frontiers | Frontiers in Communication

TYPE Original Research
PUBLISHED 16 May 2024
DOI 10.3389/fcomm.2024.1237141

OPEN ACCESS

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RECEIVED 08 June 2023
ACCEPTED 01 May 2024
PUBLISHED 16 May 2024

CITATION
Kinefuchi E (2024) Burning forests: the wood pellet industry's framing of sustainability and its shadow places.
Front. Commun. 9:1237141.
doi: 10.3389/fcomm.2024.1237141

Burning forests: the wood pellet industry's framing of sustainability and its shadow places

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Woody biomass energy has exponentially grown in the last decade as a renewable energy alternative to fossil fuels. The growing trend of burning trees amid global climate crisis suggests that the wood pellet industry has been grossly successful in positioning itself as a sustainability leader. What communicative frames and strategies has the industry harnessed to communicate sustainability? What do the frames and strategies leave out? To explore those questions, this paper examines the woody biomass industry's construction of sustainability by focusing on the case of the world's largest wood pellet company, Enviva. Following ecolinguistics and framing theory, the first part of the paper examines the company's website and social media presence to unpack the frames that Enviva engages to communicate its sustainability. Then, the paper turns to the spheres of life that the company omits from its framing but are crucial to the conceptualization of sustainability from an ecojustice perspective. The paper concludes with a call for ecojustice as the framework for evaluating sustainability of life on land.

KEYWORDS

pellets, woody biomass, framing, Ecolinguistics, ecojustice, environmental justice, greenwashing

1 Introduction

The world's forests continue to shrink. This is a regrettable conclusion by the United Nations in its 2023 progress report on Sustainable Development Goal 15 (n.d.). SDG 15 (life on land) aims to "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss" (Sustainable Development Goal 15, n.d.). According to the progress report, between 2000 and 2020, the net forest loss globally was 100 million hectares. Other data indicate even more dire state of global forests; since the turn of the 21st century, the world has lost 437 million hectares of tree cover, or about 11 percent of the global tree cover that existed in 2000, and the annual deforestation rate has doubled in the last 20 years (Global Forest Review, n.d.). In 2021 alone, 3.75 million hectares of tropical primary rainforests were lost, releasing 2.5 gigatons of carbon dioxide—equivalent to the annual fossil fuel emissions of India (Weisse and Goldman, 2022). These are alarming numbers. Given the many irreplaceable services that forests provide, including biodiversity, carbon sink, soil health, drought mediation, and more, concerted efforts to halt deforestation and conserve and restore forests while increasing afforestation seem a logical course of action. Such efforts are among the most critical targets of SDG 15. Notwithstanding, burning trees to produce energy has been a burgeoning practice in Europe and is a growing trend in Asia.

Against the backdrop of escalating climate change, in the early 2000s, European countries adopted woody biomass as renewable energy. In 2009, the European Union (EU) set a goal to

achieve 20% renewable energy by 2020 and began to subsidize the wood pellet industry (Institute for Energy Research, 2019).[1] Further propelled by the Paris Agreement that prompted each country to set its climate goals and reduce CO_2 emissions, the EU has avidly increased the use of woody biomass as renewable energy. Today Europe represents 75 percent of the global wood pellets market, and the demand is expected to continue rising (English, 2021). In 2021, the EU consumed a record 23.1 million metric tons of wood pellets largely due to the increased demands in Germany and the Netherlands (Flach and Bolla, 2022). Currently, 60% of renewable energy in the EU comes from burning wood (Catanoso, 2023). Asia is following suit. For the last decade, Japan and South Korea have drastically expanded the import of wood pellets. In 2021, the two countries combined imported over six million tons of wood pellets (Biomass Industrial Society Network, 2022). The global demand for wood pellets is expected to soar to 38 million metric tons by 2027 largely due to the demand by European nations, Japan, and South Korea (Giseburt, 2022).

The growing global trend of burning trees amid the global climate crisis suggests that the wood pellet industry has been remarkably successful in positioning itself as a sustainability leader. What communicative frames has the industry harnessed to communicate sustainability? This paper examines the woody biomass industry's construction of sustainability with Enviva as a case study. Headquartered in Maryland, Enviva is the world's largest wood pellet producer with 10 manufacturing facilities across six southern US states. According to the *Biomass* Magazine's latest report (U.S. Pellet Plants, 2023), there are 107 wood pellet plants owned by 80 companies in the United States, supplying 11–14 million metric tons of wood pellets. Half of that volume comes from Enviva. The company is expanding its market in Asia; it recently secured a 10-year contract with Japan and expects to do half of its business with Japan by 2025 (Giseburt, 2022; Boraks, 2023). What stories does the company tell to represent itself as a global sustainability leader? What stories are left out? These are germane questions to ask beyond Enviva as energy security remains a global challenge and biomass is increasingly popular in defining sustainable energy.

Given that the energy source is trees—essential terrestrial ecosystems on land that also serve as a natural carbon sink—woody biomass is of considerable interest to the discussion of life on land. A recent study (Kline et al., 2021) examined the impacts of woody biomass production in the Southeastern United States on Sustainable Development Goals (SDGs). After assessing the supply chain, the study concluded that the wood pellet industry positively contributes to multiple SDGs, including affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), industry innovation and infrastructure (SDG 9), responsible consumption and production (SDG 12), and life on land (SDG 15). Concerning SDG 15, the authors concluded that wood pellet production in the region is positive because it helps to retain forestland (by creating a market), provides landholders incomes, and promote forest management practices (e.g., removing hardwood trees and understory vegetation) beneficial to water quality and wildlife (Kline et al., 2021). The study's assessment aligns with the industry's position and mirrors the language used by the industry. The current paper takes a close and critical look into the industry's discursive construction of sustainability and considers the aspects not addressed in the previous research to provide a different assessment of the impacts of the industry on life on land. Following ecolinguistics, this paper first examines Enviva's framing of sustainability. Then, I turn to the spheres of life that are left out of the framing but are crucial to the conceptualization of sustainability from an ecojustice perspective.

2 Analytical framework: ecolingustics, framing, and greenwashing

Ecolinguistics is a distinct theoretical movement in linguistics to recognize and account for language and language-users as being situated in not only sociocultural and cognitive spaces but also physical and natural spheres (Chen, 2016). Language is part of the ecological world, and it shapes and is shaped by that world. This ecological turn animated at least two research directions for ecolingustics: one that seeks the development of linguistic theory, utilizing an ecological perspective, and one that examines the discursive constructions of ecological matters (Bang and Trampe, 2014). Of particular interest to the current study is the latter tradition where ecolingustics is an ecologically grounded form of discourse studies that investigates "the role of language in the life-sustaining interactions of humans with other humans, other organisms and the physical environment" (Stibbe, 2021, 9). Language can play vastly different and varying roles in those interactions. It can help usher life-affirming practices and relationships, but, on the flip side, it can give birth to destructiveness. In fact, one significant contribution ecolinguistics can make is to name such destructions and bring attention to more life-affirming alternatives. Ecolingustics thus critically enquires the ways in which language and other semiotic modes (visual, nonverbal, music, art, etc.) shape the very environmental reality in which we live, think, and act.

