The Carbon Cycle

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 – A process where plants use carbon dioxide (CO_2) and energy from the sun to make sugars and the 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, there are also lots of different types of plants in our oceans, such as algae, that are able to photosynthesize.

1. How is carbon dioxide used in photosynthesis? _____

Burning fossil fuels – Humans burn fossil fuels, 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 CO_2, into the atmosphere. Most scientists agree that this is fueling climate change. Had the fuel not been burnt and released into the atmosphere, the carbon would have remained buried under the ground.

2. How does burning fossil fuels contribute to the movement of carbon? _____

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_2 are released into the atmosphere. Plants remove 1/4 of this CO_2 by photosynthesis, using the energy of the Sun to create sugars from the carbon and releasing oxygen as a by-product. An incredible 600 billion tonnes of carbon are thought to be stored in land plants alone.

3. Why is it a 'win win' situation for plants and humans when plants take in carbon? _____

_____

Atmosphere – The atmosphere holds around 750 billion tonnes of carbon, mainly as CO_2 . 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_2 in our atmosphere. Cutting down large areas of forest is a problem as the trees would otherwise have helped to remove CO_2 from the atmosphere.

4. Why is deforestation a bad thing as it relates to carbon? _____

_____

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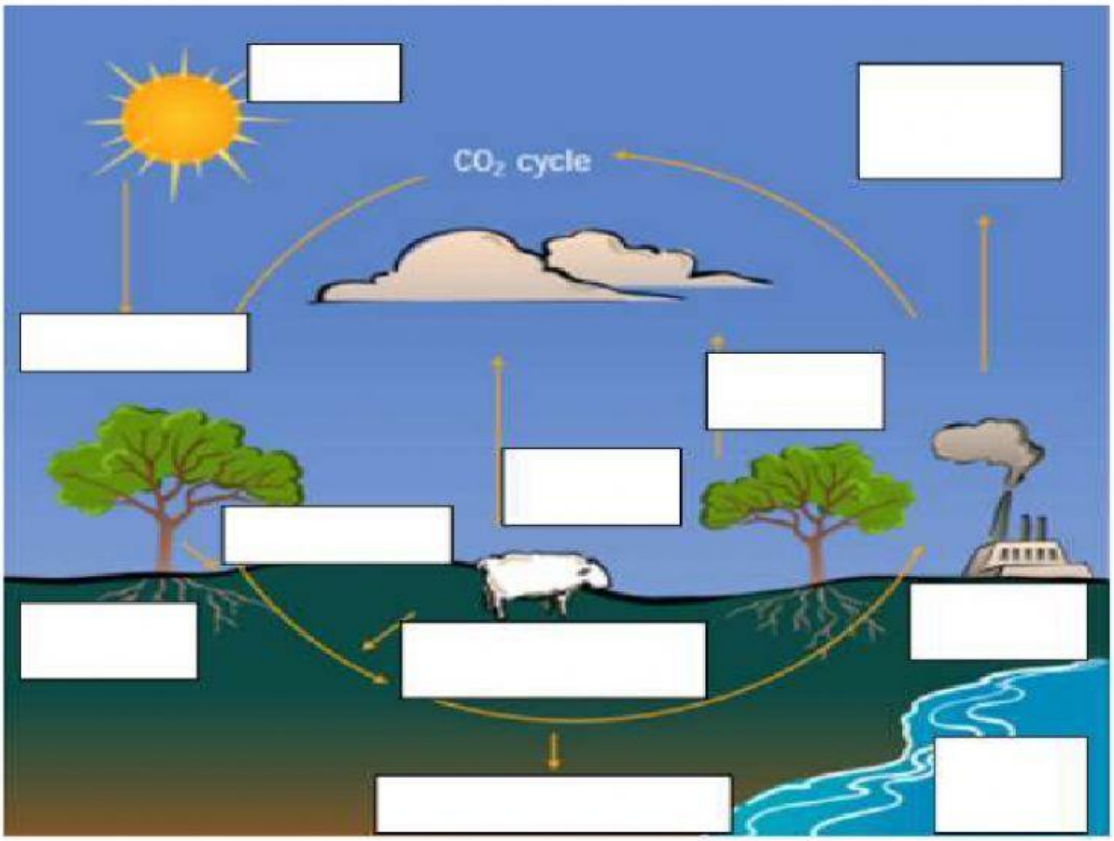
Fossil fuels (coal, oil and natural gas) – Millions of years ago, organisms containing carbon, such as trees and ocean-dwelling creatures, died and were buried. Because these organisms were buried, they weren't able to decompose properly. Over millions of years, the pressure from being buried under tonnes 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 CO2. This means we are adding extra carbon to the cycle which would otherwise have remained stored in the Earth.

5. How did fossil fuels originate? _____

6. What happens when we burn fossil fuels? _____



Drag and drop the correct descriptions in the boxes above:

-Auto and factory emissions -Photosynthesis -Sunlight -Fossils and fossil fuels

-Root respiration -Decay organisms -Dead organisms and waste products

-Animal respiration -Organic carbon -Ocean uptake -Plant respiration

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