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Sustainable Biomass Program: Certifying the *Unsustainable*

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Richard Robertson is a forest stewardship and rights-based governance expert with over two decades of senior-level experience in resource-based certification systems, including the Forest Stewardship Council, Alliance for Water Stewardship, High Carbon Stock Approach, and Assurance Services International. A skilled facilitator, he has led multi-stakeholder consultations in over 40 countries, bringing diverse perspectives together to find practical solutions in complex forest governance contexts. Richard has campaigned with Canadian environmental non-governmental organizations to protect primary and Old Growth forests, particularly in British Columbia, where he lives.

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Solutions for Our Climate (SFOC) is an independent nonprofit organization that works to accelerate global greenhouse gas emissions reduction and energy transition. SFOC leverages research, litigation, community organizing, and strategic communications to deliver practical climate solutions and build movements for change.

The Global Environmental Forum (GEF) is a Tokyo-based non-profit dedicated to advancing scientific understanding of global environmental issues and communicating them to the public. Since its founding in 1990, GEF has worked on environmental monitoring, public education, and corporate environmental management guidelines. It has a strong track record in forest conservation and, since 2019, has focused on the impacts of woody biomass through research and policy outreach.

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Mighty Earth is a global advocacy organization working to defend a living planet. Our goal is to protect half of Earth for Nature and secure a climate that allows life to flourish. We are obsessed with impact and aspire to be the most effective environmental advocacy organization in the world. Our team has achieved transformative change by persuading leading industries to dramatically reduce deforestation and climate pollution throughout their global supply chains in palm oil, rubber, and cocoa, while improving livelihoods for Indigenous and local communities across the tropics.

biofuelwatch

Biofuelwatch provides information and undertakes advocacy and campaigning in relation to the climate, biodiversity, land and human rights and public health impacts of large-scale industrial bioenergy. We are a small team of staff and volunteers based in Europe (including UK) and the USA.

Environmental Paper Network
BIOMASS ACTION NETWORK

The Biomass Action Network of EPN International comprises around 235 NGOs in 70 countries who endorse the Biomass Delusion position statement. We share a vision of a world in which thriving natural forests play a significant role in tackling climate change and contribute to a clean, healthy, just and sustainable future for all life on earth. Burning forest wood for large-scale energy production cannot be part of that future. Instead we must protect and restore natural forests, thereby reducing emissions and removing atmospheric carbon dioxide while supporting biodiversity, resilience and well-being.

This report is offered in the spirit of international collaboration toward truly sustainable and accountable climate solutions.

Sustainable Biomass Program

Certifying the Unsustainable

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Key Takeaways

- Forest biomass, i.e. the burning of wood to produce heat and electricity, makes a significant portion of the energy mix in the EU, UK, Japan, and South Korea, despite demonstrated adverse impacts on climate, biodiversity, and peoples

- As governments sought evidence that biomass they subsidize is 'sustainable', the industry created the Sustainable Biomass Program (SBP), which has become the most prominent voluntary certification scheme for biomass energy

- However, SBP more than often works to greenwash biomass through relying on other forest certifications, certifying pellet mills without field audits, and benefitting from flawed carbon accounting, altogether lowering the bar for 'sustainable forest management'

- SBP-certified Drax pellet mills in BC and Alberta, Canada, source from primary forests, including old-growth, condoned by the certification's inadequate risk assessments and mitigation measures, contributing to habitat degradation and carbon emissions

- Governments should acknowledge the impacts of forest biomass, end related subsidies, strengthen protection of natural forests and intact landscapes, and mandate due diligence across all timber trade

Executive Summary

Faced with pressure to meet climate commitments and reduce reliance on fossil fuels, many countries have turned to forest biomass as an alternative source of heat and electricity. Biomass now constitutes a significant portion of the energy mix in the European Union, United Kingdom, Japan, and South Korea. However, burning wood for energy accelerates the destruction of the world's biodiverse and carbon-rich forests, which are already under severe pressure. Decades of research in climate and forest sciences have made it clear that large-scale biomass use exacerbates the twin crises of climate change and biodiversity loss.

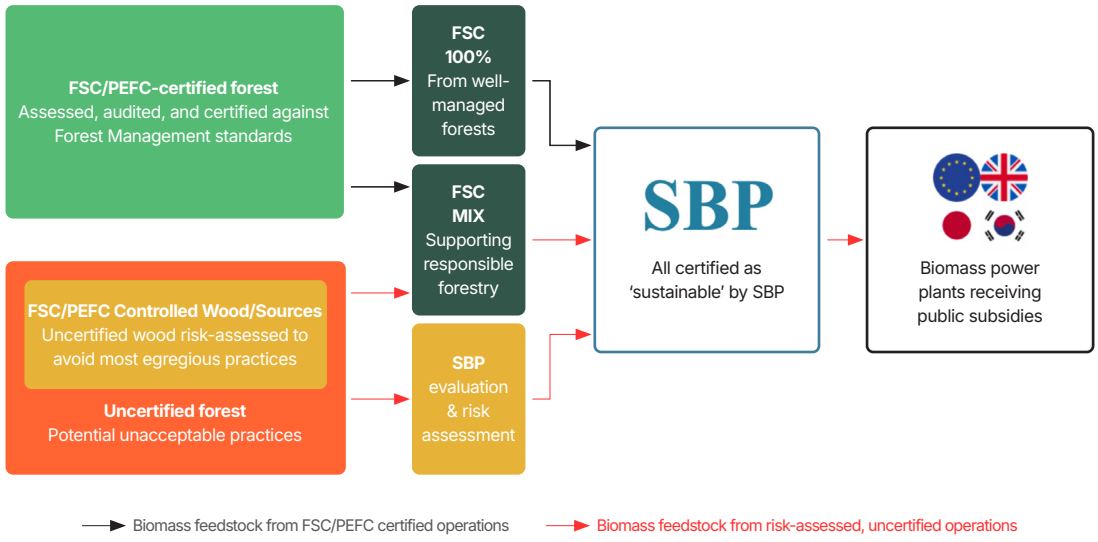
In response to mounting criticism, governments have sought evidence that biomass they support is 'sustainable' and contributes to lowering greenhouse gas (GHG) emissions. The biomass industry responded by creating the Sustainable Biomass Program (SBP) to assure that wood pellets and chips used for energy are sourced sustainably. However, SBP is a private certification scheme developed by the very industry it purports to regulate. It is backed by powerful market incentives in the form of government subsidies, not to restrain the industry, but to promote it. Evidence shows that this structural conflict of interest has resulted in weakened standards and superficial compliance mechanisms that encourage practices far removed from true sustainability.

Sustainable Biomass Program: Certifying the Unsustainable investigates the claims made by SBP through a review of its standards, policies, and procedures. This report finds that SBP's portrayal of biomass as a climate-friendly alternative to fossil fuels is misleading on several grounds:

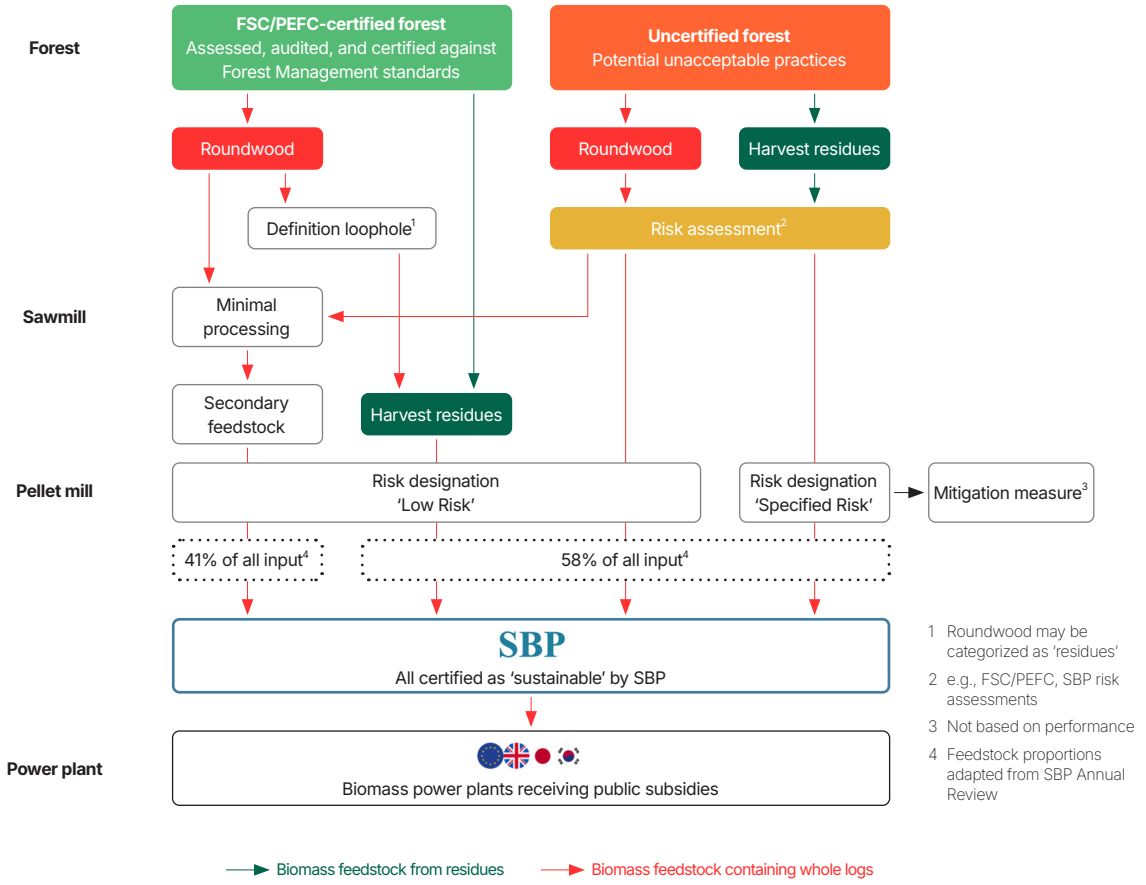
- **SBP certifies pellet mills and traders without field audits** of forest management practices or direct engagement with logging companies. Unlike other forest certifications, SBP relies on desk-based Risk Assessments and broad screening tools that detect only illegal or grossly unacceptable sources, not genuine sustainability.
- **SBP misrepresents the credibility of other certification systems.** It treats FSC "Controlled Wood" and PEFC "Controlled Sources" as if they were fully certified sources. In reality, these categories undergo only minimal risk assessment. SBP uses this lower-tier wood to label entire biomass supply chains, including wood from uncertified forests, as sustainable, effectively lowering the bar for what counts as 'sustainable forest management' (SFM).
- **SBP's climate impact claims rely on flawed carbon accounting.** The scheme assumes that emissions from burning wood are offset by forest regrowth over decades, ignoring the urgent emissions reductions required by 2030 to meet the Paris Agreement. SBP permits sourcing from areas with net carbon losses and uses national averages instead of site-level data, allowing companies to offset carbon-rich forest losses with regrowth in less carbon-dense areas.

- **SBP fails to mitigate smokestack emissions from burning biomass**, deferring this responsibility to energy regulators. By ignoring the fact that biomass emits more CO_2 per unit of energy than fossil fuels, SBP enables operators to claim 'carbon neutrality'. Current accounting methods fail to trace these emissions back to the land use sector, and the energy sector avoids bearing the cost of climate mitigation associated with biomass use.
- **SBP treats 'forest residues' as low-risk by default**, certifying them even when they originate from primary forests. The framework allows producers to categorize whole logs as residues or byproducts without meaningful oversight, masking the environmental damage of such sourcing.
- **SBP inadequately addresses Indigenous peoples' rights.** While it acknowledges the need for consultation, SBP still allows certification to proceed even when free, prior, and informed consent (FPIC) has not been obtained, sidestepping the rights of Indigenous communities.

SBP accepts wood from all sources and certifies it as 'sustainable'



SBP allows whole logs to be used as biomass fuels



Benefiting from these systemic flaws, SBP offers a convenient mechanism for regulators and utilities to fulfill reporting requirements. Biomass producers can claim sustainability even when sourcing wood from uncertified forests, so long as it appears low-risk on paper. Neither the degradation of forests nor the emissions from burning biomass are properly accounted for, thus creating an accountability gap where no one assumes responsibility for the climate impacts. The case of British Columbia and Alberta, Canada—explored in Part 2 of this report—demonstrates how these systemic failures unfold on the ground.

Despite its name, SBP does not ensure sustainable sourcing of biomass fuels. It endorses industry practices that fall short of other sustainability certification systems and international SFM norms, while contributing to the perception among policymakers, investors, and the public that forest biomass is a renewable energy source. The reality is that the world is already extracting far too much from standing forests. Any additional pressure from exploitative bioeconomy schemes risks derailing global climate and biodiversity goals.

Burning our last remaining forests is not a climate solution, it is a dangerous distraction that narrows the path to a safer future. SBP, in turn, is not fit for purpose.

Recommendations

Governments: Reject forest biomass

- **Recognize large-scale biomass for what it is: a high-carbon, low-efficiency fuel.** Burning wood emits more CO_2 per unit of energy than fossil fuels, and forest regrowth may take decades to centuries to repay this carbon debt, far beyond the timelines needed to meet climate targets.
- **Include combustion emissions in national GHG inventories.** Excluding these emissions from carbon accounting is scientifically flawed and obscures the true climate impact of biomass energy.

Governments: Protect natural forests

- **Prohibit sourcing wood from primary forests and Intact Forest Landscapes (IFLs).** Primary forests are irreplaceable reservoirs of carbon and biodiversity. Logging them undermines global climate and biodiversity goals.
- **Shift climate mitigation strategies away from a wood-based bioeconomy.** Instead, focus on halting and reversing deforestation and forest degradation by 2030, in alignment with international biodiversity goals.

Governments: Reform subsidy and trade policy

- **End subsidies for forest biomass and exclude it from green finance criteria.** The biomass industry is propped up by public incentives that distort markets and divert funds from genuinely clean energy solutions.
- **Mandate human rights and environmental due diligence in all international timber trade.** Voluntary certification schemes like SBP are insufficient to prevent social and ecological harm.

Forest certification systems: Strengthen standards

- **Reform FSC and PEFC systems to prevent the misuse of Controlled Wood and risk-based assessments** as stand-ins for full certification. These mechanisms are being exploited to greenwash unsustainable biomass supply chains.
- **Cease certifying wood pellets under current large-scale biomass models.** Acknowledge that scaling biomass energy is incompatible with protecting forest integrity. The widespread reliance on mixed-label products undermines the credibility and mission of forest certification systems.

List of Acronyms

ANAB	ANSI National Accreditation Board
ASI	Assurance Services International
BC	British Columbia
CB	Certification Body
CSA	Canadian Standards Association
FMU	Forest management unit
FPIC	Free, prior, and informed consent
FSC	Forest Stewardship Council
FSS	Forest Stewardship Standards (FSC)
GHG	Greenhouse gas
HCV	High Conservation Value
IFL	Intact Forest Landscape
ILO	International Labour Organization
ISEAL	International Social and Environmental Accreditation and Labelling
ISO	International Organization for Standardization
NAO	National Audit Office (UK)
NGO	Non-governmental organization
NIR	National Inventory Report
NRA	National Risk Assessment (FSC)
PEFC	Programme for the Endorsement of Forest Certification
P&C	Principles and Criteria (FSC)
RRA	Regional Risk Assessment (SBP)
SBE	Supply Base Evaluation (SBP)
SBP	Sustainable Biomass Program
SFI	Sustainable Forestry Initiative
SFM	Sustainable forest management

Introduction

The Sustainable Biomass Program (SBP) is a private certification scheme developed by the bioenergy industry to address public and regulatory concerns over the sustainability of biomass fuels, specifically wood pellets and chips. Established in 2013 by major pellet producers, SBP was "designed to provide assurance that biomass… is sourced both legally and sustainably."[1]

Today, SBP stands as the world's dominant certification system dedicated to industrial biomass. In 2024, SBP certified 19.15 million tonnes of biomass fuels, a 28% increase from the previous year. Of this, 8.05 million tonnes were produced in Europe, 7.80 million in the United States, and 2.60 million in Canada. Most pellets produced in North America were exported to Europe, accounting for over half of the 17.65 million tonnes of SBP-certified biomass used across the continent. According to SBP's own reporting, 85% of all industrial wood pellets consumed in Europe now carry its certification.[2] This means SBP-certified pellets are traded globally at scale, primarily to serve European energy demand. Despite this growing reach and influence, the sustainability claims underpinning SBP certification remain under-scrutinized.

Sustainable Biomass Program: Certifying the Unsustainable addresses this oversight by critically analyzing the core claims made by SBP, particularly those that present forest biomass as a climate-friendly alternative to fossil fuels. It examines SBP's reliance on other certification mechanisms to validate biomass sourcing and exposes the weak foundations behind its assurances of carbon neutrality.

This report draws from a review of public documents, academic literature, and interviews with stakeholders across the sector. It uses the Forest Stewardship Council's (FSC) certification system as a benchmark for evaluating SBP's practices and identifying potential compliance gaps. This choice reflects FSC's position as an international forest certification system frequently cited by governments, industry, and Certification Bodies (CBs) as the 'gold standard'. Since SBP itself often references FSC systems, including Controlled Wood and National Risk Assessments (NRA), this comparison provides a meaningful way to assess SBP's claims to sustainability.

However, it is important to clarify that using FSC as a benchmark does not constitute endorsement. Nor does it imply that FSC reliably guarantees sustainable forest management (SFM). Environmental groups and Indigenous rights advocates have documented FSC's significant shortcomings, including in British Columbia, where the FSC Canada National Standard and NRA permit logging in primary and old-growth forests. These practices undercut FSC's sustainability claims and point to the broader systemic limitations of certification schemes in protecting natural forests and maintaining carbon stocks.

At best, FSC represents a minimum baseline. Many environmental non-governmental organizations (NGOs)

1 SBP. (n.d.). What is the Sustainable Biomass Program?. https://sbp-cert.org/

2 SBP. (2025). Sustainable Biomass Program annual review 2024. https://sbp-cert.org/documents/annual-reviews/

interviewed do not support FSC's approach. Some remain members of FSC but cite a lack of time and capacity to keep up with the system's complexities or to meaningfully participate in consultations. Yet, when these groups challenge governments or industry to improve forest policies and practices, the response is often that FSC, and in the case of biomass, the far weaker SBP, is already in place to ensure sustainability.

In this context, this report aims to clarify for policymakers and regulators using or considering biomass how complex certification systems function in practice. Rather than endorsing FSC, the report demonstrates that even by FSC's compromised standards, SBP falls significantly short. SBP's reliance on risk assessments and paper-based compliance mechanisms is even weaker than FSC's Forest Management standards, which themselves contain loopholes and carveouts.

