

**Committee:** Environmental Commission

**Issue:** The consequences of water policy resulting in man-made drought

**Student Officer:** Han Pei Wu

**Position:** President

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## PERSONAL INTRODUCTION

Best delegates,

My name is Han Pei Wu and I am honored to be serving as the President of the Environmental Commission of the 3<sup>rd</sup> ACGMUN conference. I am a senior IB student at the Cambreur College, situated in The Netherlands.

Firstly, it is with great enthusiasm that I welcome you to the is year's ACGMUN conference. During the conference, you will be able to showcase your knowledge as well as problem solving skills regarding global environmental issues. More importantly, this conference is an opportunity to expand your knowledge and skills through learning from your fellow delegates. Throughout the conference, I hope to see enthusiastic and well-prepared delegates as well as lively debates.

This year's topic will be in the question of the consequences of water policy resulting in man-made drought. To help you get started with your research, I hereby present you with a Study Guide. This guide contains the most essential information that will help you throughout the interesting debates. Nevertheless, I strongly advise you to conduct your own research on the relations between your country and the topic. I look forward to meeting and hearing well-informed delegates. I wish you the best of luck.

If you still have any questions, please feel free to contact me. I can be contacted at: [hanpei.wu@hotmail.com](mailto:hanpei.wu@hotmail.com)

Sincerely,  
Han Pei Wu

## TOPIC INTRODUCTION

‘Drought’ is a difficult word to define. The general idea of what drought is, is an extended period of unusually dry weather caused by low or below average precipitation in a specific region. However, drought is way more complex than that and people often have misperceptions on drought. Due to the fact that dry conditions develop for different reasons, ‘drought’ can be perceived in many ways. Therefore, there are also different ways to measure drought: meteorological, agricultural, hydrological and socioeconomical.

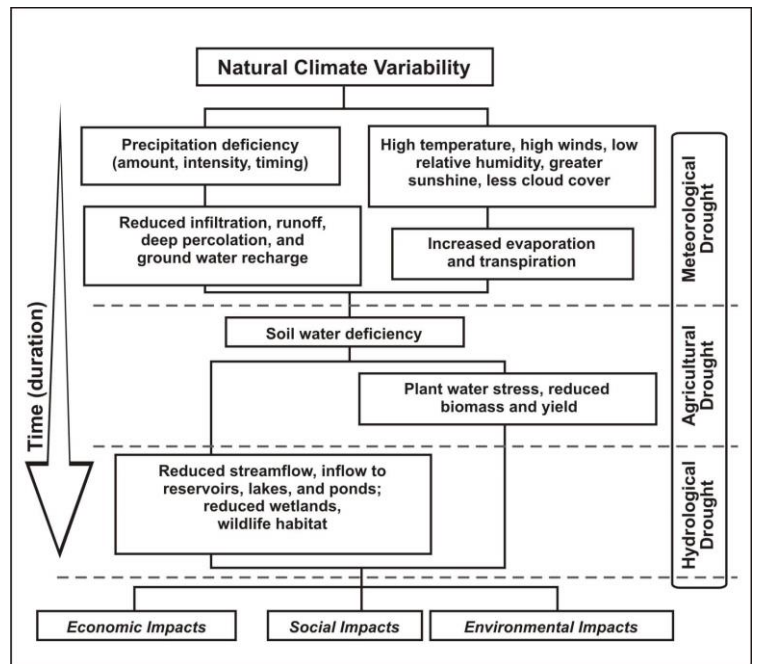
**Meteorological drought** is determined by the precipitation in a given area. A prolonged period of low precipitation. Compared to the usual situation in the area, would qualify as a meteorological drought. This type of drought usually precedes other types of drought such as agricultural drought, hydrological drought and socioeconomic drought.

**Agricultural drought** occurs when there is low precipitation over an extended period of time, meteorological drought, in combination with the needs of the plant and its biological characteristics. This results in the fact that the crops in this given area are adversely affected due to the unfit conditions.

**Hydrological drought** occurs when water supply becomes scarce due to the low water volumes in streams, rivers and reservoirs. This could be the result of meteorological droughts, since low precipitation and high temperatures may cause the water volume to decrease greatly. Another cause could be human activity, such as the drawdown of reservoirs. This can either worsen or cause a hydrological drought.

**Socioeconomic drought** occurs when the demand for certain economic goods, where water is an essential part of the product, is greater than its supply. These goods could be food grains, hydroelectric power, fish and forage. This situation where demand overpowers supply could be caused by a water deficit created by low precipitation and other weather-related changes.

As you have read in the previous paragraph, drought is determined on the basis of the usual conditions in a specific area. On the one hand, if a particular region



#1 Natural Climate Variability Graph

where there is usually a high level of precipitation has been lacking the usual rainfall, it could be considered a drought. On the other hand, dry conditions may be very usual for specific regions without suffering any serious consequences. This may be due to the fact that there is no equal distribution of water on the earth's surface. You can also see in figure 1, a schematic view of how drought is developed in relation to time and the characteristics which occur during a specific type of drought.

