

SOURCES OF CARBON DIOXIDE

HUMAN



NATURAL



HUMANS

- **Burning fossil fuels** (coal, oil, natural gas)
 - Fossilized, buried remains of dead organisms
 - High carbon content
- Alternate **renewable** technologies provide zero-low greenhouse gas emissions
 - Nuclear, hydropower, solar, wind, & biofuel
- Forests can offset emissions through carbon storage
- **Agriculture management**
 - Increases **carbon storage** through better crop rotations, manure/compost addition, and improved grazing land management

NATURAL FACTORS

- **Respiration** from plants and animals
- Large **volcanic eruptions**
 - In geologic past, large releases of greenhouse gases sometimes contributed to global warming
 - Present day volcanoes release less than 1% of the emissions caused by humans
- **Wildfires**
 - Release all the carbon stored in the vegetation



Forest management, like controlled burning and harvesting of trees, can prevent wildfires.



SINKS OF CARBON DIOXIDE

FORESTS



SOILS



OCEANS



Carbon sinks are reservoirs that **capture** and **store** atmospheric carbon dioxide, taking in more than they emit.

FORESTS

- About **50%** of a tree's chemical composition is carbon
- Fast growing **young forests** take in carbon rapidly



*A sustainably **managed** forest with repeating timber harvests stores **more carbon** over time than land that is unmanaged.*



SOILS

- Contain more than:
 - **3x** the amount of carbon in the atmosphere
 - **4x** the amount in all living plants & animals
- **Peatland** (wetland organic soils)
 - Store about **25%** of global soil carbon
- **Permafrost** (frozen soils)
 - Store about **50%** of global belowground carbon

OCEANS

- Absorbed **25%** of the carbon dioxide released since the Industrial Revolution
- **Phytoplankton** (microalgae)
 - Absorb about as much carbon as all plants and trees on land combined

TREES

AND THEIR

SUPERPOWERS



CARBON CAPTURE

- Plays a major role in the fight against **climate change**
- Starts with **photosynthesis**
- Forests are one of the largest land stores of carbon
- Wood products
 - Store carbon long-term
 - Require less energy to create
 - Results in fewer carbon dioxide emissions than steel or concrete



Every year, world **forests** absorb 1/3 of the total carbon emissions from burning fossil fuels.



WHAT ARE WE DOING?

- **Afforestation**
 - Creates forests on land previously unforested
- **Reforestation**
 - Creates forests on land previously forested
- **Avoided Conversion**
 - Prevents conversion of forested land to non-forested land
- **Forest Management**
 - Increases or maintains amount of carbon stored in trees
 - Monitors greenhouse gas removal