To that end, the report simplifies technical language and industry jargon where needed. Certification systems often obscure poor practices behind complexity. But if these systems were truly based on principled, science-based thresholds and did not cater to industry requests for exceptions, they would be inherently simpler. There would, for example, be no debate over 'how much of an Intact Forest Landscape (IFL) can we cut?' under a sustainability label—the answer would simply be: none.

This report is not a full certification audit. The author did not have access to internal audit reports prepared by CBs. Rather, it intends to illustrate how both SBP and the broader certification landscape enable the continued industrial logging of carbon-rich and biodiverse forests under a veneer of 'sustainability'. Ultimately, the findings echo the calls for a fundamental reassessment of biomass energy policy and certification systems. This report supports the global movement to go beyond weak standards toward effective climate action and the conservation of all natural forests.

This report is organized into three sections:

- **Part 1** dissects the frameworks and assumptions underlying SBP's certification system. It places SBP within the broader context of SFM certification, identifies a baseline for evaluating standards, and highlights critical gaps, especially where environmental and social safeguards are weak or absent.

- **Part 2** presents a case study of pellet production in BC and Alberta, Canada, demonstrating how SBP's systemic shortcomings are allowing unsustainable practices to be certified as 'sustainable' on the ground.

- **Part 3** synthesizes the findings and offers recommendations. It concludes that SBP fails to provide credible assurance of sustainability and that governments should stop recognizing SBP certification as a proxy for climate- or nature-safe energy. More broadly, the report calls for an end to forest biomass as a climate solution.

Detailed annexes provide further analysis of SBP's weaknesses, including a comparison of its standards with other forest certification systems. The annexes also discuss the limitations and risks of these related certification schemes in greater depth.

Part 1.

SBP's Ability to Audit the Sustainability of Forest Biomass

This section examines the broader context of sustainable forest management (SFM) certification and the ability of such schemes in evaluating the long-term environmental, social, and economic impacts of forest use, particularly beyond the boundaries of the immediate forest management unit (FMU). It then introduces a baseline set of sustainability criteria used to evaluate the SBP Standards. This analysis reveals critical gaps where SBP fails to address key concerns raised by Indigenous peoples and environmental non-governmental organizations (NGOs).

The evaluation focuses on three core areas. The first is alignment with international norms for SFM certification, including whether SBP comprehensively addresses forest sustainability, incorporates performance-based standards, and ensures independent verification through on-the-ground audits. The second is SBP's dependence on other forest certification systems, particularly the Forest Stewardship Council (FSC) and FSC Controlled Wood, as well as the Programme for the Endorsement of Forest Certification (PEFC) and its affiliated Sustainable Forestry Initiative (SFI). The analysis identifies major weaknesses in these schemes and examines how SBP leverages them to meet its own sustainability claims. Lastly, it explores systemic shortcomings in certifying 'sustainable biomass', especially when certification systems rely on generic risk assessments or limited-scope verifications that fail to capture cumulative impacts at the landscape level.

1.1. Difficulties in certifying 'sustainable forest management'

Exploring what is meant by SFM is a critical first step in assessing claims of 'sustainable biomass'. The Food and Agriculture Organization of the United Nations (FAO) offers the most widely accepted definition of SFM:

> "a 'dynamic and evolving concept, which aims to maintain and enhance the economic, social and environmental values of all types of forests, for the benefit of present and future generations'. When sustainably managed, forests and trees make vital contributions to people and the planet by bolstering livelihoods, providing clean air and water, conserving biodiversity and helping combat climate change."[3]

To evaluate sustainable forestry practices across diverse ecological and legal contexts, a single, internationally consistent standard is essential. Unlike legal frameworks, which are typically designed to prevent the worst environmental or social harms, sustainability standards should reward best practices—those that go beyond what is legally required. In this sense, FSC, established in 1994, was the first

3 FAO. (n.d.) Sustainable forest management. https://www.fao.org/forestry/sfm/en

independent forest certification scheme to apply such a standard globally. FSC's Principles and Criteria (P&C) are developed through a consensus-based process and adapted to national contexts through a tripartite chamber system that aims to balance social, environmental, and economic inputs. FSC is widely recognized as the most comprehensive forest certification system yet, and its Forest Stewardship Standard (FSS) has often been cited as the closest available model to SFM.[4]

For these reasons, FSC's P&C provide a logical benchmark for evaluating how SBP's Standards fall short. This is not to suggest that FSC represents a flawless or 'gold standard' model. Its limitations, both in terms of actual forest management and in demonstrating national-scale sustainability, are well-documented in previous studies (Fig. 1).[5] Notably, FSC itself avoided the term 'sustainable' for many years, preferring 'responsible forest management', based on the understanding that it is not possible to prove that all forest values can be sustained indefinitely. This caution appears to have been lost as governments and industry increasingly demand certification as proof of SFM, a term that other mainstream systems like PEFC have adopted more uncritically.

[Figure 1] While having critical limitations, FSC is among the most widely accepted voluntary standards

	Certification	Governance & Decision-making	Strength of Standards	Transparency & Traceability	Audits	Implementation
Timber	FSC	2 / 2	5 / 9	1.5 / 3	1 / 2	1.5 / 4
	PEFC					
Soy	RTRS					
	ProTerra					
Palm	RSPO					
	ISPO/MSPO					
Cocoa & Coffee	Fairtrade					
	Rainforest Alliance/UTZ					
Biofuels	ISCC					

Certification scorecard adapted from Greenpeace, 2021.[6] Color scales show how the certification performs against key aspects needed to be effective, with green being well and red being poor. Numbers in cell show the aggregated score of performance against indicators identified.

In fact, no forest certification system is designed to demonstrate SFM at the national level. To do so would require assessing the entire national forest area and the ministries responsible for forestry, environment, and community rights, as government holds jurisdiction over national and subnational forest policy and implementation. In some countries, public forest agencies have been certified for their management of

4 Taylor, R. (2014, September 18). What's behind the FSC logo?. WWF. https://www.worldwildlife.org/stories/what-s-behind-the-fsc-logo

5 Counsell, S. (2024). Mass imbalance: Why certification of EU's biomass energy supplies under the Renewable Energy Directive is failing to protect forests. Fern. https://www.fern.org/publications-insight/mass-imbalance/; Greenpeace. (2021). Destruction: Certified. https://www.greenpeace.org/international/publication/46812/destruction-certified/

6 Greenpeace. (2021). Destruction: Certified. https://www.greenpeace.org/international/publication/46812/destruction-certified/

state-owned forests, but this typically excludes private lands, even though those lands remain governed by public policy. As long as certification is incomplete across the forest landscape, there will always be leakage: forests that fall outside the certification system and fail to meet even basic sustainability or legality thresholds.

Rather than confront these challenges in certifying SFM, SBP relies on existing certification schemes—primarily FSC and PEFC—and scales up their limited coverage. SBP does not evaluate forest operations at the level of the FMU, nor does it meaningfully influence management decisions or ensure improved outcomes. It merely assumes that certified forests represent national-level forest conditions and infers overall sustainability from this subset of operations. This limitation can be especially problematic in contexts where environmental protections are weak or poorly enforced, or where Indigenous land rights and customary tenure are unrecognized. However, SBP takes this leap in accountability and presents a misleading equivalence between partial certification and national-scale SFM. Through the lens of SBP, forest management is often inherently carbon neutral.

1.2. Risk-based certification: A loophole-rich approach

In addition to their primary certification standards for forest management, FSC, PEFC, and other schemes operate lower-tier systems designed to assess and exclude controversial or illegal sources, typically at the national or regional level. FSC's Controlled Wood and PEFC's Controlled Sources (also referred to as Avoidance of Controversial Sources) are key risk-based approaches relevant to understanding SBP's framework. These systems function as due diligence mechanisms designed to keep wood sourced through the most contentious forest practices out of certified supply chains.

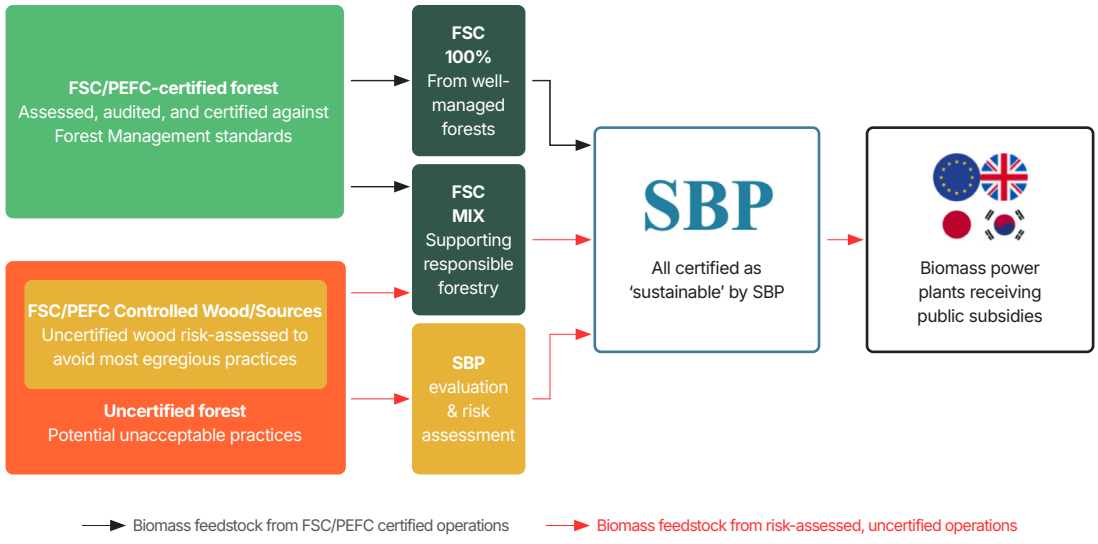
However, Controlled Wood and Controlled Sources represent only a minimal threshold. They are not equivalent to certification for 'sustainable' or 'responsible' forest management. Both FSC and PEFC allow for the mixing of fully certified wood with uncertified wood deemed low risk through these systems. For example, any product labeled "FSC Mix" contains a combination of FSC-certified material and wood from uncertified forests assessed as avoiding activities such as forest conversion, destruction of High Conservation Values (HCVs), and violations of Indigenous rights. Where risk is identified, mitigation measures are typically limited to soft interventions—such as educating foresters and policymakers—rather than requiring immediate protection of vulnerable forest areas.[7]

These risk-based systems were never designed to demonstrate sustainability. They serve as basic filters for excluding the most harmful practices. However, SBP adopts this lower-tier framework as part of its certification process, treating FSC Controlled Wood and PEFC Controlled Sources as eligible under its Controlled Feedstock category. In practice, this means that a pellet mill can source from vast areas of forest that are neither FSC- nor PEFC-certified, so long as a Risk Assessment—often based on FSC's National Risk

7 FSC. (2020). FSC-NRA-CA FSC National Risk Assessment for Canada Controlled Wood Risk Assessment (CW) V(2-1). https://connect.fsc.org/document-centre/documents/resource/344

Assessments (NRAs)—deems the area low risk or specifies mitigation actions. SBP accepts these minimal interventions and then certifies the entire biomass supply chain as 'sustainable' (Fig 2.).

[Figure 2] SBP accepts wood from all sources and certifies it as 'sustainable'



SBP relying on diluted standards—provided the risks are administratively acknowledged and procedurally mitigated—undermines the integrity of the very certification systems SBP depends on. By equating risk-assessed, uncertified wood with fully certified material, SBP lowers the standard for what counts as SFM. Its model grants sustainability status to feedstock that would not meet that threshold under FSC or PEFC rules alone. Annex A offers detailed analysis of the implications of SBP's use of FSC certification.

SBP's practice of mixing fully certified wood with feedstock merely assessed as avoiding controversial sources, while branding the entire output as sustainable, can be considered a misuse of both FSC and PEFC systems. This is especially concerning given SBP's affiliation with FSC through its membership in the Risk Information Alliance—a platform for sustainability standards to share risk information and promote best practices.[8] Rather than upholding the credibility of FSC and PEFC, SBP seems to leverage their reputations while weakening these standards. In doing so, SBP is effectively positioning itself as a direct competitor to the very systems it relies on, both of which also certify biomass fuels.

1.3. Analysis of SBP Standards and systems

As a certification system developed by and for the biomass industry, SBP claims that biomass can be considered 'sustainable' when certified under its Standards. However, many civil society and academic

8 FSC. (2024, February 29). Global sustainability organizations form alliance to share risk information. https://fsc.org/en/newscentre/eudr/global-sustainability-organizations-form-alliance-to-share-risk-information

experts have long questioned the validity of such claims. In fact, some argue that the term 'sustainable biomass', particularly in the current energy and forestry policy context, is inherently contradictory. As noted by the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), large-scale deployment of bioenergy is unlikely to be sustainable.[9]

To evaluate the basis of SBP's sustainability claim, this section assesses the SBP Standards v2.0 and their subset of Principles that form one part of the broader certification architecture. These Principles also include rules governing certification requirements, traceability, claims management, and accreditation. The design and function of the overall SBP system—including its oversight mechanisms—are summarized in Table 1, with more detailed analysis in Annex B.

1.3.1. SBP does not certify sustainable forest management

SBP's primary standard, Standard 1: Feedstock Compliance, defines how the scheme evaluates the sustainability of biomass. It outlines a set of Principles that pellet producers must meet to obtain certification. From the outset, however, SBP makes clear that its standards are not intended to replace forest management certification systems. As stated in the introduction to Standard 1:

> "The SBP Standards are not meant to replace forest management certification schemes. Rather, the SBP Standards aim to support Biomass Producers (BPs) in identifying sustainability risks when designing their sourcing policies and actions to mitigate Specified Risks."[10]

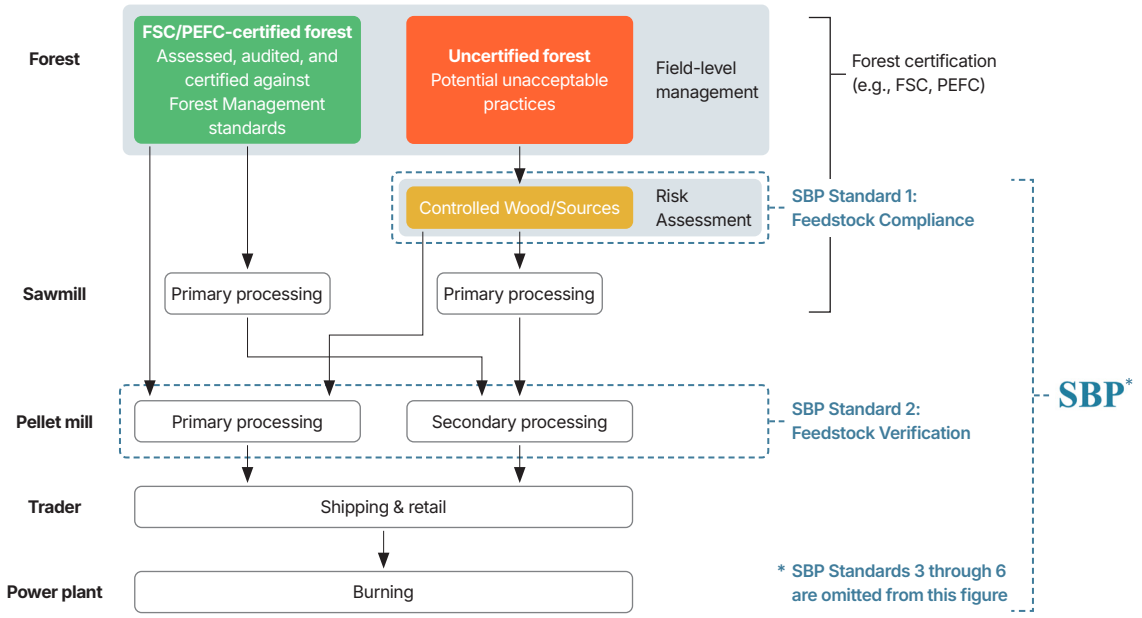
By its own admission, SBP is not a forest certification scheme. SBP Standard 1 applies only to the Supply Base of the Biomass Producer—typically the pellet mill—seeking certification under SBP Standard 2, which governs verification procedures. The mill must identify, evaluate, and 'adequately' mitigate environmental and social risks associated with its sourcing areas. This broad risk-based framework is applied to the entire Supply Base rather than certifying the practices of individual FMUs.

SBP's Risk Assessments evaluate whether a forest area presents unacceptable sourcing conditions without ensuring that environmental or social harms are prevented. Since pellet mills do not manage forests directly, they have no authority over how forests are harvested and are therefore limited in their ability to mitigate the risks identified and associated with destructive practices, such as clearcutting or the logging of primary and old-growth forests (Fig. 3). This approach is structurally closer to FSC Controlled Wood or PEFC Controlled Sources than to full forest certification.

9 IPBES. (2019). Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. https://www.ipbes.net/global-assessment; IPCC. (2023). Climate change 2023: Synthesis report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. https://www.ipcc.ch/report/sixth-assessment-report-cycle/

10 SBP. (2023). SBP Standard 1: Feedstock compliance. https://sbp-cert.org/documents/normative-documents/version-2/standards-v2/

[Figure 3] SBP does not have control over forest operations



In contrast, Forest Management certification schemes under FSC and PEFC apply directly to forest managers and the specific FMUs they oversee. These schemes require forest managers to prevent harm proactively and to comply with Corrective Action Requests when practices fall short of the standards. The certification is tied to demonstrated changes in on-the-ground management. Thus, SBP's assertion that it supports sustainable forestry lacks evidence. Its Principles and risk-based methodology do not meet the threshold of SFM as defined by internationally recognized forest institutions and certification systems.

1.3.2. SBP merely screens for worst forest practices

Compared to the 10 Principles and Criteria (P&C) of FSC, SBP's Standard 1: Feedstock Compliance outlines only four Principles—and even these are simplified to a degree that undermines their effectiveness in promoting SFM. Rather than requiring robust forest-level assessments or improvement over time, SBP's framework focuses on procedural due diligence, aligning more with efforts to screen out the worst forest practices than to promote the best.

Table 1 below compares SBP's four Principles with corresponding provisions under FSC's Forest Stewardship Standard (FSS) and Controlled Wood (CW) system. It evaluates whether SBP's standards align more closely with full SFM certification or with minimum-risk filtering systems designed to avoid only the most egregious practices. Annex B offers the full evaluation of SBP against FSC.

