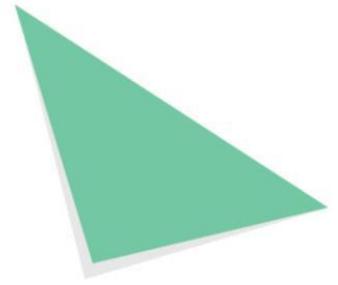


Two Sides Facts



THE MYTH: PAPER HAS A HIGH CARBON FOOTPRINT.

THE FACT: IT'S NOT AS HIGH AS YOU THINK.

While there's no "official" definition of carbon footprint, it's generally thought to mean the amount of carbon dioxide and other greenhouse gases that a person, organization, event or product causes to be released to the atmosphere, either directly or indirectly, during its life. For paper products, this life includes everything from harvesting trees through the manufacturing process to use and disposal or recycling. A look across this entire life cycle shows that paper's carbon footprint can be divided into three basic elements: greenhouse gas emissions, carbon sequestration and avoided emissions. Each of these elements is influenced by important characteristics that make paper's carbon footprint smaller than might be expected: it's made from a renewable resource that stores carbon, it's manufactured using mostly renewable energy and it's recyclable.

- The forest products industry is a leader in the production of renewable energy, with more than 65% of the on-site energy needed to produce paper products derived from carbon-neutral biomass. Since 1990, U.S. pulp and paper mill purchased energy (from fossil fuels) use per ton of production has been reduced by 25.3% and 14.5% since 2000. ¹
- There is a vital difference between energy production from fossil fuels and from biomass. Burning fossil fuels releases carbon dioxide that has been locked up for millions of years [introducing "new" carbon to the atmosphere]. By contrast, burning biomass simply returns to the atmosphere the carbon dioxide that was absorbed as the trees grew and there is no net release of carbon dioxide if the cycle of growth and harvest is sustained. ²
- It is the new carbon from fossil fuels that is primarily responsible for the increases in atmospheric carbon dioxide that have occurred in the last 100 years. ³
- Almost all of the greenhouse gas emissions from forest products industry manufacturing facilities are the result of fossil fuel combustion. The industry also burns large quantities of biomass fuels but the CO₂ released from biomass combustion is not included in greenhouse gas totals because it contains biogenic carbon [produced from living or recently living sources] that is part of a natural cycle. It is for this reason that biomass-derived CO₂ is called "carbon neutral." ⁴
- The global print and paper industry accounts for only 1% of global carbon dioxide emissions. ⁵
- Since 1990, U.S. pulp and paper mill purchased energy (from fossil fuels) use per ton of production has been reduced by 25.3% [pulp] and 14.5% [paper] since 2000. ⁶
- The forest products industry is the largest producer of renewable biomass energy in the United States, generating 77% of the nation's industrial biomass energy. Additionally, the renewable energy generated by the forest products industry exceeds all of the nation's solar, wind and geothermal energy generation combined. ⁷





- Virtually all U.S. pulp and paper mills that generate electricity on-site do so using combined heat and power technology, sometimes called cogeneration,⁸ [which recycles exhaust steam for use as manufacturing process heat or space heating]. Combined heat and power (CHP) systems are highly efficient (up to 75% efficiency compared to 45% for traditional fossil-fuel power plants) and, because they require less fuel to produce the same amount of energy, have lower emissions than separate heat and power generation.⁹
- Carbon dioxide is removed from the atmosphere by trees and stored for a period before being returned to the atmosphere. The sequestered carbon is stored not only in trees. It is also stored in forest products [including paper] for periods ranging from days to centuries.¹⁰
- In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained [climate change] mitigation benefit.¹¹
- Forests and soils have a large influence on atmospheric levels of carbon dioxide (CO₂)—the most important global warming gas emitted by human activities. Tropical deforestation is responsible for about 20% of the world's annual CO₂ emissions. On a global scale, however, these emissions are more than offset by the uptake of atmospheric CO₂ by forests and agriculture. Therefore, agricultural and forestry activities can both contribute to the accumulation of greenhouse gases in our atmosphere, as well as be used to help prevent climate change, by avoiding further emissions and by sequestering additional carbon.¹²
- Given the requirements of sustainable forestry management programs to employ practices that ensure a continued supply of wood, it is reasonable to assume that carbon stocks in industrial forests managed under sustainable forestry principles are, at worst, stable over time. In fact, it appears likely that an assumption of constant forest carbon stocks understates the carbon benefits of sustainably managed industrial forests. In the United States alone, carbon stocks on private timberland are increasing by more than 240 million tons of CO₂ equivalents per year (Bickel et al. 2004). It appears that about one-quarter of private timberland is managed to produce wood for the forest products industry, suggesting that 60 million tons of forest carbon sequestration can be directly attributed to the U.S. forest products industry.¹³
- In many cases, primary [paper] products are further processed to yield final products. In most cases, however, these operations emit low quantities of greenhouse gases compared to primary manufacturing. Data from the U.S. Department of Energy, for instance, indicate that the “printing and related support industries,” which includes some facilities that print on non-paper surfaces, have direct emissions that are only 4% of those from the paper and paperboard industry (USDOE 2005).¹⁴

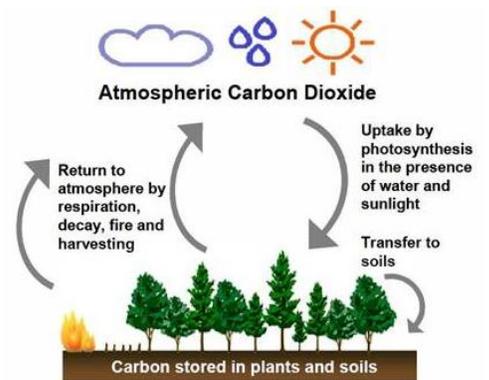


Figure 1. A sub-cycle within the global carbon cycle. Carbon continuously moves between the atmosphere, plants and soils through photosynthesis, plant respiration, harvesting, fire and decomposition.

Source: *An Introduction to the Global Carbon Cycle*, University of New Hampshire

¹ American Forest & Paper Association, 2013
² International Energy Agency (IEA) Bioenergy Task 38, 2001
³ Intergovernmental Panel on Climate Change, Fourth Assessment Report, 2007
⁴ NCASI, 2007
⁵ World Resources Institute (WRI), 2005
⁶ American Forest and Paper Association (AF&PA), 2012
⁷ *ibid*, AF&PA
⁸ *ibid*, AF&PA
⁹ U.S. EPA, Catalog of CHP Technologies, 2008
¹⁰ NCASI, 2007
¹¹ *ibid*, IPCC
¹² U.S. EPA, 2013
¹³ *ibid* NCASI
¹⁴ *ibid* NCASI