

FACT SHEET

BIOENERGY SOURCING ENDANGERS OUR PLANET'S TREES: THE NEED FOR INTERNATIONAL ASSESSMENTS AND TREATIES TO ADDRESS WOOD PELLETS

Global demand for wood pellets to burn as biomass energy is driving intense logging and clearcutting of some of the planet's most important forests, with devastating climate and biodiversity consequences. Biomass, often falsely labeled as “clean energy,” in fact is a wasteful and inefficient energy source, requiring the conversion of forests into wood pellets that are shipped overseas to be burned for electricity in power stations. In 2023 alone, major wood pellet exporting regions, including the United States and Canada, shipped 23,383,408 metric tons of wood pellets to other countries, mainly in Europe and Asia.¹ Given the increasing threats bioenergy presents to tree species across the globe—and its prevalence in international trade—international assessments and instruments should begin considering bioenergy when evaluating threats to tree species.

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Clearcutting for wood pellets in Estonia.

LOGGING FOR BIOMASS IS BAD FOR THE CLIMATE AND BAD FOR BIODIVERSITY

Climate and energy policies, mostly in Europe and Asia, facilitate forest destruction by labeling biomass as “carbon neutral” based on the faulty premise that trees can regrow, so removing them does not impact a forest’s ability to store carbon. This flawed logic has made the biomass industry eligible for lucrative subsidies that, in many cases, are essential to its business model. However, trees do not grow back within time frames relevant to mitigating climate change and preserving ecosystem function and resilience. Instead, they take decades—if not centuries—to grow enough to sequester the same amount of carbon dioxide and play the same role in the larger ecosystem as the trees they have replaced.²

Logging for biomass energy also drastically impacts our planet’s biodiversity. While the biomass industry claims it makes wood pellets from the leftovers of logging operations, referred to as “wastes and residues,” myriad independent investigations have shown that the industry routinely sources whole trees that are harvested using particularly destructive practices like clearcutting in old, ecologically rich, and climate-critical forests.³ For example, biomass companies in Canada source from primary or “old-growth” forests, like the boreal, that have never before been significantly disturbed by human activity.⁴ The North American Coastal Plain—the world’s primary sourcing ground for biomass—is a designated global biodiversity hot spot, with 1,816 endemic plant species.⁵ And in the Baltics, bioenergy harvesting ravages Natura 2000 areas that preserve habitat for imperiled bird species.⁶ For these reasons, in 2022 more than 650 scientists asked Parties to the Convention on Biological Diversity to protect biodiversity by ending the use of biomass energy.⁷

Bioenergy also produces a huge amount of climate change-causing carbon dioxide all the way down the supply chain, from the logging of trees to the production of wood pellets to the transportation of pellets overseas to the burning of pellets in power plants.⁸ In fact, burning wood pellets emits more carbon at the smokestack than burning an equivalent amount of coal.⁹

Disturbingly, bioenergy production is expected to skyrocket as countries increasingly turn to it as a false climate solution.

Already the demand for bioenergy is massive, with the United Kingdom alone importing 8.2 million tonnes of wood pellets in 2022.¹⁰ Global bioenergy demand is predicted to quadruple by 2050.¹¹ Further, unpublished analysis by NRDC shows that the United Kingdom’s bioenergy demand from 2027 to 2050 could require all of, or even more than, the total timberland in the U.S. Southeast (17 million hectares or about 42 million acres of forest).¹² If demand continues at this pace, it’s questionable whether it can be satisfied. This is something governments have begun to acknowledge, even as they continue to increase their biomass projections.¹³

BIOENERGY FURTHER THREATENS IMPERILED TREE SPECIES

Roughly one-third of all tree species—about 17,500 in total—are currently threatened with extinction globally due to a combination of stressors including logging, disease, and climate change.¹⁴ Among these are tree species sourced for wood pellets. According to certificates submitted by the biomass companies themselves under the Sustainable Biomass Program—one of several biomass “sustainability” certification systems—trees deemed Vulnerable, Endangered, or Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species are routinely logged for wood pellets.¹⁵ This includes the American elm (*Ulmus americana*), swamp bay (*Persea palustris*), redbay (*Persea borbonia*), longleaf pine (*Pinus palustris*), white ash (*Fraxinus americana*), and green ash (*Fraxinus pennsylvanica*). Certificates issued by the Forest Stewardship Council—another biomass sustainability system—show that bioenergy companies have reported logging 66 species threatened with extinction on the IUCN Red List, including 6 Critically Endangered, 26 Endangered, and 34 Vulnerable species.¹⁶ (See Tables 1, 2, and 3 for more information.)

