

Comment on Strengers & Elzenga, Availability and Applications of Sustainable Biomass (PBL 2020)

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SUMMARY

This comment addresses the PBL report “Strengers & Elzenga, *Availability and Applications of Sustainable Biomass* (PBL 2020). By failing to apply basic scientific skills and logic, the report misrepresents the science and therefore consequences of using biomass for energy in the Netherlands.

The most significant recommendation of the PBL report is that the Netherlands should continue to import large volumes of wood pellets from forest logs so long as these logs are of pulp-quality. While presented as a kind of policy compromise, it is not. Wood that can be characterized as pulp quality already provides the overwhelming source of wood for pellets being imported into Europe. And far from representing a scientific compromise, the report’s recommendation runs against the strong weight of scientific advice. We cite 15 papers analyzing multiple forest types and harvest regimes that have found that any additional harvests of wood for bioenergy, *even assuming sustainable forest management*, will increase carbon in the atmosphere for decades to centuries. Based on this record, and the importance of mitigating climate change now, multiple groups of scientists have recommended eliminating all bioenergy from stemwood including the European National Academies of Science, the Science Committee of the European Environmental Agency, and 800 scientists (many with the highest levels of scientific distinction) in a letter to the European Parliament.

The problem is intuitive. When trees are harvested for bioenergy, a large amount of carbon is lost from the forest, and because much wood is lost in the process and because wood is an inefficient fuel, its use for bioenergy only saves a fraction of this carbon in fossil fuels. For many years, this use also sacrifices more carbon sequestration from forest growth, as unharvested forests typically grow faster than new plantings. Only after many decades can faster regrowth in young forests pay off the debt, which just makes the bioenergy equal to fossil fuels, and even more decades are needed for large greenhouse gas (GHG) reductions.

As many papers have explained, this reality was long ignored because of an accounting error that treats all biomass, including forest biomass, as carbon neutral. This error is based on a misinterpretation of national IPCC accounting rules. Those national rules encourage countries to report the carbon in wood as an emission in the land use sector as soon as wood is harvested. So long as this carbon is counted there, to prevent double counting, the rules therefore allow countries to ignore this carbon when it is physically emitted through burning for energy. That rule works for national reporting, but not for other purposes, such as lifecycle analyses and emissions trading rules for energy. Thinking the rule meant biomass is carbon free, governments and researchers started ignoring this carbon from biomass completely. Doing so turned a rule against double-counting biomass carbon into a practice of not counting the carbon at all. That of

course makes biomass appear better than fossil fuels. For valid lifecycle analyses, the carbon in biomass can be counted either by counting the carbon taken from or lost in the forest or by counting carbon released up smokestacks, but the carbon must be counted somewhere. The mistake of not counting this carbon at all, embedded in EU rules, is the reason Europe has used to justify burning increasing quantities of wood for electricity and industrial heat.

Although that pure assumption of carbon neutrality has now been abandoned, it can be hidden in other ways, and this report does so. It has much language about uncertain “counterfactuals,” but what that language really means is that the report recommends accounting approaches that continue to ignore the carbon emitted by using biomass entirely.

The report’s main argument in effect is that pulp-quality wood -- the wood now used for paper, cardboard and in many composite wood boards used for furniture -- should be viewed as carbon neutral on the theory that when this wood is diverted to bioenergy, it will not be replaced. (In the same way, consuming a liter of petrol would be carbon neutral if it just meant someone else consumed a liter less.) That is the assumption, without evidence, of one of the two main papers the PBL report relies on. The report also separately argues that pulp wood is such a low value by-product of other wood production that its diversion has little or no carbon cost. That could only be true if use of pulp logs for bioenergy would not cause more trees to be harvested, and that would only be true if the paper products, cardboard packaging and particle boards now made with pulp logs were not replaced. Yet the report offers no evidence that these other uses of pulp logs will disappear, and a little analysis would show the assumption to be unjustified.

In fact, pulpwood is one third of global industrial wood use, grew 68% between 1997 and 2017 and is likely to keep growing. Although much pulpwood is co-produced with sawn timber, the amount used from any tree can vary to meet demand. Pulpwood is also used for composite wood boards that replace other timber, and there are direct harvests of trees for pulpwood as well. If pulpwood were only a by-product, its production and consumption would rise and fall with the total production of wood. In fact, we provide data showing that even in periods when overall timber production rises and falls greatly in the U.S., both pulpwood production and consumption typically remain constant. This evidence shows a robust demand for paper, cardboard and other pulpwood products, which will require harvesting additional trees to maintain if Europe diverts pulpwood to bioenergy.

Basic numbers also show that the PBL argument must be wrong. The U.S. produces 25% of the world’s pulpwood, but even if *all* of this pulpwood were diverted for European bioenergy, it would provide just 1.6% of Europe’s energy demand. That is just 1/9th of Europe’s need for more renewable energy between 2017 and 2030. Even to meet just this need, the PBL report is implicitly claiming that if Europe burns this wood, Americans will entirely stop using toilet paper, cardboard packaging, and much cheap furniture.

The report also relies on another research paper that makes a more basic accounting error – discussed thoroughly in the scientific literature. This research paper suggests harvest of all wood for bioenergy (not just pulpwood) should be viewed as carbon neutral so long as trees elsewhere in a forest or country are already growing enough to offset the bioenergy harvest. But this argument confuses the basic concept of cause and effect. The effect of bioenergy harvests

cannot include forest growth (or anything else) that would occur anyway. This argument is no more valid than claiming that a money-losing Dutch company is profitable because Dutch companies overall are profitable. Potential consequences for warming and forests of this error would be great. The U.S., Europe and the World all have large, forest carbon sinks (much spurred by higher CO₂ itself), which plays a vital role holding down climate change. The report is essentially claiming that eliminating this sink has no effect on global warming.

Finally, the report fails to recognize that its recommendation contradicts the policy of the Netherlands and nearly all other developed countries to recycle paper and cardboard. The pulp-quality wood the report recommends using for bioenergy is the same type of wood used to manufacture those products. Countries recycle paper instead of burning it in the correct belief that it is better to save the trees than to produce the energy. What this report calls for, in effect, is burning the trees saved. If using new pulp-quality wood does not save trees, the Netherlands should just burn its used paper. There is no rational policy for recycling used paper products, and then harvesting and burning the very wood saved by recycling.

Using stemwood for bioenergy will increase carbon in the atmosphere for decades to centuries, even as the proper imperatives of the Paris Agreement require large, immediate reductions. To produce even an additional 2% of global energy from wood would require a doubling of the world's industrial wood harvests and greatly threaten the world's forests in conflict with the goals of numerous international agreements. If the Netherlands wishes to remain a leader and retain credibility in the fight against climate change, it must phase out its uses of wood for bioenergy.



Figure 1: *If using pulp-quality wood for energy is carbon free and does not lead to more wood harvest, the Netherlands should stop recycling and just burn its used paper.*