Following Stibbe (2021), the present study regards stories as the basic unit of analysis. Stories are the mental models or cognitive structures that can influence thinking and acting. A story we read about air pollution affecting the health of our local community, for example, can impact our response to a proposed siting of a new pollution-emitting factory in the community. A story about stark unemployment in our community can equally influence our response to such a proposal, perhaps in favor of building a factory. The stories that enter and circulate in public discourse have the potential to become a familiar, shared reality. Once a shared reality is established, it can serve as a cultural framework through which individuals and communities process new information. In the age of social media, it is as though any story can be promoted to social reality. It is important to remember, however, that this age is also that of corporatocracy—that power is concentrated and held by corporations (DeLuca, 2011), which now spend over 350 billion US dollars in marketing and disseminating their stories (Navarro, 2023), making their stories, including ones told by a wood pellet industry giant, ripe for critical communication analysis.

Out of many forms stories may take (ideology, framing, metaphor, evaluation, identity, conviction, erasure, salience, and narrative;

1 According to Dogwood Alliance (n.d.), the UK energy company Drax received nearly $1 billion in subsidies in 2019 to buy wood pellets sourced from the southeastern United States.

Stibbe, 2021), framing will guide my analysis. According to Entman (1993), framing selects certain aspects of a perceived reality and gives salience to them. The very act of selection summons awareness of what is selected *and* signals to the audience that it is worthy of attention. Every discourse is an exercise in framing in that a discursive representation is always a clipping out of a perceivable reality. Reality gains meaning only after it is marked and tailored through a symbolic representation.

The communicator may use a number of discursive devices to frame their subject. This includes but is not limited to: vocabulary (e.g., connotations, modality), the relationship between words (e.g., synonyms, antonyms, hyponyms), grammatical structures (e.g., active and passive voice, nominalization), transitivity (the arrangement of people and processes), assumptions and presuppositions, relationships between clauses (e.g., reason, cause, purpose, consequence), the representation of events (e.g., abstractness or concreteness), intertextuality (patterns of borrowing from other texts), genres (conventional formats), and figure of speech (e.g., metaphor, metonymy, irony; Stibbe, 2021). The frames that those discursive devices help to shape are consequential, as they orient the audience to understand reality in accordance with the selected aspects, thus serving a didactic function (Plec and Pettenger, 2012). Framing imposes a select lens; it structures "a particular area of life, and occurs when a trigger symbol is used in describing that area. It is the cognitive imposition of a package of knowledge from one area of life onto another area" (Stibbe, 2021, 41). In this way, language functions metaphorically and orients the audience to understand the subject in question in terms of another. Forests, for example, can be described in the language of economics (e.g., "resource"), recreation (e.g., "refreshing"), and indigenous epistemologies (e.g., "kinship"), and each frame encourages a different view of trees. Further, framing can perform an entire problem-solving function: define the problem and its cause, make a moral judgment, and suggest solutions (Entman, 1993). Thus, the way a subject is framed can have far-reaching consequences.

Sustainability framing by the largest woody biomass company warrants a brief discussion of sustainability and greenwashing. The most widely cited definition of sustainability comes from the World Commission on Human and Environment Development (1987, ES-7) commonly known as the Brundtland Report: the ability to "meet the needs of the present without compromising the ability of future generations to meet their own needs." This definition sees sustainability as existing at the nexus of the environment (protection of water, soil, air, and ecosystems), economy (economic development and greening of industries and businesses), and equity (environmental justice and reduction of social disparities) known as the three-pillar model (Niesenbaum, 2019; Brinkmann, 2021). This model led to intergovernmental programs such as the Millennium Development Goals and the Sustainable Development Goals to advance global sustainability. Another approach, a nested dependency model, uses the same three dimensions but sees the environment as the most important as society and then economy depend on the environment (Niesenbaum, 2019). Similarly, economist Raworth (2017) developed a doughnut model that combined the planetary boundaries (e.g., biodiversity loss, climate change, freshwater use) as the outer limit and social needs (e.g., food, water, education, jobs, etc.) as the inner limit and argued that sustainability lies between these two limits. Additionally, the scholars who are concerned about justice and equity coined the term, just sustainabilities, to underscore that sustainability is about ensuring "a better quality of life for all, now, and into the future, in a just and equitable matter, while living within the limits of supporting ecosystems" (Agyeman et al., 2002, p. 2). While the emphasis and language may vary across those models, they all agree that environmental protection, social equity, and economy wellbeing are key interconnected dimensions of sustainability.

The question of whether a corporation strives to improve those key dimensions has been the concern of those who study corporate environmentalism (CE), or the priorities corporations give to reducing their environmental impacts (Bowen, 2014; Phillips, 2019). Perhaps the most notorious concept within CE is greenwashing or "communication that mislead receivers into adopting overly positive beliefs about an organization's environmental performance (Lyon and Wren Montgomery, 2015, 224). Such communication may or may not be deliberate (Bowen, 2014) and encompasses a variety of techniques, including selective information disclosure, hollow green claims and policies, dubious certifications and labels, co-opted NGO endorsements and partnerships, ineffective government-sponsored voluntary programs, misleading narrative and discourse, and misleading visual imagery (Lyon and Wren Montgomery, 2015). Most attention has been paid to techniques (e.g., TerraChoice 2007; Lyon and Wren Montgomery, 2015) and the (mis)alignment between claims and performance (e.g., Delmas and Burbano, 2011; Jones, 2019) to assess whether and how a corporation commits greenwashing.

Some writers called for nuanced theory of green advertising and corporate environmentalism, of which greenwashing a part (e.g., Bowen, 2014; Jong et al., 2018; Jones, 2019). Jones (2019), for example, suggests relational understanding of greenwashing, considering *where* in the three corporate process (micro, meso, and macro) greenwashing occurs. The product level (micro) concerns a lifecycle analysis of the product (resource extraction, production, distribution, packaging, use, longevity, and disposal). The company level (meso) focuses on the company's political and economic ties, legal history, and long-term environmental impacts. The industry level (macro) analysis sheds light on the industry-wide greenwashing communication as well as the industry's impact on shifting or undermining the larger cultural shift toward a sustainable future. The multi-level analysis helps to resist simple naming of greenwashing on narratives alone and instead conceptualizes framing as encompassing discursive and non-discursive activities across the systems. In examining the frames Enviva has fashioned to advance its image of sustainability, then, aforementioned discursive devices and greenwashing techniques are considered across the three levels of analysis.

3 Methodology

The essay unfolds in two sections. The first section takes a close and critical look at Enviva's framing of sustainability. The texts examined here come from Enviva's website and its social media presence. The website includes five tabs ("Mission and Values," "Sustainability," "Modern Bioenergy," "Heirs Property Fund," and "About Us"). Each subject tab contains multiple sub-topics with their own pages to define and explain the subject. For example, clicking the "Sustainability" tab leads to a page with an overview section on the top ("Creating a healthy market for thriving forests") followed by three sub-topics: "Protecting the Environment," "Sustainable Forestry," and

"Responsible Sourcing." Each sub-topic leads to yet another page with multiple sub-sub-topics with their own pages. "Protecting the Environment," for instance, contains "Carbon Accounting," "Fossil Fuels vs. Renewable Energy," "Low Impact Supply Chain," and "Environmental Quality." Those layers of topics were examined for the framing discursive devices (Stibbe, 2021) and greenwashing techniques (Lyon and Wren Montgomery, 2015) across the three levels of corporate activities described above. Additionally, using the same analytical framework, Enviva's posts from 2023 (January 1 to December 31) on social media platforms of LinkedIn and Facebook where the company has the most presence were studied for the way in which the company uses those platforms to tell the stories of its sustainability and complements its sustainability frames that it presents on its website.[2]

Because framing is about both highlighting certain aspects of the perceivable reality *and* deflating other aspects of it to give salience to the former, omissions are also discussed in the first section. In the second section, I elucidate the deflated aspects further from an ecojustice perspective, which serves as this essay's sustainability ecosophy. Ultimately, ecolinguistic critique is guided by an ecosophy, the ethical vision of the analyst (Stibbe, 2021). Rather than introducing my ecojustice ecosophy here, I chose to reserve its discussion for the second section to first focus on the wood pellet industry giant's framing of sustainability and then to call attention to the significant stories erased in the framing. Thus, the second section includes a brief discussion of ecojustice, the deflated aspects of the perceivable reality and the implications of the deflation.