Elaborating on the previous paragraph, drought does often start with meteorological drought meaning lack of rainfall. People often do not see this as a natural disaster. However, in the long run, lack of precipitation could affect water supplies used for irrigation, the industry, energy, municipal use and the functioning of the ecosystem. In short, drought can have disastrous consequences for the world.

On the other hand, bad water policy is also a factor which could cause drought, man-made drought in this case. Water policy is the encompassing word for the policies, principles and legal framework which influence the use, disposal, collection and preparation of water to support the human's needs. Water could include broad strategies for infrastructure development, water right laws, research funding, environmental protection etcetera. If the water policy is not handled correctly or inefficiently it could cause problems. For example, when the water infrastructure is not handled correctly water leakages could occur, which means water loss. This water loss could be crucial for areas where lots of moisture is needed.

## DEFINITION OF KEY TERMS

### Drought

An extended period of time with unusual dry weather, resulting in the development of serious problems such as yield failure, water supply shortages etcetera. The severity of the problem depends upon the duration of the drought, the degree of moisture deficiency and the size of the area affected. ( National Weather Service *Forecast*, sd)

### Water policy

The legislation and regulations that govern water management, with the specific focus on principles, policies and legal framework that surround water management. This includes broad strategies for infrastructure development, environmental protection, human rights laws, water right laws and research funding.

(*The CEO Water Mandate*, sd)

### Man-made

Instead of directly coming from nature, it is produced or developed by humans. (*Cambridge Dictionary*, sd)

## BACKGROUND INFORMATION

### Cape town’s water crisis

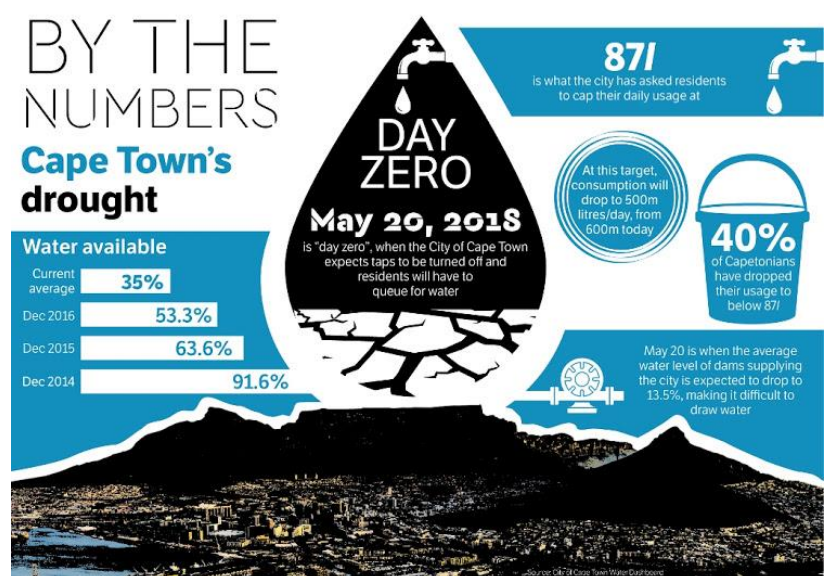
In 2015 South Africa had a serious water crisis and resulted in severe water shortages in the region. The cause of this water crisis was a combination made up of physical, social and political factors. From the period 1995 to 2018 the population grew with 79 percent, which meant that the water demand increased significantly. This demand however was always met, thanks to the city’s water consumption management (La Shier, 2018). Cape Town’s water management always proved itself as a success. In 2007 the Department of Water and Sanitation (South Africa Weather Service) announced a warning about potential water supply shortages. The city acted quickly to meet SAWS 2015-2016 water saving target. They succeeded this goal by implementing various water management strategies, such as complimentary plumbing repairs for low-income families and leak detection.

Even though Cape Town met the water saving target, a drought was expected to be happening in 2018. Disregarding this, the government decided in 2015 to allocate circa 40 percent of Western Cape’s water supply to the agriculture sector. The same year, the city requested funding from the government to finance the drilling of boreholes in order to increase availability of water supply, but this request was denied.

Three years later, the extremely low precipitation levels in combination with increasing consumption of water, due to a growing population, resulted in critically low dam levels. This serious

issue forced the government to introduce the ‘Day Zero’ plan. You can see in figure 2, the situation in Cape Town leading up to ‘Day Zero’. In the figure you can see the water availability and the water usage. In the ‘Day Zero’ plan, non-essential supplies would be cut off from water, this meant that residents would be dependent on water collection points around the City. This plan convinced the residents that the situation was extremely vital

Figure 2 Cape Town’s Drought



#2 Statistics of Cape Towns Drought

and jolted people into action and water use decreased vastly. At the end 'Day Zero' was never implemented.

