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THE SUSTAINABLE BIOMASS PROGRAM: SMOKESCREEN FOR FOREST DESTRUCTION AND CORPORATE NON-ACCOUNTABILITY

Enviva Harvest Site - Outside Woodland, NC - May 2015. © Dogwood Alliance.

The Sustainable Biomass Program: Smokescreen for Forest Destruction and Corporate Non-Accountability

Drax Power Station - North Yorkshire County, England.

A new study by the Natural Resources Defense Council and Dogwood Alliance spotlights critical flaws in the Sustainable Biomass Program (SBP) standard and raises serious questions about the standard's ability to provide credible assurances of biomass sustainability and carbon emissions intensity.

Multiple member states of the European Union (E.U.)—including the United Kingdom and Belgium—subsidize conversions of coal plants to burn wood pellets ("biomass") for fuel. This trend is driven by misguided E.U. climate and energy policies that erroneously treat all biomass as a "carbon-neutral" source of energy, on par with other truly clean energy technologies like wind and solar. In 2015, for example, dedicated and co-fired biomass facilities in the United Kingdom received more than £800 million in Renewable Obligation Certificate (ROC) subsidies, which are designed to encourage renewable energy generation.[1] Under this scheme, when European utilities burn biomass, they are not required to account for power plant emissions (i.e., smokestack emissions).[2] The latest and best science shows that when all emissions are counted, burning wood pellets made from whole trees and other large-diameter wood for electricity emits carbon pollution comparable to or in excess of fossil fuels for more than five decades.[3] We simply do not have that long to wait in the fight against climate change. For biomass-fueled electricity to be a viable solution to climate change, carbon benefits must be realized within short timeframes relevant to international and national climate policy commitments and action.

The biomass being burned for electricity in Europe comes from an ocean away. Exports of wood pellets from the United States to the European Union has sky-rocketed. In 2015, 6.1 million tons of wood pellets were exported from North America, an almost four-fold increase from 2010.[4] In the second half of 2015, export volumes from ports in the Southern Gulf of the United States were up almost 70 percent compared to 2014.[5] Approximately 97 percent of these exports were sourced from the forests of the Southeastern United States, with most destined for the United Kingdom.[6] The United States exported 4.7 million metric tons of wood pellets in 2016. The United Kingdom imported 90.1 percent, over 4.2 million metric tons, of all wood pellet exports in 2016. Belgium, the second largest U.S. importer of U.S. pellets in 2016, imported 306,000 metric tons or 6.5 percent of U.S. pellet exports. These two countries alone accounted for 96.6 percent of all U.S. wood pellet exports in 2016.[7]

A growing body of evidence paints a troubling picture of how biomass logging is likely to impact sensitive forest ecosystems and wetlands in the Southeastern United States. An analysis commissioned by NRDC, and carried out by the Conservation Biology Institute, reveals that millions of acres of vulnerable bottomland hardwood forests in the Southeast are in the bullseye of existing and proposed pellet mills. These forests provide critical habitat for rare species and important ecosystem services for local communities.[8] The Dogwood Alliance has documented pellets being sourced from large clear cuts in sensitive wetland forests.[9] These large clear cuts remove almost all of the trees from the landscape—denuding forest ecosystems compared to selective logging techniques that remove individual trees. The frequent siting of pellet mills in poor rural communities, less able to mitigate impacts such as air and other pollution from the plants, also raises serious environmental justice concerns.

BURNING WHOLE TREES INCREASES CLIMATE POLLUTION AND DESTROYS FORESTS

Whole trees and other large-diameter wood is a carbon-intensive fuel for two key reasons. First, just like coal, when trees are burned in power plants, the carbon they have accumulated over long periods of time is released into the atmosphere. However, freshly cut wood is nearly half water by weight, and that water must first be boiled off, which requires significant energy. This makes biomass facilities far less efficient than fossil fuel plants per ton of carbon emitted. Lower efficiency means more wood must be burned to generate the same amount of electricity, increasing carbon pollution at the power plant. As a result, stack emissions of forest biomass are typically comparable to or greater than coal, even according to industry analyses.[10]

Second, unlike coal, trees will continue to absorb carbon, if left alone. Harvesting and burning trees as biomass, thus, also disrupts vital carbon sinks and impedes ongoing forest carbon sequestration.[11] Even if replanted immediately, trees take decades to reach maturity. Young trees may grow at a faster rate than older trees, but older trees have been found to sequester more carbon from the atmosphere.[12] The emissions from biomass-fueled power plants and the lost sequestration create a large "carbon debt" that can take new trees anywhere from 35 to 100 years or more to repay[13]—far beyond the timeframe of existing E.U. and international climate policy commitments.

If biomass-fueled electricity is to be a viable solution to climate change, its carbon benefits must be realized within short timeframes relevant to climate policy and action. Very few types of biomass feedstocks meet these criteria. For example, true wood waste, such as sawdust and chips from sawmills that would otherwise quickly decompose and release carbon anyway, could be a low-carbon biomass source, but they are limited in supply.

Enter the Sustainable Biomass Program (SBP), previously known as the Sustainable Biomass Partnership. The SBP is an international certification system created in 2013 by companies in the biomass industry.[14] Its ostensible function is to (1) "provide assurance that woody biomass [i.e., wood pellets] is sourced from legal and sustainable sources...," (2) "enable the calculation of energy and carbon savings achieved by burning biomass in place of fossil fuel...," and (3) "demonstrate that risks to forest carbon stocks are managed and that forests' carbon sequestration capability is maintained...."[15] However, there are serious concerns about the SBP's independence and ability to credibly evaluate the climate and ecological impacts of the biomass industry.

Unlike more credible forest product certification systems, the SBP was created solely by the industry it is meant to evaluate and regulate. In addition, its membership remains limited to "user[s] of biomass for large-scale, industrial energy production."[16] The "key decision-making body," the SBP board, is also comprised solely of member company representatives.[17] This lack of balanced governance compromises the program's independence—a fundamental requirement of any credible certification system—and is a clear conflict of interest.

To be effective, certification schemes must have operational standards robust enough to deliver concrete positive impacts on the ground and a strong governance structure and systems to enforce the standards. Multi-stakeholder schemes actively involve different stakeholders, such as communities, civil society organizations, and environmental nongovernmental organizations. This careful attention to governance and participation makes them much more likely to drive dialogue on emerging issues, address topics that matter to civil society, and ensure that certificate holders comply with the standards.

Our findings show that the SBP's standards and procedures are highly deficient in many important respects. For example, SBP procedures are not based on independent assessments and ignore crucial aspects of forest carbon accounting. On forest sustainability and legality, the SBP Feedstock Standard typically fails to provide robust, performance-based thresholds and protections. Under the standard, risk assessments can be conducted with a fundamental lack of objectivity, consistency, and connection to the management of actual source forests, and they rarely require verification. The standard also allows other potentially misleading approaches to forest carbon accounting.

This report examines the SBP system and the environmental risks it can hide. It is based on our evaluation of the program and its forest sustainability and carbon assurances compared to standard expectations for credible and effective certification systems, genuinely ecologically and socially sustainable forest management, and accurate and comprehensive forest carbon accounting. We begin with a guide to the elements of the standards and other requirements. We then discuss problems with the SBP's standards for forest carbon accounting, forest legality, and sustainability. Next, we analyze its faulty methods for verifying and reporting on whether biomass projects meet those standards. Because the SBP allows other certifications to substitute for compliance with its core standards, we also briefly examine examples of how those other systems compare to the SBP. A look at the reports of SBP-certified biomass companies provides a further reality check, as do investigations of source forests in the Southeastern United States.

KEY ELEMENTS OF THE SBP SYSTEM

The SBP's forest legality, sustainability, and carbon assurances are based primarily on a handful of different standards and instruction documents, briefly detailed below:

1. Instruction Documents 5A, 5B, and 5C: reference how the SBP addresses various components of the biomass products' carbon budgets and how biomass producers (BPs) should document the carbon budget of their biomass fuel products (e.g., wood pellets).
2. Standard I – Feedstock Compliance Standard: addresses the legality and sustainability of source forests.
3. Standard I – Feedstock Compliance Standard (Section 2.5): addresses how BPs mitigate any risks of non-compliance with the Feedstock Standard through the adoption and monitoring of mitigation measures.[18]
4. Standard 2 – Verification of SBP Compliant Feedstock: addresses how BPs' should evaluate risks for source forests that do not conform with the Feedstock Standard, if they are not covered by other forest or chain of custody certifications recognized by the SBP or by SBP regional risk assessments (Supply Base Evaluations [SBEs]).
5. Standard 3 – Requirements for Certification Bodies: covers how BP procedures are verified by independent auditors.
6. Standard 4 – Chain of Custody: covers how the chain of custody of products from SBP-certified facilities should be documented.

