The Truth About the Biomass Industry:
How Wood Pellet Exports Pollute Our Climate and Damage Our Forests

Wood pellet exports from the United States nearly doubled last year, from 1.6 million tons in 2012 to 3.2 million tons in 2013, and are expected to jump to 5.7 million tons in 2015.[1] The vast majority of these exports —99 percent—originated from ports in the southeastern and lower Mid-Atlantic regions of the country. More than 98 percent went to Europe, where they were destined for use in foreign power plants to help meet European renewable energy targets.[2] This massive additional demand for logs now risks destroying ecosystems that can never be replaced. Increased use of wood from natural forests by wood pellet manufacturers like Enviva and other biomass companies will lead to additional fragmentation of a landscape that is clearly already highly fragmented, decreasing landscape integrity, water quality and flood storage, wildlife corridors and habitats, and recreational resources. Greater use of plantation pine will incentivize future conversion of the few remaining natural and semi-natural forests to intensive plantations, which bear little resemblance to natural forests in terms of the biological diversity and wildlife habitat they support.

Clearcut site in VA that investigations revealed was sourcing Enviva's Southampton facility.

A common misconception is that forestry in the Southeastern United States is strictly regulated to ensure responsible harvesting and safeguarding of sensitive ecosystems. In reality, forestry on private land in the region is conducted with few restrictions and little oversight. Practices such as large-scale clearcutting, old-growth logging, wetland logging, and the conversion of natural forests to plantations are mostly unregulated and are often practiced in sensitive habitats with little protection for species. In addition to the weak legal and regulatory environment in the region, very few forest acres are certified by any sustainability regime and there is disproportionate reliance on the least rigorous certification systems.

Large utility companies, both in the United States and abroad, must quickly shift away from fossil fuels toward low-carbon and broadly sustainable technologies, such as energy efficiency, wind, solar, and sustainable biomass fuels. Continued reliance on high-carbon biomass fuels, such as wood pellets manufactured from whole trees, delays this transition and worsens climate change while threatening some of our most ecologically valuable and carbon-rich forests. NRDC and Dogwood Alliance believe that wood pellet manufacturers must place a moratorium on the use of high-carbon biomass, such as whole trees, in their operations and establish adequate policies to protect the climate and forests before expanding biomass operations.

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THE WOOD PELLET EXPORT MARKET IS DRIVEN BY SWELLING EUROPEAN DEMAND

A principal driver of the wood pellet export market is the European Commission's 2020 climate and energy package, a binding legislation enacted in 2009 that implements the European Union's (EU) "20-20-20" climate and energy targets. These targets have three goals to be met by the year 2020: (1) to reduce EU greenhouse gas emissions by 20 percent from 1990 levels, (2) to increase the renewable portion of EU energy consumption by 20 percent, and (3) to improve EU energy efficiency by 20 percent.[3]

In 2013, the top five countries importing U.S. wood pellets were all European: the United Kingdom (U.K.), Belgium, Denmark, the Netherlands, and Italy. The United Kingdom accounted for the majority (59 percent) of U.S. wood pellet exports, and more than tripled its imports from the United States between 2012 and 2013. The United Kingdom's wood pellet imports from all sources have grown from near zero in 2009 to more than 3.5 million tons in 2013.[4] Because of the United Kingdom's own Renewables Obligation program, which requires UK electricity suppliers to source an increasing proportion of the electricity they supply from renewable sources, the operators of several large coal-fired power plants have either retrofitted existing units to co-fire biomass wood pellets with coal or have converted to 100 percent biomass.