[Table 1] SBP only addresses Controlled Unacceptable Sources (CUS) compared to FSC

SBP Principle/Topic	SBP Standard Summary	Comparison to FSC FSS & CW	Assessment: SFM or CUS
Scope and Authority	Applies to supply base only, not FMUs; relies on FSC/PEFC Risk Assessments	FSC FSS and CW apply at FMU level with clearer authority	SBP only addresses CUS
Sustainability Claim	Claims SFM but aligns more with FSC CW	SBP is closer to FSC CW than FSC FSS	SBP only addresses CUS
Legality (FSC P1)	Requires legal sourcing but not FMU-level verification	FSC mandates FMU-level audits, including anti-corruption and dispute mechanisms	SBP only addresses CUS
Environmental Protection (FSC P2)	Requires consideration of biodiversity and HCVs, but lacks precautionary principle	FSC uses detailed safeguards for HCVs and precludes their degradation	SBP only addresses CUS
Carbon Stock (FSC P3)	Vague definitions for "stable" and "long term" forest carbon; ignores short-term emissions	No FSC equivalent; critique centers on SBP only	SBP only addresses CUS
Community and Labor (FSC P4)	Covers ILO rights; lacks strong FPIC provisions or mill-level social safeguards	FSC has enforceable community and Indigenous rights provisions	SBP only addresses CUS
Additional FSC Principles (FSC P5, P7, P8, P10)	Mentions adaptive management and forest benefits; offers limited implementation	FSC operationalizes these through detailed requirements	SBP only addresses CUS

SBP's Principles are rather a checklist for verifying minimal due diligence at pellet mills than as a rigorous evaluation of SFM, with auditors reviewing paperwork than inspecting practices on the ground. This approach is much closer to FSC's Controlled Wood system, focusing on avoiding the worst practices, than to FSC's full certification standard, which promotes best practices through verified performance and continuous improvement. In essence, SBP simply screens out the most unacceptable sources. This makes it fundamentally a risk avoidance system, not a sustainability certification.

1.3.3. SBP Standard 1 fails to assure environmental and social sustainability

SBP Principle 1: Feedstock is legally sourced

SBP Principle 1 addresses legal compliance by requiring adherence to laws related to ownership, harvest rights, royalties, taxes, and the prevention of illegal activities. However, this requirement is far less comprehensive than the legal provisions found in FSC's P&C. SBP's approach resembles that of FSC Controlled Wood, which relies on risk assessments rather than direct verification of forest management practices. Even then, FSC Controlled Wood includes additional safeguards, such as anti-corruption provisions and dispute resolution mechanisms, to strengthen legality requirements.

FSC's Controlled Wood framework also integrates assessments related to biodiversity, ecosystem productivity and function, restrictions on deforestation, pesticide use, and harvest intensity—none of which

are directly addressed in SBP's legality principle. As a result, SBP should not claim to demonstrate legal compliance at a standard equivalent to FSC, nor should it claim to meet the threshold for SFM. At best, it ensures that feedstock avoids clearly unacceptable legal violations.

SBP Principle 2: Feedstock sourcing does not harm the environment

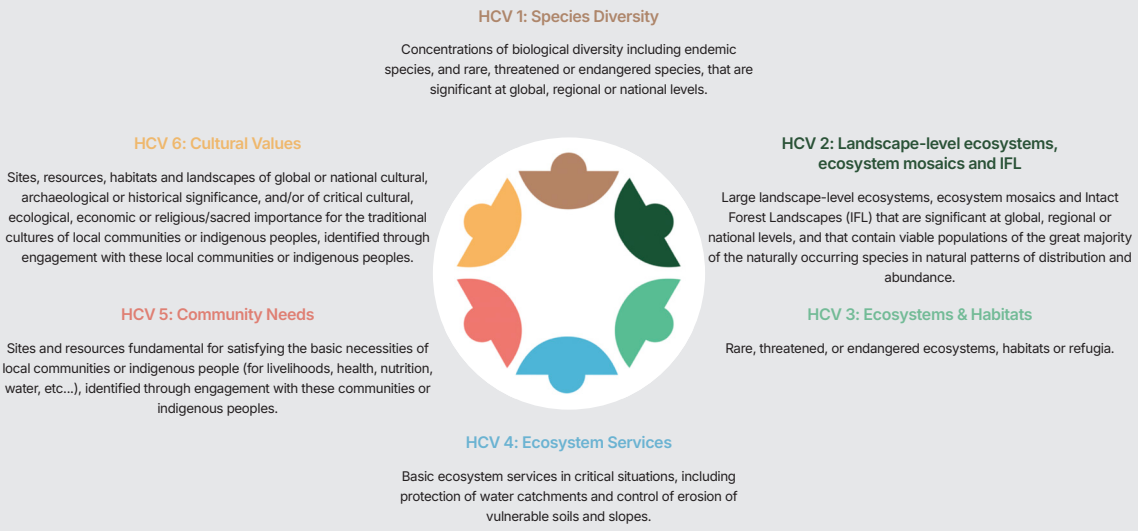
This Principle includes references to biodiversity, key species, ecosystems, habitats, and HCV areas. SBP draws on select elements from FSC Principles 5 (Benefits from the Forest), 6 (Environmental Impact), and 9 (Maintenance of HCV Forests). While this gives the appearance of alignment with FSC's sustainability framework, SBP's approach is ultimately more limited—particularly because it lacks the precautionary principle, a central component of FSC's treatment of environmental risks.

The precautionary principle requires proactive action to avoid severe or irreversible damage to environmental values, even in the absence of complete scientific certainty. Although there are ongoing controversies regarding its scope and effectiveness, FSC applies this approach to some extent in HCV areas. In contrast, SBP treats HCVs as part of broader conservation values and does not preclude their conversion to managed forests. Without this safeguard, SBP risks certifying biomass sourced from ecologically sensitive areas that would otherwise be protected under FSC rules. Further analysis of SBP's national-level Risk Assessments is warranted to understand the specific gaps in how HCVs are identified and protected.

■ Box 1. High Conservation Values and Intact Forest Landscapes

FSC introduced the concept of HCVs in 1999, requiring forest operations to identify and safeguard areas of outstanding ecological, social, or cultural value. These include old-growth forests, rare species habitats, and sacred sites (Fig. 4). FSC's Principle 9 prohibits logging practices that threaten HCVs in fully certified forests.

[Figure 4] The High Conservation Value approach includes six key categories



Source: HCV Network, n.d.[11]

FSC also applies the HCV framework in its Controlled Wood system, requiring companies to avoid sourcing from areas where HCVs are under threat.[12] PEFC includes similar provisions—such as conserving "special sites"—but generally offers weaker protections and greater national interpretation.[13]

Of FSC's six HCV categories, this report focuses on HCV2, defined as "Intact Forest Landscapes (IFLs) and large landscape-level ecosystems significant at global, regional or national scales, containing viable populations of most naturally occurring species." An IFL is "a forest area of at least 50,000 ha with minimal human disturbance and a minimum width of 10 km."[14]

Particular attention has been given to IFL definitions in FSC National Standards, notably in Canada, where vast IFLs overlap with intensive industrial logging. This is because the FSC Canada standard includes exceptions to Principle 9 that allow partial logging of IFLs, requiring only the protection of core areas.[15] However, even this limited protection is weakened in practice. FSC Canada's Controlled Wood Risk Assessment offers a narrower recognition of primary and old-growth forests while emphasizing management justifications for harvesting in IFLs.[16] As a result, once large, continuous IFLs have been fragmented to become 'landscape-level ecosystem mosaic', and only a few core areas are left un-logged.

11 HCV Network. (n.d.). HCV approach. https://www.hcvnetwork.org/hcv-approach

12 FSC Aus NZ. (2015, June 11). What is the difference between Fully FSC Certified Wood and Controlled Wood?. https://anz.fsc.org/newsfeed/what-is-the-difference-between-fully-fsc-certified-wood-and-controlled-wood

13 Greenpeace. (2021). Destruction: Certified. https://www.greenpeace.org/international/publication/46812/destruction-certified/

14 FSC. (2017). FSC glossary of terms. https://open.fsc.org/entities/publication/b1c9acf5-c499-4afd-beaf-4374c7b0ae36

15 FSC. (2018). FSC-STD-CAN-01-2018 The FSC National Forest Stewardship Standard of Canada Forest Stewardship Standards (FSS) V(1-0). https://connect.fsc.org/document-centre/documents/resource/223

16 FSC. (2020). FSC-NRA-CA FSC National Risk Assessment for Canada Controlled Wood Risk Assessment (CW) V(2-1). https://connect.fsc.org/document-centre/documents/resource/344

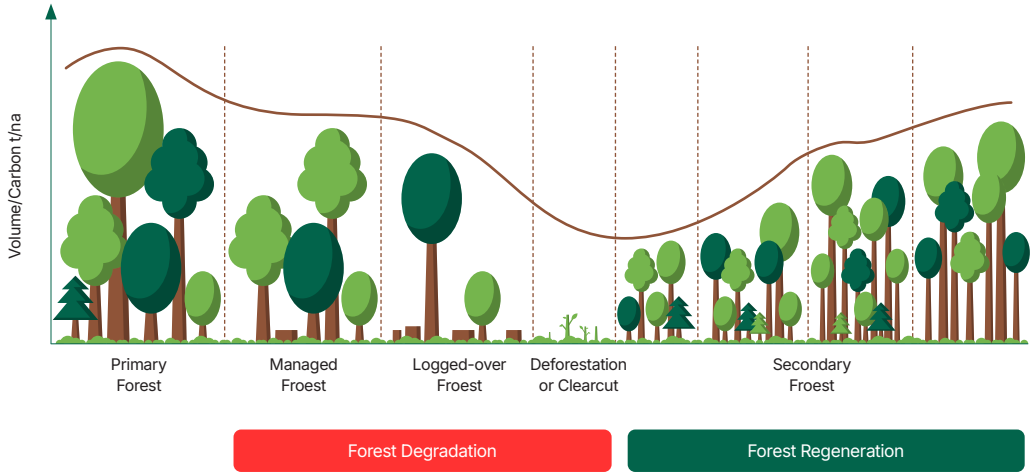
SBP Principle 3: Feedstock sourced from stable or increasing long-term forest carbon stocks

This principle should distinguish SBP from traditional forest certification schemes. In theory, it introduces a critical climate-focused criterion specific to biomass. However, the structure and substance of Principle 3 fall short of that promise. Unlike other SBP principles, Principle 3 outlines three broad compliance pathways, primarily based on national-level carbon stock reporting rather than site-specific assessments. It does not require measurement of full carbon impacts at the forest or even Supply Base level. This use of proxy indicators raises concerns about how national averages can meaningfully reflect forest-level degradation or emissions, a topic explored further in Part 2 of this report.

While Principle 3 requires that carbon stocks and sequestration capacity remain stable or increase over the long term, it also allows exceptions for losses due to 'natural processes' such as fires and native insect disturbances. These processes are escalating with climate change, and in many cases, are amplified by unsustainable forest management practices accepted by SBP. For instance, the conversion of primary to logged forests reduces carbon storage, fragments habitat, and increases fire risk through expanded road networks and edge effects (Fig. 5).[17]

In addition, SBP permits so-called 'salvage logging' in recently burned primary forests. This further delays carbon recovery and worsens ecosystem disturbance.[18] Finally, SBP asks mills to assess the demand for long-lived wood products in the Supply Base. This is an ambiguous requirement that is difficult to verify and vulnerable to manipulation. As pellet mills have a vested interest in justifying their operations, this element creates an inherent conflict of interest.

[Figure 5] Primary forest is a forest that has not been disturbed by human activities



17 Wood, P. (2021). Intact forests, safe communities. Sierra Club BC. https://sierraclub.bc.ca/intact-forests-safe-communities-sierra-club-bc-report/; State of The Forests. (2024). The state of the forest in Canada: Seeing through the spin. https://www.stateoftheforest.ca

18 State of The Forests. (2024). The state of the forest in Canada: Seeing through the spin. https://www.stateoftheforest.ca

Principle 4: Feedstock sourcing benefits people and communities

This Principle includes basic protections for labor rights and community welfare, referencing international norms such as freedom of association, protection against forced and child labor, the right to a minimum wage, safe working conditions, and grievance procedures. It also mentions Indigenous peoples' right to free, prior, and informed consent (FPIC). However, even here, SBP falls short of FSC standards. The FSC P&C, along with the Controlled Wood system, provide more detailed guidance for implementing labor protections, often embedded in National Standards. SBP merges elements from FSC Principles 2, 3, and 4 into a single general principle. This results in a diluted approach that lacks operational clarity, particularly in relation to Indigenous rights.

FPIC, for example, is addressed under just one SBP indicator. It allows operations to continue even in the absence of clear consent, so long as some form of consultation and accommodation has taken place. This makes FPIC essentially optional, undermining the fundamental right of Indigenous communities to decide whether and how industrial activities affect their lands. Such an approach cannot credibly be presented as meeting the requirements of SFM.

1.3.4. Other critical flaws further weaken SBP

Limited scope and focus on mills

SBP's Standard 2: Feedstock Verification applies exclusively to pellet mills and not to forest managers. This differs significantly from FSC and PEFC, which apply their standards directly at the forest management level. SBP's verification process begins only once the wood has reached the mill, meaning no direct oversight is exercised at the point of harvest.

Pellet mills are required to map their sourcing areas, classify input feedstocks by type and volume, and determine whether each input is certified or subject to a Risk Assessment. If the input is post-consumer wood or processing residues—also known as 'secondary feedstock'—additional conditions apply. For uncertified material, the mill must conduct a Supply Base Evaluation (SBE) or rely on a Regional Risk Assessment (RRA) to assign a 'Low' or 'Specified' risk rating to each sustainability indicator. Annex C offers detailed analysis of feedstock verification.

No high-risk designation

Similar to FSC, SBP does not include a 'high risk' category in its assessments. It recognizes only 'Low' and 'Specified' risk. This framing suggests that all sustainability risks can be mitigated, even when mitigation is clearly ineffective or unfeasible for mills to implement. For example, the only effective mitigation for logging primary or old-growth forests is to avoid logging altogether. Yet this option is never explicitly considered. Instead, SBP proposes education and training as mitigation, even though pellet mills lack the authority and capacity to prevent deforestation through such indirect measures.

Flaws in risk management

In the absence of clear legal requirements or certified practices, mills are permitted to implement mitigation measures. However, SBP allows mills to continue sourcing from risky areas while applying these measures, potentially for years. If an RMM proves inadequate, mills can simply propose a revised measure, continuing operations in the meantime. This creates a loophole where mills can greenwash noncompliance indefinitely through procedural adjustments rather than substantive change.

Verifiers and legal compliance

SBP allows mills to develop their own custom verifiers for assessing compliance with its indicators. In practice, these verifiers often focus on legal documentation rather than actual forest management. There is no formal mechanism for verifying whether laws are enforced in practice, or whether forest operations meet international best practices. This reduces SBP certification to a bureaucratic exercise rather than a credible assessment of sustainability performance.

Weak stakeholder engagement

Although SBP requires mills to engage stakeholders during SBE development, it does not require consensus. While the scheme claims to define engagement as achieving 'agreed outcomes', in practice the process lacks enforcement mechanisms and focuses on transparency rather than accountability. This contrasts with FSC's chamber-balanced, consensus-based approach to standard setting, which gives civil society, Indigenous peoples, and other stakeholders a role in decision-making.

Inadequate oversight by Certification Bodies

While SBP adopts Certification Body (CB) requirements similar to those of FSC and PEFC, major gaps remain. Notably, auditors under SBP are not required to conduct forest-level inspections. Instead, they rely heavily on reviewing documentation and Risk Assessments prepared by the mill. This is insufficient for verifying forest-level sustainability outcomes.

As with other schemes, SBP-approved CBs can compete for clients and emphasize legal minimums over rigorous enforcement. This dynamic, well-documented in the FSC system, creates a conflict of interest that undermines the integrity of certification. It is one of several reasons NGOs like Greenpeace and Fern withdrew their membership from FSC.[19] Annex D offers detailed analysis of feedstock certification assessment and decisions.

19 Rosoman, G., Rodrigues, J., & Jenkins, A. (2008). Holding the line with FSC. Greenpeace. https://www.greenpeace.org/usa/holding-the-line-with-fsc/

Surveillance and non-conformities

Though SBP mirrors FSC's procedures in some areas, it allows more flexibility in how non-conformities are addressed. Major issues may be downgraded if deemed non-systemic, or the suspension of a certificate may be delayed. SBP also permits pellet mills to continue sourcing from suppliers whose FSC or PEFC certifications have been suspended, provided the issue at hand is not covered under SBP's narrower scope. In effect, SBP's lower standards enable continued sourcing from operations that fail to meet the stricter criteria of other schemes.

SBP's reliance on FSC and PEFC to implement corrective actions where forest managers fall short highlights another weakness. While non-conformities are common across both systems, SBP lacks a mechanism to assess whether these issues are being adequately addressed.

Limited scope for complaints and appeals

SBP accepts complaints only when they relate to its own requirements. It does not recognize grievances tied to FSC or PEFC criteria, even if the supplier is suspended under those schemes. This limits accountability and further distances SBP from the sustainability standards it claims to complement. In doing so, it risks legitimizing supply chains that are actively noncompliant with FSC or PEFC, positioning itself as a lower-bar competitor rather than a complementary scheme.

Systemic issues with the certification model

SBP, like other certification schemes, operates under the International Organization for Standardization (ISO) continuous improvement model, which emphasizes iterative progress over immediate compliance. While this approach is intended to foster learning, it can also favor client retention over strict enforcement. CBs play a dual role: they help define standards and depend financially on the clients they audit. These structural dynamics risk perpetuating weak oversight and lowering the bar for sustainability across the industry.

Piles of whole logs at SBP-certified Drax pellet mill in BC, Canada © Len Vanderstar

1.4. Areas of key concern in SBP Standards

This review identifies three core areas where SBP's Standards fall short of ensuring sustainable biomass sourcing: a) reliance on weak forest certification schemes, b) insufficient safeguards around forest residues and secondary feedstocks, and c) inadequate carbon accounting. Each issue is further explored in the Canadian case study in Part 2, which focuses on how these weaknesses manifest in British Columbia and Alberta.

1.4.1. SBP relies on weak forest certification schemes

SBP's reliance on third-party forest certification systems is central to its sustainability claims. While not all certification schemes offer the same level of environmental rigor, SBP treats them as interchangeable. According to its 2024 annual report, 92% of SBP-certified biomass carried some form of third-party certification,[20] with SBP effectively equating PEFC-endorsed schemes like SFI with the more stringent FSC standard. SFI, in particular, has been widely criticized as "notoriously weak" for permitting logging in primary and old-growth forests and for applying vague, discretionary criteria that offer limited protection for biodiversity.[21]

This issue is particularly acute in BC, where an estimated two-thirds of the wood fiber used for pellet production comes from SFI-certified forests, including intact primary stands. The remaining one-third is entirely uncertified. While SBP is meant to mitigate risks in uncertified areas through its RRA, its practical application in BC has proven ineffective. A review of SBP's revised RRA for BC found that it failed to flag sourcing from ecologically at-risk old-growth areas, thereby allowing ongoing degradation under the guise of certification.[22]

By accepting any feedstock labeled as 'certified'—regardless of the certification system's credibility—SBP lends legitimacy to large volumes of wood harvested directly from forests, also known as 'primary feedstock'. In 2024, 58% of SBP-certified biomass globally was classified as primary feedstock, and of that, 77% was roundwood.[23] While operators often claim that such material is 'low-grade' or 'waste', a significant share originates from natural and primary forests. Despite SBP's heavy dependence on the credibility of upstream forest certification, this analysis finds that SBP fails to distinguish between strong and weak systems, undermining its claims to certify truly sustainable biomass.