1. The SBP Requirements for Forest Carbon Accounting

The SBP's substantive requirements for calculating the carbon footprint of feedstocks are covered in Instruction Documents 5A, 5B, and 5C. We examine whether the SBP ensures accurate and comprehensive carbon accounting for source forests as a basis for calculating and making carbon claims about biomass feedstocks and products (e.g., wood pellets). We also consider the SBP's definitions, interpretations, standards for communication of carbon data, and requirements for supply area risk assessments.[19] Table 1 highlights some, but not all, of the SBP's deficiencies related to forest carbon accounting. The following subsections provide a deeper discussion of loopholes and problems.

TABLE 1: HIGHLIGHTS OF THE SBP'S WEB OF LOOPHOLES FOR CARBON ACCOUNTING

	REQUIRED YES/NO?	EXEMPTIONS	SCALE OF EXEMPTIONS	DO OTHER PROVISIONS FILL THE GAP?
All Source Forests/Feedstock are Evaluated?	No	Broadly defined forest "residues" —which includes certain categories of whole trees—are exempt from most accounting.	Potentially large or entire portions of feedstock.	Mostly no. BioGrace[20] does not account for emissions from carbon stock changes.
Data is Specific to Source Forests and Actual Management?	No	Generic regional data likely used to estimate carbon footprints as part of BP risk assessments.	All of supply area/ feedstock.	No. BioGrace does not account for emissions from carbon stock changes.
Source Forests and Their Carbon Footprint Undergoes Third-Party Evaluation?	Cursory	Footprint of forests and feedstocks assessed by the BPs themselves, likely as part of broader risk assessments.	All of supply area/ feedstock.	No. Third-party SBP auditors to confirm BP's own carbon assessment methods. No SBP guidance for this aspect of audits.
All Forest Carbon Pools are Covered?	No	Forest carbon losses are ignored, except for fuel and energy use associated with management.	All of supply area/ feedstock.	No. BioGrace does not account for emissions from carbon stock changes.

THE SBP CARBON ACCOUNTING AND RELATED PROCEDURES IGNORE CRUCIAL ASPECTS OF FOREST CARBON ACCOUNTING.

E.U. climate and energy policies erroneously treat all biomass as a "carbon neutral" source of energy, on par with other truly clean energy technologies like wind and solar. As a result, when utilities in Europe burn biomass, they are not required to account for power plant emissions (i.e., smokestack emissions).

Perhaps the most striking deficiency of the SBP's carbon accounting procedures is the complete absence of any such requirement. The program does not require calculation of emissions at the smokestack when the product is burned nor does it specify which forest carbon pools must be considered, or data collection methods. As a result, the SBP tells us nothing about the carbon emissions impacts of any specific biomass-burning facility. The components of a sound carbon accounting system are described in the chart below.

Instruction Document 5B only requires the calculation of the energy footprint of fertilizers and pesticides for "woody energy crops." If using data from an SBP-approved compliance system (e.g., BioGrace), calculating the energy footprint of forest management and chipping is optional for all forest products.[21] More importantly, the SBP does not require BPs to calculate the carbon emissions associated with carbon stock changes resulting from biomass harvests.[22] Examples of these other greenhouse gas (GHG) emissions sources and carbon stock changes include:

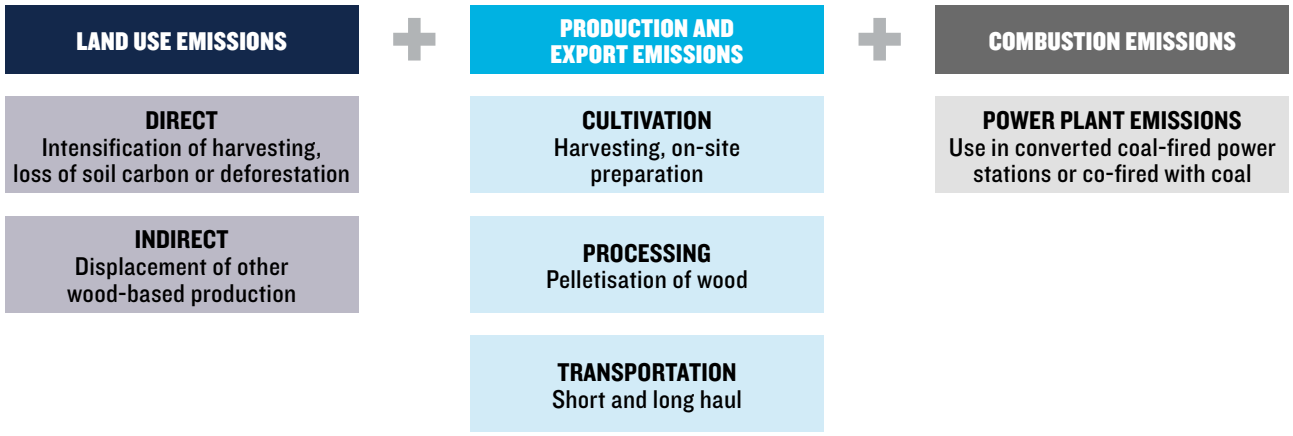
- Soil disturbance and reductions in soil carbon stores. The amount of carbon in forest soils can rival the amount in the trees. Logging can release significant amounts of soil carbon, including from mineral soil layers.[23] Studies have found that more intensive forest harvests and conversion of natural forests to plantations can reduce soil carbon up to 15 percent compared to traditional harvests.[24,25]
- The decomposition of tree roots and other disturbed vegetation not removed for use as biomass inputs, and any harvested material left at landings or other waste. This residual material can continue to release carbon through decomposition for decades.
- Emissions associated with logging and disturbing wetlands and peatlands.[26] These two ecosystems store vast amounts of carbon and logging operations disturb the soil, causing the carbon to be released.
- Foregone carbon sequestration that would have occurred above and below ground if the forest had not been logged.

Second, the SBP does not require accounting that distinguishes between feedstocks. Thus, it likely certifies the use of materials (especially large-diameter woody materials) known to have high carbon impacts. The components of a sound carbon accounting system are described in the chart below.

Third, the program's overly broad definition of "residues" includes "...bark, sawdust, slab wood or residues arising from a primary or secondary wood processor; any wood rejected by a sawmill" and "...branch wood, diseased wood and storm salvage, end of life timber plantations, thinning or tree tops."[27] As scientific literature clearly establishes, the carbon impacts of these sources vary significantly.[28]

The SBP tacitly assumes that residues are extra material, and that demand for them will not impact forest management practices, harvest rates, or forest carbon budgets. However, the pellet industry is known to rely heavily on whole trees—claiming they are residues because they are forest "thinnings," or diseased or deformed trees that would be rejected by a sawmill—and not material like tree bark, small tops, and limbs.[29] In addition, some materials the SBP defines as residue (including sawdust and slabs) can be used for paper and other manufacturing. One study found that "nearly all the mill and urban wood residues are already used by existing markets," that "any expanded biomass energy in the Southeast will come from harvested wood," and that "growth in pellet markets... most immediately displaces pulpwood."[30]

COMPONENTS OF FULL BIOMASS EMISSIONS ACCOUNTING



A recent European Commission report validated this concern, concluding that current E.U. imports of wood pellets from the Southeastern United States are being sourced from whole trees and other large-diameter wood.[31] The report found that "current E.U. imports from the southeast is dominated by wood pellets based on dedicated pulpwood (about 60 to 75 percent, mostly softwood pulpwood, but also hardwood pulpwood)" and that "most of this would not pass the eligibility criteria" meant to ensure carbon emission reductions.[32] This same report confirmed that "[i]ncreasing timber harvest causes direct and immediate losses of carbon stocks compared to the baseline," and that "additional harvests for wood pellets will reduce carbon stocks in the short term and the long-term effects of additional demand on carbon stocks across the landscape are uncertain."[33]

SBP FOREST CARBON ACCOUNTING IS NOT BASED ON INDEPENDENT ASSESSMENTS. THE FOX IS FREE TO GUARD THE HENHOUSE

The SBP does not require objective and independent third parties to provide forest carbon data and related information, as a credible certification system should. Rather, the SBP allows BPs to conduct their own data collection and analyses, despite the inherent conflict of interest in conducting assessments that could reveal shortcomings.[34] BPs are allowed to provide their forest carbon information as part of their Supply Base Evaluation (SBE), risk assessments and reports.[35] Here again the SBP essentially allows self-assessments rather than analyses by objective and independent third parties. Thus, BP's can use generalized data that may obscure key, and possibly detrimental, facts. Problems with these risk assessments and SBEs are discussed in further detail in Sections 3 and 5.

THE SBP ALLOWS OTHER POTENTIALLY MISLEADING APPROACHES TO FOREST CARBON ACCOUNTING

Under the SBP, comprehensive feedstock carbon accounting is not mandatory. Even if BPs opt for comprehensive accounting, the SBP does not require that the calculations be specific to their source forests, or to the impacts of the forestry practices in place. Rather, as with SBEs and risk assessments (see Section 5), BPs are free to use generic regional data that may poorly represent conditions in specific source forests or harvesting impacts. Carbon sequestration and emissions in BPs' source forests could differ considerably from broader regional trends. This is especially true if regional data includes public or private forests managed for conservation or other non-timber values, or forests managed under longer rotations or other less intensive forestry practices.