4 Framing woody biomass as sustainable

4.1 We are 100% renewable and carbon neutral

Perhaps the most essential and potent frame that Enviva employs is the renewability and carbon neutrality of wood pellets as they are central to the company's self-avowed mission. Simply put, the company defines wood pellets as 100% renewable because they come from trees, and new trees can be planted to restock forests. Wood pellets are also described to be carbon neutral because, as trees grow, they serve as carbon sinks and, when they are burnt, they release carbon. New trees absorb carbon, and the cycle continues.

4.1.1 Presupposition of abundance

The renewability claim is built through a number of discursive devices. First, at the product (micro) level, forests are presupposed to be abundant. The company states on its "Understanding Harvesting and Merchandising of Forestland" page that the Southeast region of the United States contains "more than 380 million acres of forestland and 10 billion tons of wood" and that "U.S. forests have increased every year for more than 50 years. State and federal forestry data demonstrate that in areas in which we operate, forest inventory also continues to increase. American forests are vast and verdant." Its "Carbon Accounting" page similarly states that:

> The vast majority of the Southeast U.S. is forested, and every year, harvest occurs on about 3 percent of forest land in the region. Simultaneously, the other 97 percent of the forest is in various stages of regrowth. In other words, in any year in the Southeast U.S., for every acre that is harvested (and losing carbon), 49 acres are growing back (and gaining carbon).

The message of abundance like this is thematic across Enviva's website and is accompanied by concrete, impressive statistics (though without references) that make the presupposition believable. The presupposition is further fashioned by disregarding contradictory information. For example, Global Forest Watch (GFW), a program of the World Resources Institute, that monitors changes to global forests shows that the United States lost 1.71 million hectares of natural forest (equivalent to 775 million tons of CO_{2e} emissions) from 2010 to 2021 (Global Forest Watch, n.d.). GFW shows that, in 20 years (2001–2021), North Carolina lost 1.93 million hectares or 24% of tree cover (equivalent to 792 million tons of CO_{2e} emissions), and the most deforested counties overlap with the areas where Enviva harvests wood. Unsurprisingly, conflicting data like those fall outside the company's story of abundant forests. Establishing the presumed abundance of forests is essential for the wood pellet industry's story; if forests are not only plentiful but are growing, using trees for energy is of little to no negative consequence.

4.1.2 Legitimacy through intertextuality

Enviva heavily cites well-established and widely recognized international and governmental entities and peer-reviewed sources to support the claim of renewability and carbon neutrality of wood pellets, thereby taking advantage of intertextuality as a legitimizing device. Notably, the company frequently references the most recognized global expert on climate change, the Intergovernmental Panel on Climate Change (IPCC) and its rule on carbon counting. The IPCC's Task Force on National Greenhouse Gas Inventories (2019) explains that CO_2 emissions from biomass or biomass-based products are captured within the CO_2 emissions in the Agriculture, Forestry, and Other Land Use (AFOLU) sector "through the estimated changes in carbon stocks from biomass harvest, even in cases where the emissions physically take place in other sectors (e.g., energy)" and that this approach is taken "for the pragmatic reason to avoid double counting." The industry interprets this rule to mean that woody biomass is carbon neutral because trees store carbon while standing and emit it at the time of harvest. It reasons that there is no need to count emissions again when the biomass is burned; in fact, counting the emissions would be dishonest; it is against the rule set by the IPCC, the foremost global authority on climate change.

The IPCC, however, is clear that its guideline for carbon accounting of biomass being reported in the AFOLU sector "should not be interpreted as a conclusion about the sustainability, or carbon neutrality of bioenergy" (FAQs, n.d.). Nonetheless, the selective interpretation became the industry's firm anchor to position itself as a commanding solution for climate change. In addition to the IPCC,

2 Enviva has the most presence at those two platforms. As of December 14, 2023, it has 41,662 followers on LinkedIn and 3,600 followers on Facebook. It has 3,687 followers and 3,078 posts on Twitter/X, but no posts have been made after Jun 29, 2023. It is on Instagram but with far less activities (611 posts and 859 followers). All those platforms post duplicate stories.

the industry relies frequently on the remarks, decisions, and policies of the European Union (EU). A recent example is the EU announcement in March 2023 that it will raise its renewable energy share to 45% and will continue to allow the burning of woody biomass as renewable energy (Council of the European Union, 2023) in order to meet its goal to phase out coals by 2030 and despite the vehement public opposition (Catanoso, 2023). Enviva immediately praised this agreement in their "Newsroom" post entitled "Enviva Welcomes REDIII Agreement and Continued Recognition of Biomass as 100% Renewable." The EU's political decision reaffirmed Enviva that burning wood is renewable and carbon neutral.

Besides international authorities such as the IPCC and the EU, Enviva makes frequent use of peer-reviewed articles that help legitimize its position. Their "Newsroom" post on February 8, 2023, entitled "New Peer Reviewed Research Reinforces the Carbon Neutrality of Sustainably Sourced Biomass in the U.S. Southeast" is a typical example. The post first provides the definition of carbon neutrality from the International Energy Agency (IEA) and cites a peer-reviewed study that matches the definition.[3] The study (Aguilar et al., 2022) assessed the net impacts of the wood pellet industry on the local forest carbon stocks in the US Southeast. The authors used the data from the National Forest Inventory (NFI) by the US Department of Agriculture (USDA) and found no decline in the forest carbon stocks. However, if you read the study, they also stressed that the ultimate neutrality of bioenergy depends on many factors and that life-cycle assessments of carbon emissions show electricity generated from woody biomass could yield as much as 83% reductions in net C emissions, or as high as 73% net increases, over coal usage" (13)—a point that Enviva chose to ignore. The Enviva's post on the study exclusively highlights the lack of evidence for carbon stocks decline, which gives legitimacy to Enviva; it tells the readers that "zero-carbon" is not Enviva's idea but is a scientific fact proven by independent peer-reviewed research (although the peer-reviewed articles that the industry claims "independent" are not always independent).[4] The intertextual use of the well-known agencies (IEA and USDA) and peer-reviewed research establishes that the claim of carbon neutrality is fully grounded in the words of respected agencies and objective studies. To reinforce this message, Enviva quoted the Executive Director of the US Industrial Pellet Association, Amandine Muskus, who remarked that, despite critics' argument that wood pellets create a carbon debt, "there is no published research that has been subjected to the rigors of independent peer review that supports these claims. Indeed, they are directly refuted by the weight of empirical scientific evidence."