### **Causes of drought**

- Lack of rainfall (or precipitation)

Droughts could arise when there is the lack of anticipated precipitation. Stressing the fact that there should be a lack of anticipated precipitation, because the lack of rainfall alone does not mean drought. This due to this reason. some regions are used to months without rainfall and therefore don't expect precipitation. Farmers plant in expectation of rainfall and so when rainfall does not occur, and irrigation infrastructure is absent in the given area, agricultural drought occurs.

- Surface water flow

Some regions are also well provided with surface water that have their sources from mountains far away. The flow of these sources must not be affected, otherwise, these surface waters run the risk of drying out. To reduce to amount of water flowing to alternative areas downstream, hydro-electric dams and irrigation systems are sometimes used.

- Human factors

Forests are important contributors to the water cycle. They help reduce evaporation, store the water and also help the atmospheric moisture keep its condition. Deforestation therefore exposes the surface water to more evaporation, reduce the soil's ability to hold water. This makes desertification easier to occur in these deforested areas. Thus, deforestation reduces the forest's potential watershed.

- Global Warming

Due to the green house gasses, which have increased greatly due to human actions, in the atmosphere, there are warmer temperatures. This often results in more dryness and wildfires. In short, global warming causes a drier environment.

### **Consequences of drought**

- **Environmental impact**

Dry conditions affect many things, biotic and abiotic factors such as plants, rocks, animals, the climate etcetera. Some of these abiotic and biotic factors manage to recover after the drought is over, but some also don't.

Some of the (a)biotic things that don't recover are soil organisms, aquatic animals, desertification and animals. Soil is essential for breaking down organic matter. Due to

droughts, there is less organic activity and therefore the quality of soils lower. Therefore, soil insects or organisms perish. Next to that, aquatic water life is also affected. Due to the drought, water bodies such as, water bodies such as, lakes, creeks, ponds and lagoons dry out. This results in the death of water animals, due to habitat destruction. Not only does this affect the water animals themselves but also an entire food chain. It also affects the animals not living in the water, due to the fact that they have to search for water over longer distances. This brings them to new habitats, making them endangered and vulnerable. Lastly it greatly affects the fertile lands. When these lands become bare and infertile, this is often the result of deforestation overgrazing or other economic activities. However, droughts make these situations even worse. As a matter of fact, it eliminates any chances of the land recovering and becoming once again fertile.

- **Economic impacts**

With economic impacts, loss of money from individuals, families, businesses and governments is involved. The root of their loss of money is often from the failing business of farming. Firstly, the farmers themselves, farmers are forced to spend more money in order to irrigate their crops and provide water for the animals on the farm. They often have to invest in new wells or water imported from places faraway. Next to that, the drought causes low crop yield. This also means that the farmers will lose a lot of money, taking a pay cut or even be out of the business. This means that industries and businesses that manufacture the farm equipment, will lose clients and therefore also lose money. Next to that, the energy industry, relying on hydro-energy, will lose their money due to the fact that they cannot meet the high demand of the region. This incapability to meet the high demand is due to the lack of water. This lack of water also means that the companies operate below their full capacity and therefore businesses need to invest in either more electric generators or close production. The lack of water due to the drought, will also affect the water recreation business. Recreational water businesses may close down due to low water levels or even dried out water bodies. On another note, the drier conditions also mean more wildfires. This is how farms, properties, forests etcetera are destroyed. Not only do people lose their money, in needing to buy or rebuild their house, governments also need to spend more money to fight these wildfires and in extreme cases send emergency supplies.

- **Social impacts**

The drought not only impacts our economy and environment, but also social environment. It affects factors such as health, living environments and mental state. Firstly, health, having access to clean drinking water is extremely important for our health and helps society to prevent and manage diseases. During drought the fresh water levels and water discharge are fairly low, this results in the situation where

there is less dilution in the waters of the ecosystem. This means that there is a higher concentration of chemicals, solid particles and nutrients and dissolved oxygen decreases.

Next to that, droughts cause the low production of food, particularly in poorer regions, where people already have less to eat. Shortages of food cause hunger, malnutrition, anemia and deaths.

Due to these bad conditions, many people migrate to other places in hope for a better living environment. This makes the region and the farm families living in the area vulnerable. Family members, especially youthful ones, migrate in order to work and help provide for the family.

These conditions also have a great impact on people's mental well-being. These situations can cause anxiety, stress and a general hopeless feeling. People often feel depressed in these situations, where they cannot see the light at the end of the tunnel. These negative emotions can result in social isolation, resulting in broken community networks and decrease of social interaction overall. Next to that, some feel threatened or unsafe due to the wildfires, and the losses that were caused by it.

