How Does Planting Trees Help Mitigate Climate Change?

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The Carbon Cycle

Before we dive into the science of how tree planting can help mitigate climate change, we first need to understand the carbon cycle.

Carbon is a key building block in life that is required to form proteins and DNA in organisms. Carbon is also in the atmosphere, most often in the form of CO_2. The carbon cycle seeks to show the continuous cycle, where carbon atoms on Earth change forms through decomposition, weathering, exchange, etc.

1. Weathering and Erosion

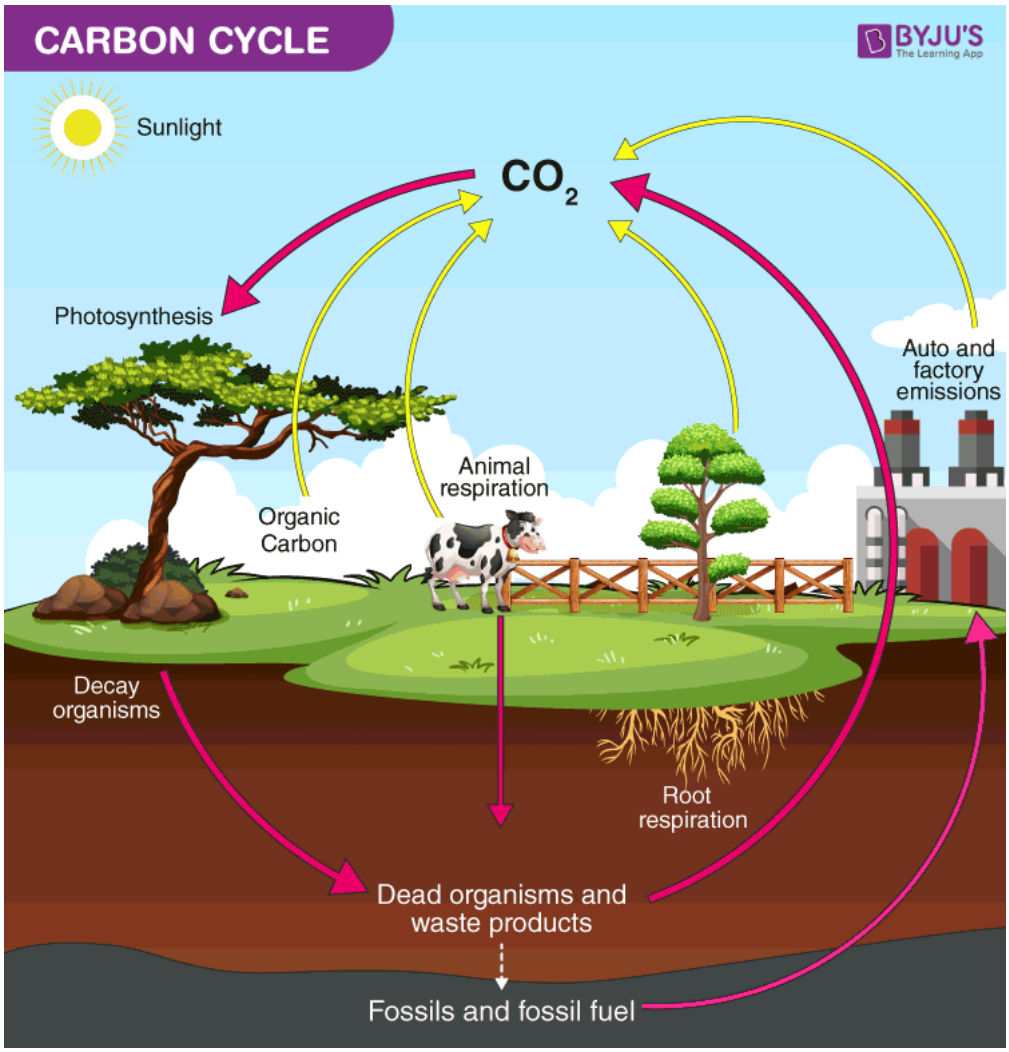
The majority of the Earth's carbon is stored inside mountains and rocks, and when natural rain, runoff and weathering happens, these carbon atoms can then be broken down into usable carbon atoms.

2. Decomposition

When living matter such as plants and animals decomposes, the carbon inside them could be consumed by another organism or released back into the atmosphere. The carbon in decomposing matter could also sink down into the soil and become fossil fuels overtime. If the dead bodies are consumed, they then are able to rearrange the carbon atoms into carbon structures that are more relevant to that species.

3. Consumption

When animals consume plants or other animals, the animal can also acquire the carbon from the organisms consumed. The carbon atoms can be rearranged to carbon structures necessary for their bodies.



4. Combustion

Combustion such as the burning of fossil fuels also releases carbon dioxide into the atmosphere.

5. Photosynthesis

One of our most prominent carbon sinks on Earth are plants, because they take in carbon dioxide through the natural process of photosynthesis. Photosynthesis is a key stage in the carbon cycle. Carbon sinks exist to balance the equilibrium of carbon dioxide produced and stored, which is being disrupted in recent years due to the burning of fossil fuels and human activities.

6. Exchange

Other than plants, the ocean is another one of Earth's biggest natural carbon sinks. Through diffusion, the carbon atoms in the atmosphere can enter in and out of the ocean.

Carbon Sequestration

Carbon sequestration is the process of taking in and storing carbon dioxide in the atmosphere. The above mentions that the main carbon sinks on Earth are the ocean and trees. Carbon sinks aim to take in the carbon dioxide that is naturally produced through cellular respiration, aerobic decomposition, volcano eruptions, combustion, and more to prevent the Earth from reaching high and inhabitable temperatures.

However, since industrialization, levels of carbon emissions have exponentially increased due to the burning of fossil fuels, and the large amounts of greenhouse gasses in the atmosphere leads to the efficient trapping of heat.

By planting trees, its chemical formula of photosynthesis allows them to take in carbon dioxide and water, which produces sugar and oxygen, and also helps mitigate carbon dioxide levels in the atmosphere. With the recent increase in CO_2 in the atmosphere, many problems such as increases in atmospheric temperatures, rising sea levels, ocean acidification, thermal pollution, and more cannot be understated. Through planting more trees, we are directly taking in our atmospheric carbon dioxide levels and one step closer to tackling climate change.

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