Drax Power, which operates the United Kingdom's largest coal-fired power plant, is in the process of implementing plans to convert half of its six generating units to run solely on wood pellets. The first of these three units entered service in 2013, while the remaining two conversions are planned for completion in 2015.[5] According to calculations compiled by Biofuelwatch, Drax is already in receipt of subsidies for their first converted unit—£190 million a year at full capacity—and have been guaranteed at least £250 million a year for converting another unit. In addition to guaranteed long-term subsidies of £480 million tonnes, the company has also been awarded a £75 million public loan guarantee and a £50 million cheap loan from the government-owned Green Investment Bank.[6]

FORESTRY REGULATIONS IN THE SOUTHEAST ARE INADEQUATE TO PROTECT OUR CLIMATE OR SENSITIVE ECOSYSTEMS

Laws and regulations in the Southeast do not prevent wood pellet manufacturers from harvesting live trees and damaging the forest's future carbon storage capacity. Current practices are creating a large and growing carbon debt by removing trees that would otherwise continue to grow and sequester carbon dioxide (CO_2). Premature second harvests, before trees have fully regrown, are likely to exacerbate this carbon debt problem. While laws and regulations vary by state, they do not prevent reharvest of forestlands before the age when on-site carbon storage would recover to the levels associated with non-harvest. Moreover, there are no requirements to limit the amount of timber cut or to replant areas that have been cut.

Figure 1: U.S. wood pellet exports by destination (2012 and 2013)

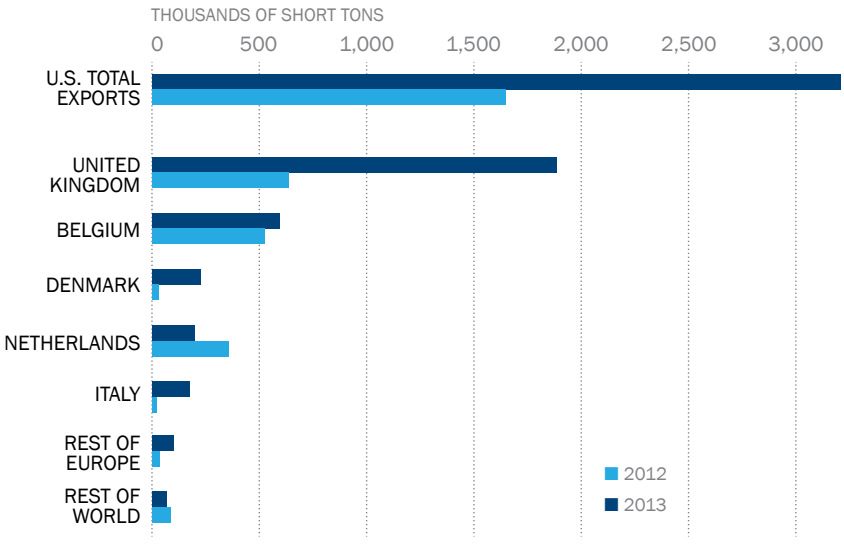
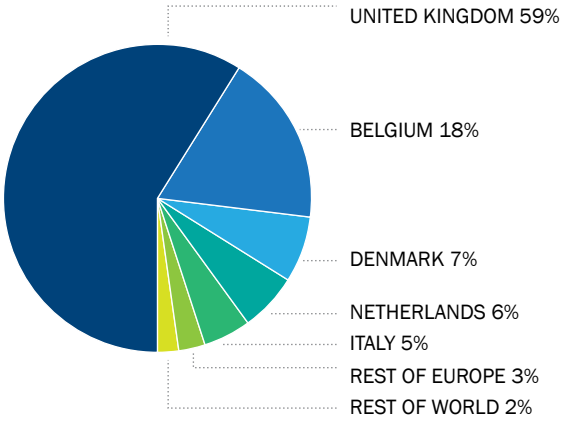


Figure 2: Imports of U.S. wood pellets by country



Source: U.S. Energy Information Administration, based on U.S. International Trade Commission data

Forestry on private land in the region is also conducted without restrictions or regulations of many forestry practices that are damaging to sensitive ecosystems. Table 1 summarizes the landscape of state laws, regulations and requirements that would limit the most unsustainable practices on private forestlands across five southeastern states. This information is compiled using a 2000 report by Defenders of Wildlife (the most recent comprehensive survey of state forestry laws), as well as the information available on state agency websites. It includes only mandatory restrictions and does not detail Best Management Practices or other voluntary programs, which are for the most part not binding and have been widely documented to allow damage to ecosystems.