## **MAJOR COUNTRIES AND ORGANISATIONS INVOLVED**

### **Iran**

Iran has been experiencing conflicts regarding an ongoing drought. Next to the high evaporation rate in the country, an estimated two-thirds of rainfall evaporates before it can replenish rivers.<sup>1</sup> Next to that domestic use of water is 70% higher than average. This crisis led to protests in the country related to the Iranian government and its mismanagement of environmental issues.<sup>2</sup>

### **The United States of America**

The United States of America has had a long struggle with its water policy and drought. The USA does not only have concerns over water safety, such as the Flint water crisis, but also over the infrastructure. Next to that the USA has a reoccurring drought problem across the country.

### **Food and Agriculture Organization**

The FOA (Food and Agriculture Organization of the United Nations) mainly focusses on advocating for the elimination of hunger, food insecurity and malnutrition. Their

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<sup>1</sup> <https://www.bbc.com/weather/features/42746372>

<sup>2</sup> <https://nationalinterest.org/blog/middle-east-watch/future-now-irans-drought-crisis-fueling-countrys-political-instability-29412>

mission is to ensure that enough high-quality food is easily accessible to people. Despite this main focus, the FOA has played a large role in the fight against drought.

### The International Water Management Institute (IWMI)

The International Water Management Institute (IWMI) is a scientific non-profit research organization which focuses on sustainable water use and the land resources in developing countries. Their mission is to provide solutions to sustainable water management and land resource management.

### World meteorological Organization

The World Meteorological Organization (WMO) is an intergovernmental organization, specialized in meteorology (weather and climate). Their mission is to provide and deliver high-quality weather, climate, hydrological and meteorological related services through international cooperation to all networks, for the improvement of the well-being of all nations' societies.

### TIMELINE OF EVENTS

Date	Description of event
1770	The Great Bengal famine, caused by a failed monsoon in combination with the policies of the British East India Company, poor infrastructure and devastation from war caused a huge famine resulting in one third of the population starving to death.
1921-1922	The Soviet Union suffered a drought resulting in 5 million people dying from starvation.
1997-2009	Australia experienced drought, known as the Millennium drought. This led to water supply crisis's across the country.
2006	Sichuan, China experienced its worst drought in modern times. Nearly 8 million people faced water shortages.
2014-02	California, USA experienced, for the first time in 54 years, shortages of water supplies.
2015-08-07	Panama Canal to limit ship size due to drought.
2015-09-22	Caribbean islands brace for worsening effects of severe drought.



2016-02-08	Somalia drought leaves 50,000 children 'facing death'
2016-11-22	Bolivia schools close early as drought empties reservoirs.
2017-02	Tamil Nadu in India experienced its lowest percentage of precipitation in 140 years.
2017-03-04	Somalia: 110 dead from hunger in past 48 hours in drought
2018-02-10	Drought-hit Cape Town rejoices at rainfall.
2019-02-19	The drought in Australia leads to children 'suffering' according to the UN.

### RELEVANT RESOLUTIONS, TREATIES AND EVENTS

Resolution adopted by the General Assembly on 21 December 2009, about the fight against desertification

International Decade for Action on Water for Sustainable Development, 2018-2028

### POSSIBLE SOLUTIONS

Unlike a hurricane or tropical storm, no one can keep a watch on when a drought is exactly coming and when it will end. However, there are many things an individual, community or government can do to minimize the impact of drought if they occur. The drought does not only greatly affect developing countries, but also developed countries. To properly handle it is important to look at aspects such as management, governance and institutions.

Firstly, it is important to educate people on how droughts occur and how they affect us. This empowers us to think of solutions and other things we can do if we find ourselves in a drought. The government (or authorities) also need to educate the public periodically about the environment, climate, weather and the natural disasters that can occur. The government also needs to understand the terrain of the region and the likelihood of a drought, so that there are no surprises if they happen. Next to that it can make people aware of the situation and beware of their water usage.

Secondly, water storage and infrastructure. Water is precious and a scarce commodity everywhere in the world and humans need to use water wisely as such. Even if there is water available, it is important because the practice makes us cope better when there is a shortage. Also, preserving water leaves enough to be stored in dams,

reservoirs and even turned into ponds. By investing in infrastructure such as sensors, smart meter, monitors and other tools to manage water, droughts could be avoided.

Thus, droughts are a very tricky thing to keep under control. Therefore, the possible solutions to this problem could include educating the people on droughts sustainable water use through adjusting water policies.

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FIGURE 1: <https://drought.unl.edu/Education/DroughtIn-depth/TypesofDrought.aspx>

FIGURE2: <http://www.sablenetwork.com/inspirations/advancements-achievements/south-africas-heroic-gift-of-the-givers-ngo-tackles-cape-town-water-crisis-&-leads-effort-to-drill-new-safe-boreholes-in-rural-communities>