What Is a Forest Carbon Sink?

The elements of a forest — the trees, soil, roots and decaying matter — can all absorb and store carbon, as well as release it.

A forest is considered to be a carbon sink if it **sequesters (a.k.a. absorbs) more carbon from the atmosphere than it releases.** The size of any forest carbon sink is determined by the amount of carbon absorbed minus the amount of carbon released.

We can ensure a strong net gain in carbon absorbed — a much-needed solution to addressing climate change — if we manage forests in such a way that existing healthy trees can grow, and if we plant more trees, always being sure they are the right trees, chosen for the right places.

Carbon Sequestration and Storage

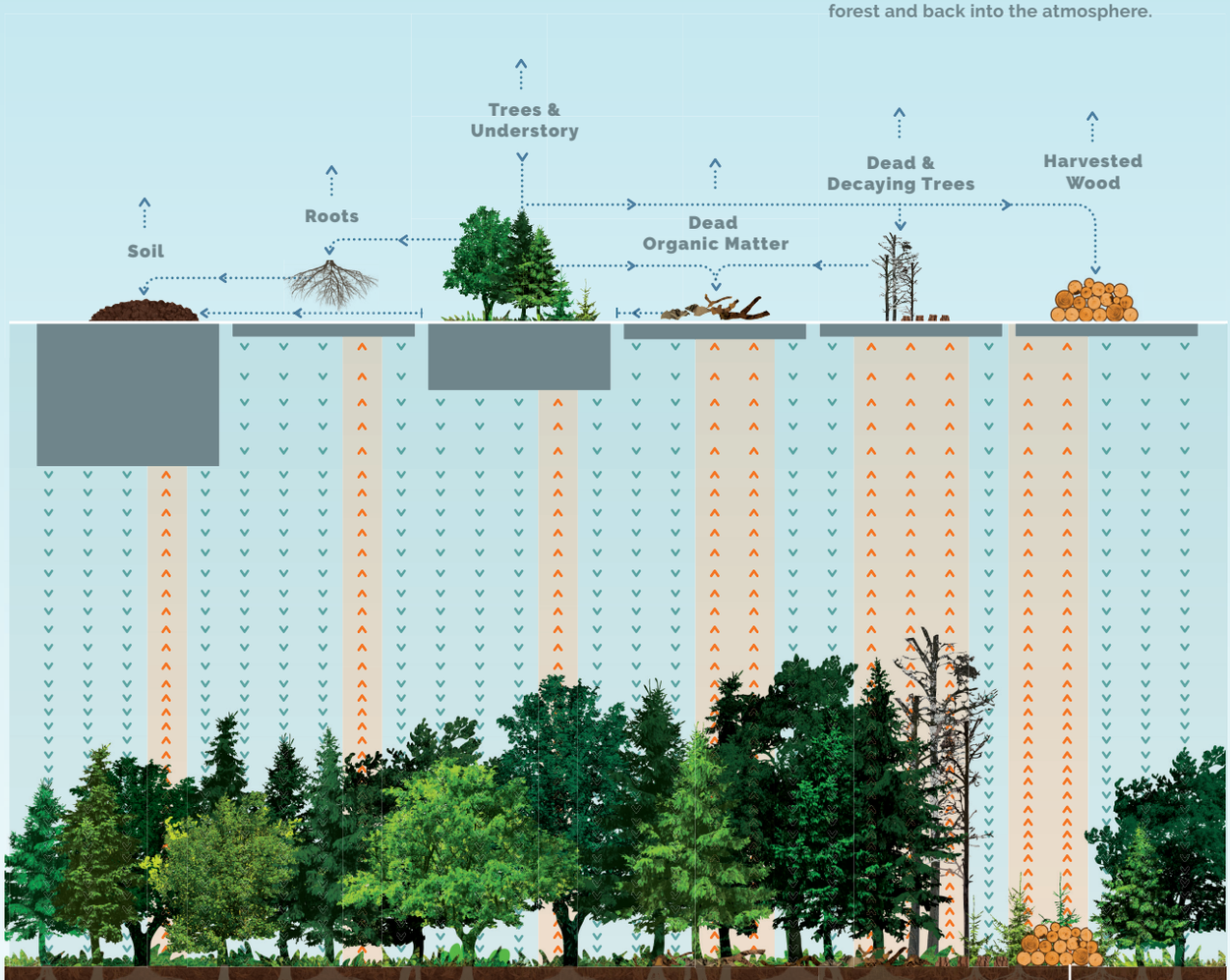
Tree leaves absorb (or sequester) carbon from the atmosphere through photosynthesis. Some of the carbon is stored in the tree leaves, trunks, branches and roots, and some is transferred into the soil.

Carbon Release

All elements of a forest release some carbon through natural decomposition, but much more carbon is released when trees are destroyed, such as during wildfires. Some carbon is also released when land is cleared to build homes or create farms, but most of the carbon in those trees is transferred into useful harvested wood products.

Carbon Flow

Carbon can also be transferred — or flow — from trees into different elements of the forest and back into the atmosphere.



Forest Carbon Stocks

In forests, carbon is stored in various "pools" — live trees, standing dead trees, downed wood, the forest understory and soils. Carbon stored by the pools in a forest make up its "carbon stocks." The amount varies by the type of pool — for example, soil and live trees have the biggest carbon stocks. Soil stores over half the carbon in the forest all by itself!

The Benefits of Sustainable Harvesting

As trees get old or sick, they grow more slowly and sequester less carbon — and when they die and begin to decay, they start to release more carbon than they sequester. When these trees are harvested, most of their carbon is transferred to useful wood products, while making space for the next generation of trees to grow and sequester more carbon.