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Angola - Water Scarcity

## Angolan Clean Water Scarcity

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Nearly one-quarter of Angola's population uses unsafe drinking water for practical use. Angola suffered from a severe drought recently which caused a huge water decrease and led many people to acute food insecurity. The lack of clean water drives people, every day, to consume contaminated water that can carry waterborne illnesses which can lead to serious illnesses and death. Clean water is responsible for maintaining proper hygiene and health and living without it is something no one should experience. Solutions for Angola's poor water quality need to be found and implemented so that Angola's citizens can live without that barrier in their lives.

Angola has an ever-growing population and a wide array of cultural groups. Angola has an urban population of about 22 million which is 66.7 percent of the entire population of about 33.6 million people (Faria, "Angola: Urban Population 2015-2020"). Angola's rural population is sitting at around 10 million people. As a result of the rapid population growth around 47 percent of the population is under 15 years of age ("CultureGrams Online Database: Subscriber Area Only"). Angola has approximately 100 distinct ethnic groups but the main ethnic group is the Ovinbunda which consists of about 37 percent of the population.

The government structure of Angola is a presidential republic. Angola has had three constitutions since it gained independence from Portugal in 1975. The 2010 constitution is the most recent and is in place today. The 2010 constitution introduced the Presidential spot as well as an executive, legislative, and judicial branch ("Constitutional History of Angola"). The current president of Angola is João Lourenço. The presidents are chosen by the National Assembly. The National Assembly consists of 220 members and they can all serve five-year terms as well as the president. Angola has 18 provinces and each one has presidentially appointed governors("CultureGrams Online Database: Subscriber Area Only").

Angola is rich with many natural resources but lacks cultivated land. While Angola does have many natural resources, out of its 35 million hectares of arable land only about 10-15 percent of it is currently cultivated. The reason behind the low cultivation percentage is the presence of landmines from the civil war that lasted from 1975 to 2002 ("Angola- Agricultural Equipment | Privacy Shield"). Angola exports lots of petroleum/oil products. Its top export is crude petroleum which represents 95 percent of the total exports. These and other products that are being exported, reeled in about 32.9 billion dollars in 2019. ("Angola (AGO) Exports, Imports, and Trade Partners | OEC"). The rural population of Angola typically has its subsistence farms with foods like corn, beans, and potatoes ("CultureGrams Online Database: Subscriber Area Only").

Angolan farms, because of communal and subsistence farming, are typically small and medium in size. About 90 percent of all farms are small to medium size. The average size of a farm per family is .58 hectares and the average farm size for resident farmers is 1.54 hectares. The size of a farm for a family is equal to 1.43 acres which is around the same size as a standard football field which measures around 1.32 acres. Resident farms are 3.8 acres, which can be compared to three standard football fields. Three football fields are 3.96 acres.

Angola is 481,353 square miles which is about twice the size of France. The country borders the Republic of Congo, the Democratic Republic of Congo, Zambia, Namibia, and the western side borders the Atlantic Ocean (“Angola | Culture, History, & People”). Climates in Angola range across the country. Southern Angola and along the coastline towards the capital of Luanda have a semiarid climate and the north has alternating rainy and dry seasons (*Geography – Angola Embassy*). Nearly all 40-60 inches of precipitation per year happen during the rainy season. Angola is a very warm country with an average temperature of about 80 degrees Fahrenheit.

As of 2019, the average size of a family living in Angola was 6.45 people per family. Nearly 70 percent of all families in Angola consist of 4-7 people (Faria, “Angola: Household Size”). Angola has a very high birth rate of 39.313 births per 1000 people but also has a high infant mortality rate of 55.019 deaths per 1000 live births (“Angola Birth Rate 1950-2021”; “Angola Infant Mortality Rate 1950-2022”). Housing in Angola varies between the rural and urban areas of the country. Many urban citizens live in colonial-built apartments with up to five people and rural area houses can be made out of mud brick or adobe. Most rural areas lack electricity within their homes and lack clean water sources (“CultureGrams Online Database: Subscriber Area Only”).

Angolan families typically have three meals a day. Each meal, in rural areas, can be accompanied by funge, which is a ground cornmeal paste. Popular ingredients in Angolan dishes include beans, rice, fish, pork, various vegetables, and cassava which is a carbohydrate-packed plant that can be ground into flour (*The Best of Angolan Food - What to Eat in Angola? – Travel Drafts*). Angolans can get food by going out and purchasing from roadside vendors or growing their food on communal farms. The country imports foods like poultry, rice, and wheat flour to distribute among its citizens (“Angola (AGO) Exports, Imports, and Trade Partners | OEC”). The food can be prepared using charcoal burners and stew pans or they can be cooked on three-stone fires which are made to expose the cooking pan close to the fire to help limit heat waste.