The SBP does not define baseline conditions for forest carbon scenario forecasts, leaving significant potential for serious inaccuracies in BPs' and biomass end users' carbon calculations. This means that BPs are not required

Hardwood Trees entering Enviva Sampson County Facility - Feb 2017.
© Dogwood Alliance.

to define their baselines as scenarios in which older and more carbon-rich forest stands are maintained, and in which other forests are managed on longer rotations that increase carbon sequestration. Instead, they may define their baselines as legal minimum forest management—e.g., short rotations that capture relatively small amounts of carbon. In addition, the SBP does not require BPs to account for the competition between biomass demand and existing forest uses, which intensify logging elsewhere. When competition for the same forest resource occurs, existing users of that resource (e.g., pulp and paper companies) must shift their harvests to another area to meet their needs. This effect is often referred to as displacement, leakage, or Indirect Land Use Change (ILUC).

Finally, the SBP ignores the critical issue of timing of carbon fluxes, allowing BPs to use longer-term regional forest regrowth and sequestration data, which is inherently uncertain, to hide short- and medium-term carbon emissions and foregone carbon sequestration.

The U.S. Forest Service and others have shown that the growth of the biomass industry has increased logging and natural forest conversion rates in Southeastern United States.[36] These documented trends present serious concerns about forest regrowth and carbon sequestration rates assumed by the SBP. Furthermore, multiple studies have shown that converting natural forests to pine plantations—a common practice in the Southeast United States—can emit carbon and reduce the yearly carbon storage for that area by up to 68 percent.[37]

2. The SBP Requirements for Forest Sustainability and Legality

This section provides a closer look at the SBP's standards for the sustainability and legality of forests being logged to produce biomass fuel, as well as BP risk assessments for source forests, along with related SBP instructions, definitions, and interpretations.[38] It begins with our evaluation of the overall structure and approach of these SBP standards, including whether we find them to be objective, performance-oriented, and likely to be applied consistently. It then discusses whether the SBP standards are likely to protect and restore specific priority environmental and social values, meaningfully address other forest threats, and properly address questions of forest legality.

Table 2 highlights some, but not all, of the deficiencies in the SBP related to requirements for sustainability and legality. A more in-depth discussion of loopholes and problems is included in the following subsections.

THE SBP FEEDSTOCK STANDARD TYPICALLY FAILS TO PROVIDE ROBUST, CONCRETE, PERFORMANCE-ORIENTED THRESHOLDS AND PROTECTIONS

Most of the Feedstock Standard's indicators follow one of several variations: "The BP has implemented appropriate control systems and procedures to ensure..." [that a given value is conserved]; "the BP has implemented... systems and procedures to identify and address..." [a given topic]; or "the BP has implemented appropriate control systems and procedures for verifying..." [that a topic is addressed].

All of these variations are highly subjective, process-oriented, and devoid of meaningful forest management thresholds or other performance-oriented requirements. BPs can deem virtually anything "appropriate." Likewise, almost any action and performance level can be said to "address" a topic, including systems that only partially protect sensitive resources.

Moreover, the indicators are worded such that independent auditors will likely focus on whether the BPs have implemented their systems, not on whether those systems can achieve specific environmental or social outcomes. While the SBP does not generally require verification of actual management practices in source forests, most of the Standard's indicators would never trigger such verification. (See Section 4 for further discussion of SBP audit requirements.)

Many of the environmental and social values ostensibly covered by the Feedstock Standard remain undefined in the Standard or the SBP Glossary. For example, "key ecosystems and habitats," "biodiversity," forests with

TABLE 2: HIGHLIGHTS OF THE SBP'S WEB OF LOOPHOLES FOR SUSTAINABILITY AND LEGALITY

	REQUIRED YES/NO?	EXEMPTIONS	SCALE OF EXEMPTIONS	DO OTHER PROVISIONS FILL THE GAP?
All Source Forests/Feedstock are Evaluated?	No	Forests/feedstocks covered by a forest certification or chain of custody claim are exempt from SBP Feedstock Standard.	Large, potentially all of supply area/ feedstock.	No. Other certification claims often do not address SBP requirements. See Web of Loopholes, Part II.
Data is Specific to Source Forests and Actual Management?	No	Risk assessments are heavily relied upon. Risk assessments may use broader regional data, including data not tied to specific forest outcomes.	All of supply area/ feedstock.	No. No other SBP provisions correct the problem.
Source Forests Undergo On-Site Third-Party Evaluation?	No	Risk assessments for BP systems and regional forest trends are conducted by the BPs themselves.	All of supply area/ feedstock.	Mostly no. Third-party SBP auditors might take a cursory look at source forests, but this is not required for SBP audits.
Forest Outcomes Field Verified by BP?	Rarely	Feedstock Standard focuses on BP's systems and procedures. BP risk assessments may not use data closely linked to outcomes of biomass logging in source forests.	All of supply area/ feedstock.	Mostly no. BPs might check outcomes if they find risk and adopt mitigation measures requiring verification.
All Priority Environmental and Social Issues are Covered?	No	Ignores old growth and other rare ecosystems, maintenance/ restoration of natural forest diversity, social issues in biomass plant siting.	All of supply area/ feedstock.	Mostly no. FSC certification would partially address. Other certification claims do not.

Log piles at Enviva Sampson County Facility - Feb 2017. © Dogwood Alliance.

Black Bear cubs.

"high conservation value," and even "forest productivity" are undefined. In practice, this means BPs can interpret the meanings as they wish, and choose examples of environmental and social values that are not at risk in the supply area while ignoring those that are.[39]

The Standard's example verifiers often make matters worse. They frequently point to regional-scale data, the "existence of a strong legal framework in the region," "regional best management practices," and other options likely to have little connection with the indicator or the actual biomass logging and other relevant forestry practices. See Section 6 for examples of how legal frameworks in the Southeastern United States are often far weaker than assumed by BPs' risk assessments.

When BPs do find a risk of non-compliance with the Feedstock Standard, there are virtually no objective performance requirements defining the mitigation measures to reduce that risk. SBP Standard 2 merely states that "mitigation measures shall be justified and recorded," and that their effectiveness shall be monitored.[40]

The Standard contains some indicators that are more straightforward and outcome-oriented. However, they are the minority, and their thresholds are not always meaningful. For example, one indicator states that "feedstock is not sourced from areas that had high carbon stocks in January 2008 and no longer have those high carbon stocks."[41] This is the closest the SBP comes to protecting high-carbon stock forests from logging, yet it only "protects" them if they are already degraded.

STANDARD ALLOWS SELF-ASSESSMENT OF RISK BY BPs

As noted in Section 1, risk assessments are often the sole step in determining if source forests comply with the SBP Feedstock Standard. Yet they need not be conducted by objective third parties, as is required by all other high-quality certification standards. Rather, they can be conducted by the BPs themselves, despite the inherent conflict of interest in identifying risk in their supply areas. A scan of available risk assessments and audit reports confirms that BPs in the United States virtually never identify such risks (see Section 5).[42]

The SBP also gives BPs wide latitude to choose their own verifiers (i.e., data sources) to gauge whether their source forests are likely to comply with the Feedstock Standard.[43] This allows BPs to cherry-pick verifiers and data to produce more favorable results, including data that has little connection to management practices in their source forests.

STANDARD ALLOWS RISK ASSESSMENTS WITH LITTLE CONNECTION TO SOURCE FOREST MANAGEMENT

SBP Standard 2 states that "...evaluation of risk begins with an evaluation of regional rather than at an individual forest level or land unit" and that "information of low risk should include regulatory requirements and evidence of compliance... [with] the corruption perception index http://www.transparency.org [being] one important information source."[44] However, regional data is unlikely to adequately capture management trends and problems

in the forests from which BPs are sourcing, both because of the scale of data collection, and because regional data simply isn't collected for some topics covered by the Standard. Existing regional data may also fail to capture the effects of biomass logging per se, given that widespread commercial biomass extraction is a relatively new practice.

The SBP primarily relies on regulatory compliance as a surrogate for verification of source forests' management relative to specific environmental and social objectives. This assumption is deeply flawed. As noted in Section 6, the laws applicable to public and especially private forests throughout much of the United States, including the Southeast, often do not require compliance with many of the SPB Feedstock Standard's indicators, much less other crucial environmental and social objectives. Even the corruption perception index, developed by Transparency International, which is valuable in many other contexts, is poorly designed to address the legality of U.S. forest practices. This index focuses on perceptions of corruption tied to national governments, rather than the state governments, and does not attempt to gauge forest managers' compliance with most applicable laws.[45]

The process for BPs to assign risk ratings is also highly subjective. The evidentiary threshold for low-risk findings is merely "justification… supported by adequate documentary evidence."[46] Because there is no requirement to consider all relevant evidence, here too, BPs can selectively pick information that suits their purpose. SBP Standard 2 also allows BPs to factor in the "likely impact" of non-compliance with the Feedstock Standard's indicators.[47] No metrics or parameters are provided for impact considerations. Thus, even if data shows a risk of non-compliance, BPs can still determine a low-risk finding by asserting the impact will be low. The only safeguard is the audit process, in which certification bodies (CBs) are expected to evaluate the completeness and accuracy of BPs' risk ratings.[48] However, CBs can only hold BPs accountable to the SBP Standard, and the lack of robust field verification requirements therein limits their ability to bring in additional perspectives.

