

Measuring carbon in trees

Measure carbon in trees, wood products and forests.
How to calculate carbon stored in trees and wood?

What resources?

- Local individual trees, or forests - to assess their full value.
- Tape measure

What to do?

- Measure the circumference of the tree at the standard chest height (1.3m) with a tape measure. Record the result in centimetres. Repeat at least 3 times, at the same height, and calculate the average measure.
- Look at the table to convert this to dry weight. Use the nearest value in the table to your value.
- Divide your answer by 2 (as 50% of the tree biomass is carbon). This tells you how much carbon is stored in the tree.
- Multiplying your figure for carbon by 3.67 - to calculate how much carbon dioxide was absorbed to create this carbon store.
- Multiply the result by 120% (as 20% of the tree biomass is in the roots).



Circumference (cm)	Tree dry weight (kg)
50	106
100	668
150	1,964
200	4,221
225	5,771
250	7,641
275	9,842
300	12,410
325	15,350
350	18,700
400	26,674

These values, provided by Forest Research (UK), are for an individual hardwood tree in Westonbirt Arboretum, UK. They can be used as an example. Trees will grow at different rates depending on the species, soil, drainage, slope aspect and climate conditions. This formula and conversion will obtain an average estimate over the life span of the tree, and will exclude stores in soil carbon.

Finally if you would like to know the CO₂ sequestered per tree per year you need to look at the CO₂ and divide it by the age of the tree. This can be found in a felled tree

by counting the annual rings.

CO₂ sequestered per tree per year (kg) = X / age of the tree (yrs)

What benefit?

This enables forest researchers, planners to decide the best species to grow and best places and conditions in which to grow trees as carbon sinks. It also enables politicians and others to understand the value of trees.

What learning?

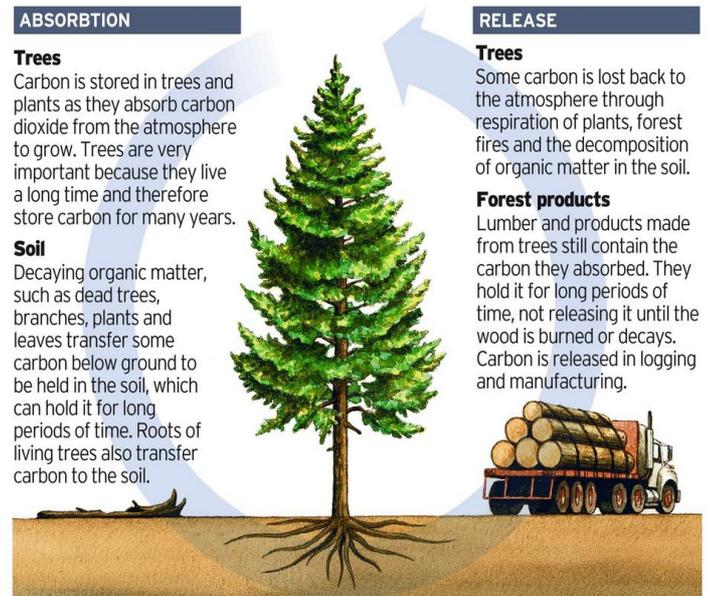
Accurate measurement and mapping is important for any scientific evidence.

However the final figures are based on many assumptions.

Trees are valuable carbon sinks, helping to balance the

How forests absorb carbon dioxide

Forests can function as carbon sinks, absorbing the climate-changing gas carbon dioxide from the atmosphere and storing it for long periods of time in trees and soil. How the carbon cycle works:



carbon cycle. Carbon constitutes approximately half of the dry mass of trees and when wood from these trees is used to produce wood products the carbon is stored for life in that product. Carbon stored in wood is only released back to the atmosphere when the wood product is burnt or decays.

What links?

[Climate Forests Project](#)

[Forest carbon diagrams](#)

Video - What impact is climate change having on European forests? [4 min. video](#)

Are trees one of the best solutions to climate change? [3 min. video](#)

Are trees one of the best solutions to climate change? [11 min. video](#)

[Solutions to climate change, Project Drawdown](#)