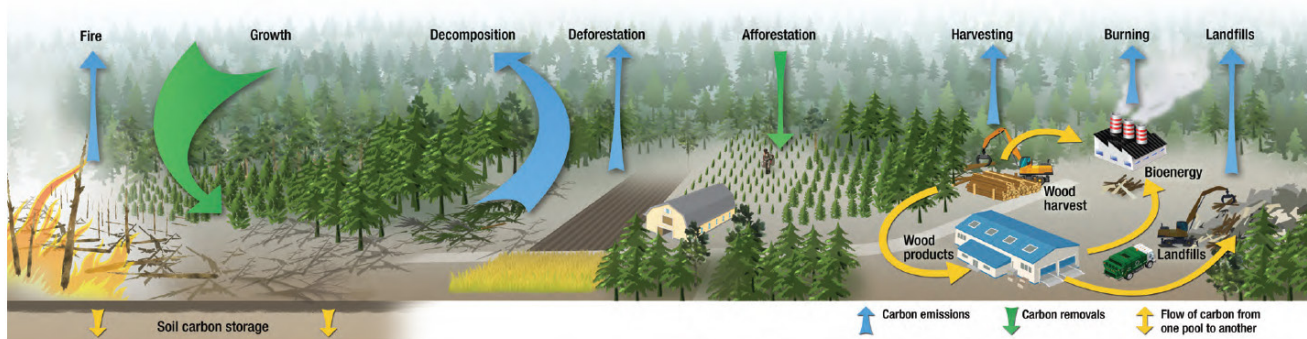


# Climate Change and Forests



## What role do forests play in the carbon cycle?

The "carbon cycle" is the movement of carbon from land and water through the atmosphere and all living things. Carbon in the atmosphere exists as CO<sub>2</sub>, a greenhouse gas (GHG). Trees absorb carbon during photosynthesis and store it in their stems, branches and roots, removing large amounts of carbon from the atmosphere. A large proportion of this stored carbon also ends up in forest soil through natural processes such as annual leaf fall and tree death.



Trees release carbon back into the atmosphere during respiration, when they die and decay, and if they are burned in a forest fire. This dynamic process of absorbing and releasing carbon constantly affects Earth's carbon balance.

Forests are considered to be "carbon sinks" when they absorb more carbon than they release; and "carbon sources" when they release more carbon than they absorb. How humans manage forests and use wood also affects this balance.

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Canada

### The role of forests in the carbon cycle.

Source: Government of Canada. <https://d1ied5g1xfqpx8.cloudfront.net/pdfs/37284.pdf>

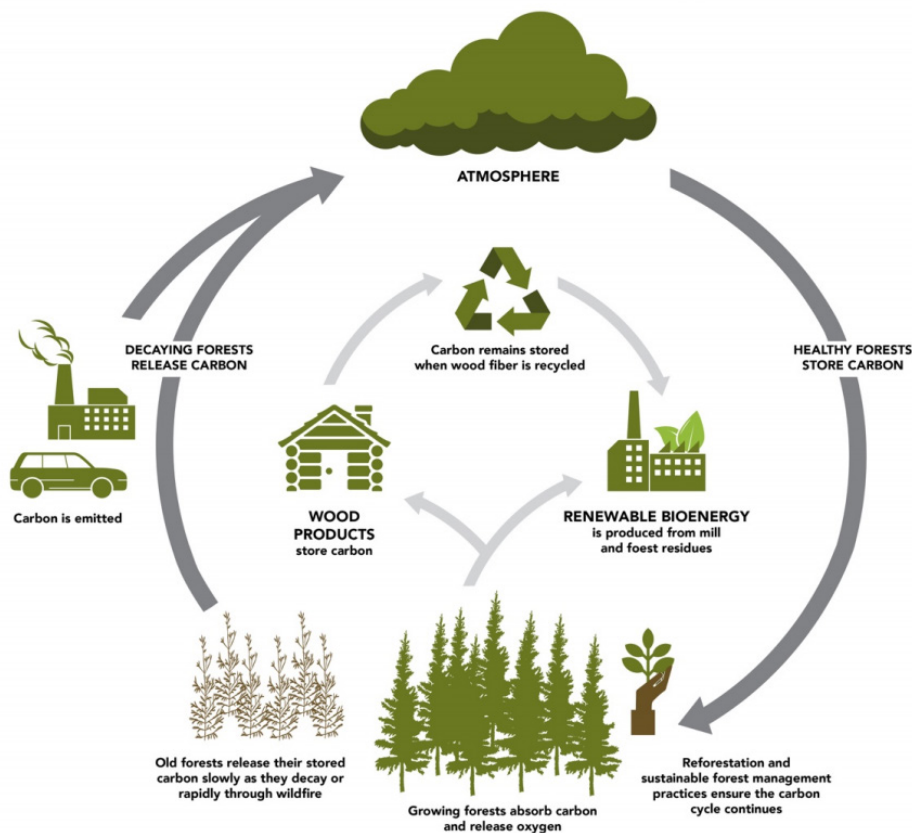
### Key Carbon Facts

- Carbon exists in the Earth's atmosphere mainly as carbon dioxide. The dry weight of most living organisms is about half carbon, making it an essential building block of life.
- Only a small portion (about 0.04%, as of 2022) of carbon exists in the Earth's atmosphere as carbon dioxide.
- 86% of the planet's aboveground carbon (carbon that exists above sea level) is stored by forests, along with 73% of the planet's soil carbon.

## Discussion Questions

- What is the role of forests/trees in the carbon cycle?
- How can we manage forests to increase carbon storage and climate resiliency?
- What problems do you recognize? How do these problems affect your neighbourhood and/or community? How should our concerns lead us to action? What is the outcome of people noticing the problem(s)?
- How are forest products part of the solution for mitigating climate change?
- How do forests, as carbon sinks, help slow down climate change?
- What role do forest soils play in the carbon cycle?
- How are forests impacted by climate change?
- How are forests adapting to climate change?
- How can forests help people adapt to climate change?
- What actions can people take involving trees and forests to help fight climate change?

### SUSTAINABLE FOREST MANAGEMENT AND CARBON STORAGE An Ontario boreal forest example with wildfire suppression



### The carbon cycle and storage through forests and forest products.

Source: Government of Ontario. <https://files.ontario.ca/mnrf-sustainable-forest-mgmt-carbon-storage.png>