THE SBP RARELY REQUIRES FIELD VERIFICATION OF HOW BIOMASS SOURCE FORESTS ARE MANAGED RELATIVE TO THE FEEDSTOCK STANDARD

BPs' risk assessments can also amount to mere desk exercises conducted without examining any forests in a supply area, much less the specific source forests.[49] Verification at the source forest level is a critical component for credible certification schemes, as it ensures the realization of measurable, positive social and environmental outcomes. Unfortunately, verification of management in source forests is only required in the unlikely event that BPs find a risk of non-compliance with the Feedstock Standard.[50]

When verification is required, it triggers Supplier Verification Programs (SVPs), which can be conducted by the BPs themselves rather than by independent third parties, and need only cover a sample of their sources.[51] The number of required samples is at BPs' discretion and need only be "appropriate."[52] Moreover, these programs may involve verification in name only, given they only "might include field-based assessments".[53] Standard 2 does not require field visits as part of SVPs. Instead, it uses vague language that can be met via office visits and allows use of "existing systems, examples of which include Sustainable Forestry Initiative (SFI) Fiber Sourcing…."[54] As noted in Section 3, the SFI Fiber Sourcing requirements have virtually no overlap with the Feedstock Standard's indicators, presumably explaining why the SBP does not allow SFI Fiber Sourcing to substitute for risk assessments against the Feedstock Standard. SFI Fiber Sourcing also triggers virtually no verification of source forests' management.

FEEDSTOCK STANDARD COMPLIANCE IS NOT REQUIRED FOR INPUTS COVERED BY OTHER CERTIFICATION SYSTEMS—INCLUDING DEFICIENT SYSTEMS THAT DON'T MATCH THE STANDARD

BPs are not required to conduct risk assessments against the SBP Feedstock Standard for inputs that meet one or more of the following conditions:[55]

- Carries "a claim for an SBP-approved Forest Management Scheme…," i.e., the Forest Stewardship Council (FSC) and PEFC endorsed schemes, such as the Sustainable Forestry Initiative (SFI) and American Tree Farm System (ATFS).[56] (Note this does not include SFI Fiber Sourcing.)[57]
- Carries "an SBP-approved Chain of Custody (CoC) System claim…," i.e., the FSC, PEFC, and SFI.[58]
- Carries "an SBP-approved Controlled Feedstock System claim…," i.e., FSC Controlled Wood, and PEFC Controlled Sources.[59] (Note this does not include SFI Fiber Sourcing.)[60]
- Is sourced via the SBP Chain of Custody Standard.[61]
- Carries "an SBP-approved recycled claim" or post-consumer tertiary feedstock.[62]
- Is comprised of lignin, which the SBP does not consider as "woody biomass" and is thus outside the scope of SBP certification, despite being derived from trees.[63]

As a result, potentially large amounts of source forests are exempt from the Feedstock Standard, given the prevalence of SFI, ATFS, and other certification in North America. A European Commission report found that 13.5 million hectares of forest in 12 Southeastern states (approximately 16 percent of the total forest area) are covered by SFI and ATFS forest management certificates.[64,65] A much smaller total area—approximately 1.8 million hectares—is certified by the more robust FSC standard.[66]

The prevalence of SFI- and ATFS-certified forestry operations is due partly to their weak, easily-met standards.[67] Those standards do not address a number of important indicators contained in the Feedstock Standard. (See Section 3 for examples.) Meanwhile, FSC and SFI Chain of Custody systems and FSC Controlled Wood and PEFC Controlled Sources address virtually no Feedstock Standard indicators, much less other important considerations for sustainable biomass logging. Even the FSC forest management standards, which are by far the most robust, were not written to fully address biomass harvest per se. As such, the SBP's reliance on these other standards and mechanisms adds a substantial risk that BPs will not uphold the Feedstock Standard's values.

THE FEEDSTOCK STANDARD FAILS TO ADDRESS A NUMBER OF CRUCIAL TOPICS FOR SUSTAINABLE FORESTRY AND PROTECTION OF ENVIRONMENTAL AND SOCIAL VALUES

The Feedstock Standard completely ignores important forest conservation and management objectives, including:

- Explicit protection for old growth forests, bottomland hardwood forests, and other rare ecosystems.[68]
- Explicit protection for rare, endemic, threatened, and endangered species and their habitats.[69]
- Establishment of protected area networks, including within source forest management units.
- Source forests management that explicitly maintains and restores the natural range and diversity of trees and forest structure, other plants, habitat types, and wildlife.
- Establishment and implementation of comprehensive management plans for source forests.
- Environmental justice (e.g., prohibitions on siting biomass plants in disadvantaged communities).[70]

THE FEEDSTOCK STANDARD'S REQUIREMENTS FOR MANY OTHER CRUCIAL ENVIRONMENTAL AND SOCIAL TOPICS ARE WEAK AND LIKELY INEFFECTIVE

As noted above, most of the Standard's indicators are overly subjective and do not require clear outcomes in the forest. While this alone can render them ineffective, many indicators also suffer from additional gaps and deeply flawed assumptions.

BIODIVERSITY: The Standard never defines "biodiversity," allowing BPs to interpret it as they wish. For example, BPs could define biodiversity as a mere index of the number of species in a forest, rather than as protections for rare, endemic, and even threatened and endangered species.[71] Example verifiers point to legal frameworks "in the region," but not to on-the-ground outcomes for imperiled species. While the U.S. Endangered Species Act (ESA) ostensibly protects threatened and endangered species, government agencies have limited access and resources to actively enforce the Act on private land. As noted in Section 6, most forests in the Southeast are owned by non-industrial private parties who are less likely to identify and protect sensitive species.

HIGH CONSERVATION VALUE (HCV) FORESTS: The Standard never requires HCV forests to be protected, only identified and "addressed."[72] The Standard also never defines HCV forests, allowing BPs to designate them as they wish. While the example verifiers offer the High Conservation Value Resource Network as one optional information source, the Network's U.S. materials are limited. The optional verifiers and guidance also point to the SFI's "Exceptional Conservation Value Forests," which ignore HCV forests recognized by the Network. Even if the BP chooses to include all HCV forests, there appear to be no mandatory requirements to maintain them. The example verifiers include "regional best management practices," existence of a legal framework in the region, and other options that will not guarantee that HCV areas are protected in source forests, in part because HCV forests are rarely covered by legal requirements and Best Management Practices (BMPs).

HIGH CARBON STOCK (HCS) FORESTS: While an indicator states that "feedstock is not sourced from areas that had high carbon stocks in January 2008 and no longer have those high carbon stocks," this means that HCS forests are only "protected" once they are already degraded.[73] The Standard also never defines these forests, and the optional guidance points only to wetlands and peatlands, thus excluding old growth and other mature forests that typically sequester high amounts of carbon.

As elsewhere, the example verifiers point not to data on the outcomes of biomass logging in source forests, but rather to existing regional data that may have less relevance. Nor does the SBP require credible baseline scenarios, or that carbon accounting address all forest carbon pools and carbon emissions.

Another indicator on the capacity of forests to sequester and store carbon provides no help, as it only requires that capacity not be diminished "over the long term."[74] In theory, most forest stands and their carbon stores can eventually grow back. But this regrowth can take many decades—or even centuries for HCS sites. And it only occurs if stands are allowed to reach ecological maturity, which may be unlikely, due in part to the combined effects of land use choices and intensification of forest management, as well as the impacts of climate change on site conditions.[75] As reflected in numerous national and international climate policies and targets, the period between 2020 and 2030 is critical for averting catastrophic climate change.[76]

PROTECTING AND RESTORING WATER QUALITY AND AQUATIC RESOURCES: The indicator for water quality is based more on systems than outcomes. In addition, it only points to "minimization" of impacts, and ignores the need for improved water quality in some regions.[77] Unlike credible forest certification systems, no basic forest management

parameters (e.g., logging and equipment exclusion zones around water bodies or streamside management zones) are included where BMPs are insufficient. Furthermore, compliance with BMPs is not required. At best, regional data on BMPs is just an example verifier. In addition, the indicator's wording can be misinterpreted as only covering water quality "downstream" from forest management units, and not within them. Finally, while chemical runoff is mentioned in the optional guidance, other crucial water quality parameters are ignored, including stream flows, temperature, sedimentation, and in-stream habitats.

SUSTAINABLE HARVEST RATES: The Standard never clearly requires that timber/biomass harvest rates not exceed growth rates, or diminish inventory levels for the management unit. Rather, the sole relevant indicator simply requires "analysis [that] shows that... harvesting does not exceed the long-term production capacity of the forest... [and that] harvest levels are justified by inventory and growth data."[78] "Forest productivity" is never concretely defined, allowing BPs to meet the indicator with less relevant data. As elsewhere, the example verifiers point to regional data, which may not be representative of trends in specific source forests, including trends driven by biomass harvest.

