

Can a forest be ‘sustainable’ and still underperform on carbon?

Rethinking forestry certification schemes in a climate emergency

The Problem with Binary Thinking

The construction industry increasingly relies on timber as part of its pathway toward lower-carbon buildings. Commercial forestry certification systems such as FSC and PEFC play an essential role in ensuring forests are managed responsibly, maintaining standards around legality, biodiversity, regeneration and long-term stewardship.

However, as carbon accounting claims become more ambitious and more precise, an uncomfortable question begins to emerge: Can a forest be considered ‘Sustainable’ while still underperforming in terms of long-term atmospheric carbon benefit? The answer appears to be yes, but that distinction matters because **sustainability certification** and **carbon performance** are not necessarily measuring the same thing.

Current forestry accreditation systems are fundamentally binary in nature. A forest either meets the required standard, or it does not. This approach is entirely appropriate for governance and stewardship purposes, but atmospheric carbon outcomes do not behave in a binary way.

Carbon sequestration performance exists on a continuous spectrum. Forests can regenerate quickly or slowly. They can sustain long-term carbon drawdown effectively or only marginally. They can recover harvested biomass rapidly or experience prolonged sequestration lag. Yet industry conversations frequently collapse these differences into a single simplified label: **Sustainable**.

Two Sustainable Forests, Different Atmospheric Outcomes

This creates a subtle but important systems problem. Two forests may both satisfy recognised sustainability certification criteria while delivering materially different long-term carbon trajectories. One may regenerate efficiently and maintain strong sequestration continuity after harvest. Another may technically remain 'sustainable' in operational terms while recovering atmospheric carbon more slowly. From a governance perspective, both forests may be acceptable. From an atmospheric perspective, they are not necessarily equivalent.

The Forest Success Concept

My recent peer-reviewed paper, "*The Impact of Forest Management Success Rates on the Net Carbon Benefits of Using Timber in Construction*" ([here](#)), explored this issue using a proposed "**Forest Success**" index (FS). This figure was attributed to forests based on the rate of sequestration (in tonnes of CO₂ equivalent – CO_{2e}) per hectare, per year, on a scale between zero (no future drawdown) and a notional maximum possible rate (FS=1, thought to be around 3.6 tonnes per hectare per year).

The FS concept was designed to represent how effectively harvested commercial forests continue to regenerate and sequester carbon over time. The modelling suggested that baseline forestry assumptions — approximately FS=0.416 within the study framework — may not always produce a net future sequestration benefit within the study period, because of losses in the process of harvesting and the effectiveness of newly planted growth.

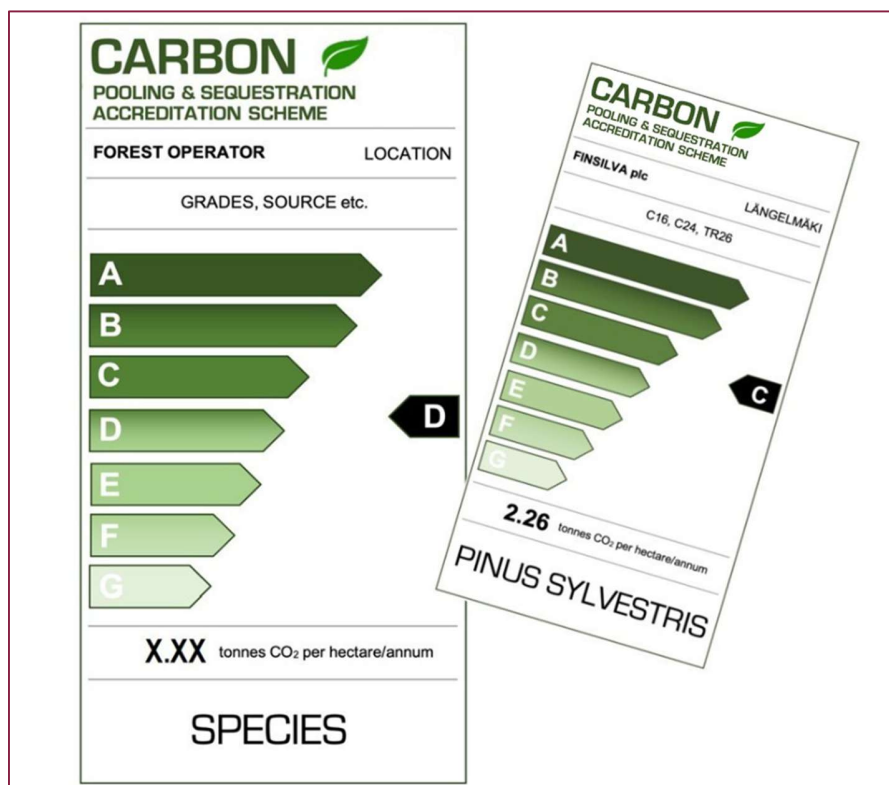
More importantly, though, relatively modest improvements in forestry performance significantly altered the long-term atmospheric outcome. The modelling indicated only a small effort, to attain a threshold region around FS=0.52, is where a future net carbon benefit began to emerge.

The key point is not the precise numerical threshold itself. It is that forestry carbon performance appears continuous, variable and highly consequential.

Do We Need “EPCs for Forests”?

Most sectors already accept the principle of graded environmental performance. Buildings have EPC ratings. Vehicles have emissions bands. Appliances have efficiency grades. Yet forestry carbon performance is often discussed in far simpler terms: sustainable or unsustainable. As whole-life carbon methodologies mature, there may be a case for introducing more granular forestry carbon-performance classifications alongside existing sustainability certification systems.

This would not replace FSC or PEFC. Rather, it would complement them by distinguishing between forests that merely sustain harvesting continuity and those that demonstrably optimise long-term atmospheric carbon recovery.



The Implications for Construction Carbon Accounting

This discussion also has implications for whole-life carbon accounting methodologies. Stored biogenic carbon, embodied carbon emissions

and future sequestration recovery are often discussed together despite representing fundamentally different atmospheric mechanisms. Carbon physically stored within timber products is real. Embodied emissions associated with production are real. Future forest sequestration recovery is also real — but critically, it remains conditional on actual future forestry performance. Treating these as automatically interchangeable risks overstating certainty around future atmospheric outcomes. If the industry wishes to make increasingly sophisticated carbon claims, it may also need increasingly sophisticated distinctions.

A More Mature Conversation

None of this is an argument against timber construction – far from it. Nor is it an argument against forestry certification. It is simply an argument for greater precision. As carbon accounting frameworks evolve, the industry may need to become more careful about distinguishing:

- responsible forestry management,
- carbon storage within products, and
- demonstrable long-term atmospheric carbon recovery.

Those concepts overlap, but they are not identical. A forest can be ‘sustainable’ and still underperform on carbon.

Recognising that distinction may ultimately strengthen the credibility of timber-based climate strategies rather than weaken them.

About the author

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