

Which Is The More Sustainable Building Material - Wood or Steel?



According to certain “studies,” wood claims a smaller environmental footprint than any other major building material. However, a closer look at the facts reveals some significant inconsistencies with that claim.

MYTH: Studies demonstrate that wood is a more sustainable material than steel.

REALITY: The most cited study contained numerous incorrect assumptions about steel, and it omitted wood impacts.

A study cited often by the wood industry was published by the Consortium for Research on Renewable Industrial Materials (CORRIM) and is based on outdated information. For example, it made incorrect assumptions about the quantity of steel needed for its comparisons.

Wood is typically a single-use material. At the end of its life, a building’s wood frame is typically landfilled or incinerated. This returns any stored carbon dioxide back into the atmosphere as either carbon dioxide or methane, shifting greenhouse gas burdens to future generations.

In comparison, steel is the world’s most recycled material. Steel construction products have a recycling rate of more than 90 percent, meaning that at the end of a steel building’s life, more than 90 percent of its steel is recycled into another steel product,

using significantly less energy than was necessary to create the original product. A material that can be recycled continually over centuries with no loss in quality and that lowers the burden on future generations is the very definition of sustainability!

MYTH: Wood is more sustainable than steel because it is a renewable building resource.

REALITY: Being renewable is not the same as being sustainable.

The wood industry claims that for every tree cut down, one or more new trees are planted.

However, the claim does not take into account that it will take decades before those saplings mature. In the meantime, the forest is depleted of the oxygen, water storage and filtration, wildlife habitat, global cooling, and other benefits provided by the mature tree.¹

Trees are often harvested by clear-cutting, leaving large gaps in the forestland that also impact the plants and animal species left behind.

MYTH: Wood is more sustainable than steel because wood construction products store carbon.

REALITY: Carbon storage for construction products is temporary, only shifting impacts to future generations.

Carbon is sequestered in the fiber of trees, but that does not mean that wood buildings become large reservoirs of carbon that is stored indefinitely. Upon harvesting, the unused root and leaf systems immediately return their CO₂ to the atmosphere by decay.

For wood products, the reality is that carbon storage is also temporary and it is released back into the atmosphere at the end of the wood building’s life either by the demolition and subsequent decay of the wood or by incineration.

Ann Ingerson of The Wilderness Society states: “As a result of wood waste and decomposition, the carbon stored long-term in harvested wood products may be a small proportion of that originally stored in the standing trees—across the United States, approximately 1 percent may remain in products in use and 13 percent in landfills at 100 years post-harvest.”²



MYTH: All wood construction products are certified as being sustainably harvested.

REALITY: The majority of forests in the U.S. do not meet the wood industry's own sustainable harvesting standards.

Eighty-one percent of forests in the United States are not certified, 11 percent are Sustainable Forestry Initiative (SFI®)-certified, and 7 percent are Forest Stewardship Council (FSC®)-certified.³

The sustainable harvest certification provided by the Sustainable Forestry Initiative has often been challenged as to whether it reaches the required threshold of sustainable forestry.

SFI was created in 1994 by the paper and timber industry. A report on SFI by ForestEthics concludes in part:

–“SFI is funded, promoted, and staffed by the very paper and timber industry interests it claims to evaluate.”⁴

–“Of SFI’s 543 audits, up to the time of the report’s issuance, there were no major noncompliance issues related to soil erosion, clear-cut procedures, watershed issues, or chemical usage.”⁵

–“SFI-certified logging practices are having a disastrous impact on North American forests.”⁶

In actuality, only 7 percent of the forestland in the United States reaches the threshold of being considered sustainably managed.

References

1 “Understanding Environmental Product Declarations (EPDs) for Wood (Current Problems and Future Possibilities),” The Sierra Club Forest Certification and Green Building Team, September 24, 2013.

2 Ingerson, Ann, “Carbon Storage Potential of Harvested Wood: Summary and Policy Implications,” The Wilderness Society, October 23, 2010, p. 1.

3 “Forest Certification Around the World: Georgia-Pacific, Sustainable Forestry and Certification,” Georgia-Pacific, 2014.

4 “SFI: Certified Greenwash – Inside the Sustainable Forestry Initiative’s Deceptive Eco-Label,” a report by ForestEthics, November 2010, p. 2.

5 “SFI: Certified Greenwash – Inside the Sustainable Forestry Initiative’s Deceptive Eco-Label,” a report by ForestEthics, November 2010, p. 9.

6 “SFI: Certified Greenwash – Inside the Sustainable Forestry Initiative’s Deceptive Eco-Label,” a report by ForestEthics, November 2010, p. 11.