



Planted forests and carbon

Planting trees and forests is one of the best immediate responses to climate change. Sustainably grown trees capture carbon dioxide from the atmosphere and the carbon is stored in the forest biomass. Wood products and buildings continue to store carbon for their lifetime.



Trees provide energy alternatives that can substitute for fossil fuels. Timber and other wood products are low carbon-footprint materials compared with concrete and steel.

The carbon uptake by forests can also be used to offset emissions from other sources.

Society needs sustainable sources of energy and raw materials. Trees are a sound, sustainable option that we can put into service right now.



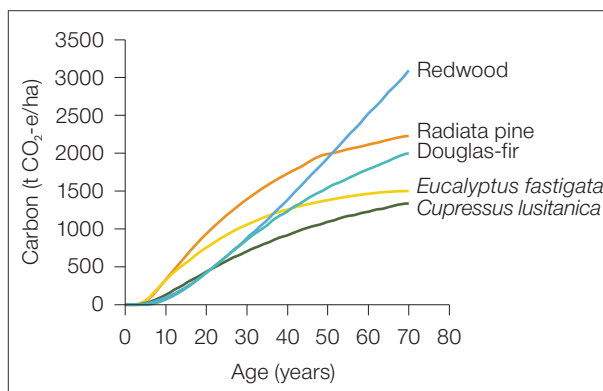
Storing carbon in forests

Planting trees in non-forested landscapes increases the carbon stock in that landscape. Trees absorb carbon dioxide from the air, then use that carbon to grow the forest, including wood. Planting initiatives such as the One Billion Trees Programme will help New Zealand meet its target of a 30% reduction in net emissions.

The rate at which carbon dioxide is absorbed from the atmosphere depends on the growth rate of the trees. This in turn varies with species.

The carbon storage potential for radiata pine across New Zealand is affected by site, climate and management. Productivity and carbon storage potential is generally greater in the North Island, but highly productive sites can be found in the South Island.

When harvesting is followed by replanting, the reservoir of stored carbon is maintained as carbon dioxide is captured by the next rotation of trees.



Rates of carbon sequestration by a range of exotic tree species planted in New Zealand.

Low carbon building materials

Worldwide, some timber buildings have been standing and storing carbon for more than 1000 years. Wood is the only construction material that absorbs carbon dioxide from the atmosphere, other materials such as concrete, steel and aluminium are net emitters.

Modern engineered timber such as laminated veneer lumber, cross laminated timber and Glulam is being used in construction. Engineered timber was used in construction of Scion's Te Whare Nui o Tuteata and in Tauranga City Council's new office, which when completed will be the largest mass timber office building in New Zealand. The United States is home to Ascent, a 25-story (86.6m) mass timber apartment and retail complex, which is currently the tallest mass timber building in the world.

Forestry greenhouse gas emissions

Forestry is a net benefit to New Zealand's emissions profile when considering activities of the forest growers. Beyond capturing carbon dioxide, forest soils can act as methane sinks capturing more methane than other managed soils. This is an area of active, ongoing research. Forestry also has very low emissions of nitrous oxide.

Offsetting agricultural emissions

The most effective means of reducing a farm's net emissions is to plant trees to capture and store carbon to offset livestock emissions. Although methane capture by forest soil is continuous, trees will only sequester carbon dioxide while they are growing. Once they reach maturity, additional trees must be planted on new land to continue offsetting emissions.