The Wood, the Pulp, and the Ugly Shirley, cloudyclimate@org, June 30, 2025

What happens to trees that are logged? Around the world, about half of removed trees are used for fuel, either burned as fuelwood or processed into charcoal and pellets. The other half goes into forest products: 37% paper products, 32% wood products, 16% wooden furniture, 10% pulp and recovered paper, and 5% non-wood forest products (like rubber and forest nuts).[1] Looking at a tree, the thick trunk turns into sawn wood and planks for buildings and furniture, the thinner diameter parts become pulp and paper products or get chipped or formed into pellets for fuel, and what's left stays on the forest floor or is used to power mill operations.[2] I look at three wood products.

Wood is good for building things, and mass timber expands its range. Also called engineered wood, it is formed by binding smaller pieces of wood together to optimize strength and stability.[3] Cross-laminated timber (CLT), made from boards layered perpendicular to each other, can make structural floors, walls, and ceilings. Glue-laminated timber (glulam) has wood fibers oriented in the same direction and becomes load-bearing beams and columns. Other types of engineered wood fit other purposes.[4] Mass timber is fire-resistant, tending to char rather than burn, and can outperform concrete in earthquakes.[5] Carbon emissions can be reduced when mass timber substitutes for carbon-intensive steel or concrete, in conjunction with sustainable forestry.[6] It *is* possible to log sustainably, by limiting harvesting to plantations, replanting new trees, and using all parts of the tree efficiently.

The US is a top producer and consumer of paper products. The three source materials for paper-making are recycled paper, wood chips and scraps from sawmills, and whole trees and plants.[7] Paper is widely recycled by Americans,[8] but can only be recycled 5-7 times before fibers get too short for paper production. Environmental costs can still be high for some products. For example, the softest, whitest, luxury toilet paper requires non-recycled pulp, from such sources as Eucalyptus plantations in Brazil, boreal forest in Canada, and tropical rainforests in Indonesia and Malaysia.[9] Alternatives to consider are bidets, using less toilet paper, or TP made from recycled content or alternate fibers like bamboo.[10]

The hot new product is wood pellets, burned for energy in large-scale power plants. Europe is the largest consumer of wood pellets, and demand is rising rapidly in South Korea and Japan. The top exporters are the US and Canada, especially from the Southeast US and western Canada.[11] California and the Pacific Northwest are targets for new pellet plants.[12] The IPCC doesn't count CO2 emissions in the country that burns the biomass for energy, creating a false impression of zero emissions. The EU deems biomass a renewable energy source, but it is *not* carbon neutral. CO2 is added to the atmosphere during harvesting, processing, and transport and when pellets are combusted. This carbon contributes to warming upfront, while reductions in atmospheric CO2 only follow later, if the forest is allowed to regrow. The carbon debt is not repaid for decades or longer, if ever. Also, the carbon that would have been absorbed by trees left standing is not captured. Because wood is less energy dense than coal, more wood must be burned to generate the same amount of energy, emitting more CO2 than continued coal use.[13] That only "waste" wood or forest residue is pulped for biomass is questionable.[14] Biofuels should not be promoted or subsidized as renewable energy.

I've presented the good, the partly bad, and the ugly. Mass timber is the green and versatile construction material of the future. Paper needs are less in the digital age, except for cardboard packaging, but we can still try to not waste paper at work and at home. It is sad to lose any natural forest to produce toilet paper. I'm calling wood pellets ugly – not a carbon neutral energy source, not forest friendly. Wood products do store carbon, but while wood used in construction is long-lived, paper products are short-lived, and wood burned for fuel is very short-lived.[15] Whole trees should be used first for long-lasting wood products and only burned for energy as wood pellets as a last choice. With a shift of perspective, I am not just a consumer, but a citizen of biosphere Earth. Then I see the tree not just as source material for wood products and fuel, but as part of wondrous forest, and I want that precious forest to persist.

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