Across all southern states, there are no state laws specifically regulating private forest areas.[7] Most also lack regulations requiring notification before cutting, regeneration after cutting, and management planning. Of the five states examined, none have laws to regulate some of the most damaging practices, such as clearcutting and wetland logging, and none have imposed limits on the cumulative impact of logging operations. None of the states have laws or regulations that protect old growth and endangered forests. Likewise, none have laws that would prevent the conversion of natural forest ecosystems to plantations—a practice that typically includes extensive use of chemical herbicides that can contaminate waterways and threaten aquatic biodiversity.

Federal laws, such as the Clean Water Act (CWA), Endangered Species Act (ESA), or the Migratory Bird Treaty Act may apply to forestry operations in the region. However, their application to specific forest practices can be uncertain and inconsistent across ecosystems.

Current protections under the CWA are not comprehensive. First, there is significant ambiguity about which streams and wetlands are covered by the law. For example, the U.S. Environmental Protection Agency (EPA) acknowledged that "isolated" waters—waters without a

Table 1: Summary of Mandatory Restrictions of Damaging Forestry Practices on Private Forestlands in Five Southeast States

State	Private landowner laws regulating privately-owned forest areas	Laws regulating large-scale clearcutting	Wetland logging	Laws or regulations that protect old growth forests and endangered forests	Requirements to limit the cumulative impact of logging operations*	Conversion of natural forest ecosystems to plantations	Regulations that require restocking of trees after forests are cut	Regulations that require notification before cutting, regeneration after cutting, and management planning
Virginia	None	None	Allowed	None	None	Allowed	None	Prior to completion but not later than three working days after the commencement of an operation, the logging operator (not the forest landowner) must notify the State Forester of the commercial harvesting of timber. If the job takes less than three days, they must notify before completing the job.[a]
North Carolina	None	None	Allowed	None	None	Allowed	None	None
South Carolina	None	Unregulated	Allowed	None	None	Allowed	None	State law requires eligible landowners to submit an approved forest management plan for lands under their control to the South Carolina State Forester. The landowners must also maintain their lands in a "forest condition" for a period of ten years or until the commercial harvest of such lands, or remit the cost-sharing payment back to the state forest renewal fund.[b]
Mississippi	None	None	Allowed	None	None	Allowed	None	None
Louisiana	None	None	Allowed	None	None	Allowed	None	None

* The combined, incremental effects of logging activity, referred to as cumulative impacts, pose a serious threat to the environment. While they may be insignificant by themselves, cumulative impacts accumulate over time, and can result in the degradation of important resources (e.g., soil and water resources, habitat values).
a Codes of Virginia, § 10.1-1181.2. Conduct of silvicultural activities; issuance of special orders. See: http://law.lis.virginia.gov/vacode/title10.1/chapter11/section10.1-1181.2/.
b Defenders of Wildlife, State Forestry Laws, July, 2000. See: www.defenders.org/publications/state_forestry_laws.pdf.

