

# Climate Change





There are scientists who have been spending most of their career looking into the effects of climate change. Is it occurring or is global warming simply a fear campaign?

**Discuss your thoughts with your partner.**

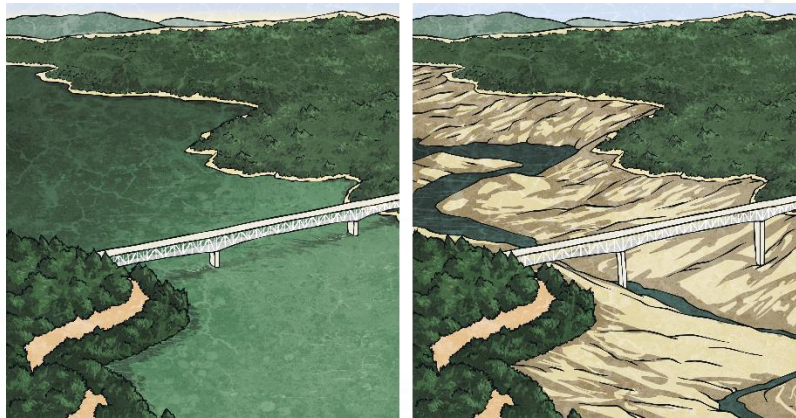


# What Is Climate?

The word **climate** refers to the weather conditions over a long period of time across a region of land.

Climate is the overall picture, taking into account the rainfall, temperature, winds and other conditions. Climate does not look at these factors on a day to day basis but more long term results.

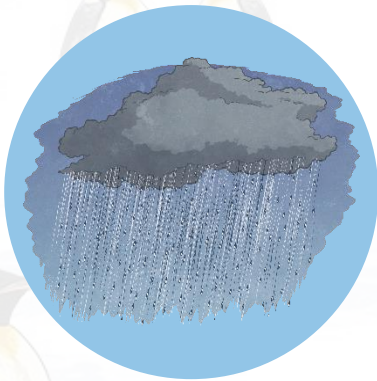
Climate conditions do change but the process is gradual and takes place over a long period of time and the changes are large.



# What Is Weather?

**Weather** looks at the specific time and place over the short term.

Weather refers to the conditions on a particular day, such as the temperature, wind, rainfall and humidity. The weather can change very quickly - one minute it can be warm and sunny and the next it can be raining!





# What Is the Difference Between Climate and Weather?

Meteorologists look at weather conditions and attempt to foresee the weather in the future. Weather is determined by the humidity, cloud and temperature and can change rapidly.

Climatologists study the climate. They interpret data from sources such as ice cores, soil, air and water to find patterns and see how these affect the Earth.

In short, weather refers to the conditions at a specific time, such as a hot day; climate refers to the conditions over a longer period, such as a warm, dry summer.

# Natural Disasters

Natural disasters such as volcano eruptions, tsunamis and earthquakes can all affect the lives of thousands of people. When they occur they can cause large destruction, but the impact of them is generally confined to one region, not world wide. While they may cause concern for people around the world, the actual cause of their damage is specific to one location.



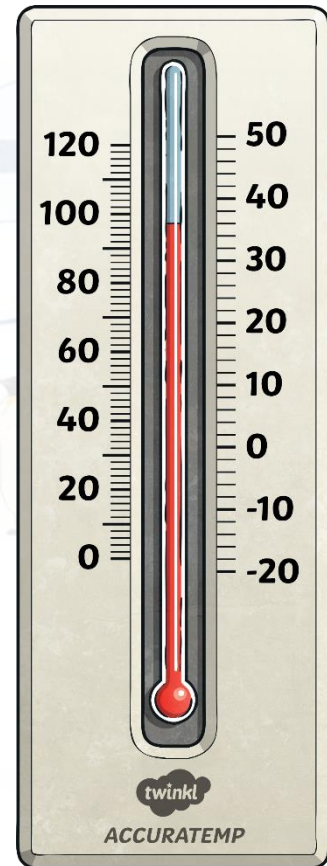


# Global Warming

Global warming is the gradual rising of the temperature on Earth. It is a worldwide problem that will affect everyone, not just those in certain locations.

Both the land and water temperatures are warmer now than they have been since records began in 1880 and are continuing to rise.

In the last 100 years, scientists believe the Earth's temperature has risen  $1^{\circ}\text{C}$ . While this may not seem like a lot, that one degree is enough to make large changes.