Notwithstanding Muskus's definitive words, there is ample peer-reviewed and independent research that suggests the non-carbon neutrality of woody biomass (e.g., Booth, 2014; Ter-Mikaelian Michael et al., 2014; Buckholz and Gunn, 2015; Searchinger et al., 2018; Sterman et al., 2018; Reid et al., 2020; Brack et al., 2021; Booth, 2022; Pierrehumbert, 2022). These sources consistently point out that regrowing forests takes decades and incurs substantial carbon debts, replanted plantation forests absorb less carbon than natural forests that they replace, and the physical composition of biomass (rich in carbon but not in energy) results in greater near-term emissions than fossil fuels and perpetual carbon debt. Additionally, whole-tree harvests magnify nutrient loss needed for tree growth, and intensive wood harvest also increases soil nutrient leaching, runoff, soil erosion, and organic carbon loss (Wagner et al., 2018). Enviva is silent about these opposing conclusions.

The company further establishes the legitimacy of its renewability claim by emphasizing its participation in the Sustainability Biomass Program (SBP), a certification scheme that verifies that woody biomass used for industrial energy production is sustainably sourced. According to the SBP website, the program aims to "facilitate the economically, environmentally and socially responsible use of biomass enabling climate goals to be met" by "the development and operation of an independent, third-party certification system." On the surface, the SBP appears to be a rigorous, unbiased mechanism for ensuring that businesses meet the highest standard of renewability. However, the SBP's governance is comprised of many individuals from the industry itself,[5] and an in-depth analysis of the SBP by the Natural Resources Defense Council and the Dogwood Alliance (Natural Resources Defense Council, 2017) shows inherent problems with the program. They found that the SBP (1) does not use concrete performance-oriented thresholds and protections, (2) does not require field verification of source forest management, (3) allows biomass producers to conduct their own risk assessments, (4) fails to consider important topics (e.g., legal compliance, biodiversity, high conservation value forests, water quality, regulating biomass removals to protect soils and habitats, and prohibiting conversion to plantations and non-forest), (5) does not consider many crucial factors (e.g., protection for old growth and bottomland hardwood forests, for rare, threatened, and endangered species, and the siting of biomass mills), and (6) relies on other forest certification systems as a loophole even though they do not cover many of the SBP's Feedstock Standard's indicators. Another study, conducted by the European Commission (Camia et al., 2021), confirms that there are considerable inconsistencies among the member states in reporting the amount of woody biomass used for energy production: underreporting is more

3 The IEA (2021)state that the idea of "carbon neutrality" is unhelpful because it is used differently in different contexts. At the same time, the agency supports the conclusion that the forest carbon stocks in the southeast United States is increasing and that the wood pellet industry is responsible for a fraction of deforestation in the region.

4 For example, Aguilar et al. (2022) that Enviva cites was partly funded by USDA, and two of the authors work for USDA, a federal agency that has been a strong ally of the wood pellet industry. For another example, Petrokofsky et al. (2021) found no large-scale damage to biodiversity in the Southeast United States was partially funded by Drax, a mega biomass and power generation company. Another study (LeBlanc and Vlosky 2023) that found generally positive public reactions to the wood pellet industry was co-authored by researchers from Drax Biomass and Louisiana Forest Products Development Center.

5 The board includes representatives from Enviva and Drax, and the eight-member SBP Standards Committee includes a board member of the US Industrial Pellet Association, the Executive Director of the Wood Pellet Association of Canada, the biomass business development manager from Vattenfall Energy Trading, one of the largest European producers of electricity and heat, and the chief technology officer of biomass at ENGIE Laborelec, the electricity generation service company.

than 20%, and reporting the origin of the wood as unknown is a growing tendency. Hence, there is much room to question the SBP as the basis for supporting Enviva's renewability claim.

4.1.3 "Low-value wood"

Renewability is further molded through the economic and anthropocentric vocabulary of "low-value wood," another presupposition repeated across Enviva's website and other public communication. This presupposition is followed by the arrangement of people and processes (transitivity) that make the best use of the poor wood. The "Sustainable Forestry" page explains that the company's sourcing practice allows forests to thrive, stay healthy, and grow because it sources "from landowners who intend to return their land to forest and create a market for their low-value wood. This augments the productivity of their working forests as we are purchasing the parts of the harvested wood that are generally not utilized in other higher-value markets." The "low-value wood" includes "the tops and limbs of trees, crooked or diseased trees, slash, understory, and thin tree lengths," and "Enviva does not source from old growth forests, protected forests or forests where the landowner intends to convert their land to non-forest use," according to Enviva's "Working with Forests Responsibly" page. The language of "low-value wood" is not unique to Enviva but is consistently employed by the wood pellet industry, including the power generation giant, Drax (Finch, 2022).

While the wood pellet industry claims that it only uses forest residues, a significant gap exists between the said sourcing practice and the volume of wood pellets it produces. Investigations by organizations such as Dogwood Alliance, the Natural Resources Defense Council, and Biofuel Watch show that the industry indeed relies on clearcutting forests to produce wood pellets and that many of the forests are bottomland hardwood forests that Enviva professes to protect (Stashwick et al., 2019; Natural Resources Defense Council, 2022). *Mongabay,* an independent environmental news organization, also published a whistleblower's story, confirming that Enviva purchases whole trees from clearcutting: "We take giant, whole trees. We do not care where they come from. The notion of sustainability managed forests is nonsense. We cannot get wood into the mills fast enough," the whistleblower said (Catanoso, 2022c). A study conducted by geographers (Williams, 2021) for the Southern Environmental Law Center supports the testimony. Their examination of satellite images of forests in Enviva's sourcing areas confirmed hardwood forest loss between 2011 and 2016 and concluded that Enviva's three mills consumed nearly 50% of all wood from clearcut areas. This was the consequence that Searchinger et al. (2009) feared over a decade ago when they published an article pointing out that "the potential of bioenergy to reduce greenhouse gas emissions inherently depends on the source of the biomass and its net land-use effects" and that clearcutting long-established forests results in large releases of carbon (528).

The dire consequences of massive clearcutting are the reasons why nearly 800 scientists across the globe, including many lead authors of IPCC reports, sent an open letter to the EU to revise its renewable energy directive to limit the forest biomass to residues and wastes and exclude deliberate cutting of trees as bioenergy (Letter from Scientists to the EU Parliament Regarding Forest Biomass, 2018). A similar letter by over 500 scientists was sent to the EU, US President Biden, Japanese Prime Minister Suga, and South Korean President Moon just before the UN climate conference (COP26; WWF, 2021). Some years prior, over 100 scientists also wrote to North Carolina Governor Roy Cooper, expressing their concerns about the expansion of the wood pellet industry in the state and throughout the South (Scientist Letter to Governor Cooper, 2017). So far, those voices and data from the experts on forests, energy, and climate change have been ignored not only by the wood pellet industry but by the EU and named governments. As we see in the EU's REDIII, the EU continues to support the frame of renewability and carbon neutrality. In the United States, the US Department of Agriculture (USDA) has been a decisive supporter of growing the wood pellet industry. It has provided hundreds of millions in grants to encourage wood energy markets and the production of wood products in the name of "wood innovations." Most recently in April 2023, a press release by the U.S. Department of Agriculture (2023) announced that the Biden Administration will invest $34 million in grants to strengthen the wood products economy. The press release reasons that forest restoration by the forest products industry creates "byproducts like small diameter timber and woody biomass which has historically been of little market value"—the same language used by Enviva.

