

Facts about Forest Carbon and Carbon Markets

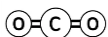
25% of forest carbon is in the living trees and plants.



Forests are living, dynamic systems that cycle carbon through the plants, soils, deadwood, and the atmosphere.

- On average, only 25% of carbon in forests is in the living trees and plants, which can be increased by management.
- Up to 50% of carbon in forests is in the soils. Carbon in the soil is difficult to increase, so soil should be protected to prevent erosion.
- 5% of forest carbon is stored out of the forest in harvested wood products, most of which is in houses and buildings.

The carbon found in plants and trees are part of carbon-based sugar molecules.



Through photosynthesis, plants sequester or remove carbon dioxide from the air to make sugar, which supports the primary functions of the plant.

- Plants turn sugar molecules like glucose into molecules like cellulose and lignin, which are the building blocks of woody biomass.
- Increasing the average amount of living woody biomass (usually, trees) per acre helps store forests store additional carbon.

Climate-smart forestry helps forests adapt *and* mitigate climate change.



The future of forests and climate are interlinked—if one suffers, they both suffer.

- Forests help regulate the climate by controlling the amount of carbon dioxide in the atmosphere.
- A stable climate helps forests grow and live longer by reducing the likelihood of extreme temperatures, weather events, and stress on plants.
- Management that prevents forest loss and/or protects forest health can help stop the negative feedback loop between forests and climate.

One carbon credit represents one metric ton of carbon dioxide emissions reduced or avoided.



Carbon credits are created when a landowner is paid to adopt a new forest management practice that reduces carbon dioxide emissions.

- A verified reduction in carbon emissions, due to an increase in carbon sequestration by the forest, can be used to generate carbon credits.
- Buyers of carbon credits, either an individual or organization, are able to reduce their carbon footprint by paying others to change their behavior instead.

Forests are a leaky reservoir for carbon.



Carbon credits that have been approved by a carbon offset registry come with a promise that the climate benefits are permanent and real (e.g., lasts 100 years).

- Carbon molecules can cycle through a forest in less than 100 years.
- Project managers try to account for these changes by tracking total carbon gains over total carbon losses over time within the project area (e.g., change in amount of living trees per acre).
- Management practices that help increase total carbon gains, and maintain it above a designated baseline, help protect additional carbon storage.

FOCCE website



<https://sites.psu.edu/focce/>

Penn State Extension Website



<https://extension.psu.edu>

For more resources, scan these links with a smart phone camera!