REGULATING BIOMASS REMOVALS TO PROTECT SOIL PRODUCTIVITY, HABITATS, AND OTHER FOREST VALUES: Given the incentive to remove more woody plant material from a logging site, intensive biomass harvests can impact forest productivity and ecosystem function significantly more than other industrial logging operations.[79] [80] However, the Standard's indicators merely require procedures and analyses showing that forest management and harvest "maintains or improves soil quality" and "avoids negative impacts on forest productivity," leaving likely impacts to habitats and other ecological values unexamined.[81] Moreover, the options for verifiers also include regional data, growth and harvest data, and other data unlikely to cover the more intensive on-site impacts of biomass harvests, including impacts on soils and productivity. No verifiers are provided for other critical considerations like nutrient cycling, erosion control, forest composition and structure, and wildlife habitats.

PROHIBITING CONVERSION TO PLANTATIONS AND NON-FOREST LAND USES: The "scope" section of the Standard states that a "feedstock shall not be sourced from large (>1000ha) short rotation plantations that are fully dedicated to the production of biomass and that were established after 1 January 2015."[82] However, the Standard lacks a specific requirement to implement this expectation. Its applicability would also be limited. While conversion of natural forests to plantations has been a serious problem in the Southeast and other parts of the United States, resulting in severe impacts to natural forest ecosystems, few plantations were established exclusively for biomass. Further, much of the acreage in the Southeast is owned privately in smaller parcels, usually under 1,000 ha (approx. 2,470 acres).[83]

Red Wolf in North Carolina.

The Standard includes an indicator that ostensibly precludes sourcing from sites converted to plantations or non-forest uses after 2008. However, it too is process-based and limited to the SBP's overly narrow definition of "plantations," which only covers "forests of exotic species."[84] While plantations in the Southeastern United States are no less ecologically barren and bereft of many natural forest attributes, they are typically comprised of single species, such as pine, native to the broader eco-region.

EXOTIC SPECIES AND GENETICALLY MODIFIED ORGANISMS (GMOS): The indicator for GMOs is reasonably well written and clearly states that "genetically modified trees are not used."[85] However, as elsewhere, no analysis or monitoring is required to assess the use of GMOs in source forests. The example verifiers include options for publicly available regional data or the existence of legal frameworks, neither of which is likely to identify GMO use in the United States, given that it is a new and emerging trend, and poorly regulated. Meanwhile, the Standard does restrict sourcing from some plantations of exotic species (see above), but does not prohibit other use of exotics in source forests, including not only trees, but also potentially invasive grasses.

LEGAL COMPLIANCE: As elsewhere, the indicators pertaining to source forest managers' compliance with applicable laws are highly subjective and process-oriented, and focus on the actions of the BP, not the forest managers.[86] The example verifiers also point toward publicly available information from regulators, which is often inadequate, given the lack of capacity to monitor compliance within many regulatory agencies. The optional guidance also points to international corruption perception indices that, as noted earlier, are poorly suited to assess legal compliance rates in U.S. forests.

Equally important, the SBP does little to address the serious gaps and weaknesses in the U.S. regulatory system for industrial and non-industrial private forests, including those discussed in Section 6.

3. The SBP's Web of Loopholes for Alternate Compliance Paths

As described in Section 2, the SBP does not require BPs to conduct risk assessments against the Feedstock Standard for inputs carrying other forest certification claims. None of the existing forest certification standards, however, fully address wood harvests for energy production. Even the FSC forest management standard, which is by far the most robust, does not require companies to account for carbon emissions associated with biomass harvesting. Even worse, SBP's broad exemption includes deficient forest management and chain of custody claims with serious gaps relative to the Feedstock Standard.[87]

TABLE 3: THE SBP'S WEB OF LOOPHOLES FOR ALTERNATE COMPLIANCE PATHS

	REQUIREMENT IS CLEARLY COVERED BY THE ALTERNATE CERTIFICATION CLAIM?						
SBP REQUIREMENT — EXAMPLES (PARAPHRASED)	**FSC FM**	**SFI FMI**	**ATFS FMI**	**FSC COC/ CW**	**SFI COC**	**PEFC COC/CS**	**SFI FIBER SOURCING[a,b]**
Feedstocks are not sourced from High Carbon Stock Forests degraded after 2008	No	No	No	No	No	No	No
Harvest does not diminish forests' long term carbon storage potential	Not explicit	Not explicit	No	No	No	No	No
Soil quality and forest productivity is maintained	Yes	Partially	Partially	No	No	No	No
Residue/biomass removal minimizes harm to ecosystems	Yes, but not specific to biomass	Partially, but not specific to biomass[a]	Partially, but not specific to biomass[a]	No	No	No	No
Key ecosystems, habitats, and biodiversity are conserved	Yes	Partially (relative to SBP)[a]	Partially (relative to SBP)[a]	No	No	No	Partially (relative to SBP)
High Conservation Value forests are identified and threats addressed	Yes	Mostly No[a]	No	Yes (relative to SBP)	No	No	No
Water quality impacts are minimized	Yes	Yes (relative to SBP)[a]	Yes (relative to SBP)[a]	No	No	No	Partially (relative to SBP, N America sourcing only)
Chemical use is controlled	Yes	Yes (relative to SBP)[a]	Mostly No[a]	No	No	No	No
Feedstocks are not sourced from forests converted after 2008	Yes	Mostly No[a]	No	Yes	No	Yes	No
GMO trees are not used	Yes	No	No	Yes	No	Yes	No
Workers' rights, including to collective bargaining, are protected	Yes	Yes (relative to SBP)[a]	No	No	Partially (relative to SBP)[a]	No (unless protected by law)	Yes (relative to SBP, sourcing outside N America only)
Indigenous Peoples' and local communities' rights are protected	Yes	Partially[a]	No	Yes	Partially (relative to SBP)[a]	No (unless protected by law)	Partially (relative to SBP, sourcing outside N America only)

a The Standard is considered deficient overall, relative to expectations for environmentally and socially credible forest certification.

b SFI Fiber Sourcing is recognized by the SBP for some purposes (Supplier Verification Programs) but not others (as an alternative to Feedstock Standard risk assessments/verification).

4. Certification Body Audits

The SBP is basically a self-assessment scheme for BP companies, with virtually no requirements for independent forest audits. Most of the Feedstock Standard's indicators are focused on BPs' procedures rather than forest-level outcomes, and the Standard's example verifiers often have little connection to actual forest practices. Stakeholders may mistake the SBP's limited requirements for independent certification audits as equivalent to more credible third-party certification approaches. However, since independent verification is essentially limited to verifying whether a BPs' self-assessment triggers the SBPs' requirements, it provides narrow value.

For example, the SBP requirements for certification body (CB) audits do not specify additional considerations for carbon and GHG accounting for source forests.[88] Likewise, the SBP doesn't require CBs to meaningfully verify source forest management practices, including field visits. The CB standard does say that CBs shall "…conduct adequate and appropriate sampling and review of sites, documents, [etc.]."[89] However, "sites" is not defined and can be interpreted as an office of the BP or its suppliers. "Adequate and appropriate" is also very subjective. Other language could be interpreted as requiring forest visits in the unlikely event that a BP finds a risk of non-conformance to the Feedstock Standard, and if the CB deems site visits necessary to check the BP's mitigation measures.[90] Yet even here, such verification is not clearly required.[91]

5. Reality Check: SBP Risk Assessments

Seven BPs in the United States are listed as having SBP certificates (eight, if you count the two certificates for Drax Power).[92] Drax Power, the United Kingdom's largest coal-fired power plant, is now responsible for 38 percent of total biomass generation in the country. Since 2013, it has converted three of its coal plants to burn biomass. Drax's conversions have been financed with generous public subsidies, receiving more than £540 million in biomass subsidies in 2016.[93] Press analyses estimate that subsidies range anywhere from three-quarters of the company's 2014 gross profits to potentially several times the company's 2012 gross profit after 2016.[94]

We were able to review the risk assessment public summary reports for two of these BPs: one found on the SBP site (Drax), the other via a web search (Nahunta Pellets).[95] Through a web search, we also located the full SBE for one of the seven certificate holders (Drax), plus the consultation draft SBE for an additional BP, pending SBP certificate (Enviva, the largest producer and exporter of wood pellets in the United States and one of Drax's major pellet suppliers).[96]

Our analysis of these SBEs confirms problems with the SBP's reliance on self-assessments, and on broad-scale risk assessments instead of examinations of actual conditions in source forests. We also confirmed the weaknesses of a Feedstock Standard in which subjective and process-oriented indicators can be met by a wide range of assertions. Both the Nahunta and Drax summary reports show the BPs found low risk for all of the Feedstock Standard's 38 indicators, and thus adopted no mitigation measures and conducted no site visits or SVPs.[97]

Nahunta's summary report cites the legal framework as the primary reason for all of their low-risk findings.[98] The report provides virtually no analysis of how each indicator's requirements are met by forestry-related laws, which would be difficult, as applicable laws do not cover many of the Standard's requirements, as noted in Section 6. Similarly, the summary report for Drax's SBE cites legal requirements, BMPs, and forest certification claims (including FSC Chain of Custody (COC), PEFC COC, and SFI COC and Fiber Sourcing) as primary reasons for low risk.[99] However, as noted in Sections 3, there are substantial gaps between the Feedstock Standard and these other certification claims.