4.2 We are forest conservationist

Complementing the assertion of the renewability and carbon neutrality of wood pellets is Enviva's avowed role of an eager and committed forest conservationist. This frame, too, saturates the pages of the company's website and social media through the recurrent appearance of thriving forest images and frequent use of words and active voice such as "protect," "restore," "pristine," "free from development," and "keeping forests." The company also has a dedicated webpage—"Environmental Conservation." It is here the company showcases its persona as a generous environmental conservationist through the arrangement of Enviva's actions (transitivity) and partnerships (intertextuality); it articulates its active role in restoring forests and its collaboration with environmental organizations thereby harnessing their credibility and their words. Enviva tells the story of its partnership with the US Endowment for Forestry and Communities and its establishment of the Enviva Forest Conservation Fund to "protect tens of thousands of acres of forestland in southeast Virginia and northeast North Carolina" with the goal "to preserve 35,000 acres of bottomland forests." A recent example is an 80-acre parcel of bottomland hardwood near the Little River in Montgomery County, North Carolina. Three Rivers Land Trust associate director is quoted to say that, thanks to Enviva, "these 80 acres on the pristine Little River will remain free from development and maintained as a beautiful hardwood forest for the enjoying of future generations."

Similarly, Enviva has partnered with the Longleaf Alliance to "protect and restore longleaf pine forests, one of the most biodiverse ecosystems in North America." On the Enviva Forest Conservation Fund website, this passionate conservationist persona is augmented further:

> Though the vast majority of Enviva's wood supply comes from areas other than bottomland forests, the Enviva Forest Conservation Fund is targeting these areas because they offer a wide range of environmental and economic benefits while facing a number of potential threats, including conversion to other uses.

The story tells that Enviva goes above and beyond its business to protect the US forests and biodiversity because it truly cares about forests not only for the landowners' economic benefit (which in turn benefits the company) but for the sake of the ecosystems. The stories of partnership with the environmental organizations educate the audience that those organizations endorse Enviva as a passionate generous conservationist; Enviva is a conservation leader just like the organizations they partner with. These and other partnerships news (e.g., sponsoring the meetings of the forestry associations in Mississippi, North Carolina, Alabama, and Florida) circulate through social media such as LinkedIn and Facebook (e.g., the posts from August 31, September 13, September 26, and October 30, 2023) to showcase Enviva as an avid leading forest conservationist.

Besides the stories of partnerships, the company uses testimonials of landowners to demonstrate its success in forest restoration. The "Longleaf Restoration" page of Enviva's website features emotive stories. In a 49-s video, Charlie King from North Carolina explains how the biomass market is helping to clear and restore his 60-acre forest. Another landowner, Jimmy Rogers in Florida, narrates his story in a 2-min video. Standing on his land where new longleaf pines are growing, he tells the story of his grandfather managing the longleaf pine forest in the early 1900s and his desire to restore that forest. He explains,

> If it weren't for the pellet plant, I would have never been able to establish my pine trees that afforded me the ability to cut those trees, sell those trees. They were sand pines that nobody wanted. There is no market for the sand pine. But the pellet plant can cut those trees and develop their product from what I call a trash tree. The money I received from that cut, I was able to put toward replanting with longleaf pine.

Showing Enviva in its best light, these stories are even featured in the company's annual sustainability reports (Gibbens, 2021). The same webpage also lists the endorsements by former Governors of Virginia and North Carolina, the president of American Bird Conservation, and others to further build its conservationist persona. The testimonies of the landowners and the endorsements intertextually signal that Enviva as a benevolent forest conservationist is not just their self-avowal but are the truth affirmed by the people the company helped and by known political and conservation leaders. The stories, testimonies, and endorsements communicate the credibility and legitimacy of Enviva as a genuine and eager conservationist.

4.3 We build community

Finally, community is a popular concept in Enviva's presentation of itself as a sustainability leader. The company showcases itself as an active community member who cares about building community economically and socially. Across the website, Enviva repeats such keywords as "local employment," "giving back to the community," and "we live where we work" to highlight its contribution to the local economy. The "About Us" page uses statistics to reinforce these words: "1,300 people are employed by Enviva, mainly in rural areas in the Southeast United States where economic development is needed" and "every one job created at Enviva facility, more than two additional domestic jobs are created in the community." A story like this is a common practice, as underscoring economic benefits to the community is something all businesses do. However, persuading the audience about the social benefits of having a wood pellet plant takes more deliberate effort. One tool Enviva uses is the cultivation and advertisement of relationships with known social, cultural, and educational organizations. A recent example is its partnership with one of the most recognized and beloved youth leadership organizations in the United States – Girl Scouts. In February 2023, Enviva announced that it has entered a partnership with Girl Scouts of Greater Mississippi (GSGMS) in the programming related to "climate change, tree planting and conservation initiatives, and other STEM/natural resources-related education opportunities planned by the GSGMS and Enviva." The Chief Sustainability Officer stated that the company "recognizes that females are a minority within the forestry field, and we are committed to investing in and providing the necessary skillsets to succeed and thrive." This news was published widely in various industry news sites, general news media (e.g., Yahoo; Business Wire), and social media (posted on Facebook and LinkedIn on February 2, 2023). Like the partnership with environmental organizations, the relationship with Girl Scouts strategically positions Enviva as a community builder and a proponent of social justice and equity who works to elevate the status of girls—a minority. Similarly, Enviva publicized their sponsorship for the North Carolina A&T university, the largest historically black university in the country (posted on Facebook and LinkedIn on September 20, 2023) and visit to K-12 schools (e.g., Ware County Middle School, Greenwood, South Carolina) on Facebook and LinkedIn (posted on December 8, 2023). Those stories help to situate the company as a valuable and active community member that is committed to youth education and elevating minorities.

Among the three frames, community building is where Enviva most heavily turns to social media. Social media is utilized in two major ways. First, the company publishes posts to communicate that it cares about diversity. For instance, whenever a diversity month comes up (Hispanic Heritage Month, Pride Month, etc.), Enviva posts a message that it honors the history and culture of the group and support justice and equality for the group. The company also features their diverse employees in leadership in their stories. For example, during the Asian American, Native Hawaiian, and Pacific Islander Heritage Month, two Asian American managers were interviewed about their background, and their stories were widely shared through LinkedIn and Facebook (May 18 and 22, 2023 posts).

Second, the company regularly publishes stories of employees in action in communities, taking advantage of the arrangement of people (transitivity and action) to erect the community building frame. The stories and accompanying photographs of Enviva employees volunteering in a community or interacting with community members help to show that the company is part of the community. For example, an April 19, 2023 post on LinkedIn tells that an Enviva team participated in the fundraising campaign to support Log-A-Load For Kids. The post says, "We're #EnvivaProud to play a small part in this great cause that is making such an important difference in children's health and well-being." Other robust posts on LinkedIn and Facebook (e.g., a workday, helping to improve a community center, participation in a welding competition, a trash pickup event, helping with a Habitat for Humanity, tree planting on Earth Day, and more) have similar messages. Frequent appearance of stories of community-involvement and support for diversity, justice, and equality on social media such as

LinkedIn and Facebook brings Enviva close to the readers; it is not a faceless corporation but is made up of people just like anyone who wants to build a vibrant, caring, healthy community.