20 SBP. (2025). Sustainable Biomass Program annual review 2024. https://sbp-cert.org/documents/annual-reviews/

21 Ecojustice. (2023, February 3). Competition Bureau launches investigation into greenwashing complaint against North America's largest forest certification scheme. https://ecojustice.ca/news/competition-bureau-launches-investigation-into-greenwashing-complaint-against-north-americas-largest-forest-certification-scheme/

22 SBP. (2021). SBP-endorsed Regional Risk Assessment for the Province of British Columbia, Canada. https://sbp-cert.org/wp-content/uploads/2021/08/SBP-endorsed-RRA-for-BC-Aug21-FINAL.pdf

23 SBP. (2025). Sustainable Biomass Program annual review 2024. https://sbp-cert.org/documents/annual-reviews/

1.4.2. SBP gives a free pass on 'forest residues' and 'secondary feedstocks'

SBP defines 'forest residues' as low-value materials such as branches, treetops, thinnings, storm-damaged trees, and even timber from end-of-life plantations. This expansive definition contrasts with more restrictive interpretations. For example, the United Kingdom's Renewables Obligation guidance defines forestry residues as waste generated during harvesting, excluding anything created after processing.[24] SBP's broader definition risks allowing whole trees—especially those of low commercial value but high ecological importance—to be classified as 'residues'.

This semantic loophole allows primary and old-growth logs to be labeled as byproducts, qualifying them for sustainability certifications and public subsidies. Despite industry claims that only byproducts like sawdust and chips are used, investigations and policy documents have shown that intact logs from primary forests are indeed entering pellet production lines.[25] In BC, government data shows that 75% of original biomass, including treetops, branches, stumps, snags, and woody debris, in a primary forest is left behind after clearcutting.[26] Yet these components are routinely harvested and classified as 'residues'. The UK government has since responded to this risk by announcing new rules to exclude primary forest material sourced from biomass subsidies.[27]

SBP also grants automatic compliance to 'secondary feedstocks', such as sawmill residues, if they carry a valid chain-of-custody certification (e.g., FSC or SFI). If such a label exists, no further due diligence is required, even though the certification does not guarantee sustainable forest origin. This creates a loophole where whole logs from primary forests, once minimally processed, can enter the biomass chain as residues or secondary feedstocks. Under this policy, SBP categorizes 40% of its certified biomass as processing residues.[28]

In BC, evidence shows that mills may report mostly residual feedstock while actually sourcing whole logs, including trees from old-growth forests, reclassified after minimal processing. The SBP-endorsed RRA for BC automatically treats any feedstock from FSC- or SFI-certified forests as Low Risk, even though these schemes do not prohibit logging of ecologically sensitive areas. By giving these inputs a blanket pre-approval, SBP bypasses the need for sustainability vetting, compromising its own environmental safeguards (Fig. 6).

24 Ofgem. (2025). Renewables Obligation (RO) guidance: Sustainability criteria. https://www.ofgem.gov.uk/publications/renewables-obligation-sustainability-criteria

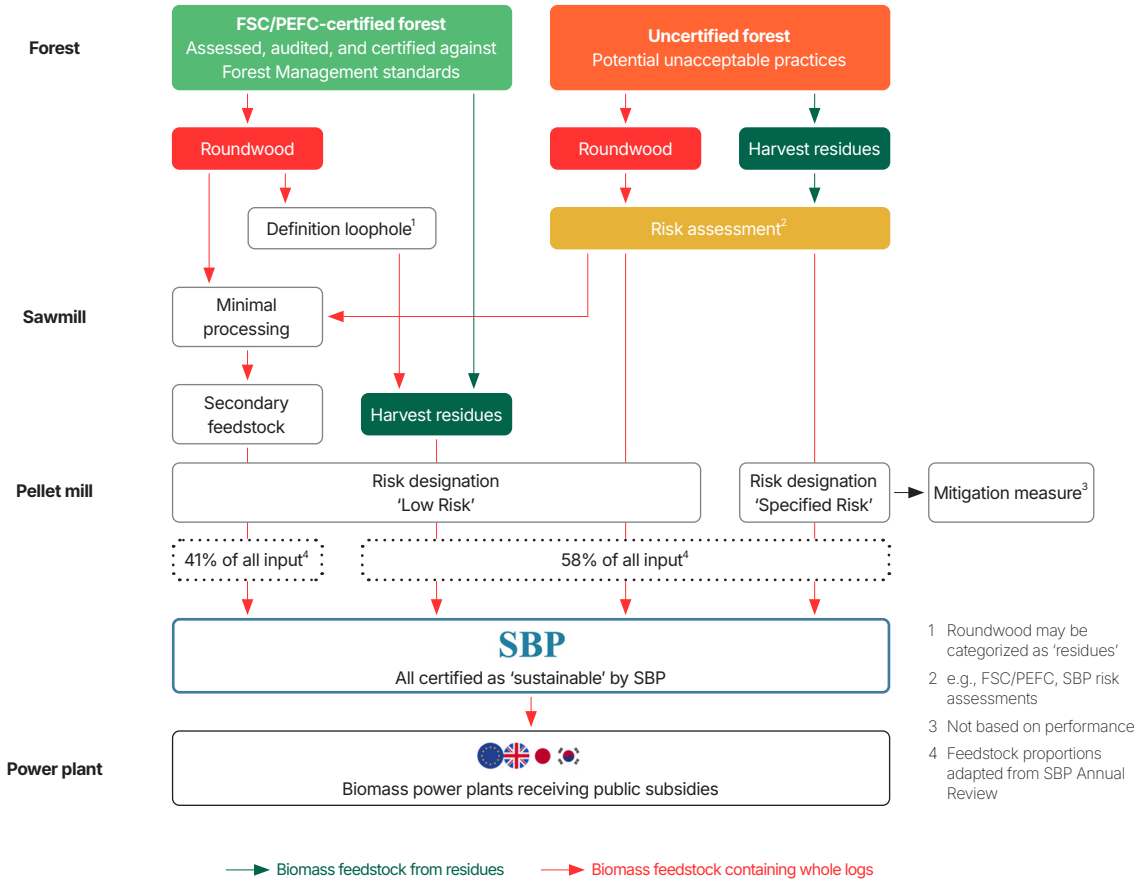
25 Young, S. & Chestney, N. (2025, February 10). UK cuts subsidies for biomass power producer Drax. *Reuters*. https://www.reuters.com/sustainability/climate-energy/uk-cuts-subsidies-biomass-power-producer-drax-2025-02-10/

26 Broadland, D. (2021, October 23). The economic costs of converting forests into sawdust and wood chips. *The Evergreen Alliance*. https://www.evergreenalliance.ca/portal-the-economic-costs-of-converting-forests-into-sawdust-and-wood-chips/1/

27 Young, S. & Chestney, N. (2025, February 10). UK cuts subsidies for biomass power producer Drax. *Reuters*. https://www.reuters.com/sustainability/climate-energy/uk-cuts-subsidies-biomass-power-producer-drax-2025-02-10/

28 SBP. (2025). Sustainable Biomass Program annual review 2024. https://sbp-cert.org/documents/annual-reviews/

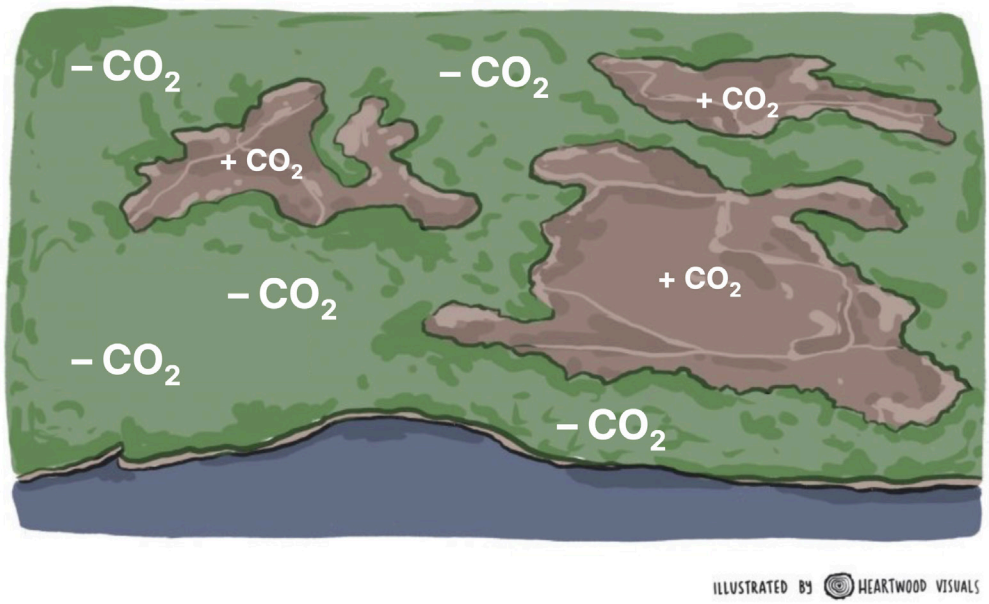
[Figure 6] SBP allows whole logs to be used as biomass fuels



1.4.3. SBP gives a free pass on carbon emissions

One of SBP's most problematic features is how it handles forest carbon accounting. While FSC and PEFC were never designed to track carbon emissions, SBP, as a biomass-specific scheme, does include a carbon-related principle (Principle 3). In theory, this principle should ensure that certified biomass is sourced from areas where forest carbon stocks are stable or increasing, a core assumption behind claims of carbon neutrality. In practice, however, SBP relies heavily on national-level carbon data. It assumes that if a jurisdiction's total forest carbon appears stable, then all sourcing within that area is sustainable—even if individual sites are losing significant carbon through logging, such as old-growth clearcutting. Relying on regional averages masks localized emissions hotspots, giving the impression of climate compatibility where it may not exist (Fig. 7).

[Figure 7] Only the overall change in carbon stock appears on paper, masking emissions from logging



Source: Environmental Paper Network, 2023.[29]

SBP also allows exceptions for carbon stock losses resulting from so-called natural processes, such as wildfires or insect disturbances—both of which are becoming more frequent due to climate change. It even permits salvage logging (i.e., harvesting of trees after forest fires) as an acceptable practice. This is particularly harmful in primary forests, where rich biodiversity and complex canopy structures help retain significant amounts of standing trees for years. SBP overlooks the fact that even burned forests continue to store residual carbon, and that removing this organic matter can severely delay, if not permanently impair, ecosystem regeneration. In many cases, it would take decades, if ever, for these forests to recover and repay the resulting carbon debt.

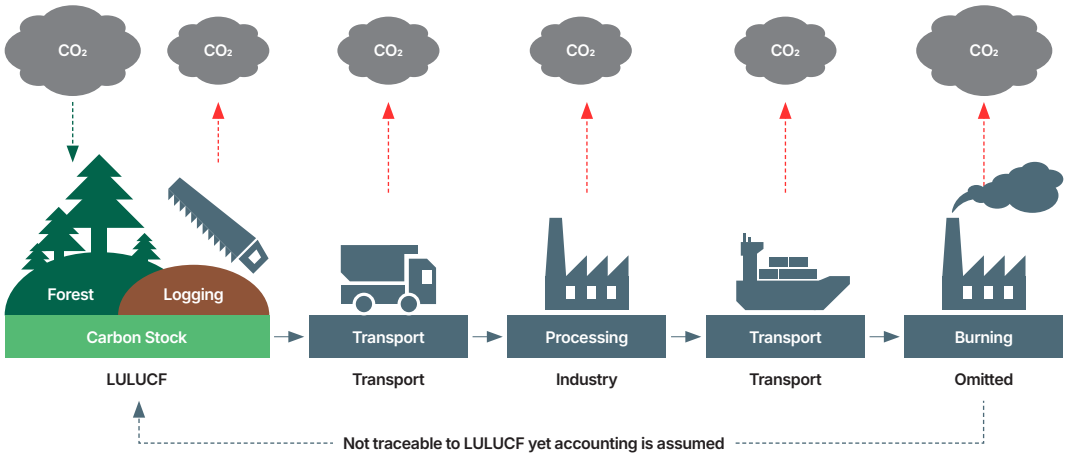
Worse, SBP does not require the accounting of emissions from biomass combustion, deferring instead to the importing country's energy regulators. This contributes to the widespread policy error of counting biomass CO_2 emissions as zero at the smokestacks, thereby shifting the climate burden to the land-use sector (Fig. 8). However, burning trees for energy releases CO_2 immediately, while forest regrowth takes decades or centuries, if it occurs at all, especially under increasing climate stress.[30] In particular, primary forests are far more resilient and carbon-rich than plantations, and their protection offers critical biodiversity and climate benefits.[31]

29 EPN. (2023). How UNFCCC carbon accounting has created a biomass delusion and is contributing to climate change and global inequity. BAN. https://environmentalpaper.org/2023/11/how-unfccc-carbon-accounting-has-created-a-biomass-delusion-and-is-contributing-to-climate-change-and-global-inequity/

30 Brack, D. (2019). Background analytical study. Forests and climate change. UN Forum on Forests. https://www.un.org/esa/forests/wp-content/uploads/2019/03/UNFF14-BkgdStudy-SDG13-March2019.pdf

31 Thompson, I., et al. (2009). Forest resilience, biodiversity, and climate change. A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. SCBD. https://www.cbd.int/doc/publications/cbd-ts-43-en.pdf

[Figure 8] International carbon accounting rules omit smokestack emissions of biomass from energy sector



SBP's weak carbon safeguards exacerbate this time gap in emissions, rather than resolving it. While FSC-certified forests may perform better in terms of carbon storage due to stronger management, even FSC does not claim biomass carbon neutrality. The key difference is that SBP claims to address carbon, and does so poorly, thus creating false confidence among policymakers.

1.5. Third-party assessments of SBP

The weaknesses outlined in SBP's sustainability claims have not gone unnoticed by governments, independent certifiers, and NGOs. While SBP is positioned as a certification system for 'sustainable biomass', investigations and institutional scrutiny have suggested it lacks the accountability required of a truly robust certification framework. This section summarizes key third-party evaluations and controversies surrounding SBP's performance and credibility.

1.5.1. SBP is not ISEAL Code Compliant

Government agencies often rely on International Social and Environmental Accreditation and Labelling Alliance (ISEAL) membership to determine whether a certification scheme is capable of discerning what is 'sustainable'. However, ISEAL itself provides different levels of membership. SBP is a "Community Member," which only requires a demonstration of commitment to the ISEAL Codes of Good Practice—not full compliance, nor adherence to any fixed deadline. This is in contrast to "Code Compliant" members like FSC.[32] SBP's ISEAL profile explicitly states that its certification system aligns at minimum with regulatory

32 ISEAL. (n.d.). Membership. https://isealalliance.org/membership

requirements, indicating that legal compliance, not genuine sustainability, is its operational baseline.[33] This distinction is often misunderstood or overlooked, but it is critical: SBP's status does not meet ISEAL's criteria for a fully sustainable system.

1.5.2. SBP terminated its association with Assurance Services International

In 2016, SBP appointed Assurance Services International (ASI)—a globally recognized assurance body that also services FSC as its accreditation provider.[34] This move initially signaled alignment with international best practices and third-party oversight. However, in 2022, SBP abruptly ended its relationship with ASI and transitioned to the ANSI National Accreditation Board (ANAB),[35] a United States-based body primarily focused on ISO and International Electrotechnical Commission (IEC) standards. Notably, no other ISEAL member is accredited by ANAB.[36]

The rationale behind this move remains unclear. It followed a period during which ASI suspended SBP certifications in Russia and Belarus and penalized two CBs for noncompliance. DNV Finland, one of the suspended CBs, was later reaccredited by ANAB. The shift raises questions about SBP's tolerance for rigorous oversight and its commitment to continuous improvement under independent scrutiny.

1.5.3. Civil society repeatedly criticized SBP Standards

Several civil society organizations have conducted in-depth assessments of SBP, particularly its first iteration (Standards v1.0) introduced in 2013. While Standards v2.0 updated in 2023 include some procedural changes, many of the structural weaknesses identified in earlier evaluations remain relevant today.

In 2017, the US-based Natural Resources Defense Council (NRDC) and Dogwood Alliance highlighted that SBP's sustainability assurance relies heavily on documentation and producer-led due diligence, rather than robust, independent field verification. The system did not directly certify forest management but instead assessed biomass supply chains through RRAs and SBEs with ineffective mitigation measures, all of which are the core concerns raised in this report as well. The 2017 report concluded that SBP's system amounted to "a license to operate," not a genuine guarantee of sustainable sourcing or climate integrity.[37]

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33 ISEAL. (n.d.). Sustainable Biomass Program. https://isealalliance.org/community-members/sustainable-biomass-program

34 SBP. (2016, August 5). SBP Appoints ASI as Accreditation Body https://sbp-cert.org/sbp-appoints-asi-as-accreditation-body/

35 Wedgbury, M. (2022, May 19). ANSI National Accreditation Board (ANAB) Launches Assurance Program for SBP. SBP. https://sbp-cert.org/ansi-national-accreditation-board-anab-launches-assurance-program-for-sbp/

36 ANAB. (n.d.). Agriculture and forestry. https://anab.ansi.org/industry/agriculture-and-forestry/

37 NRDC & Dogwood Alliance. (2017). The Sustainable Biomass Program: A smokescreen for forest destruction and corporate non-accountability. https://www.nrdc.org/resources/sustainable-biomass-program-smokescreen-forest-destruction-and-corporate-non

A 2023 briefing, led by the UK-based Biofuelwatch, assessed SBP's adequacy for use in the Netherlands' renewable energy subsidy scheme (SDE++). The analysis was particularly critical of SBP's delegation of auditing and monitoring responsibilities to Biomass Producers and their selected CBs, rather than requiring independent checks on forest practices. For instance, the report found that SBP accepted pellet manufacturer Enviva's justification for harvesting hardwood forests in the US Southeast without independent scrutiny of the biodiversity or carbon implications. The scheme's carbon requirements were described as "a paperwork exercise," with no real assessment of GHG impacts or opportunity costs of forest carbon loss. The briefing concluded that SBP fell far short of the EU's sustainability and emissions standards and was inadequate as a basis for public subsidies.[38]

In 2024, the EU-based Fern published a comprehensive review of biomass certification systems under the EU's Renewable Energy Directive, singling out SBP for its use of the 'mass balance' approach. This system allows mixing of certified and uncertified biomass within a facility or supply chain, thereby undermining transparency and weakening traceability of actual forest impacts. The report again emphasized that SBP applied broad, region-based risk categories without requiring field-level verification or protection for HCV areas. It further noted that SBP permitted sourcing from regions where legal frameworks failed to protect Indigenous rights or prohibit conversion of natural forests. Fern argued that SBP certification risks legitimizing unsustainable biomass practices and weakening the EU's own climate and biodiversity plans.[39]

As the civil society criticism of SBP grew, the Earthworm Foundation (EF), an NGO working to improve supply chain sustainability, suspended SBP-certified biomass producer Drax in 2023 due to concerns over its sourcing strategy.[40] While EF applied a risk-based approach akin to FSC's Controlled Wood framework and monitored members for controversial sourcing, it deemed Drax's practices incompatible with the Foundation's policy. Consequently, Drax, a major UK biomass utility and a founding board member of SBP, stands as one of only two EF members ever suspended.