Angola’s currency is the Angolan Kwanza. 1 US dollar is equivalent to 455.99 Kwanzas. Urban and rural citizens have varying monthly incomes that range from 19,000 Kwanzas to around only 9,000 Kwanzas which equals around 34 and 16 dollars (Juila Faria). The GDP per capita as of 2020 was only 1,895 dollars (“Angola - Place Explorer - Data Commons”). There aren’t lots of job opportunities for rural citizens so selling grown produce is a way of making money. There are well-paying jobs in Luanda, the capital of Angola, but unfortunately, poverty is a serious issue in surrounding communities (Borgen Project).

School systems in Angola vary depending on location. Primary school starts at age six and develops into a secondary school that starts at age 12 and extends at age 15. Many children don't advance after primary school because of the lack of accessibility. Government efforts have made education centers in urban areas much more accessible than rural areas which struggle with school accessibility. Universities provide education but only in urban areas and they can be very expensive. Health practices in Angola are also not that developed. Rural hospitals lack trained professionals. Low access to clean water has raised the likelihood of contracting severe waterborne diseases. Education on health issues isn't widely available which worsens the situation (“CultureGrams Online Database: Subscriber Area Only”).

Families’ access to water, electricity, roads and phones ranges across Angola. Angola’s safe water accessibility percentage across urban areas is 72% whereas the percentage for rural areas is only 28% (Julia Faria, “Angola: Access to Drinking Water by Area 2015-2020”). Lack of clean water can lead to cholera. Less than 40% of all of Angola has access to electricity. Roads can be found throughout Angola’s areas of economic activity but only 1/4th of them are paved (“Angola - Resources and Power | Britannica”). As of January 2021, Angola registered approximately 15.5 million cell phone connections

which are just under half of the population (Julia Faria, “Angola: Number of Mobile Connections 2017-2021”).

Angolan families are burdened because of a drought that has been happening for about three years. This drought has caused a 40 percent decrease in crop production which has forced many people into poverty. Along with food scarcity, Angolans also experience shortages in clean water. Water can be harvested for practical use from communal wells or public standpipes. 59% of Angola lacks basic water services

Angola has very poor water quality and clean water availability. Although taps were placed by the government around the country, most of them don't work and are dried up (“Water Everywhere in Angola, but Few Places to Drink - Angola”). Many people have to travel miles to find water sources that don't pose problems like contamination. Traveling to find water isn't worth the time and energy for some people, so they resort to using the contaminated water which can cause serious illnesses such as diarrhea and diphtheria which can cause death in young children.

In 2019 an estimated 2.3 million people's water access was affected by one of the worst droughts in Angola's history. As of December 2021, 1.2 million people face direct issues related to clean water scarcity (“UNICEF Angola Year End Humanitarian Situation Report No. 2: 31 December 2021 - Angola”). Even more face problems with food insecurity. Studies were conducted and show that in the worst-affected portions of the country water taps weren't working at all. Although the situation is getting slightly better, a copious amount of people are still being affected by the water limitations.

Multiple organizations have invested lots of money to help better the situation within Angola. The Luanda Bita Water Supply Project invested 500 million dollars to help provide water access to parts of southern Luanda, the capital of Angola (“ANGOLA: The Bita Drinking Water Megaproject Registers \$500m in Financing”). This money went into building infrastructure throughout Luanda, Angola's most populous city. The U.S. Agency for International Development also provided clean drinking water to just over 82 thousand people. These efforts have all slightly helped relieve Angola's water issues but unfortunately haven't been enough.