4.4 Briefing Enviva's framing

This section took a close look at the ways in which Enviva presents itself as a global sustainability leader by underscoring its commitment to renewability, carbon neutrality, forest conservation and restoration, and community-building. As shown, the company has used discursive devices of presupposition, intertextuality, vocabulary, transitivity, and active voice (Stibbe, 2021) to build the frames. By using the devices, Enviva's frames perform problem-solving (Entman, 1993). Its discourse tells its audience that climate change is the problem, and it is caused by fossil fuels like coals. Woody biomass is the solution because it is a renewable energy and is carbon neutral. Enviva is leading this effort as the largest wood pellet company in the most sustainable ways by helping to conserve forests, creating jobs in rural communities, eagerly supporting the education of children, women, and racial minorities, and providing moral support too racially, sexually, and ethnically diverse groups.

It is hard not to be impressed by the stories that Enviva tells and the frames it used. On its face, the company appears to embody the three pillars of sustainability—the wellbeing of the environment, economy, and society—superbly. A review of Enviva's frames, however, shows that, as it built those frames, it engaged a number of techniques of greenwashing to shape the stories (Lyon and Wren Montgomery, 2015). This includes selective use of information (selective use of study results and information regarding carbon counting), a non-independent and lax certification (SBP), co-opted endorsement and partnerships with various organizations and misleading verbal and visual narratives (exclusive focus on abundance of forests and selective forest conversation while clearcutting forests). Those techniques occurred at all levels of systems (Jones, 2019) from declaration of forest abundance (micro level) to Enviva's political and economic partnerships with various entities (meso level) to the industry-wide (and government-supported) communication about woody biomass as renewable energy that leaves out information that points to unsustainability of woody biomass (macro level). Greenwashing, thus, has been accomplished at all levels largely through selective use of information and legitimating devices beneficial to the industry while leaving out those that are unfavorable.

Frames, especially those contributing to greenwashing, are just as much about what they omit as what they include. When widespread, omission becomes an erasure pattern—"a linguistic representation of an area of life as irrelevant, marginal or unimportant through its systematic absence, backgrounding or distortion in texts" (Stibbe, 2021, 141). What is left out of Enviva's framing? This section already included discussions of the conflicting information Enviva has left out. In the next section, I pay attention to the spheres of life that are largely missing from Enviva's framing of sustainability. These are what Val Plumwood (2008) calls "shadow places" that support others but are deprived of recognition and respect. Those shadow places contest Enviva's framing of sustainability and call for an ecojustice paradigm of sustainability.

5 Ecosophy of ecojustice and shadow places of woody biomass

To adequately argue the unsustainability of the woody biomass industry that Enviva represents, I must introduce my ecosophy of sustainability—ecojustice. The ecojustice ecosophy that I use here lies at the intersection of just sustainability, ecofeminism, earth jurisprudence, and most intrinsically Indigenous epistemologies.

Just sustainabilities as referenced briefly earlier in the paper emphasizes justice and equity as the pivotal conditions of sustainability along with living within the supporting ecosystems (Agyeman et al., 2002). Theorizing sustainability from the bottom-up, environmental justice (EJ) standpoint, just sustainabilities pays close attention to historically vulnerable demographics and communities (Agyeman, 2005) and posit that social and economic equities are connected to environmental matters and that a truly sustainable society is possible only when these equities are achieved alongside environmental concerns (Agyeman et al., 2002; Agyeman, 2005; Agyeman et al., 2016). From this perspective, then, a sustainable industry is one that operates in a way that respects the interdependence and helps to build a socially and economic equitable and environmentally healthy society.

If just sustainabilities delineates the interdependence of social, economic, and environmental wellbeing with justice and equity for vulnerable *human* communities as the pivotal concern, ecofeminism brings to focus the systemic power hierarchies that create inequity and injustice in the first place. The ecofeminist epistemology sees interconnections of the systems of oppression of all kinds. It is not only that sexism, racism, ableism, and other -isms within the human domain are related to each other, but they are also entangled with the oppression of the more-than-human world (Warren, 1988; Plumwood, 1993; Phillips, 2019). These systems of oppression use hierarchized dualisms as the logic of domination of the inferiorized—those humans, more-than-human animals, and the ecosystems—that the alleged superior depends on for their lives and prosperity. They are "shadow places"—humans *and* more-than-humans—that support others but are deprived of recognition and respect by design of physical, psychological, emotional, and spiritual remoteness (Plumwood, 1993, 2008). They are "all those places that produce or are affected by the commodities you consume, places consumers do not know about, do not want to know about, and in a commodity regime do not ever need to know about or take responsibility for" (Plumwood, 2008, 146–147). Removing the remoteness and denial and restoring responsibility for shadow places is a project of ecofeminism.

Earth jurisprudence and indigenous epistemologies further give support to the ecofeminist ethical and epistemological standpoint. Earth jurisprudence is a legal philosophy and framework for governance that regards the Earth as a diverse self-regulating community in which humans are but one part and co-exist with other non-human animal and plant species and ecosystems. All members of the community have the right to exist and contribute to the wellbeing of the community (Nash, 1989; Berry, 2001). Cultural historian Berry (2001) argued that every component of the Earth community has three rights: "the right to be, the right to habitat or a place to be, and the right to fulfill its role in the ever-renewing processes of the Earth community" (Berry, 2001). From the point of view of earth jurisprudence, the very notion of land (and other more-than-human

elements of the Earth) as a property to be owned and exploited by humans becomes problematic (Cullinan, 2003).

The idea of non-human animals and ecosystems holding rights may appear unconceivable to the modernist, industrialized world that has thoroughly depended upon unsatiable extraction from and exploitation of the more-than-human world, but it is neither drastic nor new. It is part of an ancient, indigenous epistemology of kinship. Sanchez (1993), a poet of Laguna Pueblo, Lakota and Lebanese descent, spoke of the Tribal principle of relationship as one of relatedness; her elders taught her "to reclaim and reestablish our sense of connectedness to everything and to acknowledge the sacredness of everything in our universe" (211). This kinship (and thus reciprocity that follows) exist between humans, non-human animals, plants, trees, waters, and the air, and everything in the universe. An Anishinaabe White Earth leader, LaDuke (2015) similarly wrote that, in Native American cultures, the relations to those all around (trees, animals, fish, rocks, and others) are taught as that of kinship; they are "our brothers, sisters, uncles, and grandpas …. They are our older relatives—those who came before and taught us how to live (2). For Kimmerer (2013), botanist and a member of the Citizen Potawatomi Nation, this means that plants are restoration ecologists who show us, the modern humans, who have turned the Earth into industrial wasteland, how to nurse back the wounded to health. The wisdom humans need, she contends, is letting plants do their work and learning from them.

In sum, just sustainability, ecofeminism, earth jurisprudence, and most intrinsically indigenous epistemologies all feed into the contour of sustainability based on ecojustice ecosophy. For something to be sustainable, including corporations, it must be based on the principle of justice and respect for all relations on earth now and into the future. In this regard, Enviva's practices and, by extension, the wood pellet industry, clearly fall outside sustainability even as they try to claim and even practice elements of sustainability. In the last section, guided by ecojustice, I discuss two shadow places that are left out of Enviva's framing of sustainability.