1.5.4. Governments are reconsidering biomass

In multiple jurisdictions, biomass policies that once embraced certification schemes like SBP are now under review. In 2025, the UK announced subsidy reductions for Drax starting in 2027. The National Audit Office (NAO) criticized the government's overreliance on industry self-reporting and highlighted the need for stronger verification and a reassessment of certification systems.[41] EU member states are also facing increased pressure to restrict support for biomass that depends on minimal auditing, weak sourcing standards, and controversial inputs such as FSC Controlled Wood.

38 Biofuelwatch, et al. (2023). Sustainable Biomass Program: Certifying paperwork without looking at the forest. https://www.biofuelwatch.org.uk/2023/sbp-report/

39 Counsell, S. (2024). Mass imbalance: Why certification of EU's biomass energy supplies under the Renewable Energy Directive is failing to protect forests. Fern. https://www.fern.org/publications-insight/mass-imbalance/

40 EF. (2023). Suspension of Drax Group's Earthworm membership. https://earthworm.org/pages/suspension-of-drax-groups-earthworm-membership-2023

41 NAO. (2024). The government's support for biomass. https://www.nao.org.uk/reports/the-governments-support-for-biomass/

Similarly, in East Asia, South Korea announced in 2024 it would end subsidies for all new biomass plants and phase out existing ones, citing sustainability and emissions concerns. Japan followed suit in 2025, cutting subsidies for new large-scale biomass facilities.[42] These policy shifts underscore growing recognition that biomass, as currently certified and subsidized, is incompatible with climate and biodiversity goals.

■ Box 2. Biomass subsidies fuel conversion of primary forests

Government subsidies are the financial backbone of the large-scale biomass industry. Without generous support recognizing biomass as a form of 'renewable energy', producing electricity from wood pellets and chips would be uneconomic. These subsidies are typically contingent on producers demonstrating 'sustainability' through approved certification schemes like SBP. In this context, SBP's low threshold for sustainability becomes pivotal. It effectively acts as the key that unlocks billions in public funding.

However, this subsidy-driven model has led to serious unintended consequences. In the UK and EU, renewable energy incentives have created a massive demand for wood pellets. By 2016, UK power plants were burning pellets made from approximately 15 million tonnes of freshly cut ("virgin") wood annually.[43] Because this level of demand far exceeds the UK's domestic wood supply, most of the feedstock is imported, notably from regions with carbon-rich forests such as BC and the US Southeast.

Investigations have revealed that wood pellets exported from these regions often come directly from the logging of natural forests, including primary and hardwood stands. In Canada, a BBC exposé and subsequent parliamentary debate confirmed that Drax's Canadian operations were sourcing whole trees from BC's old-growth forests.[44] Once logged, these irreplaceable ecosystems are typically replaced with near monoculture plantations or second-growth stands, leading to permanent ecological conversion and significant biodiversity loss.

A similar pattern exists in the US Southeast, where natural hardwood forests are logged for pellet production and replaced with fast-growing pine plantations. Conservationists have criticized this trend as the creation of "fake forests", low-diversity plantations that provide none of the ecological services or carbon storage of native forests.[45] In both regions, foreign demand for biomass, subsidized by overseas governments, provides strong economic incentives for landowners to harvest and convert native forests.

42 Catanoso, J. (2025, March 6). Forest biomass growth to soar through 2030, impacting tropical forests. *Mongabay*. https://news.mongabay.com/2025/03/forest-biomass-growth-to-soar-through-2030-impacting-tropical-forests/

43 Biofuelwatch. (n.d.). UK: End biomass subsidies. https://www.biofuelwatch.org.uk/end-biomass-subsidies

44 Gardiner, B. (2022, December 6). Sustainable energy generation: Burning trees. UK House of Commons Hansard. https://hansard.parliament.uk/Commons/2022-12-06/debates/F64F3AE8-E706-434D-B4CF-B11D18CF0BC6/SustainableEnergyGenerationBurningTrees

45 Smith, R. (2021). Smokescreen: Sumitomo's "carbon neutral" failures. Mighty Earth. https://www.mightyearth.org/wp-content/uploads/Mighty-Earth-Sumitomo-Report-6.10.2021web.pdf

This dynamic enables the biomass industry to hide behind the sawmill industry, claiming to use waste when, in fact, their demand enables access to forests that might otherwise be left standing. In turn, sawmills and pellet mills alike often rely on certification schemes such as SBP, FSC Controlled Wood, or SFI, none of which prohibit the logging of primary forests. These schemes allow industrial players to justify logging under the guise of sustainability, even in ecologically sensitive areas.

Subsidies intended to accelerate the transition to clean energy are, in practice, fueling the destruction of intact, carbon-rich forests. Without stricter safeguards and clearer definitions, certification systems like SBP are enabling this degradation under a veneer of climate action.

Logging of primary forest in BC, Canada © Michelle Connolly

Part 2.

SBP in Practice: Drax Pellet Mills in Canada

The shortcomings of SBP become starkly visible when examining how the system operates on the ground. This section investigates Drax-owned Pinnacle Pellet Mills in British Columbia (BC) and Alberta, Canada, as a case study of how SBP-certified wood pellets are marketed as 'sustainable' and 'low-carbon'. It evaluates how SBP manages sourcing from forests at high risk of ecological degradation, particularly in landscapes with old-growth forests, Intact Forest Landscapes (IFLs), and threatened species such as the Woodland caribou. The methodology used in this analysis is provided in Annex E.

In BC, the uptake of the Forest Stewardship Council's (FSC) Forest Management certification remains relatively limited. However, the FSC's Canada National Risk Assessment (NRA) for its Controlled Wood system still plays a central role in SBP's sourcing decisions. SBP's Regional Risk Assessment (RRA) for Canada adopts risk categories partially derived from the FSC NRA and applies them across various land tenures, including Crown (public) land and Private Managed Forest Land. However, the SBP RRA does not replicate FSC's spatial and ecological thresholds, leading to overly broad designations of acceptable sourcing areas.

This discrepancy opens a critical loophole: mills sourcing non-certified wood from areas deemed 'Specified Risk' under the FSC NRA may still be certified by SBP as sustainable so long as they propose mitigation measures, even if those measures are vague or indirect.[46] In other words, pellet mills can source from ecologically sensitive or high-risk forests while relying on FSC's Controlled Wood framework to present their supply as responsible, despite falling short of FSC's Forest Management certification requirements.

This misuse of FSC's Controlled Wood system is not unique to biomass. The pulp and paper sector similarly employs the FSC NRA to shield reputational risk when sourcing from contentious regions. Producers often use Controlled Wood inputs to produce "FSC Mix" products, combining fully certified fiber with timber from risk-assessed areas deemed acceptable through mitigation.[47] What was originally intended as a risk avoidance mechanism becomes a certification workaround. This is a trend that SBP not only perpetuates but worsens. By treating this minimal-risk filtering system as proof of sustainability, SBP effectively lowers the bar and reinforces weak safeguards where robust certification is most needed.

46 SBP. (2021). SBP-endorsed Regional Risk Assessment for the Province of British Columbia, Canada. https://sbp-cert.org/wp-content/uploads/2021/08/SBP-endorsed-RRA-for-BC-Aug21-FINAL.pdf

47 FSC. (2020). FSC-NRA-CA FSC National Risk Assessment for Canada Controlled Wood Risk Assessment (CW) V(2-1). https://connect.fsc.org/document-centre/documents/resource/344

2.1. Wood pellet industry and its sourcing of forest biomass

Understanding the context of Canada's forest industry is essential to evaluating the impact of wood pellet production on its temperate and boreal ecosystems. In BC, where forestry has long been a dominant economic driver—and where the provincial government derives significant revenue from taxing forest exploitation—there has historically been low uptake of FSC certification.[48] This is largely due to the lack of market incentives for FSC in western Canada, especially as European buyers—once key FSC supporters—have scaled back sourcing from the Pacific Northwest. Just as important, many in BC's forest sector have resisted subjecting their practices to international environmental and social scrutiny, likely because of the province's long history of controversial industrial logging.

Since the early 1990s, BC has been a flashpoint for large-scale public protests over clearcutting of old-growth forests. One defining moment came in 1993–94, when activists blockaded logging operations in Clayoquot Sound, an event that became known as the "War in the Woods."[49] Public and First Nation resistance to old-growth logging continued through 2021, when protests at Fairy Creek became the largest act of civil disobedience in Canadian history.

Despite this long-standing public opposition, forest certification schemes—including FSC, Programme for the Endorsement of Forest Certification (PEFC), and more recently, SBP—have failed to fully reckon with this history or the ongoing ecological and social risks in the region. BC remains far from a 'low-risk' environment for forest sourcing. The forest industry, with continued government support, remains deeply contentious.

This report examines how these dynamics are reflected in the biomass industry, specifically by looking at the on-the-ground application of SBP Standards at wood pellet mills owned by Drax, a United Kingdom-based energy company. Since its 2021 acquisition of Pinnacle Renewable Energy, Drax has become the largest wood pellet producer in Canada, operating 12 mills across BC and Alberta, all of which are SBP-certified (Fig. 9).[50] This analysis draws from the nine available SBP Public Summary Reports for Drax-owned facilities, which offer insight into each mill's feedstock composition, risks identified, and mitigation measures applied at each site.

48 McDermott, C. (2012). Trust, legitimacy and power in forest certification: A case study of the FSC in British Columbia. *Geoforum, 43*(3). https://doi.org/10.1016/j.geoforum.2011.11.002

49 Winter, J. (2021, April 9). 'War in the woods': Activists blockade Vancouver Island in bid to save ancient trees. *The Guardian*. https://www.theguardian.com/environment/2021/apr/09/canada-logging-old-growth-trees-vancouver-island

50 SBP. (n.d.). Certificate holders. https://sbp-cert.org/certifications/certificate-holders/

[Figure 9] Drax operates wood pellet mills across British Columbia and Alberta, Canada

Image: Google Earth.

2.1.1. Pellet mills rely on other certifications to source roundwood

SBP Public Summary Reports reveal that most Drax pellet mills source primarily from sawmill residuals such as sawdust and shavings, categorized as 'secondary feedstock'. For instance, the Armstrong (BC) mill reports 100% of its input from sawmill and plywood mill residues, implying no direct logging of roundwood for pellet use. These residues often originate from large sawmills processing logs from Crown forests, which may be certified under the Canadian Standards Association (CSA) or SFI (both PEFC-endorsed) or may lack certification entirely. If suppliers possess FSC or PEFC Chain-of-Custody certification, SBP deems the feedstock SBP Controlled and of low risk, requiring no additional mitigation even if the original forests include old-growth or other primary forests.

Several mills also source 'primary feedstock', such as logs and forest harvest residues extracted directly from forests. Drax's data indicates that approximately 10% of input was roundwood and 8% harvest

residues, while 81% came from sawmill residuals.[51] These categories can blur, as roundwood may be hidden within what's labeled as 'harvest residues'. For example, the Smithers (BC) plant consumed around 60,000 oven-dry tonnes of primary feedstock in a year (~137,500 m^3 of wood). Other mills, like Meadowbank and Burns Lake (BC), also reported substantial intake of primary feedstock, mainly broadleaf logs (e.g., aspen) and conifer tops.

When sourcing uncertified primary feedstock, pellet mills are required to conduct a Supply Base Evaluation (SBE). These evaluations typically rely on SBP's RRA for BC or on in-house assessments in Alberta, both drawing heavily from the FSC NRA for Controlled Wood. These tools identify 'Specified Risks' such as logging in old-growth or caribou habitat and unresolved Indigenous land claims. Mills must then show mitigation for each identified risk. Common concerns in BC include Woodland caribou habitat, IFLs, and culturally significant Indigenous sites (HCV2, HCV5/6).

SBP reports frequently note mitigation based on existing certifications. For example, Princeton (BC) stated that it reviews the percentage of PEFC (SFI/CSA) certified claims annually, treating higher certification rates as effective risk mitigation. Many mills indeed consider feedstock low risk if suppliers maintain a high percentage (95–100%) of certified wood. Only when suppliers lose certification do mills implement additional mapping or mitigation. This indicates that SBP relies heavily on PEFC and other schemes to assure sustainability, rather than conducting independent, site-level risk management. Annex F offers detailed analysis of the SBP reports on Drax mills.

Pile of whole logs at SBP-certified Drax pellet mill in BC, Canada © Len Vanderstar

51 Drax. (2025). Annual report and account 2024. https://www.drax.com/investors/annual-report/

2.1.2. SBP's Risk Assessments are weaker than FSC's

SBP and FSC Canada use distinctly different approaches to risk assessments, especially when identifying areas of Specified Risk requiring mitigation. Albeit imperfect, FSC Canada's NRA applies a precautionary method that uses spatial thresholds tied to conservation science. For example, if more than 50% of an IFL within a forest management unit (FMU) has been disturbed, the area is flagged as Specified Risk. This approach ensures that mitigation is triggered by quantifiable ecological indicators, especially when High Conservation Values (HCVs) such as IFLs, primary forests, or caribou habitat are involved.[52]

In contrast, SBP's SBEs and RRAs adopt a more generalized and ownership-based method. In BC, the SBP RRA flags Specified Risk based on land categories, such as Crown land lacking FSC certification or uncertified private land, rather than on ecological thresholds or specific habitat conditions. Instead of applying scientifically derived risk triggers, SBP allows producers to develop their own mitigation strategies, which are then reviewed by third-party auditors.[53] This flexibility has raised concerns among environmental experts that SBP outsources too much authority to producers and auditors, without enforcing consistent ecological safeguards.

While FSC's NRA aims to provide detailed guidance on mitigation—stressing that actions must be verifiable, effective, and proportional to the level of risk—SBP emphasizes procedural adequacy over ecological outcomes. The FSC system includes region-specific annexes and best practices for mitigation, whereas SBP lacks comparable landscape-level requirements or attention to cumulative impacts. In SBP's system, simply documenting mitigation activities like stakeholder engagement or educational outreach can be accepted in lieu of on-the-ground environmental protection. Such reliance on broad RRAs and allowance of non-interventionist mitigation by individual producers create conditions where forest degradation can continue, even under the appearance of certified sustainability.

2.1.3. SBP's mitigation measures are weaker than FSC's

While SBP requires Biomass Producers to identify Specified Risks and apply mitigation, a close review of public audit reports reveals a consistent pattern: mitigation measures are often minimal, procedural, and insufficient in addressing real ecological threats. SBP's system permits weak or indirect responses, even in areas with clear evidence of degradation. This is especially problematic when compared to FSC Canada's NRA, which takes a more ecologically grounded approach. Table 2 below summarizes key contrasts between the SBP RRA for BC and the FSC Canada NRA in how they identify and mitigate risk to HCVs.

52 FSC. (2020). FSC-NRA-CA FSC National Risk Assessment for Canada Controlled Wood Risk Assessment (CW) V(2-1). https://connect.fsc.org/document-centre/documents/resource/344

53 SBP. (2021). SBP-endorsed Regional Risk Assessment for the Province of British Columbia, Canada. https://sbp-cert.org/wp-content/uploads/2021/08/SBP-endorsed-RRA-for-BC-Aug21-FINAL.pdf

[Table 2] SBP RRA for BC offers weaker mitigation measures than FSC Canada NRA

HCV Type/Element	FSC Canada		SBP	
	NRA: Risk Designation and Reason	Mitigation Measures	BC RRA: Risk Designation and Reason	Mitigation Measures
HCV1: Biodiversity (incl. caribou)	Specified Risk – due to threats to southern mountain and boreal caribou; habitat fragmentation and insufficient protection; critical habitat destruction continues despite recovery plans	Requires enhanced mapping and zoning of caribou ranges; development and enforcement of habitat retention targets; and documented implementation of caribou recovery actions	Specified Risk – but persistent gaps in implementation of recovery plans for caribou; habitat disturbance continues in core ranges; risks not fully mitigated across Crown or private land	Rely on landscape-level planning and caribou range plans; mitigation left to Biomass Producers through SBE processes; long implementation timelines
HCV2: IFLs	Specified Risk – based on 91 mapped IFLs with over-threshold industrial activity or weak tenure protection; low risk only where 80% core intactness remains or strong voluntary deferrals are in place	Requires maintenance of ≥80% core IFLs; avoidance of industrial overlap, and stakeholder consultation where overlaps exist; Emphasis on permanent protection over procedural review	Specified Risk – due to lack of legal protection, unregulated disturbance in mapped IFL areas; absence of mandatory preservation in certification or policy frameworks	Optional mapping and deferral mechanisms through SBE; does not prohibit sourcing from IFLs if other risk mitigation claims are made
HCV3: Rare or Threatened Ecosystems	Specified Risk (by proxy) – uses species-at-risk density as a surrogate due to gaps in national ecosystem mapping; specified where data shows high vulnerability without formal protection	Requires fine-filter identification of vulnerable ecosystems; spatial mapping overlays; independent ecological review; monitoring of harvesting impact on Rare or Threatened Ecosystem zones	Specified Risk – due to consistent under-protection of rare ecosystems across ownership types; lack of integrated ecosystem-level safeguards in legislation	Defer to provincial identification; optional integration into due diligence; mitigation often based on general biodiversity maps or third-party certification
HCV4–6: Ecosystem services; community needs; cultural values	Mixed – Some Specified Risk (e.g., HCV6) in Indigenous territories due to lack of effective consultation, overlapping tenure claims, and unresolved title cases	Use cultural value overlays; site exclusion; Indigenous-led consultation and mapping; implementation of FPIC protocols	Specified Risk – particularly on private land; weak legal obligations for cultural value protection and inconsistent Indigenous engagement in operational planning	Legal compliance and voluntary engagement; optional stakeholder mapping; relies on company-led due diligence; lacks verification mechanism for cultural risk mitigation

Old Growth Management Areas

Pellet producers sourcing from Old Growth Management Areas typically rely on legal compliance, mapping, and acknowledging boundaries, without going beyond the regulatory minimum. No evidence was found of companies voluntarily setting aside old growth or implementing more robust conservation measures.[54] This is concerning given that many of Drax's mills operate in regions with extensive old growth, including temperate rainforests near Armstrong/Lavington (BC) and inland spruce–fir forests near Smithers (BC).