The full Drax SBE is also relatively cursory, and often provides no explicit data that shows the condition of forest resources and other values. Rather, it cites various sources that are simply asserted as supporting the SBE's conclusions, including conclusions focused on the existence of management systems, rather than objective forest-level performance.[100] Some of the SBE's assumptions about specific verifiers and data sources are also questionable. For example, the SBE cites BMPs as evidence of biodiversity protection, HCS forest protection, and means of protecting forest productivity from biomass removal. Most BMPs do none of these things, as they are primarily focused on impacts to water and soil resources.[101] The SBE also did not appear to include a serious search for rare or imperiled species or ecosystems in the source forests.

Bottomland hardwood forest in the Roanoke River Basin outside Williamston, NC (within the Enviva Ahoskie sourcing area). © Dogwood Alliance.

The Enviva draft SBE is only somewhat better. Its legality analyses do not appear to provide much evidence of compliance rates in the supply area. Instead, they refer to the company's internal procedures for legal compliance, for which little performance data is provided.[102] The SBE claims that laws such as the Endangered Species Act are "policed effectively," despite the U.S. Fish & Wildlife Service's limited capacity to monitor and protect species on private forestlands.[103] The SBE also repeatedly cites SFI Fiber Sourcing and BMPs as meeting various indicators, including indicators for forest carbon, when the Fiber Sourcing Standard and most BMPs have little overlap with the Feedstock Standard.[104]

The Enviva SBE did find risk for sourcing from some HCV forests and wetlands (e.g., cypress-tupelo swamps, Atlantic white cedar stands, pocosins, and Carolina bays). It also cites the company's mapping and internal "tract approval process" as a mitigation measure designed to avoid harming older forests in the area.[105] However, it provides no analysis of the effectiveness of this internal process. Similarly, the SBE found risk for sourcing from key ecosystems, habitats, and biodiversity areas, and then assumed the company's mitigation measures are sufficient.[106] Thus the SBE found low risk for all Feedstock Standard indicators.[107]

CB audit reports were available for two other certificates, Westervelt and Georgia Biomass, which also found low risk for all indicators.[108] In other words, risk was found by none of the four SBP certificate holders for whom audit reports or risk assessments were publicly available. Together with Drax and Nahunta, these four certificates cover approximately 100 million acres (40 million ha) of forest in the Southeastern United States.[109]

As discussed earlier, the only report we found that began to identify any risk was the draft assessment for Enviva's pending certificate. Even then, the company found low risk for all of the Standard's indicators based on its own mitigation measures. Yet, as noted in Section 6, there are serious environmental and social concerns in the region's forests and forest-related communities.

6. Reality Check: SBP-Certified Forest Degradation

There are several examples of how existing laws fail to protect forest resources in the Southeastern United States, and biomass producers are known to source feedstocks from ecologically sensitive forests and wetlands. The SBP's greenwashing extends past the United States. In addition, biomass logging elsewhere, including in Canada, South America, and Europe raises similar serious concerns.[110]

THE SOUTHEASTERN UNITED STATES: WEAK LAWS AND ECOLOGICALLY VULNERABLE FORESTS AND COMMUNITIES

The sourcing areas for nearly every proposed pellet plant in the Southeastern United States—and several currently operating plants—include critical habitat for up to 25 different species that are federally listed as imperiled or endangered.[111] The Southeast's bottomland hardwood forests, which have been reduced by 80 percent from their historical size, are home to much of the region's high levels of biodiversity, and are heavily concentrated in many existing and proposed sourcing areas.[112]

Meanwhile, logging on private lands in the region is unlikely to be preceded by surveys for rare and endangered species and ecological communities, much less by voluntary adoption of protections. Approximately 60 percent of forestland in the Southeast is held by small, non-industrial landowners, with forest sizes averaging 30 acres. Less than 5 percent of such lands in the Southeast are covered by forest management plans and most harvesting in the region is done without oversight by a qualified natural resources professional, increasing the risk that biodiversity resources will not be identified or protected.[113] The application of laws, such as the Clean Water Act, Endangered Species Act, and Migratory Bird Treaty Act is also uncertain and inconsistent in many forests. Outreach programs focused on logger training and BMP compliance are also unlikely to address many legal gaps, as BMPs tend to focus on minimum (and sometimes only partial) protections for streams and soil conservation.

Large-scale clearcutting, old growth logging, wetlands logging, and conversion of natural forests to plantations is generally allowed by laws applicable to private forests in the Southeast and throughout the United States. Likewise, forestry laws do not preclude short rotation logging that removes regrowth before it has replaced carbon stores that may have been lost during prior logging. Key states in the Southeast do not even require reforestation after logging.[114] Federal and state laws also tend not to protect important categories of HCV forests, high carbon stock forests, or prohibit use of GMO species.

The siting of biomass production facilities in disadvantaged communities also raises environmental justice concerns. These communities often have limited ability to address the plants' impacts on their air quality, health, and livability. Dogwood Alliance found that wood pellet mills are twice as likely to be sited in locations with environmental justice risks. In fact, all the mills they analyzed in Alabama, South Carolina, and North Carolina were within two miles of such a risk area.[115]

ENVIVA

Five Enviva facilities are located in hotspots for conflicts between biomass sourcing and bottomland hardwood forests.[120] Independent investigations over five consecutive years have revealed sourcing of mature hardwoods from clearcuts in wetland forests to supply Enviva's wood pellet mills. This risk is acknowledged even in Enviva's own SBE, which identifies forests that are increasingly imperiled and unlikely to regenerate.

Since 2013, media and local groups have investigated and documented the devastating impact that European demand for wood pellets is having on forest ecosystems in the Southeastern United States. These investigations provide critical insight into the supply chains for pellets exported by Enviva. In a new investigation (February, 2017), local groups found that mature hardwood forests were cut down to source Enviva's new wood pellet mill in Sampson County, North Carolina. The images from this investigation, which follows similar investigations in 2014, 2015, and 2016, once again expose the unsustainable logging practices being used to provide biomass to Enviva (i.e., clear cuts of wetland forests). They also spotlight the vast quantities of whole trees and other large-diameter wood—biomass feedstocks known to be high-carbon—entering Enviva's supply chain. The results portray a disturbing pattern: a significant proportion of Enviva's pellets are produced using trees and other large-diameter wood from native hardwood forests.[121]

Enviva's use of whole trees suggests they were not residues, but likely the primary objective of the logging, which might not have occurred otherwise. This was strongly suggested by one senior forester that supplied the company. He stated that "most of this wood is no good for sawmills," that he found very few sawlogs "in the swamps I've cut," and that the hardwood species might never return, "because owners seeded other, fast-growing species in their place."[122] Specifications for the company's pellet plants also indicate that Enviva predominantly uses large-diameter tree trunks and branches for feedstock, including mature hardwood trees from wetland forests.[123]

DRAX

Drax's SBE indicates the presence of small amounts of older forest in the Amite and Morehouse supply areas, plus a large amount of floodplain in the Morehouse supply area. The supply areas are also in a hotspot for conflicts between biomass sourcing and bottomland hardwood forests.[116] The Natureserve database also shows several Critically Imperiled (CI) mussel and fish species in Texas, Louisiana, and Mississippi. However, the SBE found no risk of impacting these imperiled and sensitive resources, did not appear to evaluate BMPs and applicable laws in relation to these resources, and adopted no mitigation measures. The SBE did not appear to even look for the GI species, though it did list some relevant data sources.[117]

Another report indicates that Drax's largest supplier is "intensifying [its] forestry methods" and "had increased the productivity of [its] southern pine forests by 50 percent…" in response to Drax's market demand.[118] This confirms that biomass markets can increase pressure on forests, rather than using feedstocks that are somehow "extra." It also shows how biomass can create demand for intensive plantations that are little more than tree factories, having replaced diverse natural ecosystems with rows of trees lacking other vegetation and wildlife, and sprayed regularly with fertilizers and herbicides.[119]

Conclusion

A growing body of peer-reviewed science and ground-level evidence clearly shows that the expanding wood pellet industry threatens our climate, natural forest ecosystems, and quality of life in rural communities. While the SBP certification system claims to address these threats, an in-depth analysis reveals significant deficiencies in the program's ability to achieve its stated outcomes.

