Climate Change

What is climate?

Climate is **not** the same as weather. What is the difference?

Weather is the state of the atmosphere at a given time and place. It is measured in terms of factors such as temperature, rainfall, humidity and cloudiness.

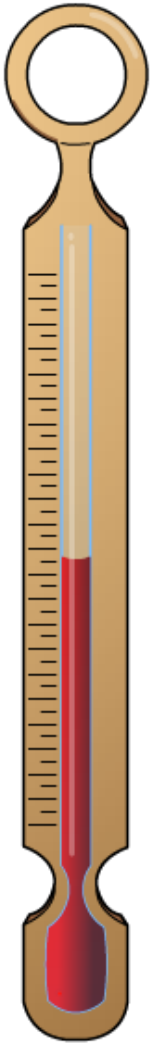
Climate is the average weather for a region over a long period of time, usually 30 years.

Weather can change several times a day; the climate normally takes a long time to change. What would happen if the climate changed quickly?

What is climate change?

Climate change is a natural phenomenon and normally takes place over several centuries.

The term ‘climate change’ is being used now to refer to the current climate. This is because recent scientific records show that the global climate seems to be warming up **more rapidly** than usual.



- **The average global temperature has increased by 0.6°C in 140 years.**
- **The ten hottest years for the last 100 years have occurred since 1990.**
- **Scientists have predicted that the climate could increase by up to 6˚C in the next 150 years.**

Impacts of climate change

What is global warming?

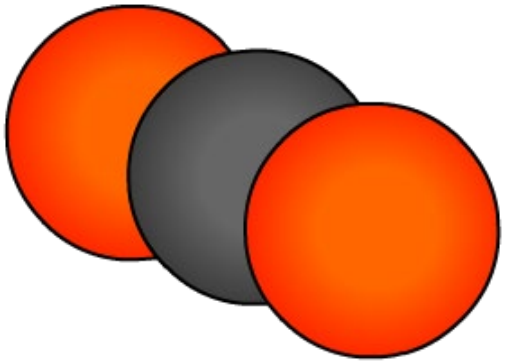
The term "**global warming**" is often used in connection with climate change, but what does it mean?

Global warming refers to the increase in the Earth's temperature due to the greenhouse effect, which can cause changes in climate.

However, the term "global warming" is now being used to refer to the warming **predicted** to occur as a result of **increased emissions** of greenhouse gases and other human activities. This enhanced greenhouse effect may lead to significant climate change.

Why is carbon dioxide so important?

Carbon dioxide is considered the **most significant greenhouse gas**.



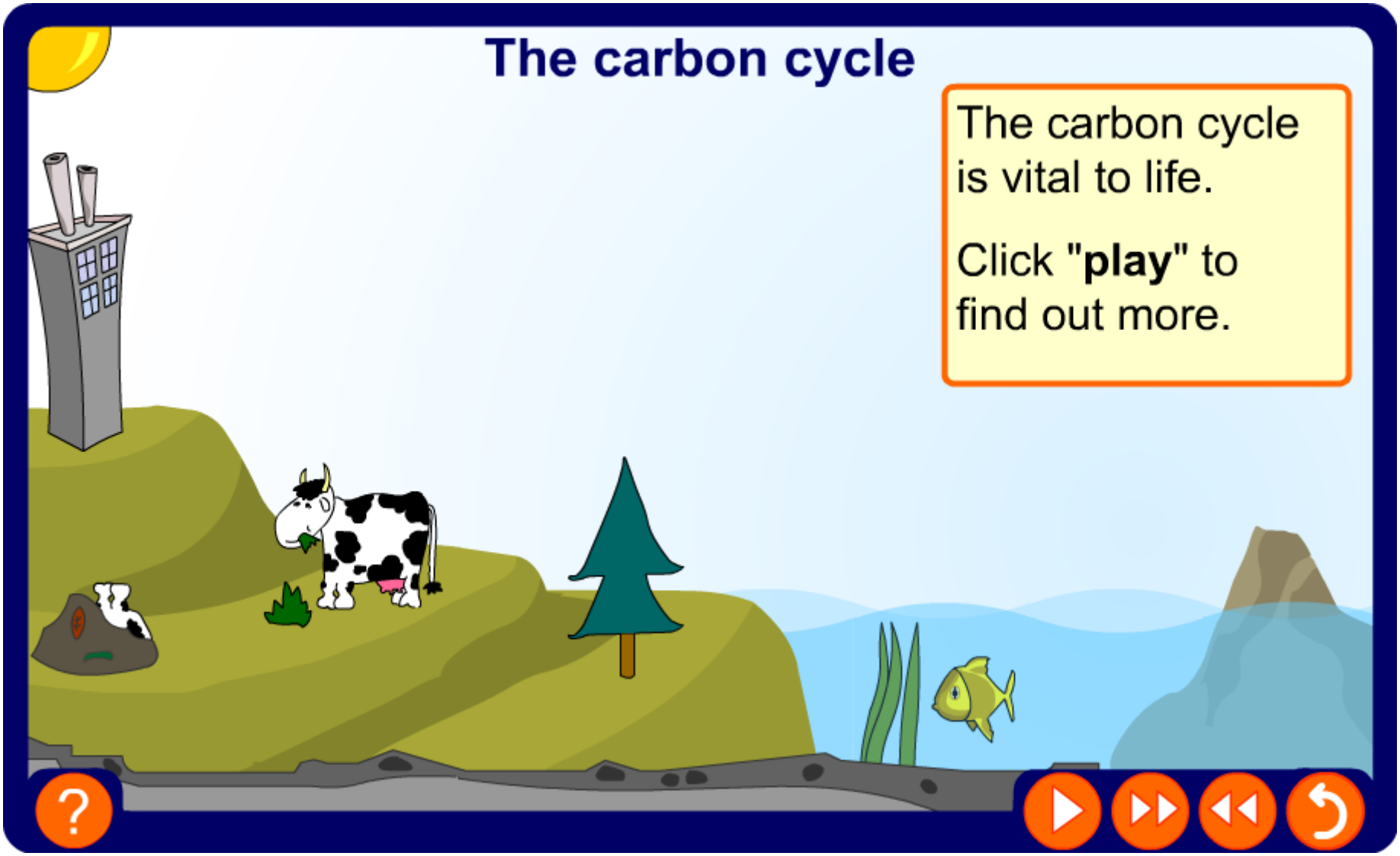
This is because carbon dioxide can remain in the environment over a long time, from 50 to 200 years.