54 Hervieux, D., et al. (2014). Managing wolves (Canis lupus) to recover threatened woodland caribou (Rangifer tarandus caribou) in Alberta. *Canadian Journal of Zoology, 92*(12). https://doi.org/10.1139/cjz-2014-0142

SBP audits often rated old-growth sourcing as Low Risk if it occurred outside protected areas, citing provincial deferrals or company policies to avoid ecologically sensitive stands. However, investigations, including by the UK's National Audit Office (NAO), have shown that wood pellets sometimes derive from residuals left after logging old primary forests for sawlogs.[55] Rather than flagging this as non-compliance, SBP accepts such sourcing as long as it is legal and the company has a process to identify old forests. In one case, an audit noted that logging was permitted under an old-growth management strategy, though such measures are widely criticized as insufficient by ecologists.[56]

Intact Forest Landscapes

SBP permits sourcing from logged or fragmented portions of IFLs, so long as these areas are not formally protected or explicitly illegal. Unlike FSC, which may prohibit or conditionally restrict sourcing from IFLs based on spatial thresholds or conservation value, SBP requires only awareness and mapping of IFL boundaries. No specific mitigation is required beyond documentation, threatening what is left of once vast IFLs while undermining landscape-level conservation goals.

Caribou habitat

SBP audit reports acknowledge the overlap between pellet sourcing areas and Woodland caribou ranges. Mitigation measures typically involve adherence to existing provincial harvest plans, such as designating Ungulate Winter Ranges or retaining lichen in cutblocks. However, these measures are widely seen as inadequate by conservation biologists, particularly given ongoing caribou population declines. Few audits mention any immediate operational changes to avoid sourcing from high-risk zones.

In some cases, companies cite long-term or indirect mitigation, such as participating in landscape planning or supporting research, but these are aspirational and lack enforceability. The emphasis on procedural compliance over ecological outcomes highlights SBP's insufficient response to well-documented threats facing caribou habitat.

Indigenous rights and consultation

SBP audit reports show that pellet companies often engage Indigenous communities during Risk Assessments and, in some cases, source from Indigenous-owned suppliers. However, this engagement does not meet the standard of free, prior, and informed consent (FPIC). Instead, SBP defers to existing provincial and federal consultation protocols, which often require only notification rather than consent.

For example, the Princeton (BC) pellet mill audit noted that it sources from unceded First Nations territories. Its mitigation involved using the province's "Archaeological Chance Find Procedure" and relying

55 NAO. (2024). The government's support for biomass. https://www.nao.org.uk/reports/the-governments-support-for-biomass/

56 Stand.earth. (n.d.). Forest eye. https://stand.earth/forest-eye/

on consultation records from forest licensees' stewardship plans, effectively outsourcing Indigenous engagement to other actors without independent verification.

This approach is particularly problematic in BC, where most land claims remain unresolved, and capacity among First Nations is limited. Communities are often inundated with consultation requests from governments and industries, straining their ability to respond meaningfully. In such a context, lack of response may reflect consultation fatigue or strategic silence, not consent. Yet SBP does not distinguish between these outcomes, accepting silence or procedural compliance as sufficient.

FSC's core certification standards, by contrast, require FPIC and more robust Indigenous engagement, even if its Controlled Wood system that still falls short. SBP's default to the weakest applicable standard, even where stronger norms exist, underscores its failure to uphold Indigenous rights in practice. Moreover, the risk of stakeholder input being misconstrued as endorsement deters some communities and non-governmental organizations (NGOs) from participating at all, further undermining the credibility of SBP's stakeholder engagement claims.

■ Box 3. Drax's use of irreplaceable old-growth forests in British Columbia

Investigations over the years have revealed that Drax sources wood from some of the rarest old-growth forests in BC. While the company now claims to rely primarily on sawmills for its biomass feedstock, a 2024 report by Conservation North, Bulkley Valley Stewardship Coalition, and Biofuelwatch demonstrates that this shift has not prevented the logging of ecologically and culturally significant old-growth forests.

Using publicly available timber mark data, the report found that 59% of log deliveries to Drax-owned pellet mills in BC in 2023 could be traced to specific harvest areas. Of these, 60% (1,765 loads) came from cutblocks where at least 10% of the area was classified as old growth; 42% (1,251 loads) originated from areas where over half the logged forest was old growth; and 10% (300 loads) were traced to sites with over 90% old-growth cover.

Old growth in this context refers to forests that have reached an advanced ecological age (typically over 140 or 250 years, depending on the ecosystem) and feature large trees, snags, and multilayered canopies. Many of these cutblocks overlap with Priority Deferral Areas—the most at-risk types of old growth, including Ancient Forests, Big-treed Old Growth, and Remnant Ecosystems, which a BC government-appointed science panel recommended for immediate protection.

The report further highlights that the Smithers and Burns Lake mills received the highest volumes of logs from these areas. This contradicts early local support for the mills, which was based on claims that they would primarily use logging waste like slash piles to reduce open burning and smoke pollution. In reality, no chipped slash was used, and the mills sourced fresh roundwood alongside sawmill byproducts.

By routing whole logs through sawmills or third-party suppliers, these materials are reclassified as 'secondary feedstock', allowing them to bypass stricter sustainability checks normally applied to primary wood sources. Under SBP rules, such material is deemed 'low risk' based on weak and outdated criteria. This loophole enables continued industrial logging of BC's last remaining old-growth forests—natural ecosystems in development for millennia—so their carbon-rich biomass can be burned in power stations in the UK, Japan, and South Korea.[57]

Whole logs for SBP-certified Drax pellet mill in BC, Canada © Michelle Connolly

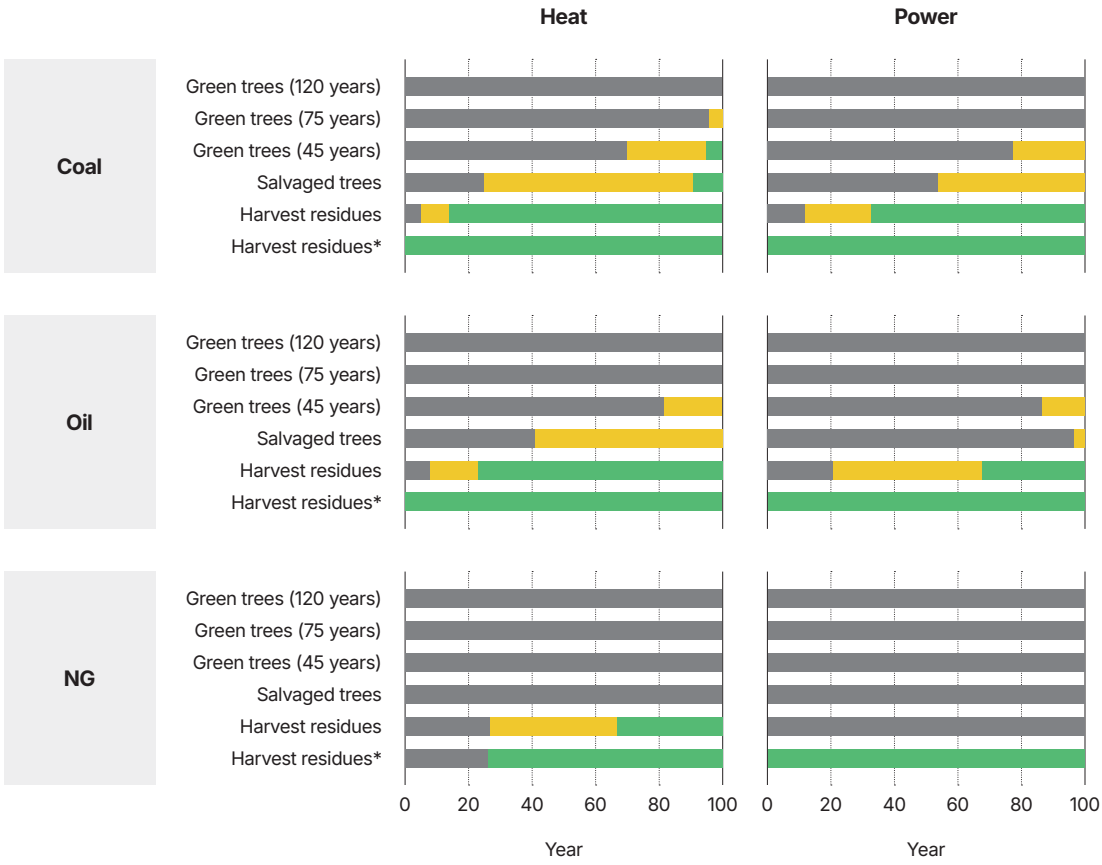
2.2. Analysis of carbon emissions

Following the international carbon accounting rules, Canada places emissions from biomass energy within the land-use sector rather than the energy sector. SBP's Principle 3 on carbon likewise defers to national accounting frameworks. In practice, compliance under SBP is typically demonstrated by citing Canada's reporting of forest carbon stocks to the United Nations Framework Convention on Climate Change (UNFCCC)

57 Conservation North, Bulkley Valley Stewardship Coalition, & Biofuelwatch. (2024). Logging what's left. https://conservationnorth.org/drax-still-sourcing-from-old-growth-forests-in-bc/

and the official claim that carbon levels in managed forests are stable or increasing.[58] However, this high-level reporting omits site-specific analysis of carbon payback periods and fails to examine the actual emissions impacts of the specific feedstock used—one of the most critical aspects of biomass sustainability (Fig. 10).

[Figure 10] Carbon payback periods of biomass may last for decades to over a century when replacing fossil fuels



Source: Laganière, et al., 2017.[59] Length of the C debt (black), uncertainty (yellow), and C benefit (green) phases for scenarios using different bioenergy feedstock to replace different fossil fuels for heat and power production. The asterisk indicates that harvest residues are burned by the roadside instead of left to decompose on the harvest site in the counterfactual scenario. NG: natural gas.

None of the SBP audit reports reviewed included any evaluation of the carbon debt or payback period associated with the feedstock. Instead, some audits justified carbon neutrality by noting that the majority of feedstock—such as 95% in one case—consisted of sawmill residuals, and that these were secondary byproducts of other industries. In one example, the Armstrong (BC) mill calculated that its use of fiber represented less than 1% of the provincial allowable annual cut, leading to the conclusion that the carbon impact was negligible at the landscape scale.

58 State of The Forests. (2024). The state of the forest in Canada: Seeing through the spin. https://www.stateoftheforest.ca

59 Laganière, J., et al. (2017). Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests. *GCB-Bioenergy, 9*(2). https://doi.org/10.1111/gcbb.12327

While such arguments may hold at a macro level, they overlook key counterfactuals. Some of the biomass, especially lower-value wood or species like the Trembling aspen, might otherwise have remained in the forest and decayed slowly over time. Without pellet demand, this material might not have been harvested at all. In cases like Meadowbank and Burns Lake (BC), the audits acknowledged the mills were using broadleaf logs not typically accepted by sawmills—logs that may have previously been left on-site. By diverting this wood into pellet production, the carbon stored in these trees is now released immediately through combustion, accelerating emissions that would otherwise have occurred over decades.

Rather than addressing this timing issue, SBP's carbon principle appears to treat the shift as beneficial, focusing on reduced slash burning while ignoring the long-term climate implications of turning previously unutilized biomass into energy. As long as the operations remain within legal harvest limits and replanting occurs, SBP considers forest carbon stocks to be stable. Yet this assumption has been challenged by independent scientific studies, especially in BC, where increased harvest intensity and loss of old growth are shown to reduce long-term carbon storage capacity.[60]

2.2.1. Burning wood emits CO_2 just like wildfires

Recent scientific estimates suggest that logging releases between 3.5 to 4.2 billion tonnes of CO_2 annually—about 10% of current global emissions. In Canada, carbon emissions and removals from managed forests are reported in the National Inventory Report (NIR), but in recent years these forests have shifted from being net carbon sinks to net emitters, largely due to intensifying wildfires and native insect outbreaks. Despite this trend, Canada's accounting framework does not fully capture or transparently report the forest industry's carbon impacts.[61]

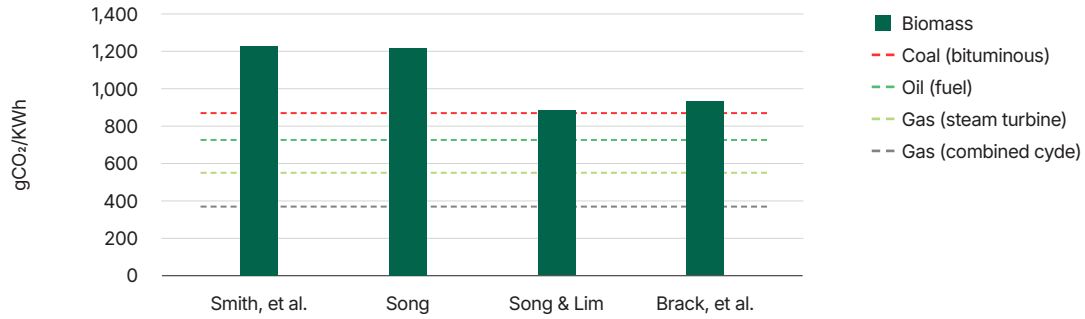
Analyses, including from Nature Canada, emphasize that logging results in considerable emissions from both slash decomposition and soil disturbance. Forests can continue to emit carbon for years after harvesting, further reinforcing the shift from carbon sink to source.[62] This is particularly relevant for wood pellet production: when trees are cut and combusted for energy, the carbon is released immediately, and any remaining soil carbon also continues to emit over time. Functionally, this carbon pulse mirrors the immediate emissions of wildfires, undermining claims that pellet fuel is inherently 'clean' or 'carbon neutral' (Fig. 11).

60 Booth, M. S. (2018). Not carbon neutral: Assessing the net emissions impact of residue-based bioenergy. *Environmental Research Letters, 13*(3). https://doi.org/10.1088/1748-9326/aaac88

61 State of The Forests. (2024). The state of the forest in Canada: Seeing through the spin. https://www.stateoftheforest.ca

62 Saxifrage, B. (2023, August 8). Managed to death: How Canada turned its forests into a carbon bomb. *Bulletin of the Atomic Scientists*. https://thebulletin.org/2023/08/managed-to-death-how-canada-turned-its-forests-into-a-carbon-bomb/

[Figure 11] Biomass emits more CO_2 per unit of electricity than fossil fuels at the point of combustion



Source: Song, 2025.[63]

While Canada's NIR captures some of these emissions under the land-use sector, they are often ignored by energy sector policies. This omission is exacerbated when importing countries like the UK, Japan, and South Korea treat pellet combustion as carbon-neutral at the point of use. In practice, the emissions are simply offshored and appear in Canada's inventory. In addition to hundreds of millions of CO_2 already being emitted by increasingly severe wildfires in BC, the logging and conversion of old-growth forests for wood pellet exports further worsens the province's negative carbon balance,

2.2.2. SBP dismisses forest management emissions

Every cubic meter of wood harvested contributes to a net carbon emission when accounting for both lost future carbon sequestration and the decay of forest biomass. According to estimates derived from Canada's NIR, logging across the country results in approximately 26 million tonnes of CO_2 emissions annually, primarily due to forgone carbon uptake and decomposition. This surpasses the direct emissions from the pulp, paper, and lumber industries' operations, indicating that forest harvesting itself is a major and underacknowledged source of emissions.[64]

Wood pellet production, though smaller in scale, also contributes hundreds of thousands of tonnes of CO_2 emissions annually, which would not have been there if those trees remained in the forest. While such carbon footprint may seem modest compared to Canada's wildfire emissions, it is far from climate neutral, especially within the timeframes critical for climate action. Yet SBP's framework does not engage with this reality. It assumes that biomass harvested under a 'sustainable' forest management regime is inherently carbon neutral, without addressing the gross emissions or the timing of carbon release and reabsorption.

63 Song, H. (2025). South Korea to reduce subsidies for biomass energy, explained. SFOC. https://forourclimate.org/research/558

64 Saxifrage, B. (2023, August 8). Managed to death: How Canada turned its forests into a carbon bomb. *Bulletin of the Atomic Scientists*. https://thebulletin.org/2023/08/managed-to-death-how-canada-turned-its-forests-into-a-carbon-bomb/

Moreover, SBP audits routinely cite legal replanting requirements on Crown lands as adequate evidence that carbon stocks will recover. While important, these measures are an insufficient proxy for actual carbon neutrality. Regenerated forests, especially when managed on short rotations, typically store significantly less carbon than older stands.[65] As a result, shifting from old, carbon-dense forests to younger, intensively managed ones creates a long-term carbon deficit, even if the forested land technically remains forested and avoids land-use change classification. SBP does not restrict such 'carbon decline by intensification'.

SBP further fails to consider the emissions resulting from soil carbon loss, which is a major blind spot in forest carbon accounting. Logging activities disturb forest soils and accelerate the oxidation of soil organic carbon. Although the Canadian forest service's carbon models project partial recovery over time, field measurements in BC's interior suggest much steeper and more prolonged soil carbon losses, especially under short harvest rotations. The disturbance of carbon-rich peatlands and wetlands—where emissions are particularly high—is not mentioned at all in SBP audit summaries.[66] These loopholes masks the real emissions profile of wood pellet sourcing and weaken SBP's credibility as a climate-focused certification.

65 Waring, B., et al. (2020). Forests and decarbonization – Roles of natural and planted forests. *Frontiers in Forests and Global Change, 3*. https://doi.org/10.3389/ffgc.2020.00058

66 James, J., & Harrison, R. (2016). The effect of harvest on forest soil carbon: A meta-analysis. *Forests, 7*(12). https://doi.org/10.3390/f7120308

Part 3.

Conclusions and Recommendations

Forest ecosystems, some of which have developed over millennia without intensive human intervention, are vital for global biodiversity and environmental stability. Forests regulate climate and water cycles, buffer against extreme weather, and support complex webs of flora and fauna uniquely adapted to these landscapes. While traditional and Indigenous land stewardship has coexisted with these ecosystems for thousands of years with relatively minimal ecological disruption, modern industrial forestry has imposed a radically different impact in a fraction of that time.

Industrial logging, especially in regions like British Columbia (BC), Canada, is often justified by industry as mimicking natural disturbances such as wildfire or insect outbreaks. However, these natural processes occur over much longer timeframes, often centuries, not decades. In contrast, industrial forestry has transformed millions of hectares of primary forests into managed stands in less than a century. This pace of change leaves little room for ecosystems and the species within them to adapt.

Amid mounting climate and biodiversity crises, policymakers, scientists, and forest managers are asking how to make forests more resilient to climate change. A clear answer is to reduce logging pressure on primary forests, allowing them to serve as climate refuges, migration corridors, and long-term carbon sinks. Protecting these forests, rather than cutting them, is one of the most effective strategies available for both climate mitigation and biodiversity conservation.