5.1 The well-being of the frontline communities

As referenced earlier, most research that attempts to determine the pros and cons of woody biomass energy focuses on whether it helps to address climate change. Carbon emissions are understandably the predominant topic as the biomass energy industry exists on the premise of fighting climate change. But, from an ecojustice standpoint, justice and equity must be integral, essential components of sustainability. In particular, the well-being of historically vulnerable demographics and communities must be accounted for alongside environmental and economic concerns. These EJ concerns are grossly missing from Enviva's construction of sustainability. In its Responsible Sourcing Policy, Enviva not only pledges to "conserve key ecological values" but to commit to human rights. It states that Enviva "has a strong commitment to ethical business practices and is committed to treating people with dignity, respect, and equal opportunity." Notwithstanding this pledge and its broadcasted community-orientedness is its neglect of the health of the communities around its facilities. On the "Our Plants" page, the company proudly proclaims that "Our manufacturing facilities operate 24/7 to provide customers with reliable, renewable options to replace fossil fuels." This sounds all favorable from customers' point of view, but this very non-stop operation is the cause of the suffering in the neighboring communities. Just as other unwanted facilities, wood pellet plants are predominantly built in low-income and people of color communities.

The majority of the wood pellet plants are in EJ communities where the poverty level is above the state median and 25% or more of the residents are people of color, and all wood pellet plants in North Carolina and South Carolina are in EJ communities (Koester and Davis, 2018). This is salient because wood pellet processing facilities come with considerable public health consequences. The facilities have become a serious cause of air pollution as the dust from the plants continuously falls on their communities. The residents living near the facilities have been subjected to buzzing sawmills 24/7, sawdust covering their homes, cars, and streets, and unpleasant odors (Gibbens, 2021) and constant health problems such as mucus, coughing, burning eyes, and runny nose (Quaranda, 2022). Those stories reveal the result of failed enforcement of a policy. Under the Clean Air Act (CAA), the facilities that emit large amounts of air pollutants must have a permit, are required to engage the public in the permission process, and are mandated to install necessary pollution control devices. However, the North Carolina Department of Environmental Quality failed to enforce the CAA, allowing Enviva to claim that its operations are in compliance with the federal and state emission standards all the while emitting dangerous levels of PM2.5, carbon monoxide, and hazardous air pollutants such as formaldehyde and methanol (Wisner et al., 2019; Majlie, 2021).

Noise is also a serious concern for the residents living near wood pellets plants and silos. They are exposed to constant noise pollution from the sawmills and track traffic, keeping them awake at night and affecting their health (Smart, 2018; Cunningham, 2023). A *CNN* expose (Majlie, 2021) tells somber stories of residents who live near Enviva's Northampton plant. The 18-wheelers carry logs all day and night like an earthquake, depriving them of sleep while the sawdust and toxic particles from the plant prevent them from spending time in their gardens during the daytime. These are the stories of pollution that are entirely left out of corporate and governmental responses to the problems associated with wood pellet production.

There have been numerous protests and requests to the authorities to step in to address the public health impacts of the wood pellet industry on local communities. The aforementioned letters sent by scientists are one example. Locally, the movements organized by environmental organizations and concerned citizens have grown over the years. For instance, when Enviva applied to expand its operation at its facility in Greenwood, South Carolina in late 2020, citizens pleaded with the South Carolina Department of Health Environmental Control (DHEC) to deny the permit application. A caravan of cars carrying the message, "We cannot breathe: Stop Enviva"—an obvious reference to the institutionalized racial violence that killed George Floyd—circled the DHEC office and the Governor's mansion (Smith and Woodberry, 2020). Despite many objections, however, the DHEC granted the permit.

Similarly, when North Carolina's Department of Environmental Quality's Division of Air Quality held a public hearing in late 2022 on Enviva's air permit renewal that includes an increase in production from 480,000 tons to 630,000 tons a year at the Ahoskie plant, the residents negatively affected by the wood pellet industry formed the Impacted Communities Against Wood Pellets and

shared their stories at the public hearing and a press conference (Quaranda, 2022). Despite the public outcry, the renewal-expansion permit was granted with a condition that the plant installs new air pollution control devices designed to reduce air pollutants (volatile organic compounds and hazardous air pollutants). This revision was a hard-won outcome of the lawsuit the Southern Environmental Law Center filed on behalf of the impacted residents in 2019. Although the revision requiring the air pollution control devices seems a win for the residents, the devices should have been installed in the first place when the plant was built. According to Dogwood Alliance, a North Carolina-based forest conservation organization, Enviva saved at least $100 million across the four plants in North Carolina for operating without the expensive pollution control devices, while also receiving $10 million in subsidies from the government (Quaranda, 2022). Additionally, even though the installation of devices to reduce hazardous pollutants is an improvement, they do not eliminate dust, which is the source of many respiratory problems experienced by the frontline communities.

The residents in Stone County, Mississippi are fighting, too. In the same spring of 2023 when Enviva proudly announced its partnership with Girl Scouts of Greater Mississippi, the Mississippi Department of Environmental Quality (MDEQ) approved the construction of an Enviva facility in the county. In response, the residents called for a contractual agreement between Enviva and the county leaders, stipulating the company's responsibility to stay within the permitted amount of pollution (Spradley, 2023). The residents are aware that Enviva has committed major permit violations in other locations and wanted to hold the company accountable.[6] Instead of responding to the environmental justice concern, Enviva emphasized its legitimacy and economic contribution to the community; the plant construction was "unanimously approved" by the MDEQ, the company held "extensive meetings" with the community, and the company will bring vast financial benefits to the community because it will be "the largest taxpayer in the county" that will fund infrastructure and safety and emergency services" (Spradley, 2023).

Those stories reveal Enviva's disregard for the health of the neighboring communities. If the company is committed to ethical business that respects human rights and the dignity of people as its Responsible Sourcing Policy states, why did it fail to address those public health problems at its onset? Why did it choose to defend its legitimacy based on lax regulations instead of working with the affected communities to address the problems? Why did it fail to consider that a massive facility that operates 24/7, grinding and processing wood carried in by 18-wheelers produces serious air and noise pollutions in the neighboring communities? These are the problems that fell outside Enviva's sustainability frame despite its avowed commitment to human rights.

5.2 The well-being of the more-than-human world

The Southeastern United States (SE US) is one of the most biodiverse regions in North America. In 2016, the North American Coastal Plain (NACP), which stretches from New York to Texas, was recognized as the world's 36th biodiversity hotspot that is home to 1,816 species of plants, 51 species of birds, and 114 species of mammals that are found nowhere else in the world (Noss, 2016).[7] Federally listed animal and plant species live in those bottomland hardwood forests, and the region is known for the highest diversity of amphibians in North America, including freshwater fish, mussels, and a globally significant diversity of salamanders (Natural Resources Defense Council, 2015). Besides sequestrating and storing carbon, bottomland hardwood forests provide critical ecosystem services, including filtering water, protecting freshwater supply, controlling floods, providing habitats for thousands of species, and protecting soils.

This biodiversity hotspot discussion is tremendously relevant to the wood pellet industry. The map prepared by the Southern Environmental Law Center (2023) shows that the majority of the wood pellet plants and their sourcing radii exist in the NACP. The SE US is home to more than 24 million acres (or 65%) of bottomland hardwood forests in the United States, but half of those forests exist within Enviva's sourcing parameters (Wisner et al., 2019). While Enviva has constructed a convincing persona of a benevolent forest conservationist, critics argue that the company is responsible for the deforestation of 60,000 acres per year in the SE US (Wisner et al., 2019; Guynup, 2021; Dogwood Alliance, n.d.). A study (Duden et al., 2018) that examined the impacts of wood pellet demand on the SE US has shown that the conversion of natural forests to plantation forests (which the industry's presence demands) decreases species richness and that species richness is projected to diminish in the coast of Virginia, North Carolina, and parts of the Gulf Coast that overlap with the NACP. The Virginia-North Carolina border region where three giant Enviva plants operate (Southampton, Northampton, and Ahoskie) is also home to critically endangered red wolf (with only 50 to 75 known individuals), West Indian manatee, and Roanoke logperch, all of which rely on undisturbed, healthy bottomland hardwood forests and surrounding river basins (Natural Resources Defense Council, 2015).