Our analysis identified the following key deficiencies:

- The SBP Feedstock Standard mostly lacks concrete, performance-oriented thresholds and protections, and thus provides little assurance regarding environmental or social protections in source forests.
- The SBP virtually never requires field verification of source forest management. Instead, it relies on regional risk assessments and verifiers that lack consistency and connection to the Feedstock Standard's requirements, as well as connection to the management of actual source forests.
- Biomass producers can conduct their own risk assessments, and choose their own verifiers and data sources, despite the inherent conflict of interest. Our review of available reports also shows that BPs in the United States virtually never identify environmental or social risks in their sourcing areas.
- Other flaws also nullify the Standard's requirements for important topics, including legal compliance, biodiversity, high conservation value forests, high carbon stock forests, water quality, harvest sustainability, regulating biomass removals to protect soils and habitats, prohibiting conversion to plantations and non-forest, and exotic species and GMOs.
- The Standard fails to consider many crucial environmental and social topics, such as explicit protection for old growth forests, bottomland hardwood forests, and other rare ecosystems; explicit protection for rare, threatened, and endangered species and their habitats; maintaining and restoring the natural diversity of forest plants and wildlife; and the siting of biomass mills.
- The SBP uses other forest certification systems essentially as a loophole and not as a solution to gaps in its requirements. This broad exemption from the Feedstock Standard includes forest management certification systems that are deficient with regard to basic forest management and conservation objectives, as well as certification claims that do not address many of the Feedstock Standard's indicators.

European policymakers are increasingly looking to "sustainable" sourcing standards such as the SBP to ensure their biomass imports are "green." However, in light of these deficiencies, SBP-certified biomass projects will likely continue to pose a high degree of risk to forest integrity, local communities, and carbon reduction goals.

We caution policymakers in the United States and Europe to reassess whether the SBP can mitigate the carbon and sustainability risks inherent to burning biomass for energy and call on them to invest in truly clean and lower cost energy technologies like solar, wind and energy efficiency.

ENDNOTES

1 Average 2015 ROC price calculated as £42.69 from http://www.epowerauctions.co.uk/erocrecord.htm. Data on ROC allocation derived from The Renewable Energy Foundation, at http://ref.org.uk/generators/group/index.php?group=yr.

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31 European Commission, Directorate-General for the Environment. "Environmental Implications of Increased Reliance of the EU on Biomass from the South East US," 252. The report uses eligibility criteria developed by the state of Massachusetts as an example.

32 The report explains that pellet mills seek "the lowest cost lowest ash-content fibre," and "logging residuals (tops and limbs) [are generally] less suitable... due to high ash content" and high levels of "bark, foliar components, or dirt" and concludes that it is "reasonable to assume that the increased demand for industrial pellets requires a roughly equivalent increase in logging removals in the region."

33 Ibid. 110.

34 Sustainable Biomass Program, "SBP Framework Instruction Documents 5A, 5B, and 5C."

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38 Sustainable Biomass Program, "SBP Framework Standard 1: Feedstock Compliance" Section 1: Background. Sustainable Biomass Program, "SBP Framework Standard 2: Verification of SBP-compliant Feedstock." Sustainable Biomass Program, "Interpretation Q&As." Sustainable Biomass Program, "SBP Glossary of Terms and Definitions."

39 Sustainable Biomass Program, "SBP Framework Standard 1," Secs 2.2.3, 2.2.4, 2.1.1, 2.1.2, and 2.3.1.

40 Sustainable Biomass Program, "SBP Framework Standard 2," Secs 16.2 and 16.3.

41 Sustainable Biomass Program, "SBP Framework Standard 1," Sec 2.9.1.

42 As discussed in Section 6, all of the four SBP certificate holders for whom audit reports or risk assessments were publicly available found no risk for any of the Feedstock Standard's indicators, and thus no need for the BPs to adopt any mitigation measures. A draft risk assessment for an additional, pending certificate holder did find risk for a few indicators – but then concluded their mitigation measures eliminated that risk.

43 "The Standard... does not define the specific means of verification which are appropriate... in determining risk. BP's must prepare Locally Applicable Verifiers...." Sustainable Biomass Program, "SBP Framework Standard 1," Sec 2.4. The SBP also allows BPs to modify the Feedstock Standard's indicators themselves, subject to SBP approval, though it does not appear that many BPs have done so. Ibid., Secs 3.2 and 3.3.

44 Sustainable Biomass Program, "SBP Framework Standard 2," Sec 11.2.

45 Natural Resources Defense Council (NRDC), *The Truth About the Biomass Industry: How Wood Pellet Exports Pollute Our Climate and Damage our Forests,* August 2014, www.nrdc.org/sites/default/files/wood-pellet-biomass-pollution-FS.pdf (accessed December 5, 2016).

46 Sustainable Biomass Program, "SBP Framework Standard 2," Sec 11.7.1.

47 Ibid., Secs 11.4 and 11.5.

48 Ibid., Secs 11.7.3 and 11.7.4.

49 The SBP Glossary and Standard 2, Figure 2, confirm that SBE risk assessments can be done as mere desk-based analyses.

50 Sustainable Biomass Program, "SBP Framework Standard 2," Sec 9.2.

51 Ibid., Instruction Note 2A, Sec 1.

52 Ibid., Instruction Note 2A, Sec 1.2.

53 Ibid., Sec 14.2.

54 Ibid., Instruction Note 2A, Sec 1.1.

55 Ibid., Sec 8.2.

56 Ibid. "SBP Framework Standard 1," Secs 2.1 and 8.2. Sustainable Biomass Program, *SBP Glossary,* "SBP Approved Forest Management Schemes."

57 Sustainable Biomass Program, "SBP Framework Standard 2," Sec 8.2, Note.

58 Sustainable Biomass Program, "SBP Framework Standard 2," Sec 8.2. SBP Glossary, *Sustainable Biomass Partnership,* "SBP Approved Chain of Custody Systems."

59 Sustainable Biomass Program, "SBP Approved Standard 2," Sec 8.2. SBP Glossary, *Sustainable Biomass Partnership,* "SBP Approved Controlled Feedstock Systems."

60 Sustainable Biomass Program, "SBP Approved Standard 2," Sec 8.2, Note.

61 Sustainable Biomass Program, "SBP Approved Standard 2," Sec 8.2. Note: it is unclear from the SBP Chain of Custody Standard whether this provision is merely redundant with the options to rely upon FSC, SFI, or PEFC CoC systems, given the SBP requirement for BPs to use one of them, or whether it is an open door for anything to count.

62 Ibid, Instruction Note 4A.

63 Sustainable Biomass Program, "Interpretation Q&A."

64 Excluding National Forests and other lands less likely to be commercially harvested brings the percentages of SFI and ATFS certified forests even higher.

65 European Commission, Directorate-General for the Environment. "Environmental Implications of Increased Reliance of the EU on Biomass from the South East US," 85.

66 There are a plethora of forest certification schemes in the marketplace today. Certification will only ensure responsible forest management if the system has comprehensive management standards, rigorous control mechanisms and broad involvement of economic, environmental and social stakeholders. Many environmental groups and large buyers consider the Forest Stewardship Council (FSC) to be the best certification system to ensure environmentally responsible, socially beneficial and economically viable management of forests.

67 The SFI and especially the ATFS lack important resource protections, are overly flexible and process-oriented, and largely endorse business-as-usual forestry. The SFI is also known for greenwashing environmentally and socially destructive and controversial practices in North America, including in the Southeastern US. ForestEthics *SFI New and Unimproved: Analysis of Revised Sustainable Forestry Initiative Standards 2015-2020: SFI Labels Allow Illegal Practices, Logging Old Growth, Human Rights Abuses, and Phony Claims*, 2015.

68 While Standard 1, Sec 2.2.3 references "key ecosystems and habitats," these are never defined.

69 While Standard 1, Sec 2.2.4 references "biodiversity," this is never defined. Optional guidance for the HCV indicators points to the NatureServe database does not indicate which species categories should be considered.

70 Alysa Delgado, "Biomass and Environmental Justice Capstone," Dogwood Alliance, June 23, 2016, www.dogwoodalliance.org/2016/06/guest-blog-biomass-and-environmental-justice-capstone (accessed February 2017).

71 Sustainable Biomass Program, "SBP Framework Standard 1," Sec 2.2.4.

72 Ibid., Secs 2.1.1 and 2.1.2.

73 Ibid., Sec 2.9.1.

74 Ibid., Sec 2.9.2.

75 David Hasemyer, "Southern Forests' Ability to Suck Carbon From the Air May Be Slowing" InsideClimate News, February 2, 2015, insideclimatenews.org/news/20150202/southern-forests-ability-suck-carbon-air-may-be-slowing (accessed February 2017).

76 For example, the United Kingdom's 2008 Climate Change Act which commits the government to reducing greenhouse gas emissions by at least 50% of 1990 levels by 2050; the UK's 2020 Renewable Energy Targets—to provide 15% of its energy needs from renewable sources; the EU Renewable Energy Directive which requires the EU to fulfil at least 20% of its total energy needs with renewables by 2020; and the 2015 Paris Climate Agreement which requires all countries—developed and developing—to make significant commitments to addressing climate change and to strengthen their emissions reduction targets over time.

77 Sustainable Biomass Program, "SBP Framework Standard 1," Sec 2.2.6.

78 Ibid., Sec 2.3.1.

79 Barrett, S. et al., 2016. Implementation of Forestry Best Management Practices on Biomass and Conventional Harvesting Operations in Virginia. *WATER*, 8(3), p.89.

80 Achat, D.L. et al., 2015. Forest soil carbon is threatened by intensive biomass harvesting. *Scientific reports*, 5, p.15991.