Yet current biomass policies move in the opposite direction. Logging is intensifying to feed the industry that is propped up by public subsidies and increasingly reliant on ‘residual’ material from old-growth logging. These subsidies treat biomass as a clean, renewable alternative to coal despite mounting evidence that burning wood for energy releases large amounts of carbon in the near term. The irony is stark: the industrial revolution abandoned wood as a fuel source because it could not meet demand; now, in the name of climate action, governments are subsidizing a return to a pre-industrial, carbon-intensive energy source that still cannot scale sustainably.

Logging of primary forest for SBP-certified Drax pellet mill in BC, Canada © Michelle Connolly

3.1. Summary of SBP's failures

SBP was established to fill a perceived gap in biomass certification by including carbon stock assessment, which schemes like the Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) do not directly address. However, SBP does not certify forest management itself. Instead, it focuses on the sourcing practices of pellet producers and traders, largely through desk-based due diligence processes such as Regional Risk Assessments (RRAs). In effect, SBP's system does not evaluate whether forests are managed sustainably but merely seeks to avoid the most egregious practices often through generalized or indirect mitigation.

Crucially, where harmful practices are embedded in government policy or normalized by industrial forestry—such as in BC—SBP's framework accommodates them. It permits high-risk sourcing from primary forests, provided that pellet companies implement vague mitigation measures like staff education or procedural awareness, which do little to prevent actual ecological harm. In jurisdictions actively converting primary forests into managed landscapes, SBP functions more as an enabler than a safeguard, offering a sustainability veneer while avoiding enforceable protections.

International subsidy regimes have largely accepted SBP at face value, often failing to understand how its standards fall short of what is typically expected in sustainable forest management (SFM). Unlike FSC or PEFC, which at least impose minimum operational requirements for forest practices, SBP allows biomass producers to meet compliance through jurisdictional Risk Assessments or minimal chain-of-custody controls. This creates a loophole where 'sustainability' is certified based not on actual forest conditions but on paperwork and proximity to certification systems.

Part of the issue is structural: biomass production depends on vast quantities of cheap, undifferentiated wood fiber. This includes residues from sawmills that mix certified and uncertified logs from various forest tenures. Because sawdust and other mill residues cannot be traced back to specific forest sources, segregating fiber from well-managed versus poorly managed forests becomes functionally impossible, especially for low-value pellet feedstock. Maintaining separate supply chains would impose costs incompatible with the economics of biomass.

This raises a critical question: has biomass already been granted a blanket presumption of environmental benefit, regardless of sourcing realities? Or are governments and industry simply unwilling to acknowledge that the forests feeding the biomass boom cannot consistently meet higher sustainability standards? While some forest operations may indeed meet rigorous benchmarks, the biomass industry's scale and cost structure rely on access to all available fiber, including from controversial or degraded sources. This report finds that SBP's low bar enables this access at the cost of forest integrity and climate credibility.

3.2. Global implications of SBP certification

The case studies from BC and Alberta expose systemic weaknesses in the SBP framework. By relying on third-party certifications—such as FSC Controlled Wood and PEFC/Sustainable Forestry Initiative (SFI)—and procedural mitigations, SBP provides only superficial safeguards for High Conservation Values (HCVs), species at risk, and Indigenous rights. It accepts certification claims and legality as proxies for sustainability, with minimal independent scrutiny or verification. Even in Canada, a country widely regarded as having some of the strongest forest governance, SBP-certified mills were documented sourcing from old-growth forests, Woodland caribou habitat, and unceded Indigenous territories. These activities occurred with minimal consultation and no evidence of free, prior, and informed consent (FPIC).

These findings raise deeper concerns about SBP's performance in jurisdictions with weaker legal and institutional safeguards. In major biomass exporter countries, such as Vietnam, Indonesia, Estonia, and Chile, environmental protections tend to be weaker, enforcement less reliable, and Indigenous rights less secure. In Vietnam and Estonia, false sustainability claims and feedstock mislabeling in pellet supply chains have been found to violate FSC and SBP's standards.[67] In Indonesia, tropical rainforest clearance

67 FSC. (2023, January 13). Integrity of wood pellets supply chains at risk. https://fsc.org/en/newscentre/integrity-and-disputes/integrity-of-wood-pellets-supply-chains-at-risk; Wal, S. (2021). Wood pellet damage. SOMO. https://www.somo.nl/wood-pellet-damage/

for biomass plantations has proceeded through legal loopholes, while in Chile, native forests have been extensively replaced by monoculture plantations, often without meaningful Indigenous engagement or consent.[68]

Compared to these contexts, Canada has more extensive certification coverage—particularly PEFC—and more detailed frameworks, such as FSC's National Standard, Controlled Wood National Risk Assessment (NRA), and SBP's province-specific RRAs. Even with these added layers, SBP has proven unable to prevent unsustainable sourcing or uphold robust ecological and social safeguards. In countries with fewer external checks, SBP's reliance on pellet producers to self-generate Risk Assessments, without transparent, rigorous, and consistent third-party enforcement, exposes even greater risks.

If SBP certification fails to ensure sustainability in a country with relatively strong governance like Canada, its efficacy in higher-risk jurisdictions is deeply questionable. Without robust audit systems, clear ecological thresholds, and enforceable social safeguards, SBP risks becoming a vehicle for the global greenwashing of biomass. Rather than advancing meaningful climate and conservation goals, it could be facilitating the continued exploitation of ecologically sensitive and socially contested forests under the guise of 'sustainable' energy.

■ Box 4. RWE, Samling Group, and SBP's Certification failures in Malaysia

A joint complaint by the Europe-based Biofuelwatch and Comité Schone Lucht to the Dutch Emissions Authority highlights SBP's failure to prevent high-risk sourcing. The case involves RWE, a major German utility burning wood pellets in converted coal plants, sourcing from two SBP-certified Malaysian suppliers.[69]

The first supplier, a Samling Group subsidiary TreeOne MegaPellet, has long been accused by the Penan communities and NGOs of illegal logging, deforestation, and Indigenous rights violations in Sarawak State. Samling withdrew from FSC certification after a 2025 ruling upheld complaints over illegal logging and destruction of HCV forests.[70] However, despite independent satellite evidence linking the company's concessions to recent rainforest clearance and peat drainage, TreeOne still carries the Malaysian Timber Certification Scheme (MTCS) label.

68 EPN. (2024). Burning up the biosphere: A global threat map of biomass energy development. BAN. https://environmentalpaper.org/2024/11/burning-up-the-biosphere-a-global-threat-map-of-biomass-energy-development-2024-update/

69 Biofuelwatch & Comité Schone Lucht. (2025, June 26). Joint complaint to Dutch Emissions Agency about RWE's wood pellet sourcing. https://www.biofuelwatch.org.uk/2025/rwe-nea-complaint/

70 The Borneo Project. (2025, May 6). FSC Latest: Investigation finds Samling guilty of illegal logging. https://borneoproject.org/fsc-latest-investigation-finds-samling-guilty-of-illegal-logging/

By relying on MTCS, a national standard with a poor enforcement record, SBP continues to certify TreeOne. MTCS has ignored similar complaints submitted to FSC nor did it act on a 2022 NGO letter detailing non-compliance and strategic lawsuit against public participation (SLAPP) suits against the complainants.[71] In 2023, the Dutch government requested a formal PEFC investigation into MTCS, following a critical review by the Timber Procurement Assessment Committee (TPAC).[72]

The second supplier, Rainbow Pellet in Pahang State, sources wood from 236 rubber plantations. Studies show rubber and oil palm plantations are key drivers of deforestation in Malaysia, with most rubber sites not replanted, leading to further forest loss.[73] SBP provides no sourcing transparency, and its reliance on MTCS again offers no credible assurance of sustainability. SBP's ongoing dependence on MTCS, despite documented failures, exposes a serious credibility gap, enabling companies like Samling to greenwash unsustainable practices.

3.3. Policy recommendations

The SBP system, in its current form, falls short of being a credible sustainability standard and instead often functions as a mechanism for greenwashing. Its foundation rests on risk assessment frameworks—such as FSC and PEFC's Controlled Wood systems—that are intended merely to exclude the most egregious forest practices, not to guarantee SFM. By treating these minimal thresholds as equivalent to full certification, SBP effectively lowers the bar for sustainability and misrepresents what constitutes responsible forestry to regulators, markets, and the public.

A significant share of SBP-certified biomass feedstock—whether labeled as 'sawmill residues' or 'forest debris'—can be traced back to primary forests. Their removal contributes directly to biodiversity loss, ecosystem degradation, and long-term carbon debt. Meanwhile, SBP's treatment of carbon emissions is inadequate: it overlooks the immediate release of carbon when biomass is burned and assumes that forest regrowth will offset emissions immediately. This obscures the real climate impacts of biomass and perpetuates the false narrative that it is a carbon-neutral energy source.

SBP's approach enables and incentivizes continued industrial logging of primary and old-growth forests, undermining both climate and biodiversity goals. In doing so, it risks accelerating the transformation of the world's remaining intact forests from carbon sinks to net carbon sources, tipping points that could

71 ICCA Consortium. (2022, May 31). NGOs demand Malaysian Timber Certification Council acknowledge certification scheme's shortcomings and take action. https://www.iccaconsortium.org/2022/05/11/malaysian-timber-certification-council-certification-schemes-shortcomings/

72 TPAC. (2023, October 6). Advies TPAC aan de Staatssecretaris van Infrastructuur en Waterstaat: Naar aanleiding van signalen en klachten ten aanzien van het Keurmerk MTCS (Malaysian Timber Certification System). https://open.overheid.nl/documenten/e99d9aa7-38e0-4214-bad1-191a54e23aff/file

73 Mande, H. K. (2020). Key drivers of deforestation in Pehang Malaysia: A threat to tropical forest ecosystem. *Fudma Journal of Sciences, 4*(2), 767 - 779. https://fjs.fudutsinma.edu.ng/index.php/fjs/article/view/449

irreversibly worsen the climate crisis.

To align international biomass policy with credible sustainability and climate outcomes, this report recommends following actions:

Governments: Reject forest biomass

- **Recognize large-scale biomass for what it is: a high-carbon, low-efficiency fuel.** Burning wood emits more CO_2 per unit of energy than fossil fuels, and forest regrowth may take decades to centuries to repay this carbon debt—far beyond the timelines needed to meet climate targets.
- **Include combustion emissions in national GHG inventories.** Excluding these emissions from carbon accounting is scientifically flawed and obscures the true climate impact of biomass energy.

Governments: Protect natural forests

- **Prohibit sourcing wood from natural forests, including primary forests and Intact Forest Landscapes (IFLs).** Primary forests are irreplaceable reservoirs of carbon and biodiversity. Logging them undermines global climate and biodiversity goals.
- **Shift climate mitigation strategies away from a wood-based bioeconomy.** Instead, focus on halting and reversing deforestation and forest degradation by 2030, in alignment with international biodiversity goals.

Governments: Reform subsidy and trade policy

- **End subsidies for forest biomass and exclude it from green finance criteria.** The biomass industry is propped up by public incentives that distort markets and divert funds from genuinely clean energy solutions.
- **Mandate human rights and environmental due diligence in all international timber trade.** Voluntary certification schemes like SBP are insufficient to prevent social and ecological harm.

Forest certification systems: Strengthen standards

- **Reform FSC and PEFC systems to prevent the misuse of Controlled Wood and risk-based assessments** as stand-ins for full certification. These mechanisms are being exploited to greenwash unsustainable biomass supply chains.
- **Cease certifying wood pellets under current large-scale biomass models.** Acknowledge that scaling biomass energy at the current rate is incompatible with protecting forest integrity. The widespread reliance on mixed-label products undermines the credibility and mission of forest certification systems.

Primary forest that was logged in 2021, 2023, and 2024 to feed pellet mills in BC, Canada © Michelle Connolly

Annex A. SBP Use of Other Forest Certification Schemes

Item	Requirement	Risks
SBP-recognized Certification Scheme	Certification schemes and associated claims that have been assessed by SBP and found to meet recognition requirements, which can be used by Certificate Holders as eligible input to produce SBP-certified biomass.	
SBP-controlled Feedstock/biomass	Feedstock/biomass produced in conformance with an SBP recognized controlled claim, such as FSC Controlled Wood and PEFC Controlled Sources.	FSC Controlled Wood is intended to avoid material from unacceptable sources that cannot be used in FSC Mix. It can be certified at the FMU level or sources through a due diligence system to evaluate and mitigate risk associated with material supplied without an FSC claim. According to the FSC Chain of Custody Certification Standard (FSC STD 40 004 V3-1), the Organization may only sell products with the FSC Controlled Wood claim on sales and delivery documents if the products are raw or semi-finished and the customer is FSC-certified. The intent is that Controlled Wood does not compete with FSC-certified Forest Management. This means that other schemes such as SBP are not permitted to claim FSC Controlled Wood as if it were 'sustainable' content. This would occur, for example, where a sawmill with FSC Chain of Custody supplied residues to a pellet mill as FSC Controlled Wood. This would appear to be in violation of the FSC standards. Claiming this material 'sustainable' is misleading and detrimental to both SBP and FSC.

Annex B. Comparative Analysis of SBP Standard 1

Scheme	SBP Standard 1	FSC CW	FSC FSS	Deficiencies in the SBP Approach	Assessment: SFM or CUS
Scope	Applies to the supply base of a biomass producer.	CW Risk Assessment: Applies to material supplied without an FSC claim to evaluate the risk of sourcing from unacceptable sources. CW forest certification: Applies to a Forest Management Organization and to the FMU.	Applies to a Forest Management Organization and generally applies to the FMU.	SBP does not assess the forest management at the forest of origin but relies on other certification schemes or a risk-based approach at the level of the country or jurisdiction. Where there are issues with forest management within a specific forest, these cannot be detected or corrected as the scheme has no authority over the performance at the FMU level.	CUS
Sustainability claim	SFM	Controlled forest management—avoiding the unacceptable practices	Responsible [sustainable] forest management	SBP Principles and risk-based approach are more closely aligned with FSC CW than FSC FSS, undermining the claim that SBP certifies SFM.	CUS
SBP Principle 1: Feedstock is legally sourced	Operators and operations are legal. Includes applicable laws, ownership, use rights, harvest, royalties and taxes, protection from illegal activities.	CW Risk Assessment: Similar requirements to SBP. CW forest certification: Far more detailed including anti-corruption and systems to resolve disputes and demonstrate legal compliance.	Far more detailed including anti-corruption and systems to resolve disputes and demonstrate legal compliance.	SBP legality requirements are not assessed at the FMU level and fall short of both the FSC CW and FSC FSS certifications. SBP is not SFM and can only claim avoidance of unacceptable practices.	CUS
SBP Principle 2: Feedstock sourcing does not harm the environment	1. Biodiversity (key species, habitats, ecosystems, and areas of HCV pertaining to biodiversity) are identified, evaluated and maintained or enhanced. 2. Ecosystem productivity, functions, and services are maintained or enhanced. No deforestation and conversion of certain ecosystems. Pesticides use is restricted. Harvest levels can be sustained and forest regenerated. Impacts of fire, pest and disease to be managed.	CW Risk Assessment: Similar requirements to SBP, although HCV may appear to be treated in more detail in FSC CW Risk Assessment. However, at the 'supply base'-scale 'key species, habitats, ecosystems' should be evaluated as HCVs, as should ecosystem productivity, functions, and services. CW forest certification: Far more detailed including anti-corruption and systems to resolve disputes and demonstrate legal compliance.	FSS has a principle just addressing HCVs, that requires a precautionary approach to avoid harm, as well as a separate principle for other biodiversity values. No HCVs may be degraded or converted to other land uses. Plan, check, do, act cycle of adaptive management is applied. SBP combines some key aspects of FSC P5 (Benefits from the Forest), P6 (Environmental Values and Impacts) and P9 (HCV). This dilutes the assessment of SFM to a CUS approach.	For HCV, this is a little closer to the FSC approach, but SBP fails to apply a precautionary principle to HCVs and combines them into one general principle with other conservation and ecosystem values and does not preclude conversion (degradation) of all HCV ecosystems. This warrants further investigation.	CUS

Scheme	SBP Standard 1	FSC CW	FSC FSS	Deficiencies in the SBP Approach	Assessment: SFM or CUS
SBP Principle 3 Feedstock is only sourced from Supply Bases where the forest carbon stock is stable or increasing in the long term	1. Feedstock sourcing is consistent with international requirements for LULUCF emissions. SBP provides options/ routes that (A) the country reports on LULUCF and counts biomass harvest; (B) LULUCF laws are in place to prevent carbon sink removal; and (C) SBE demonstrating carbon stock/sink is 'stable' over the 'long term'. 2. Carbon stocks in the forest area of the Supply Base are stable or increasing in the long term. 3. Feedstock sourcing shall not compete with wood sourcing for long-lived wood products.	N/A	N/A	1. Route A does not state that the country should report neutral emissions from biomass harvest. Route B evidence that reported LULUCF-sector emissions do not exceed removals does not essentially address the timespan over which logged forests will re-absorb lost carbon. Route C does not define 'stable' or 'long term' and misses that carbon emissions from biomass harvesting will be in the atmosphere for decades to centuries to come, whilst the forest regrows and recovers lost soil, deadwood and other biological capacity to store carbon. 2. SBP gives the route B that carbon stocks may be declining due to 'natural processes' including forest fire and pests, which are increasing exponentially as the climate crisis progresses. Conversion of primary forests to managed forests is known to contribute to not only to decreased carbon storage in such forests but has also been shown to add to the risk of forest fire, through reduced species diversity, even-aged forests and forest operations that increase fire risk, such as increasing road access. 3. The SBPs one indicator here states 'Feedstock sourcing shall be in compliance with the principles of cascading use; high quality stem wood shall not be used as feedstock if it is in substantial demand for long-lived products in the Supply Base.' Such an assessment would be highly subjective, including terms such as 'substantial demand' and 'high quality stem wood' that would need defining. Even if these terms were defined, the idea that there may currently be no better market for this 'feedstock' suggests a lack of regard for the potential to leave these forests standing to continue to store and capture carbon.	CUS