Angola's poor water quality affects urban and rural populations in many different ways. Rural communities are affected by this issue the most because their water sources, when not dried up, are not sanitary and raise the risk of diseases like cholera and typhoid (“Water Everywhere in Angola, but Few Places to Drink - Angola”). Urban areas have about 72% safe water access whereas the percentage for rural areas is significantly less at only 28% (Julia Faria, “Angola: Access to Drinking Water by Area 2015-2020”). Communal water taps, used by up to 10,000 people, are available in Luanda but are susceptible to drying up as well (“Water Everywhere in Angola, but Few Places to Drink - Angola”). Angola's water issues have an equal effect on all citizens except children. 14% of all child deaths in Angola are directly related to waterborne illnesses (“USAID United Communities to Bring Water to All | News | Angola | U.S. Agency for International Development”). Angolans are susceptible to diarrheal diseases that can be caused by unclean water. Diarrheal diseases are one of the main causes of death in Angola (“Water and Sanitation: A Pillar of Angola's Development”). In mid-2020, about 80,000 refugees and 650,000 immigrants were in Angola (“Angola Immigration Detention Profile”; “Angola: Stock of International Migrants 2020”) Refugees and immigrants are also facing the same problems as everyday Angolan citizens do.

A quick, simple, and easily accessible water purification method could be introduced to Angolans called SODIS. SODIS stands for solar water purification and can prevent any waterborne illnesses acquired from unsafe drinking water. SODIS uses the combination of UV rays and heat to kill off any dangerous bacteria and protozoa that could be in the water. SODIS works by exposing PET plastic bottles full of untreated

water (with low turbidity) sitting on a metal or reflective surface to direct sunlight for 6 hours to 2 days depending on the cloud cover.

This method of water purification has been implemented in over 28 countries like Brazil, South Africa, and Ethiopia and is being used every day (“Solar Disinfection | the Safe Water System | CDC”). It is a very cheap and inexpensive method because all you need is a water bottle and a reflective surface. Angola's climate is also ideal for this method because it is a hotter country and it's surrounded by countries that currently use SODIS. Instead of drinking contaminated water and exposing yourself to illness-causing organisms, you can use SODIS to purify your water and ensure safe drinking. Introducing SODIS to Angolans and educating them on how to properly execute this may be the key to preventing and reducing water-related illnesses.

Other methods of water purification include water filtration straws and rapid sand filters but these wouldn't be as appropriate as SODIS. These methods are very effective in purifying water but they would require excessive amounts of setup or funding to execute projects like this. Sand filters are complex and require lots of materials to set up such as sand, gravel, coal, troughs, and more. They also require lots of maintenance to ensure they work to their full potential. Water filtration straws would also be great but they can't be homemade and a large sum of money would need to be acquired to provide families across the country with these.

The United Nations can help further this project by providing education on SODIS so people can start using it. The UN, in 2009, under the “Water For All” scheme helped aid Angola and expand water availability across rural and urban areas, so they may be inclined to want to aid once more in trying to improve Angola's water quality (“UN to Help Angola Achieve ‘Water for All’”). Education about SODIS is a large part of successfully implementing this. The UN could send over groups of people to educate Angolans on proper techniques for use of SODIS. Universities could also educate select students on how SODIS works and send them to Angola to educate them in rural and urban areas. The government of Angola could fund advertisements across the nation as well. SODIS doesn't require lots of money at all, in fact, it only takes less than a dollar to use. This project could be funded by multiple sources for it to work.

Angolans can contribute to this project by providing information on how exactly different regions are affected by the lack of clean water. When people hear about success elsewhere they will realize that if it has worked elsewhere it will work there as well. This information can be used to help tailor education to different portions of the country. Angolans will also have to be willing to continue using this method after education has been provided to ensure that the implementation continues. Angola's government will have to monitor this project and conduct research on how well it's working and provide statistics to show the progression.

In Angola, there are no cultural norms that could burden the implementation of SODIS but there are established behaviors. People may not want to stray from what they have been doing even though SODIS is safer. People may see the amount of time it takes to purify water and defer from using SODIS and just continue drinking contaminated water. Hopefully, if people realize that SODIS is safer and can virtually work on any water they will start to use the method more often. Policies that help protect the project and help promote the use of SODIS throughout the country could be put into place to help with positive results. Without the promotion of SODIS, the project could potentially die out and consequently become irrelevant and not work overall.

This project can be sustainable and efficiently work once positive results are achieved. After people start to see improvements in the drinking water they will be more obligated to participate in the usage of SODIS. SODIS is very inexpensive and requires few materials that can be reused multiple times. This

water purification method doesn't require a lot to sustain except for participation. This project can be sustained as long as people are actively involved and use the method.

Angolans have been subjected to a lack of water for some time and have used contaminated water for basic needs including drinking. SODIS is an easy method of water purification and may be used to help relieve the number of people who suffer from drinking unsafe water in Angola. By implementing the use of SODIS, the number of waterborne diseases and infant mortality rates should decrease. SODIS could be key to accessing clean water within Angola.

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