These findings are likely just the tip of the iceberg. It is very difficult to differentiate many tree species in the field or in the lumberyard before they are turned into wood pellets, meaning more species may be impacted but not reported. Further, all biomass certification schemes rely heavily on self-policing and are prone to underreporting.

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Aerial photo of Drax power station in the UK, where many of the world’s wood pellets are burned for electricity.

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Clearcutting of huge areas of bottomland hardwood forests in southern Virginia for bioenergy.



Whole trees sourced for wood pellets being transported to Enviva’s wood pellet facility in Southhampton County, Virginia.

TABLE 1: IUCN VULNERABLE TREE SPECIES SOURCED FOR BIOMASS

European horse chestnut (<i>Aesculus hippocastanum</i>)
Apa (<i>Azelia bipindensis</i>)
Angouma (<i>Aucoumea klaineana</i>)
African pearwood (<i>Baillonella toxisperma</i>)
Brazil nut (<i>Bertholletia excelsa</i>)
Spanish cedar (<i>Cedrela odorata</i>)
Cedar of Lebanon (<i>Cedrus libani</i>)
Etimoe (<i>Copaifera salikounda</i>)
Indian rosewood (<i>Dalbergia latifolia</i>)
Sapele (<i>Entandrophragma cylindricum</i>)
Utile (<i>Entandrophragma utile</i>)
Sugar gum (<i>Eucalyptus cladocalyx</i>)
Rainbow eucalyptus (<i>Eucalyptus deglupta</i>)
Tuart (<i>Eucalyptus gomphocephala</i>)
Ironwood (<i>Eusideroxylon zwageri</i>)
Poui (<i>Handroanthus incanus</i>)
East African mahogany (<i>Khaya anthotheca</i>)
African mahogany (<i>Khaya grandifoliola</i>)
Lagos mahogany (<i>Khaya ivorensis</i>)
Gambia mahogany (<i>Khaya senegalensis</i>)
Red ironwood tree (<i>Lophira alata</i>)
Itauba (<i>Mezilaurus itauba</i>)
<i>Microberlinia brazzavillensis</i>
Iroko (<i>Milicia regia</i>)
Nyatoh (<i>Palaquium maingayi</i>)
<i>Paramachaerium schunkei</i>
Gregg’s pine (<i>Pinus greggii</i>)
Merkus pine (<i>Pinus merkusii</i>)
Koto (<i>Pterygota macrocarpa</i>)
<i>Shorea acuminatissima</i>
<i>Shorea johorensis</i>
<i>Shorea laevis</i>
Light red meranti (<i>Shorea smithiana</i>)
Ivory Coast almond (<i>Terminalia ivorensis</i>)

TABLE 2: IUCN ENDANGERED TREE SPECIES SOURCED FOR BIOMASS

Turkish fir (<i>Abies nordmanniana</i> subsp. <i>equi-trojani</i>)
Borneo kauri (<i>Agathis borneensis</i>)
Cerejeira (<i>Amburana cearensis</i>)
Autranella (<i>Autranella congolensis</i>)
Atlas cedar (<i>Cedrus atlantica</i>)
Camden white gum (<i>Eucalyptus benthamii</i>)
Timor white gum (<i>Eucalyptus urophylla</i>)
Yellow lapacho (<i>Handroanthus serratifolius</i>)
Butternut (<i>Juglans cinerea</i>)
Zebrawood (<i>Microberlinia bisulcata</i>)
Wenge (<i>Millettia laurentii</i>)
Chengal (<i>Neobalanocarpus heimii</i>)
African teak (<i>Pericopsis elata</i>)
Serbian spruce (<i>Picea omorika</i>)
Whitebark pine (<i>Pinus albicaulis</i>)
Armand pine (<i>Pinus armandii</i>)
Longleaf pine (<i>Pinus palustris</i>)
Monterey pine (<i>Pinus radiata</i>)
Coast redwood (<i>Sequoia sempervirens</i>)
Red louro (<i>Sextonia pubescens</i>)
White meranti (<i>Shorea bracteolata</i>)
Yellow meranti (<i>Shorea faguettiana</i>)
Honduras mahogany (<i>Swietenia humilis</i>)
Mahogany (<i>Swietenia macrophylla</i>)
Teak (<i>Tectona grandis</i>)
American elm (<i>Ulmus americana</i>)