81 Sustainable Biomass Program, "SBP Framework Standard 1," Secs 2.2.2 and 2.3.1.

82 Ibid., Sec 2 Scope.

83 Forest conversion rates and risks in the Southeast include: "Extensive conversion of natural pine forest types to planted pine... since the 1950s;" 14% losses of natural hardwood forests on the Cumberland Plateau between 1981 – 2000, 74% of which was attributed to pine conversion; loss of as much as 35% of longleaf pine forests (over 300,000 ha between early 1990s to mid-2000s); loss of 105,044 ha of forested wetlands in NC, SC, GA, FL, AL, MS, LA, and AR between 2004 and 2009; and forecasts for future loss including 4.4 – 9.3 million ha between 1997 and 2060, and bio-energy demand potentially driving the loss of about 2 million ha of natural forests in the Coastal Plain. European Commission, Directorate-General for the Environment. "Environmental Implications of Increased Reliance of the EU on Biomass from the South East US," citing Wear & Greis 2013, McGrath 2004, Abt 2014, Frost 1993, Dahl 2011, and Abt et al 2014.

84 Sustainable Biomass Program, "SBP Framework Standard 1," Indicator 2.1.3; Standard 1, Indicator 2.1.3, guidance. SBP Glossary.

85 Sustainable Biomass Program, "SBP Framework Standard 1," Sec 2.10.1.

86 Ibid., Secs 1.2.1, 1.3.1, 2.4.3, 2.5.1, etc.

87 Per Standard 2, Sec 8.2 and the SBP Glossary, these include: SPB-approved Forest Management Scheme claims (FSC and PEFC endorsed systems, e.g., SFI and ATFS); SBP-approved Forest Management Scheme partial claims; SBP-approved Chain of Custody claims (FSC, PEFC, and SFI); SBP-approved Controlled Feedstock System claims (FSC and PEFC); SBP-approved recycled claims; feedstock from BPs' own SBP-approved CoC systems; feedstock from BPs' own SBP-approved Controlled Feedstock systems; and post-consumer tertiary feedstock.

88 Sustainable Biomass Program, "SBP Framework Standard 3: Certification Systems. Requirements for Certification Bodies," *The SBP Framework,* March 2015, www.sustainablebiomasspartnership.org/docs/2015-03/sbp-standard-3-certification-systems.-requirements-for-certification-bodies-v1-0.pdf (accessed August 22, 2016). Sustainable Biomass Program, "Interpretation Q&As."

89 Sustainable Biomass Program, "SBP Framework Standard 3," Sec 7.2.c.

90 Sustainable Biomass Program, "SBP Interpretations Q&A." Sustainable Biomass Program, "SBP Framework Standard 3," Sec 7.2.

91 Some CB audit reports indicate they did spend a few hours in source forests. While this seems quite inadequate given the scope of the BPs' sourcing, it may also have been more than required. See Drax (Morehouse) and Westervelt audit reports.

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94 David Rose, "The UK's £1Billion Carbon-Belcher Raping US Forests That You Pay For: How World's Biggest Green Power Plant Is Actually Increasing Greenhouse Gas Emissions and Britain's Energy Bill," *Daily Mail*, June 6, 2015, www.dailymail.co.uk/news/article-3113908/ How-world-s-biggest-green-power-plant-actually-INCREASINGgreenhouse-gas-emissions-Britain-s-energy-bill.html (accessed February 2017). "Wood: The Fuel of the Future," *The Economist*, April 6, 2013, www.economist.com/news/ business/21575771-environmental-lunacy-europe-fuel-future (accessed February 2017).

95 Sustainable Biomass Program, "Supply Base Report Template for Biomass Producers," March 2015. www.epelletsgroup.com/files/1714/5672/9569/Nahunta_Pellets_-_Supply_Base_Report_12-09-15.pdf (accessed August 22, 2016). Sustainable Biomass Program, "Supply Base Report Drax Biomass Inc: Amite BioEnergy LLC" Drax Biomass Inc, Amite BioEnergy LLC, Supply Base Report, February 2016, www.sustainablebiomasspartnership.org/docs/reports/Supply-Base-Report-v1-1-Amite-BioEnergy-LLC.pdf (accessed August 22, 2016). Drax Biomass Inc., Morehouse BioEnergy LLC, Supply Base Report, February, 2016. www.sustainablebiomasspartnership.org/docs/reports/Supply-Base-Report-v1-1-Morehouse-BioEnergy-LLC.pdf (accessed August 22, 2016). The Drax public summary is actually comprised of two public summary reports, one for the Amite BP and one for the Morehouse BP. However, both reports are virtually identical, and they were based on an integrated risk assessment/SBE covering both the Amite and Morehouse operations.

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98 Sustainable Biomass Program, Nahunta Pellets, "Supply Base Report Template for Biomass Producers," Section 4.5: 7, November 13, 2015.

99 Sustainable Biomass Program, "Supply Base Report Drax Biomass Inc: Morehouse BioEnergy LLC," Section 4.3: 11. Sustainable Biomass Program, "Supply Base Report Drax Biomass Inc: Amite BioEnergy LLC."

100 Sustainable Biomass Program, "Supply Base Report Template for Biomass Producers," Sec 1.2.1: 4, Sec 1.3.1: 4-5, Secs 2.1.1 and 2.1.2: 8-9, Sec 2.1.3: 10, Sec 2.2.1: 10-11, Sec 2.2.3: 12-13, Sec 2.2.4: 13-14, and Sec 2.2.5: 15, Drax Biomass Inc., Annex 1, Detailed Findings for Supply Base Evaluation Indicators, 2015.

101 Ibid., Sec 2.2.4: 13, 2.2.5: 15, 2.9.1: 33, 2.9.2: 34, Drax Biomass Inc, Annex 1, Detailed Findings for Supply Base Evaluation Indicators, 2015.

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103 Ibid. Secs 6-2.1.1: 10-19, 6-2.1.2: 19-20, and 6-2.4.1: 40, Enviva Pellets, Wilmington Region Supply Base Evaluation/Risk Assessment, Draft for Consultation, May 5, 2016. Among other things, enforcing the ESA's prohibitions on harming threatened and endangered species requires proof of the species' presence and of harm to the species, both of which the US Fish & Wildlife Service and the public typically lack access to, in the context of private lands. Public access to such information is relevant, given that "in practice, citizen suits are the primary mechanism by which the ESA is enforced against government agencies and private entities" (Kirsten Nathanson, Thomas R. Lundquist, and Sarah Bordelon, "Developments in ESA Citizen Suits and Citizen Enforcement of Wildlife Laws," *Natural Resources & Environment* 29, No. 3, Winter 2015, www.crowell.com/files/Developments-in-ESA-Citizen-Suits-and-Citizen-Enforcement-of-Wildlife-Laws.pdf (accessed February 2017). Enforcing the ESA on private lands may also not be a priority for the USFWS. The USFWS Office of Law Enforcement webpages focus largely on international trade in endangered wildlife, and include almost no indication that the agency is responsible for enforcing the ESA to protect domestic species. U.S. Fish & Wildlife Service "Office of Law Enforcement," www.fws.gov/le/index.html (accessed February 2017).

104 Enviva Pellets, "Wilmington Region Supply Base Evaluation/Risk Assessment, Draft for Consultation," Secs 6-2.2.1: 21, 6-2.2.4: 30-34, 6-2.2.5: 34, 6-2.3.1: 38, and 6-2.9.1: 47-48.

105 Ibid., Secs 6-2.1.1: 10-19 and 6-2.1.2: 19-20, Enviva Pellets, Wilmington Region Supply Base Evaluation/Risk Assessment, Draft for Consultation, May 5, 2016.

106 Ibid., Secs 6-2.2.3: 23-30, 6-2.2.4: 30-34, and 6-2.9.1: 47-48

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110 Fred Pearce, *Up In Flames: How Biomass Burning Wrecks Europe's Forests*, Fern (November 2015) www.fern.org/sites/fern.org/files/upinflames_internet.pdf (accessed February 2017). Isis Alvarez and Rachel Smolker, Ronnie Hall (ed.) *A Global Overview of Wood Based Bioenergy: Production, Consumption, Trends and Impacts,* Global Forest Coalition, November 2014, globalforestcoalition.org/wp-content/uploads/2010/06/REPORT-WOOD-BASED-BIOENERGY-FINAL.pdf (accessed February 2017).

111 NRDC, *In the US Southeast, Natural Forests Are Being Felled to Send Fuel Overseas*.

112 Ibid.

113 European Commission, Directorate-General for the Environment. "Environmental Implications of Increased Reliance of the EU on Biomass from the South East US," 42.

114 NRDC. 2014. Factsheet: The Truth About the Biomass Industry: How Wood Pellet Exports Pollute Our Climate and Damage Our Forests.

115 I.e., communities where median income is below the state median, and at least 25% of the population is nonwhite.

116 NRDC, *In the US Southeast, Natural Forests Are Being Felled to Send Fuel Overseas*.

117 Drax Biomass Inc., "Annex 1, Detailed Findings for Supply Base Evaluation Indicators," Secs 2.1.1, 2.1.2, 2.2.3, 2.2.4.

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