Any process producing carbon dioxide today could affect the climate for hundreds of years.

Carbon is present in all living things and moves through the environment in a chain of reactions called the **carbon cycle**.

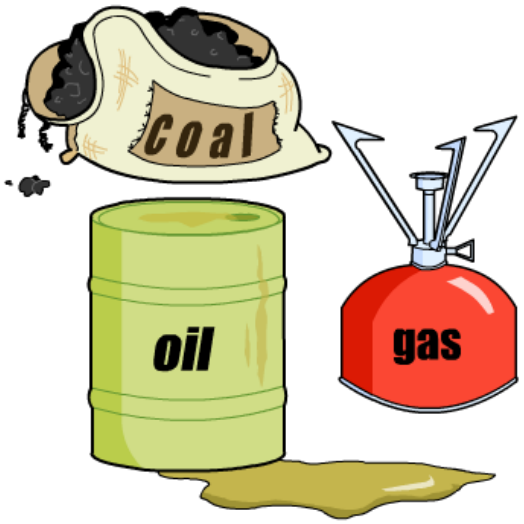
Levels of carbon dioxide in the atmosphere have increased since the industrial revolution in the 19th century.

What is the carbon cycle?



What happens when fossil fuels are burned?

Fossil fuels are carbon-based materials that formed over millions of years from the remains of ancient plants and animals.



Fossil fuels are burned to generate heat. This combustion reaction creates carbon dioxide and water as waste products.

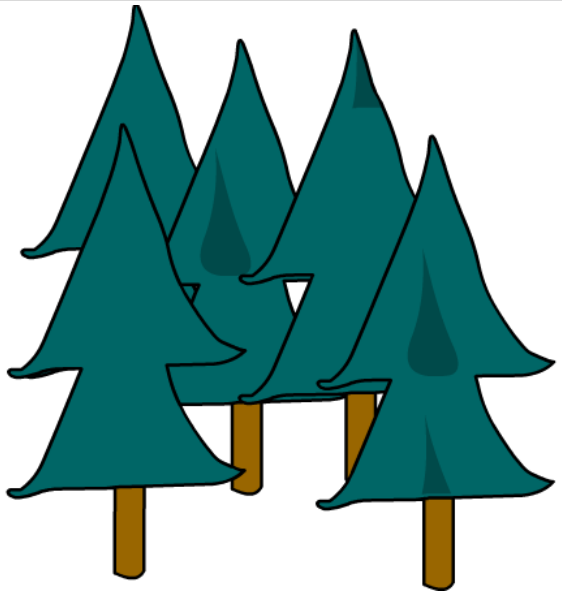
fossil fuels + oxygen → carbon dioxide + water

Greater use of fossil fuels is thought to be the main source of the increase in atmospheric carbon dioxide.

Should the use of fossil fuels be limited?

How would this affect our lifestyles?

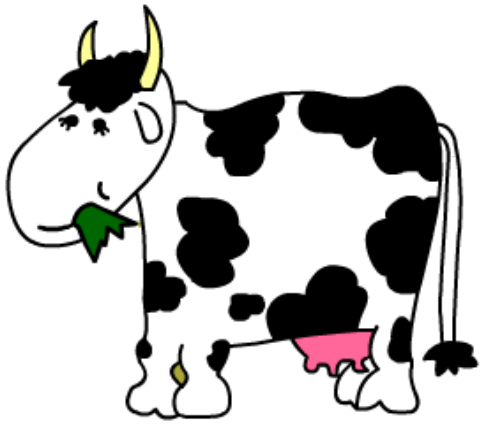
What else affects greenhouse gas levels?



Burning wood releases carbon dioxide into the atmosphere.

Living trees also have a major impact on the atmosphere, as they produce oxygen and absorb the greenhouse gas carbon dioxide. Deforestation reduces the amount of photosynthesis taking place and so increases carbon dioxide levels.

Rice farming and cattle farming produce the greenhouse gas **methane**. This gas is 7.5 times more effective as a greenhouse gas than carbon dioxide but is currently in the atmosphere at much lower levels.



Tackling climate change