# Global Warming Impact on the Earth



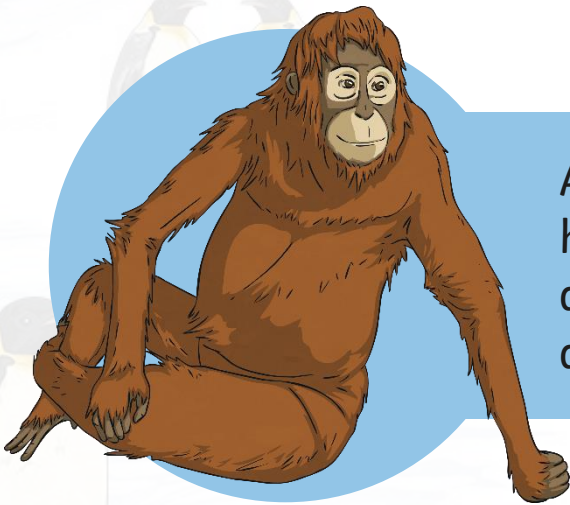
The Earth has changed many times over billions of years, but never before has it had to cope with the human activity it is working with now. The warmer climate can affect the planet as even that one degree is enough to melt polar ice sheets, causing the sea level to rise which threatens low land.

It means changes in other areas such as increased rainfall, harsher droughts, extreme seasons, changes in the wind and ocean patterns and more extreme and unpredictable weather. As a result, animals, plants and humans may find it difficult to adapt to the new climate.



# Global Warming Impact on Wildlife

Wildlife is already fighting with the climate change. Polar animals are losing their habitats as they are melting at a rate of what is estimated to be 9% per decade. Animals who live in these areas use the ice to hunt, feed and care for their young.



Animals such as orangutans have their habitats under threat as their homes are cut down and more fires burn through the land due to the drought.

# Atmosphere



The Earth is surrounded by a layer of gases we call the atmosphere. As sunlight enters the atmosphere some of the heat is trapped which is what is used to warm the Earth while the rest passes through and back out.



# What Causes Climate Change?

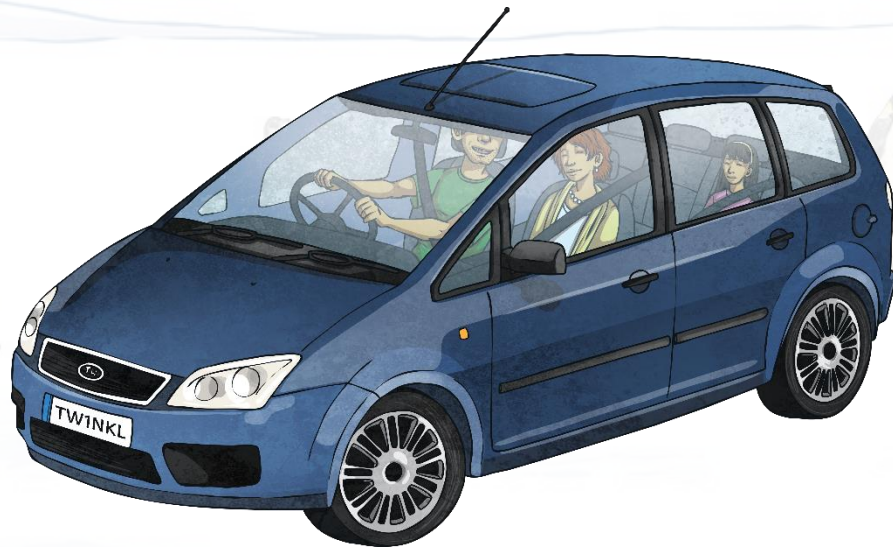
Chat with your partner and write down all the things humans do on Earth and how they would impact climate change?



Share your thoughts with the class.

# What Is Causing it?

Activities such as driving vehicles, using air conditioners and other devices rely on using energy provided by natural gas, oil and coal. These release a gas known as carbon dioxide (CO<sub>2</sub>). The carbon dioxide works with other greenhouse gasses to trap heat which the atmosphere would previously have released, causing the temperature around the world to rise.



Let's look at some of the causes a little closer.



# Fossil Fuels

For over 150 years, humans have been burning large amounts of fossil fuels including oil and gas. This releases gasses into the atmosphere and builds up, meaning more heat is trapped and less escapes, increasing the temperature of the Earth. This is what we refer to as the Greenhouse Effect.



Compared to the rest of the world, Australia is a large producer of CO<sub>2</sub>. Australia's level of CO<sub>2</sub> pollution per person is nearly four times higher than the world average. One of the main reasons behind this is because of the use of electricity. Over 70% of Australia's electricity comes from burning coal and over 10% from burning gas. Only 14% comes from renewable energy sources.