TABLE 3: CRITICALLY ENDANGERED SPECIES SOURCED FOR BIOMASS

White ash (<i>Fraxinus americana</i>)
Green ash (<i>Fraxinus pennsylvanica</i>)
Downy birch (<i>Betula pubescens</i>)
Black ash (<i>Fraxinus nigra</i>)
Blue ash (<i>Fraxinus quadrangulate</i>)
Acapu (<i>Vouacapoua americana</i>)

INTERNATIONAL ASSESSMENTS AND TREATIES MUST ADDRESS WOOD PELLETS

Thus far, international assessments and mechanisms focused on the impacts of trade on imperiled tree species have not considered the growing threat of bioenergy. For example, the IUCN Red List—the world’s most comprehensive source of information on species’ extinction risk—has not yet incorporated bioenergy into its species assessments. IUCN should add the threat of international trade in wood pellets to its existing assessments. In doing this, it may be able to determine whether bioenergy is impacting any tree species to the degree that their extinction risk should be reevaluated. IUCN can—and should—also consider the threat that bioenergy may pose to certain tree species in the future, even if it not a significant threat currently.

Further, the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**—the world’s only treaty tasked with ensuring that international trade in wild plants and animals does not threaten their survival—has not protected species on the basis of impacts from the international trade in wood pellets (though several

species sourced for pellets are listed on CITES Appendix II due to other threats).¹⁷ Given the drastic risks that forest bioenergy presents to many tree species, CITES should consider regulating several tree genera affected by global trade in wood pellets. CITES parties could also obtain a more comprehensive picture of the species being sourced for wood pellets with a decision, resolution, and/or agenda item on bioenergy. Specifically, a decision facilitating further information-gathering on which tree species are being traded in the form of wood pellets (e.g., one directing CITES parties to report annually on the species they import in the form of wood pellets) would help assess the level of threat.

CONCLUSION

With scientists estimating that one million species face extinction, many within decades, countries must ensure that the use, harvesting, and trade of wild trees minimize impacts on ecosystems and do not further endanger already imperiled species.¹⁸

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Aerial view of logs to convert to pellets at Enviva pellet mill in Southhampton County, Virginia.

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Example of the type of important forest habitat in Pärnu county, Central Estonia where bioenergy logging occurs.

Endnotes

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- 3 See, e.g., Sarah Hurtes and Weiyi Cai, “Europe Is Sacrificing Its Ancient Forests for Energy,” *New York Times*, September 7, 2022, <https://www.nytimes.com/interactive/2022/09/07/world/europe/eu-logging-wood-pellets.html>; Dogwood Alliance, Natural Resources Defense Council (NRDC), and Southern Environmental Law Center (SELC), “Global Markets for Biomass Energy Are Devastating U.S. Forests,” 2022, <https://www.cutcarbonnotforests.org/wp-content/uploads/2023/06/global-markets-biomass-energy-devastating-us-forests-202306.pdf>; STAND.Earth, *Canada’s Growing Wood Pellet Export Industry Threatens Forests, Wildlife and Our Climate*, 2020, <https://www.stand.earth/sites/stand/files/report-canada-wood-pellet-industry.pdf>; Siim Kuresoo et al., *Hidden Inside a Wood Pellet*, Estonia Fund for Nature, December 2020, https://media.voog.com/0000/0037/1265/files/Biomass_report_ENG%20_2020.pdf.
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