Enviva facility in Ahoskie, NC.

surface water connection to other surface waters and are intrastate and non-navigable—have effectively not been protected under the law since 2001.[8] Second, even if a body of water is protected, discharges of dredged or fill material associated with "normal" silviculture operations associated with forestry, which are not specifically identified in the law, are typically exempt from permitting.[9] The CWA contains a similar exemption for construction or maintenance of forest roads where they are constructed in accordance with Best Management Practices. Neither of these exemptions applies if the discharge converts a wetland to a non-wetland for any purpose. Finally, in the spring of 2013, the U.S. Supreme Court upheld the EPA's interpretation of its industrial stormwater regulation to exclude discharges of runoff from logging roads from the pollution discharge permitting program.[10]

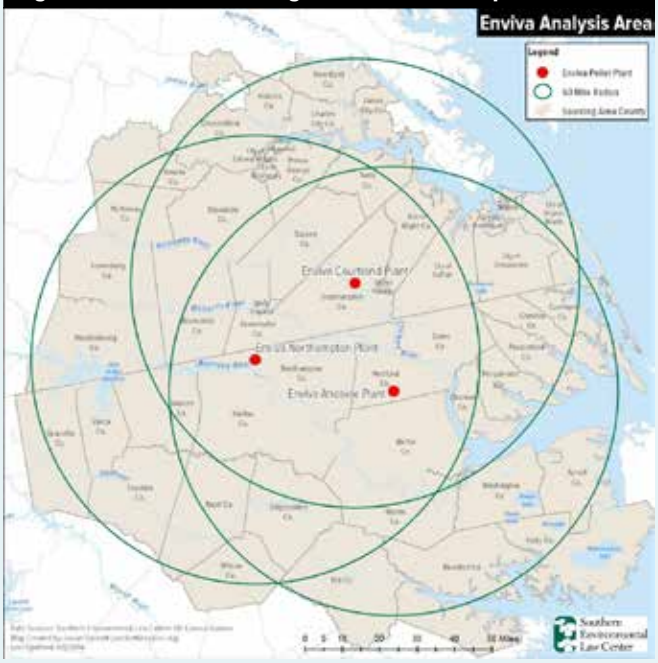
The ESA applies only to animals or plants that are listed as threatened or endangered and only to projects that might

Explosive growth of the wood pellet industry in the Southeast—led by Enviva—threatens the region's forests

One company sourcing from biologically diverse bottomland hardwood forests in the Southeast is Enviva, the largest producer and exporter of wood pellets in the United States. Enviva is also the primary supplier of wood pellets to Drax Power, which is in the process of converting the United Kingdom's largest coal-fired power plant to biomass. Enviva has pellet mills in southeastern Virginia, northeastern North Carolina, and South Carolina (indicated by red dots in Figure 2). Enviva's Ahoskie facility sources wood from the Southeastern Mixed Forests and the Middle Atlantic Coastal Forests ecoregions—both of which have been designated by the World Wildlife Fund as "critical/endangered" because of their high biodiversity and the combination of habitat fragmentation, conversion, and other threats.[11]

The projected impact of Enviva's cumulative biomass demand on forest harvest levels in the region is substantial—in particular its consumption of hardwood. Independent data shows that the three Enviva plants in the region have a total wood consumption of 2.98 million green tons annually with production starting in 2011 and full capacity around 2013. Of this, 80 percent is assumed to be hardwood. The three circles in Figure 2 indicate the company's sourcing area for this fuel.

Figure 2: Enviva's sourcing area for its three pellet mills



According to a recent analysis, once all three pellet mills reach capacity, Enviva's total hardwood consumption will be large enough to move hardwood pulpwood consumption to historically high levels. While the main impacts on inventory are in the small roundwood or pulpwood category, increases in removals also affect long-run sawtimber inventories by reducing in-growth of smaller trees into the larger size categories and utilizing low-grade trees of sawtimber diameter.[12]

The same analysis also found that while the company's demand for pine pulpwood is relatively small, even this marginal increase would mean increased harvests in the region since sawmill residues are fully utilized for meeting existing pulp demand and other uses. Even if Enviva sources from sawmill residues, the analysis concludes that this could force other consumers of residues into the roundwood market, driving additional harvests.

harm these species. Some of the most important protections included in the statute only apply on federal lands or in instances where a federal permit (such as a wetland permit under the CWA) is required, obligating federal agencies to consult with Fish and Wildlife Service before taking any action that might harm a listed species. Permits or consultations that allow logging to go forward under the ESA are obtained only on a case by case basis and mitigation practices are tailored to the specific species in question. Thus, even where ESA is triggered, damaging practices such as logging of old growth forests may continue as long as they do not impact the particular species in question.