# Deforestation



Trees and plants absorb carbon dioxide from the air and release oxygen back into it. Many rainforests and bushland are being cut down to make wood, palm oil, farmland, roads, dams, housing estates. This means fewer trees and plants around, which means less CO<sub>2</sub> is absorbed from the atmosphere and more heat is trapped.



# Cows

Australian farming of livestock such as sheep and cattle is a large contributor to global warming. As the livestock eat, methane gas (a greenhouse gas) builds up in their stomach and they fart it out. On a small scale this may not seem like much but considering there are around 1.5 billion cows releasing gas alone, it adds up.



# How to Help Global Warming

By understanding a little more about global warming and some of the things causing it, what can we do to fix it?



Discuss with your partner some strategies on how to help slow global warming.



# Renewable Energy Sources

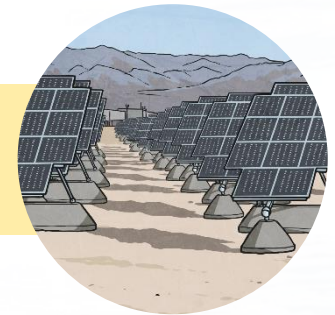
Renewable energy is energy that does not deplete as it is used. It is energy produced from sources such as:

**Wind power** – The wind power can be used to pump water or generate electricity.



**Hydroelectricity** – This uses gravitation and elevated levels of water to function.

**Solar power** – Energy using power from the sun that is collected and converted into a range of uses.



**Biomass** – Energy formed in agricultural crops and animal waste. **Biogas** - Landfill or methane gasses.

# How to Help Global Warming

Prevent deforestation or encourage reforestation. By increasing the amount of trees it will help to prevent floods by regulating rainfall, it will reduce the carbon dioxide released into the air from rotting trees and increase the oxygen released into the atmosphere.





# How to Help Global Warming



Farmers can help by rotating their livestock grazing and put strategies in place to manage the manure to reduce the methane and nitrous oxide released.

They could also change the stock feed to a high quality food that reduces the methane produced.

# Is It Enough?

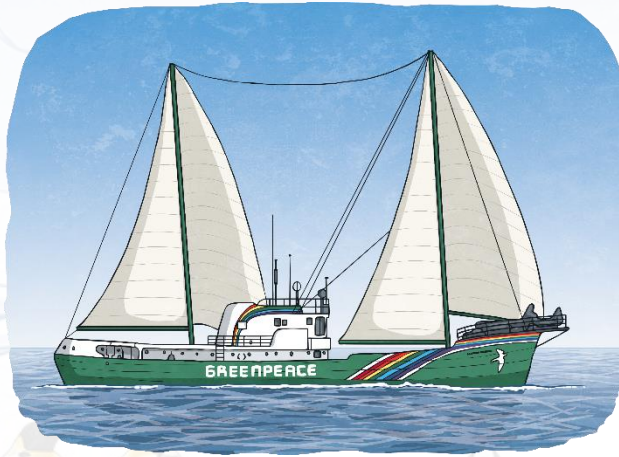
We see on the news and around us the battle as to whether global warming is really happening and what we can do to help global warming.



Science is telling us global warming is occurring. While weather fluctuates day to day, global warming refers to the overall trend of the climate and it is increasing. The increase and change is happening so rapidly that it will not give the plants and animals a chance to adapt and we can already see evidence of species of animals dying off from the changes.



# Should We Be Doing More?

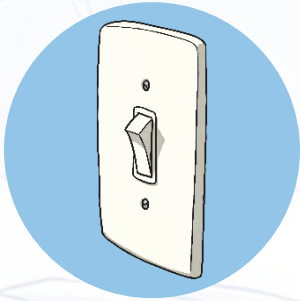


Organizations such as Greenpeace and WWF are doing their best to help change attitudes and people's behavior when it comes to the protection of our environment but should we do more?

**At home what can you personally do to help reduce your impact on global warming?**

**Discuss ideas with your partner and complete the activities. You can make a difference!**

# Should We Be Doing More?



Turn off  
the lights



Carpool



Have shorter  
showers



Plant plants  
in the garden



Take lunch to  
school in reusable  
containers



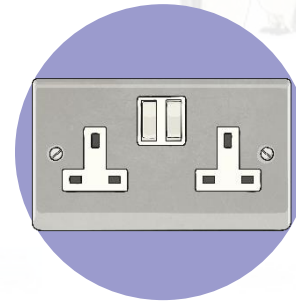
Repair things  
when they break  
instead of replace



Ride your  
bike



Recycle



Unplug electronic  
devices when they  
aren't in use



Walk