

# **Water Scarcity**

## What are Environmental Resources?

Environmental resources are natural (from the environment) resources that are valuable to humans. There are three types of environmental resources: renewable, non-renewable, and continuous. Renewable environmental resources are resources that, in a short period of time, can be restored. For example, water is a renewable resource because of the water cycle. However, overuse of a renewable resource can make that resource scarce or might cause it to disappear entirely. For example, fishermen may catch so many fish that the marine population could start declining and certain species of fish could die out. Non-renewable environmental resources cannot be renewed. Non-renewable environmental resources are those that cannot be restored. For example, the minerals in the earth cannot be renewed. Continuous environmental resources are resources whose accessibility doesn't change when it is used. For example, wind and solar energy are continuous resources.

## What is Water Scarcity?

Water scarcity is when there are 'insufficient freshwater resources to meet the human and environmental demands of a given area' ("water scarcity | Description, Mechanisms, Effects, & Solutions | Britannica," 2021). In other words, water scarcity happens when there isn't enough water to help us do the things we need to do in daily life. Water is an environmental resource that is essential for all humans and when it becomes scarce, we can be in big trouble.

## What causes Water Scarcity and Why is it a Problem?

There are three main causes of water scarcity: climate change, overpopulation, and water overuse. Climate change can affect the availability of water most commonly in the form of droughts and natural disasters. A drought is when the precipitation in a certain area is unusually low, causing loss in soil moisture and the availability of water. Droughts are common in many parts of Asia, Australia, and especially Africa, which means that a lot of families don't have access to a lot of clean, drinkable water. In other more tropical areas, natural disasters such as hurricanes, storms and earthquakes, infrastructure designed for the containment and sanitation of water can be damaged or destroyed, which can also cause water availability to decrease dramatically. Overpopulation and the misuse/overuse of water are also big factors that contribute to water scarcity. Overpopulation is when the population of a certain area or country exceed the expected amount, and so there is less water for more people. This isn't helped by the fact that in a lot of countries, people use water incorrectly or unnecessarily use too much of it, for example, taking long showers, or leaving the tap on. Water scarcity is a very big problem, because when water is scarce, people can be forced to drink water that isn't clean and could be contaminated with several diseases, like cholera. This can result in people suffering from diarrhoea, vomiting, dehydration, and even death.

## Water in Australia

In Australia, we are very lucky, because we don't suffer from droughts very often. We receive a good amount of rainfall, which contributes to our stable supply of water. But people in other countries aren't as lucky as us. Some countries don't have the infrastructure to be able to hold and clean water so that it can be used.

Pick a country any continent below, and investigate the availability of water in that country:

Africa (Chad, Nigeria, etc.)

Asia (China, Indonesia, etc.)

Australia (WA, NSW, etc.)

## How do we overcome Water Scarcity?

Although Water Scarcity is a worldwide problem and can be hard to control, there are ways we can reduce the effects of water scarcity, through lots of different techniques. These techniques include filtration, distillation, flotation, and desalination. Filtration is when you clean water by passing it through a filter. Most filters have very small holes than are smaller than most bacteria and dirt but is bigger than a water droplet. This means that the dirty stuff stays behind, but the clean, pure water gets filtered through. Distillation is when dirty water is heated up, and the water evaporates onto a container. The water is light enough to evaporate, but the solid components, such as dirt, is too heavy to evaporate. The water then condensates (turns back into a liquid) back into another container as fresh water. Flotation is when a gas is injected into the water, forming gas bubbles in the water. The solid matter in the water then attaches to the bubbles and floats to the surface, making it easy to separate it from the clean water. Desalination is like filtration. It is the process of removing salt from seawater, which ends up as freshwater. The seawater is pushed at a very high pressure through small holes, which are too small for the salt particles to pass through, but big enough for the water particles to pass through. This leaves the salt behind but lets the freshwater filter through the system. These techniques are implemented into many different structures, like water towers and portable water filtration devices (e.g., the LifeStraw).

Answer the following questions on the computer or in your books.

1. What are the 3 types of environmental resources? Give examples.
2. In your own words, describe water scarcity.
3. What are the main causes of water scarcity?
4. Why is water scarcity serious?
5. What are some ways we can manage water scarcity?

## Activity:

Pick a country any continent below and investigate a form of water purification that is the most suitable for that country. It can depend on the climate, terrain, population, etc. of that country:

Africa (Chad, Nigeria, etc.)

Asia (China, Indonesia, etc.)