Scheme	SBP Standard 1	FSC CW	FSC FSS	Deficiencies in the SBP Approach	Assessment: SFM or CUS
SBP Principle 4: Feedstock sourcing benefits people and communities	1. Decent working conditions are provided, and labor rights are safeguarded. This includes freedom of association, forced labor, child labor, discrimination, minimum wage, hours, health & safety, and grievances. 2. Feedstock sourcing benefits communities. This includes avoiding negative impacts, local economy, HCV environmental services, grievances, and cultural heritage. Indigenous peoples' right to FPIC is included but limited in scope.	1. CW Risk Assessment: Similar requirements to SBP, as these are core ILO labor requirements that all countries who are ILO members are required to enshrine in law, even if they have not ratified them because these are basic workers' rights. CW forest certification: Far more detailed on how to apply these basic ILO labor rights. 2. The assessment of community benefits from feedstock sourcing critically excludes community impacts from pellet mills, including evidence of environmental pollution, air quality, and human health.	1. Far more detailed information included for FSC P&C on how to apply these basic ILO labor rights. 2. Far more detail included on how community benefits should be provided.	1. SBP combines some key aspects of FSC P2 (Workers' Rights and Employment Conditions), P3 (Indigenous Peoples' Rights), and P4 (Community Relations). To assess whether these aspects are sustainably managed, SBP would need to take a far more detailed approach at the FMU level and/or apply the precautionary principle, especially in countries where Indigenous peoples rights are not respected. Negative impacts on communities of feedstock 'sourcing' are addressed but not the negative impacts of wood pellet production, including air quality, noise and other environmental impacts on human health. 2. Indigenous peoples' rights are given one indicator that only tries to address situations where FPIC has not been achieved and only requires that a consultation and accommodation process are 'put in place'. Even this small concession to FPIC does not have to be enacted, or more importantly, their consent given prior to logging the Indigenous peoples' forests and taking their timber without any compensation.	N/A To state that the SBP approach here is even intended to CUS would be to denigrate Indigenous Peoples' rights. This is also true of the efforts to address community benefits, since they ignore the environmental and human health impacts of pellet production.
Additional FSC Principles not fully addressed by SBP or FSC Controlled Wood					
	SBP focuses only on benefits to communities of harvesting biomass and not on the wider benefits the forest can provide the community, including work beyond the biomass sector.		FSC P5: Benefits from the Forest	SBP focuses only on benefits to communities of harvesting biomass and not on the wider benefits the forest can provide the community including work beyond the biomass sector.	CUS
	SBP mentions the importance of applying adaptive management practices, but does not include management planning, monitoring, and assessment as elements of its standard.		FSC P7: Management Planning FSC 8: Monitoring and Assessment	SBP mentions the importance of applying adaptive management practices, but does not include management planning, monitoring, and assessment as elements of its standard.	CUS
	SBP includes some aspects of P10, but crucial elements around integrated pest management, control of alien species, avoiding fertilizers, implementing activities to avoid natural hazards, and responsible infrastructure development are missed.		FSC P10: Implementation of Management Activities	SBP includes some aspects of P10, but crucial elements around integrated pest management, control of alien species, avoiding fertilizers, implementing activities to avoid natural hazards, and responsible infrastructure development are missed.	CUS

Annex C. SBP Feedstock Verification

Item	Requirement	Adequacy
Scope	SBP Standard 2 is for use by Organizations defined as Biomass Producers and is aimed at sourcing feedstock from a defined Supply Base and selling biomass with a SBP claim.	Inadequate. There is no SBP Standard that applies to the Forest Manger, unlike FSC and PEFC Standards. The first point of verification is after the wood has arrived at the pellet mill.
Supply Base Definition and Mapping	The Organization shall define the boundaries of its sourcing areas and map its Supply Base, in accordance with the following: all feedstock (including up-to-date geographical boundaries) that are currently used and intended to be used in the production of SBP-certified biomass; feedstock category; all operators involved, up to and including the Organization's own operations; keep records of feedstock and relative volumes of different feedstock inputs used, including species for the primary feedstock and, if known, for processing residues feedstock. The Organization shall record the relative portions and volumes of its feedstock, as coming from: a. RRA with all low risks, b. RRA with some Specified Risks, c. Biomass Producer's SBE, d. Certified sources against an SBP-recognized certification scheme as published by SBP	
Traceability to the Supply Base	The Organization shall ensure that all sourced feedstocks can be traced back to the defined Supply Base, ensuring that the sourcing area is within the defined Supply Base. Access to records describing the sourcing area of all feedstocks, and whether feedstock sourced is certified against an SBP-recognized scheme or the area is covered by a valid SBP-endorsed RRA, if relevant. When an Organization is sourcing post-consumer feedstock, it shall implement and comply with the requirements defined in Annex 1: SBP processing residues and post-consumer feedstock requirements.	
SBE	The Organization shall develop, implement, and maintain an SBE or a RRA with Risk Management for Specified Risks, either way. Whether it's primary feedstock (i.e. forest fiber) or Processing residues, if they are FSC- or PEFC-certified, they may consider requirements of the SBP-recognized certification scheme as a potential Risk Mitigation Measure (RMM). The SBE shall assign low or Specified Risk for each indicator of SBP Standard 1. With SBP-compliant claims, for processing residues not certified to an SBP-recognized certification scheme, there should be evidence to prove 'processing residues' feedstock category. SBE + Risk Management for Specified Risks or RRA + Risk Management for Specified Risks Certified to an SBP-recognized certification scheme can be used to prove 'processing residues' feedstock category and that the feedstock is certified by an SBP-recognized certification scheme.	Inadequate. SBPs relies on FSC and PEFC to mitigate risks identified in the Supply Base. This implies that it treats FSC Controlled Wood and PEFC Controversial Sources as equal to full Forest Management certification. It also assumes that FSC- or PEFC-certified forests are taking account of landscape level issues that are in fact out of scope and beyond the control of the FMU. SBP assumes that all certified forests are fully compliant, when they are going to have non-conformities to address that could add up to systemic failure not only at the FMU level but across the region at a regulatory level. Whilst Specified Risk is assigned to an indicator where RMMs are applied, there is no category of high risk, where risk mitigation is not effective or not possible.

Item	Requirement	Adequacy
Supply Base Reporting	Annual reporting and update.	Adequate. Standard requirements.
Supply Base Verifiers	This requirement allows for the development of verifiers to add to the SBP Standard 1 indicators. Supply Base Verifiers require that the Organization shall not remove or weaken the indicators or alter their intent. The pellet mill is required to identify all applicable laws that meet the indicators of SBP Standard 1, if the laws are enforced and that Forest Managers are implementing best practices that demonstrably meet the indicators.	Inadequate. This part of the system is where the real measures of SFM are determined. Unfortunately, this is also where SBP shows that its system is only set up to assess legal compliance. The fact that laws may not be in place to address every indicator in the SBP Standard is addressed in the Risk Assessment, where the pellet mill must then determine if best practice is then being implemented. The next step is to assess if these legal requirements are enforced. No method to assess whether these laws are enforced is provided. Existing laws are considered inadequate to address SFM as laws are there to catch potential criminal activity not to reward better or even best practices. Best practice is usually a big step up from legal compliance and generally not applied, if indeed it can be determined, across the forest industry in any jurisdiction. This is why certification systems such as FSC were established. Such a blanket assessment of forest practices in a region is never going to expose bad practices or eliminate them if they are identified. It is asking too much of a pellet manufacturer to impartially assess their suppliers, the forest industry, and state over which they have little influence or incentive to influence established forest industry policies and practices.
Risk Assessment	The Risk Assessment uses the Sustainable Biomass Verifiers to determine the risk of nonconformance with the SBP Standard 1 requirements. It includes all operators involved in the production, harvest and transport of the 'feedstock'.	Inadequate. See above.
Risk Management	RMMs either developed by the pellet mill or SBP itself shall be applied to any verifiers with Specified Risk identified to reduce the risk rating.	Inadequate. If the pellet mill struggles to come up with some legislation that roughly addresses the indicator in the SBP 1 Standard, then it has the option to put RMMs in place. It appears that forest operations can continue to supply the mill during the timeframe set to implement change, potentially introducing controversial sources into the pellet mill for whatever that timeframe may be, with the pellet mill monitoring progress at least every 12 months. This suggests a multi-year infraction of the SBP requirements is permitted. The pellet mill is then required to consider the 'feedstock' non-compliant if the mitigation measure has been found ineffective in mitigating the risk, but only until another measure is identified. It appears the cycle goes on, effectively greenwashing the non-compliant feedstock for years to come.

Item	Requirement	Adequacy
Stakeholder Engagement	Before finalizing its SBE or when the Organization updates its SBE, the pellet mill shall engage with its stakeholders, with the specific intention of seeking feedback. The pellet mill shall seek to address relevant stakeholder concerns; but it is not required to achieve a consensus with stakeholders. It shall provide stakeholders with adequate information as a basis for informed comment but does not have to provide confidential information. The Organization shall maintain lists of individuals/organizations invited to comment. In the Glossary of Terms, SBP defines Stakeholder Engagement as the process used by the Organization to engage relevant stakeholders for a clear purpose to achieve agreed outcomes. It is now also recognized as a fundamental accountability mechanism, since it obliges the Organization to involve stakeholders in identifying, understanding, and responding to sustainability issues and concerns, and to report, explain, and answer to stakeholders for decisions, actions, and performance. The Stakeholder Engagement Plan (SEP) further details procedure that outlines how, when, and where (physical or platform) relevant stakeholders will be identified and contacted, what information will be shared with them, and how comments/feedback will be received, reviewed and responded to. Reference to such a plan could not be found in any of the SBP Standards.	
Annex 1: SBP processing residues and post-consumer feedstock requirements	"Adapted from Reference Source: FSC-STD-40-007 (V2-0) EN: Sourcing Reclaimed Material For Use In FSC Product Groups Or FSC-Certified Projects" This Annex instructs pellet mills on how to assess and evidence processing residues. The UK Renewables Obligation: Sustainability Criteria have the same requirements for residues as for wood directly supplied from the forest.	Inadequate. The FSC system is not open source and subject to copyright. The SBP system uses the FSC system frequently, including most concerningly the FSC Controlled Wood Risk Assessments with crucial elements and oversight removed. This abuse of its systems should be investigated by FSC.

Annex D. SBP Feedstock Certification Assessment and Decisions

Item	Requirement	Adequacy
Normative References and CB	The CB shall hold SBP accreditation in accordance with ISO 17065. Other relevant references include ISO 14065:2020: General principles and requirements for bodies validating and verifying environmental information, ISO/IEC 17065:2012 Conformity assessment; requirements for bodies certifying products, processes and services, and ISO 19011:2018 Guidelines for auditing management systems	Adequate. These are the general ISO normative references expected of a certification systems assurance model.
Auditors and Training	Very similar if not identical requirements to FSC. Selecting and appointing an evaluation team shall follow the relevant requirements of ISO 19011. Auditors need to be trained to audit the SBP, FSC and PEFC schemes. At a minimum the auditors shall have a secondary education in a relevant discipline (e.g., forest and/or other natural resource management, and/or labour/social issues) and five years of professional experience relevant to the scope of the evaluation and to their role (e.g., legislation, regulations or other forest certification standards).	Adequate.
On-site Evaluations	At 7.3 of SBP Standard 3 Requirements for Certification Bodies, the initial evaluations shall always be conducted on-site. However, this refers to the pellet mill site and not the forests they are sourcing from.	Inadequate. Having required that auditors are trained to audit the SBP, FSC and PEFC schemes and have a secondary education in a relevant discipline and five years of professional experience relevant to the scope of the evaluation and to their role, SBP does not require them to visit the forests the mill is sourcing from at any stage in the process. This is essential in order that the auditor can evaluate the practices in at least a representative sample of the forests the mill sources from. Relying on a risk assessment of the sourcing area without forest assessment does not give confidence that any assessed risks are adequately addressed by the Forest Manager. Relying on forest certificates from other schemes such as FSC and PEFC does not account for any major or minor nonconformities these scheme's auditors have detected, and SBP has no power to assess or address these issues.
Systems	Check for key monitoring systems in the mass balance system.	Further investigation is needed to check how the mass balance system functions in SBP Standard 2.
Stakeholder Engagement	Posting of evaluation on SBP website and review of stakeholder comments prior to evaluation.	Inadequate. No requirement found for the CB to evaluate impacted or interested stakeholders or how to reach out to them prior to the assessment. List of stakeholders is reliant on the clients list. One month is not sufficient to receive comments for an initial evaluation.
Corrective Actions	Very similar if not identical requirements to FSC.	Inadequate. Issues exist with how non-conformances are assessed, including downgrading major to minor non- conformances, or failing to recognize non-conformities as systemic, which would raise them to Major. This allows clients to avoid being suspended or having their certificates terminated.
Surveillance Evaluations	Very similar if not identical requirements to FSC.	Adequate.

Item	Requirement	Adequacy
Termination, Scope Revision, Suspension, or Withdrawal of Certification	Very similar if not identical requirements to FSC. However, SBP also requires that in the case the FSC, PEFC, or SFI certificate(s) of the client is suspended, the CB shall determine if the suspension has an impact on SBP conformance and follow the requirements of this Standard.	Inadequate. This clause appears to allow mills to source from suspended or terminated FSC or PEFC certificates if they can justify this against the requirements solely of this standard. This poses a further risk in SBP's reliance on other certification schemes.
Complaints and Appeals	Complaints shall only be accepted when they relate directly to allegations of non-conformance with SBP requirements.	Inadequate. Given that SBP does not measure up to many of the requirements of the FSC P&C, complaints will only be accepted for the lower level of requirements SBP has set. This not only undermines the FSC P&C but potentially puts SBP in direct competition with both FSC and PEFC when it comes to certifying wood pellets as 'sustainable', which goes against SBP's mission to complement these standards rather than replicate them.

Annex E. Methodology Used to Analyze Drax Pellet Mills

Item	Description
Certification Scheme Analysis	Reviewed publicly available SBP documentation, including the Feedstock Compliance Standard, Risk-Based Approach guidance, and RRAs, as well as certification system documents from FSC and PEFC. Particular attention was given to the FSC Canada NRA, which is referenced in the SBP's own RRA for BC. Key differences in how each system defines and manages risk were identified and analyzed.
Risk and Mitigation Review	Analyzed RMMs reported by pellet producers in BC to determine whether they substantively protect HCVs, including old-growth forests, IFLs, and caribou habitat. This involved reviewing auditor reports, stakeholder comments, and company SBEs to evaluate the specificity and strength of mitigation practices. The evaluation emphasized the degree to which measures went beyond regulatory minimums and whether they addressed identified risks effectively.
Supply Chain Evaluation	Reviewed, where available, wood sourcing disclosures and audit results to determine how RMMs were implemented in practice. This included comparisons between what companies reported on paper (e.g. commitments to avoid high-risk areas) and what independent investigations, public datasets, or stakeholder concerns suggested about on-the-ground operations. The goal was to identify any disconnect between certification documentation and actual forest management practices.
Residues Classification Assessment	Analyzed how the term 'residues' is defined and applied by SBP in comparison to UK government guidance, BC government policy, and industry practice, because of the central role residues play in SBP-compliant biomass. Assessed whether whole logs from primary forests could be included under broad definitions of residues, and how SBP's reliance on FSC or PEFC certification affects the classification and treatment of these materials.
Carbon Accounting and Policy Analysis	Considered, where relevant, carbon emissions from biomass combustion, referencing IPCC guidelines and peer-reviewed literature. Analyzed policy to contextualize how SBP-aligned certification practices affect broader climate goals and biodiversity conservation commitments, including under frameworks such as the CBD and Paris Agreement.

Annex F. Feedstock Summary from SBP Reports for Drax Pellet Mills

Pellet Mill (province)	Feedstock from Certified Sources (FSC/PEFC)	Feedstock Risk-Assessed (Controlled)	Primary Feedstock Usage (Logs & Forest Residues)	Key Risks Identified	Example Mitigations	Mitigation Effectiveness
Armstrong (BC)	~100% from secondary residuals (all from sawmills); suppliers had SFI Chain of Custody	Not risk-assessed (no uncertified inputs)	None (no roundwood for pellets)	Nonsignificant (all inputs low-risk sawdust)	N/A (all SBP-compliant via suppliers' certification)	Not immediately effective
Smithers (BC)	~85% residuals (sawmill chips); ~15% logs	Minor (some residuals from non-certified mills)	~60k ODT logs (~18% of feedstock that year)	Caribou habitat; old growth (HCV1, 2)	Relied on provincial caribou plans; suppliers mostly CSA-certified; mapping of IFLs (no special set-asides)	Not immediately effective
Houston (BC)	~95% residuals; <5% logs	Some uncontrolled residuals included	Very low (essentially none; focus on sawmill waste)	Old-growth spruce; Wet'suwet'en territory	Referenced to licensee's old growth strategies; government consultation process with First Nation (no FPIC)	Not immediately effective
Burns Lake (BC)	~70% residuals; ~30% primary (pulp logs)	Included some uncontrolled fiber	~7,583 m^3/year broadleaf logs (aspen) + conifer	Caribou habitat; old growth (HCV1, 2)	Noted as "incidental harvest," mitigation by cutting permit reviews (no extra on-ground measures)	Not immediately effective
Meadowbank (BC)	~60% residuals; ~40% primary	Included uncontrolled fiber	~14,177 m^3/year broadleaf logs	Caribou habitat; old growth (HCV1, 2)	Similar to Burns Lake (reliance on licensee practices)	Not immediately effective
Lavington (BC)	~100% residuals (from Tolko sawmill)	Not risk-assessed (single supplier fully certified)	None (integrated with sawmill)	None beyond normal (mill has FSC Controlled Wood)	N/A (Tolko mill's systems cover it)	Not immediately effective
Entwistle (AB)	~80% residuals; ~20% primary (forest residuals)	Some risk-assessed	Mainly harvest residues (limbs, tops)	Caribou (boreal); Treaty 6 territories	Mitigation: followed government's Integrated Land Management rules; consulted Alexis Nakota Sioux Nation, etc.	Not immediately effective
High Level (AB) "Northern Pellet"	~90% residuals; ~10% primary	Small percentage risk-assessed	Some conifer logs from remote areas	Caribou (boreal); intact boreal	Mitigation through parent company's (Tolko) CSA certification; mapping of sensitive areas via Defined Forest Area planning	Not immediately effective

Pellet Mill (province)	Feedstock from Certified Sources (FSC/PEFC)	Feedstock Risk-Assessed (Controlled)	Primary Feedstock Usage (Logs & Forest Residues)	Key Risks Identified	Example Mitigations	Mitigation Effectiveness
Princeton (BC)	~75% residuals; ~25% primary (mostly small logs)	Yes	Low-grade logs from local forests	Spotted owl habitat (endangered); old-growth Ponderosa pine stands	Avoidance of known Spotted Owl areas per government order; old pine considered low conservation priority by company, no specific action	Not immediately effective

Note: Annex F illustrates that even within one company's mills, the dependency on primary vs. secondary feedstock varies. SBP requirements were met in all cases, but the stringency of what that meant in practice differed—where fiber was mostly residual and certified, little was scrutinized; where more primary fiber was used in high-value forests, SBP still allowed it with nominal mitigation. Rightmost column indicates instances where the audit did not provide evidence of effectiveness of mitigation.

Sources: SBP Public Summary Reports (2019–2022) for each facility. Percentages are approximate and based on the latest available audit year. "Certified Sources" include FSC, SFI, or CSA certified wood; "Risk-assessed" means the mill conducted its SBE for that portion (no prior certification). "Primary Feedstock" includes roundwood and harvest residues directly from the forest. "Key Risks" are drawn from audit text (e.g., references to HCVs or sensitive sites). "Mitigations" are summarized from the companies' documented control measures and auditor notes.

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Sustainable Biomass Program

Certifying the Unsustainable

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