Enviva has published throughout its website and public communication numerous stories about its effort to protect the environment by using "low-value wood," helping landowners to maintain their forests, implementing a responsible sourcing policy, and partnering with other organizations to conserve longleaf pine forests. Those forest conservation efforts may merit some recognition. Yet, such efforts to help restore small acreages are minuscule in the scheme of the 60,000 acres the company clears annually. Although Enviva insists that it sources from forest residues and "low-value trees," peer-reviewed and investigative research have shown that the

6 For instance, at the Enviva plant in Southampton County, Virginia, plant operators intentionally removed the pollution control device to avoid the upgrade requirements, emitting more carbon and other harmful particulates. For more details on this and other violations, see Anderson and Powell (2019). Enviva is not alone in its violation of pollution emission limits. In 2021, the MDEQ fined another wood pellet company, Drax Biomass, $2.5 million for emitting three times more pollution than permitted (Sneath, 2021).

7 In order to be designated as such, a region must have at least 1,500 vascular plants as endemic and have lost 70% of its original natural vegetation. While comprising less than 2.5% of Earth's land surface, biodiversity hotspots are home to 44% of the world's plants and 35% of land vertebrates (Critical Ecosystem Partnership Fund, 2021).

company extensively uses whole trees from clearcutting (Stashwick et al., 2019; Williams, 2021; Natural Resources Defense Council, 2022; Catanoso, 2022c). The overlay between the sourcing areas and the biodiversity hotspot makes deforestation particularly dire.

Additionally, the economic and anthropocentric language of "low-value wood" that the wood pellet industry uses to justify its massive deforestation needs attention. While longleaf pines, which Enviva is ardent about restoring, are unique to the region and merit the benefit of restoration, focusing on this (commercially high value) species at the expense of other native species is problematic. For example, Jimmy Rogers in Florida, the landowner featured by Enviva as a poster child success story, replaced sand pines with longleaf pines, because sand pines are "trash" trees that no one wants. However, sand pine forests, native to Florida, are important ecosystems of their own; they are home to more than 20 species of endangered or threatened plants and animals, including the endangered Florida scrub jay; their cones nourish birds and mammals; and their extensive, fibrous root systems stabilize soils and help to prevent erosion (Florida 4-H Forest Ecology, n.d.). These ecosystems are endangered by the ongoing and growing wood pellet production. Both the frontline communities and the more-than-human world in the SE US are shadow places of the wood pellet industry. The very existence of the industry is enabled by the destruction of those places. This entanglement is left out of the industry's framing of sustainability.

6 Conclusion: life on land through an ecojustice lens

Enviva, the largest wood pellet company in the world, presents itself as a leading sustainability leader by using the frames of renewability and carbon neutrality, forest conservation, and community building. The frames signal that the company appears to be doing everything right, and anyone who visits its website or social media sites will be impressed by the company's commitment to the environment, renewable energy, and community-wellbeing. Enviva's framing of sustainability, however, leaves out concerns for the shadow places—the wellbeing of frontline communities and the ecological world beyond humans. Frames are consequential; they are how people "understand and remember a problem, as well as they evaluate and choose to act upon it," and what the frames omit "may be as critical as the inclusion in guiding the audience" (Entman, 1993, 54). The omission of the shadow places allows the wood pellet industry to maintain the semblance of a global sustainability leader that fights climate change and protect the environment. Yet, the erasure of the shadow places is incompatible with SDG 15 (life on land) that calls for the protection and restoration of forests, halting of biodiversity loss, and reversing land degradation.

Agyeman et al. (2016) reminds us that injustice between geographies must be addressed as a matter of global environmental justice issues because transporting injustice to another locale does not solve environmental inequity but creates new injustice. This argument has been convincingly made in cases where the countries in the Global South become sites of resource extraction and waste dumping grounds for the Global North. The same argument must be made about woody biomass. The SE US has become a violent site of the global extractivist economy. While the European and Asian nations frantically try to reduce their carbon emissions by burning wood, the communities in the SE US, both humans and more-than-humans, have become sacrifice zones.

The controversy over woody biomass energy predominantly surrounds the question of renewability and carbon neutrality. As exemplified by the EU's recent decision regarding RED III, the political discourse of woody biomass still favors the interpretation of woody biomass as renewable and carbon-neutral energy. Beyond the EU, the woody biomass market is growing in Asian countries that are eager to decarbonize their economy, using the available carbon accounting loopholes. Some shift in the discourse, however, is happening. In December 2022, Australia removed the renewable energy classification of woody biomass harvested from native forests. With 309 million acres of native forests, Australia is home to the seventh-largest forested area in the world. Having experienced the extraordinary rate of mammal extinction since the European settlement, years of drought, and devastating wildfires, the country turned away from biomass; in 2021, 29% of Australia's energy came from renewables such as solar, wind, and hydro without woody biomass (Catanoso, 2022b). Moreover, following *Mongabay*'s whistleblower story, the Netherlands' Parliament announced that it will stop paying subsidies to companies that fail to follow sustainable harvesting practices (Catanoso, 2022a).

These new developments may suggest some hope for those who have been fighting to end industrial wood pellet production. In the end, however, the debate over carbon neutrality is immaterial if it only serves national emission accounting. On paper, a country may reduce emissions by taking advantage of the accounting loophole. But what is the accounting for from the point of view of Earth as a whole? Anishinaabe White Earth leader, LaDuke (2015), reminds us that we can create our own rules apart from how the rest of Earth works, but in the final analysis, natural law does not change. Nations may reduce emissions on paper by burning trees that were harvested elsewhere and meet their emission goals, but it will not fool natural law, as we all live on the same planet. And we all eventually must face natural law.

There is no energy source that is entirely sacrifice free. What we consider as better, more sustainable alternatives for energy production, transportation, goods, and lifestyles all incur ecological and human debts. The questions are then: what are these debts? Who shoulders the debts? How can we account for them? How can the debts be minimized? The industrial, global use of woody biomass ignores these questions and thus is antagonistic to the creation of a sustainable world. Precisely because the world is interconnected, the practice of sustainability must account for the entanglement and kinship that the interconnectedness creates. That is, our view of sustainability is better served by an ecojustice approach that grapples with the question of justice, equity, and care for both humans and more-than-humans. Plumwood (2008) argued that communities should always be understood in relationships with others, especially downstream communities—the shadow places. The same should be said about the concept of sustainability. For life on land to be protected, sustainability must be always framed in relation to shadow places. For something to be sustainable, it must be based on the principle of justice and respect for all relations on earth now and into the future. Those relations encompass plants, minerals, waters, the air, and animals, including humans. Something that protects humans but not others is not sustainable. A practice that protects *my* place at the expense of *other* places is not sustainable. Sustainability

based on ecojustice grapples with the entanglement of lives. It names the shadow places with the goal of not only recognizing them but struggling together to redeem them.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was not required for the study involving online data in accordance with the local legislation and institutional requirements. Written informed consent was not required for participation in the research or for the publication of either directly or indirectly identifiable information. The study was carried out in accordance with the terms of use/reuse of all the online sources.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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