# What is the carbon cycle?

KS2 KS3 Ages 9-14 ⏰ 3 min read

Carbon is the backbone of all life on Earth. It's in every cell of your body, in every plant, in the air you breathe, and in the rock beneath your feet. But carbon doesn't sit still — it moves constantly between the living world, the atmosphere, the oceans, and the ground. This movement is the **carbon cycle**.

## Carbon in the air

The atmosphere contains carbon in the form of **carbon dioxide** ($CO_2$) — a gas made of one carbon atom bonded to two oxygen atoms. Plants absorb $CO_2$ from the air during photosynthesis and use the carbon to build their leaves, stems, and roots. In doing so, they lock atmospheric carbon into solid matter. This is called **carbon fixation**.

## Carbon through the food chain

When animals eat plants, they take in that carbon. When they breathe, some of it is released back as $CO_2$. When animals and plants die, decomposers (bacteria and fungi) break down their bodies, releasing carbon back into the soil and air. Some carbon gets buried in sediment and, over millions of years, is compressed into coal, oil, and natural gas — what we call **fossil fuels**.

Imagine carbon as money in an economy. It flows from the bank (atmosphere) to shops (plants), from shops to customers (animals), and customers eventually deposit it back at the bank (by breathing, decomposing, or dying). For millions of years, the total amount in circulation stayed roughly the same. Burning fossil fuels is like finding an enormous buried treasure chest full of old money and spending it all at once — suddenly flooding the economy with far more carbon than it's used to handling.

## The ocean's role

The oceans absorb roughly a quarter of all the $CO_2$ humans emit — acting as a massive carbon sink. This has slowed climate change, but it comes at a cost: as seawater absorbs more $CO_2$, it becomes more acidic (a process called **ocean**

**acidification**). This threatens shellfish, coral reefs, and the entire marine food chain that depends on them.

## How humans are changing it

For most of human history, the carbon cycle was roughly in balance. Then we started burning fossil fuels — releasing carbon that had been locked underground for hundreds of millions of years, all within the space of about 200 years. The cycle can't absorb this extra carbon fast enough. It accumulates in the atmosphere as $CO_2$, trapping heat and causing the climate to warm. The carbon cycle isn't broken — but we are definitely stressing it in ways it has never been stressed before.


Free for educational use