

What are forest carbon pools?

Carbon is constantly in flux in a forest. As new atmospheric CO₂ is sequestered by trees and other plants, carbon is also transferred to other pools as live plants die or shed leaves or branches. Carbon that is used in a tree's cells for branches, leaves, roots, and other living parts is the live biomass carbon pool (Figure 7). The carbon is stored in the live biomass pool until it is transferred to another pool or removed (burned, harvested, or consumed by an insect or fungi). Live roots also exude carbon directly into the soil to increase microbial processes and nutrient availability. When branches break, leaves are shed, or a tree dies, the carbon is transferred to the dead wood carbon pool or leaf litter carbon pool. As these pools are decomposed by fungi, insects, and other organisms, they release CO₂ back to the atmosphere, but some carbon is transferred to the soil carbon pool where it can reside for a long time – up to centuries or millennia. Carbon in the soil can eventually make its way into rivers and lakes.

The live biomass carbon pool can be divided into aboveground (trunk, branches, leaves, bark) and belowground (roots) portions. The live biomass pool is the most dynamic of the five carbon pools, meaning that it fluctuates the most from year to year due to weather conditions and the length of the growing season. However, trees do not make up the largest carbon pool in the forest; the soil pool contains about 1.5 times more carbon than the live biomass pool.

For managed forests, there are also non-forest carbon pools: the harvested wood products in use and the harvested wood products in landfill. Carbon stored in durable wood products like furniture, cabinets, floors, and buildings may be secured for decades or even centuries – as long as the product is in use. Other wood products, like paper or cardboard, also store carbon, but for shorter periods. The landfill carbon pool accounts for the end of life of wood products that release CO₂ as they decompose slowly, especially under anaerobic conditions.

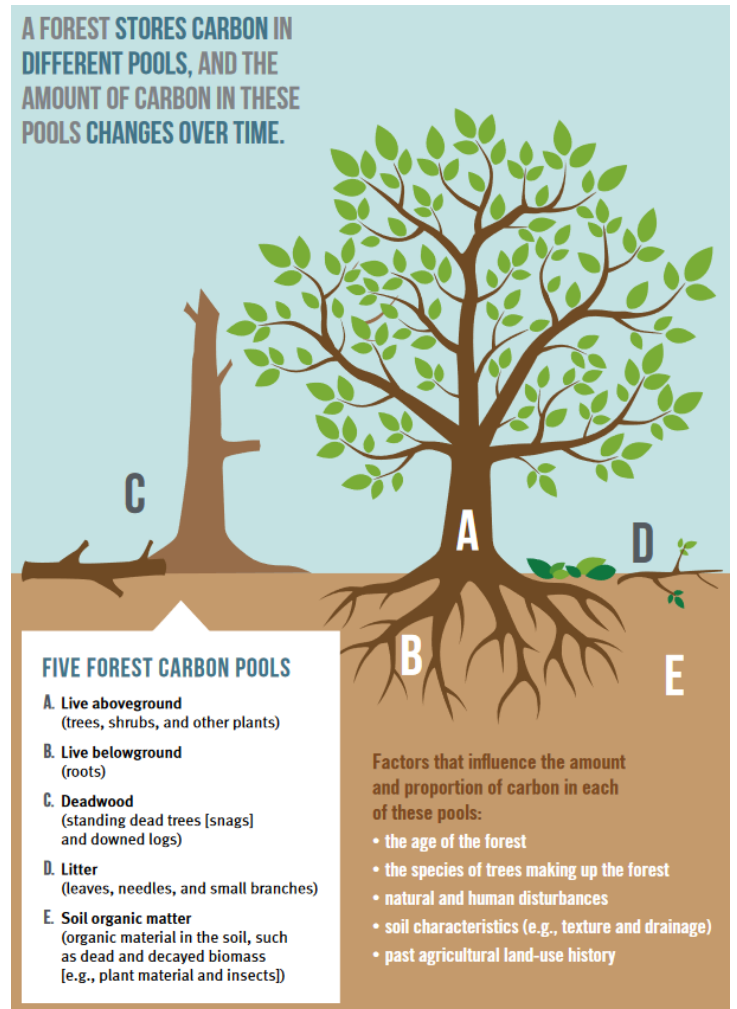


Figure 1 Source - Forest Carbon