At the state level, where forestry laws and regulations do exist, they are limited in scope and effect. For example, Virginia's state law requires the retention of "seed trees"—a harvesting method in which a few scattered trees are left in the area to provide seed for a new forest stand[13]—for the purposes of regenerating forests and maintaining a minimum amount of habitat.[14] This law pertains to areas with more than 25 percent pine and 10 acres or more (with an exemption if you replant). The law does not apply to land zoned for uses beyond forestry or agriculture.[15]

North Carolina has some regulations to protect water quality that require harvest buffers from streams and other waterways. Forestry is exempted under the state's Sedimentation Pollution Control Act if it complies with water quality guidelines, which include a required streamside management area where vegetation must be maintained to protect the stream from sediment. However, this in practice can be small and often abused.[16]

South Carolina is the only state among the five examined to require eligible landowners to submit an approved forest management plan to the South Carolina State Forester for lands under their control. Landowners must also maintain their lands in a "forest condition" for a period of ten years or until the commercial harvest of such lands, or remit the cost-sharing payment back to the state forest renewal fund.


Enviva facility in Ahoskie, NC.

WEAK FORESTRY CERTIFICATION SYSTEMS DOMINATE IN THE REGION

Very few forest acres in the Southeast are certified by any sustainability regime. There is a disproportionate use of the least rigorous certification options, such as the Sustainable Forestry Initiative (SFI) and American Tree Farm System (ATFS). These systems allow the conversion of natural forests with high biodiversity and high carbon values to low-biodiversity forests with low carbon storage value, industrial tree plantations, or development. Both also fail to ensure adequate protection for the habitats of endangered and threatened species, and for special, rare, or disappearing ecosystems.[22]

Of the region's certified forests, only a tiny fraction is certified with the Forest Stewardship Council (FSC), the strongest certification system. It is important to note, however, that even the FSC does not currently include specific requirements for protecting forest carbon storage capacity. Table 2 indicates the percentage of privately owned, FSC-certified forest acres across the five states.

Table 2: Share of privately owned forest acres certified by the Forest Stewardship Council

State	Total forest acres	Privately owned forest acres	Percent of privately owned forest acres certified by FSC*
Virginia	15.7 million	13.0 million[17]	2% (264,009 acres)
North Carolina	18.6 million	15.5 million[18]	<1% (47,389 acres)
Mississippi	19.5 million	13.9 million[19]	2% (280,349 acres)
Louisiana	14.0 million	12.7 million[20]	5% (606,855 acres)
South Carolina	13.1 million	11.5 million[21]	<1% (80,875 acres)

*Based on https://us.fsc.org/preview.fsc-certified-acres-by-state.a-204.pdf

Endnotes

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8 U.S. Environmental Protection Agency, *Potential Indirect Economic Impacts and Benefits Associated with Guidance Clarifying the Scope of Clean Water Act Jurisdiction*, April 27, 2011, pg. 3.

9 As part of a lawsuit settlement in a case filed by the Southern Environmental Law Center against the EPA and Weyerhauser in North Carolina, the EPA developed guidance explaining the kinds of wetland forestry activities in the Southeast that will generally require permits prior to conversion to pine plantation. United States Environmental Protection Agency, Wetlands Silviculture Site Preparation Guidance and Resolution of Silviculture Issue. United States Environmental Protection Agency, water.epa.gov/lawsregs/guidance/wetlands/silv.cfm. (Accessed August 8, 2014.)

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14 Virginia Department of Forestry, Seed Tree Law and Reforestation of Timberlands, www.dof.virginia.gov/laws/rt-seed-tree-law.htm.

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