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Mali, Water Scarcity

## **Water Scarcity In Mali**

Mali is a country in western Africa, known for its stunning architecture and the famous city of Timbuktu. Mali's architecture is quite unique, as it holds buildings such as The Great Mosque of Djenné and the University of Timbuktu. Mali is the eighth-largest country in Africa. It is a landlocked country, which means it cannot access the ocean since the nearest coast is in another administrative unit. It is located mostly in the Saharan and Sahelian regions, with a current population of 21,834,559. According to [worldbank.org](http://worldbank.org), 44.68% of the population is urban and the other 55.32% is rural.

Only about 7% of land in Mali is currently cultivated. This means that not many crops are grown. Some major crops are grains, wheat, rice, cotton and iron. [Trade.gov](http://Trade.gov) mentions that 4.487 hectares is the current farm size in Mali, compared to 445 acres, the average farm size in America. 445 acres translates to 180.08511 hectares. Mali, resides largely in the Saharan Desert and along the equator, resulting in the land being mostly flat and arid. In March to June, Mali has mostly dry weather. In June to October, it's rainy and cold. On and off cold weather from October to February, with a dry, saharan wind called Harmattan.

[Globoledge.msu.edu](http://Globoledge.msu.edu) states that Mali has a republic government, a form of government in which a state is ruled by representatives of the citizen body. Mali's constitution provides for a multi-party democracy, with the only restriction being a prohibition against parties based on religious, ethnic, regional or gender lines. Eight local parties from Mali are represented in the National Assembly; others are active in local government. It has a tripartite system of government consisting of executive, judicial and legislative branches as well.

Malian families typically live in dwellings such as structures made of mud, cement, bricks and clay. The average family diet consists of millet, corn and rice. They get food from their agricultural industry and cook it in a terracotta stove, either in the kitchen or outside. Mali residents have jobs in agriculture, such as mining or energy related jobs. Access to healthcare is limited and is not that affordable.

Much of Mali does not have access to proper sanitary stations, such as toilets as of 2020. 59% of households rely on off grid electricity. Only 80% of Mali's population has access to clean drinking water; however, this number drops significantly in rural areas. Water scarcity is a major problem in Mali and due to recent climate change, the scarcity of water is worsening because there is barely any healthy grass left. There are time periods where rain is in short supply. Issues like global warming, an increase in population and more pressure on water sources are contributing to the trend of water scarcity. Improved drinking water is only available to 70% of the rural population, and in urban areas there is water scarcity because of flooding and water logging. This affects millions of Malians because water is a necessity in many aspects of life. Without water, crops won't be able to grow, thus affecting the environment. This affects the environment because of the fact that if water is scarce, or there is none at all, crops and other food resources will not be able to grow.

An example of water scarcity is Lake Faguibine. Lake Faguibine is what used to be Mali's largest permanent lake. This lake dried up and shrank significantly after two decades of drought. The Lake Faguibine System, consisting of four interlinked lakes 80 kilometers west of Timbuktu was historically one of Mali's most fertile areas, but over the course of two decades the system completely turned to desert. Sand filled the channels connecting the lakes to the Niger River, so when rain eventually did fall the water was not able to reach the lakes. The region's prosperity evaporated along with the water. (Unep.org) Unfortunately, climate change has led to erratic rainfall patterns and sand dunes block parts of the channels, thus preventing the replenishing of Lake Fanguibine. With only 3.8 percent of Mali having land able to sustain crops, one can understand the need for a replenishing of the lake.

The flow of the Niger River, combined with severe droughts have reduced the availability of water in central and eastern Mali. More specifically, upstream irrigation and hydroelectric power generation are reducing downstream flows required to sustain river stages and flood levels critical to fuvial agriculture, fisheries, transportation and viable dry season husbandry. Inadequate sanitation systems and effluents from mining, tanneries and dyeing industries degrade water quality and ecosystems.

Groundwater is the primary drinking water source and domestic use nationally, however, insufficient groundwater quality monitoring and protection schemes increase public health risks, particularly in cities like Bamako.

According to wateraid.org, 3.5 million people in Mali lack the clean, sustainable water they need. Mali is one of the hottest countries on earth, with land stretching far into the Sahara Desert. 11 million people don't have access to a decent toilet. The AMALDEME educational center's water tower was old and cracked, and the supply was polluted, forcing staff to buy water using precious funds. Only three of thirty toilets were usable. As a result of this, children had to use pots outside.

The 4 main causes of water shortage in Mali are droughts and climate change, poor water management and growing demand, water pollution, food insecurity, increased human conflicts, and water is now traded as a commodity.

A way to begin solving this problem is to establish schools for farmers where they learn how to adapt to climate change. This includes drought resistant crops, crop rotations, and sustainable ways to raise livestock. Drought resistant crops include grapevines, figs on a tree, and sorghum. Drought resistant crops have been bred through conventional plant breeding techniques or biotechnology and continue to grow and produce even when rain does not fall. They will learn how to properly rotate crops depending on the season and how aggressive the rainfall is; and the practice of planting different crops sequentially on the same plot of land to help improve soil health, optimize nutrients in the soil, and combat pest and weed pressure. They will use sustainable ways to raise livestock by well managed pasture, forests or rangelands where animals can move and graze freely. Raising livestock on pasture is labor intensive and expensive, from pasture and farm management to securing reliable processing facilities.

Starting seed banks to distribute local seeds more tolerant to extreme droughts and rainfall is another way to help solve water scarcity in Mali. A seed bank is a bank or vault that stores a vast range of seeds from around the world. They are kept in temperature controlled facilities, often underground, to ensure the survival of seeds. Starting a seed bank will help farmers replenish needed seeds if they are lost from crops due to natural or man made disasters, such as pollution. Seed banks are necessary in order to preserve biodiversity and ensure that the future of many species of plants that are vulnerable to extinction. According to the Millennium Seed Bank Organization, statistics show that two in five plant species are at risk of extinction.

It is imperative that seed banks exist in order to protect plants and wildlife across the planet. The importance is ever greater as climate change continues to change the biodiversity of the planet at alarming rates. Many seed banks are also made to ensure that plants are protected after natural disasters such as tsunamis and firestorms, as well as human disasters, such as nuclear warfare.

In conclusion, water scarcity in Mali is a very massive issue. Global warming, natural disasters and droughts are problems that promote the loss of water. Only 80% of Mali's population has access to fresh and clean water. 7% of land is cultivated, which means that not many crop rotations occur since not many crops are being grown. Two ways I believe could help replenish water in Mali are to establish schools for farmers where they learn how to adapt to climate change by using drought resistant crops, rotate the cultivated crops and use sustainable ways to raise livestock, and to start seed banks to distribute local seeds that are more tolerant to extreme droughts and rainfall. Seed banks are very important because they can help replenish needed seeds if they are lost from crops due to natural or man made disasters like climate change or pollution.

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