plethora of waterborne diseases, unsafe transportation conditions, and insufficient resources to advance education and careers. **The responses we received indicate that water wells are vital for meal preparation, food production, sanitation, and public health.** We believe that our program has made, and will continue to make, a significant impact on the lives of hundreds of thousands of people for generations to come.

Sources

- "Chad: Poorest of the Poor." World Bank, http://web.worldbank.org/archive/website01210/WEB/0_CO-48.HTM
- Hubbard, Guy. "In Chad, Clean and Sustainable Water and Sanitation Systems Keep Families Safe from Disease." UNICEF, 17 Feb. 2012, www.unicef.org/wash/chad_61754.html.
- "More than 55,000 people have access to safe water in the most underserved districts in Chad" Relief Web, <https://reliefweb.int/report/chad/more-55000-people-have-access-safe-water-most-underserved-districts-chad#:~:targetText=Chad%20has%20one%20of%20the,water%20and%20sanitation%20related%20diseases>.
- "Water." World Health Organization, World Health Organization, www.afro.who.int/health-topics/water.
- "Water Sanitation Hygiene." World Health Organization, World Health Organization, 29 Aug. 2016, www.who.int/water_sanitation_health/monitoring/jmp2012/key_terms/en/.
- "Water, Sanitation & Environmentally-Related Hygiene." Centers for Disease Control and Prevention, www.cdc.gov/healthywater/hygiene/index.html.
- "World Water Day Report." World Health Organization, World Health Organization, www.who.int/water_sanitation_health/takingcharge.html.