



# The Carbon Cycle

## Watch the film:

Watch these bitesize clips.

Fossil Fuels:

[bbc.co.uk/education/clips/zdx4wmn](http://bbc.co.uk/education/clips/zdx4wmn)

Climate Change:

[bbc.co.uk/education/clips/zg7d39q](http://bbc.co.uk/education/clips/zg7d39q)

We know trees are great at storing carbon, but where does it come from and where does it go? Let's explore the Carbon Cycle to find out more!

All life on Earth is Carbon based, and carbon is constantly moving from one part of the planet to another through a process called the **Carbon Cycle**.

## How does carbon go from one place to another?

Carbon is transferred through many different **processes** including:

- **Photosynthesis** – Process where plants use Carbon Dioxide ( $\text{CO}_2$ ) and energy from the sun to make sugars and  $\text{O}_2$  that we and other animals need to survive. Whilst we typically only think of trees, flowers and grasses when we think of plants, this process is also happening in our oceans where there are lots of different types of plants such as algae that are able to photosynthesise.
- **Burning fossil fuels** – Our use of fossil fuels is a human activity using coal, oil and gas to generate power and electricity. This happens in oil refineries, factories, car engines and planes across the world, releasing a large amount of 'greenhouse gases', including  $\text{CO}_2$ , into the atmosphere. Most scientists agree that this is fuelling Climate Change. Had the fuel not been burnt and released into the atmosphere, the carbon would have remained buried under the ground.





## Where is carbon stored?

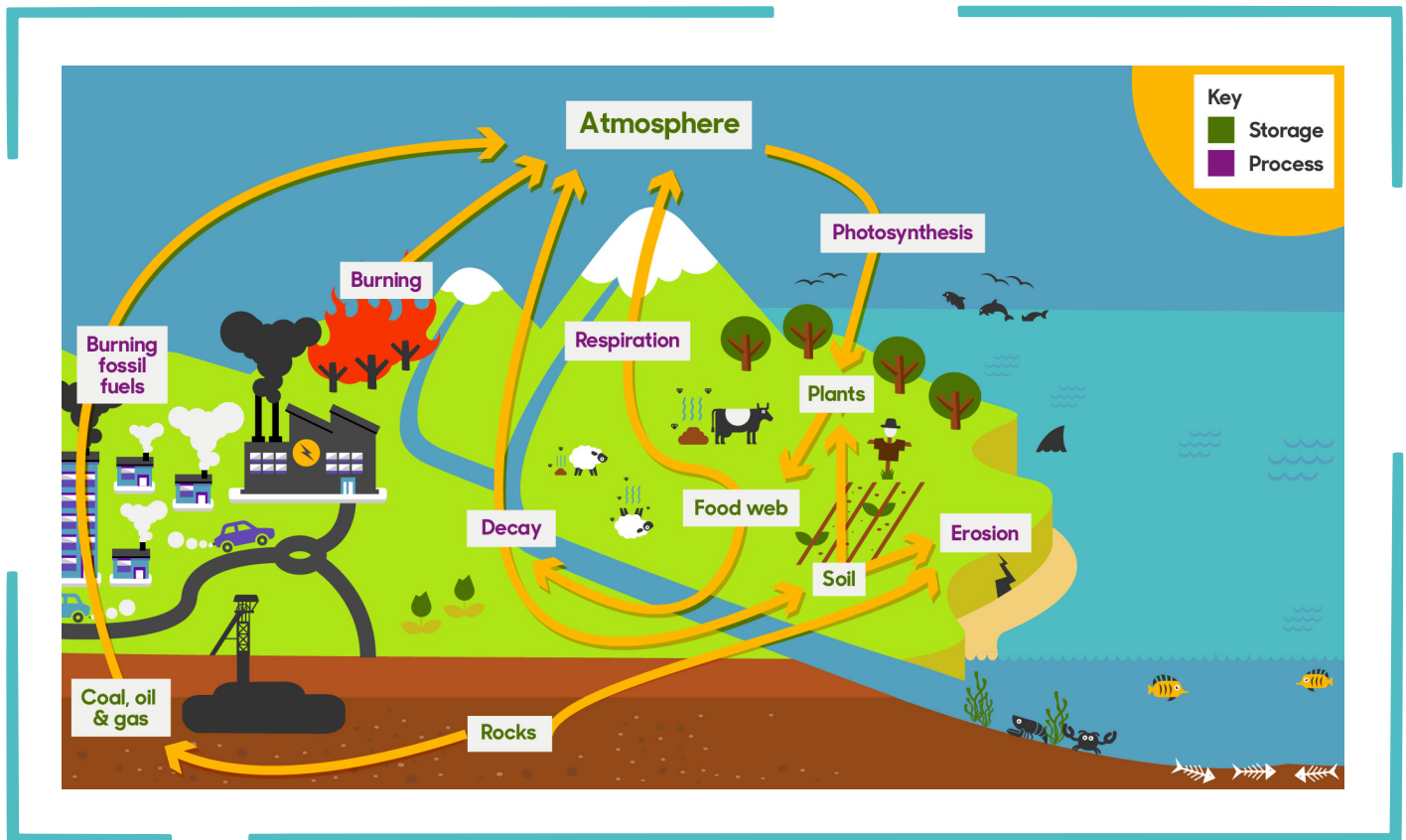


There are several different **carbon stores**, including:

- **Plants** – Trees store carbon in their trunks, leaves and roots. Every day, tonnes of CO<sub>2</sub> are released into the atmosphere. Plants remove ¼ of this CO<sub>2</sub> and convert it into sugars by photosynthesis, using energy from the Sun and releasing oxygen as a by-product. An incredible 600 billion tonnes of carbon are thought to be stored in land plants alone.
- **Atmosphere** – The atmosphere holds around 750 billion tonnes of carbon, mainly as CO<sub>2</sub>. Human activity such as burning fossil fuels and deforestation (cutting down trees) is contributing to what most scientists agree are dangerously high levels of CO<sub>2</sub> in our atmosphere. Cutting down large areas of forest is a problem as it would otherwise have helped to remove CO<sub>2</sub> from the atmosphere.
- **Fossil fuels (coal, oil and natural gas)** – Millions of years ago, organisms containing carbon, such as trees and ocean-dwelling creatures, died and were buried. Because these organisms were buried, they weren't able to decompose properly. Over millions of years, the pressure from being buried under tonnes of material meant that these organisms were turned into fossil fuels. As we burn these fossil fuels, we release carbon that has been stored in the Earth for millions of years into the atmosphere, as CO<sub>2</sub>. This means we are adding extra carbon to the cycle which would otherwise have remained stored in the Earth.



We have simplified this diagram to only focus on land-based carbon movement, but can you think of other places you may find Carbon? Hint: Only 29% of our planet is land!



The Carbon Cycle diagram above shows other stores and processes.

- Which processes do you think help to move the most carbon around the cycle?
- Which stores do you think can hold the most carbon?
- Are there any that could be prevented?



Now you have explored the land-based carbon cycle, why not see if you can label the diagram?



Remember to write down whether it is Carbon Storage or a Carbon Process, using the Key in the top-right corner.