



Burning forests in the name of clean energy?

How banks are failing to exclude the harmful wood biomass industry from finance

October 2022

BANKTRACK

1. Introduction

Wood biomass, biomass coming from trees, is commonly presented as a renewable source of energy that helps bring down greenhouse gas emissions, in the same category as solar and wind. Such is the belief in the climate benefits of (all sources of) biomass that bioenergy continues to be the main source of renewable energy in the [EU](#), with a share of almost 60%.

However, the wood biomass industry is neither carbon neutral nor ecologically sustainable. Rather, burning trees for energy exacerbates forest destruction and climate change. It also causes harm to communities due to air and noise pollution from pellet production and biomass plants, and by destroying forests that are important to people's lives and well-being and that protect them from extreme weather impacts. In addition, it directs investment away from proven low/no carbon renewable energy solutions, such as wind and solar.

As the climate crisis deepens, and the invasion of Ukraine and the resulting energy crisis pushes ever more governments to cut their reliance on fossil fuels, the need for large scale renewable energy solutions becomes more urgent than ever before. Yet such solutions must not themselves exacerbate the climate and biodiversity crises nor violate the rights of communities, since this cannot be considered part of the just transition.

Commercial banks have a key role to play in financing a rapid and just energy transition. It is their lending decisions in the energy sector that decide whether capital is allocated to continuing our reliance on fossil fuels, or for energy solutions that create a solid fundament for a just and sustainable economy. The large-scale use of wood biomass for power generation is no such solution.

This briefing paper sets out the environmental, social and human rights issues associated with the wood biomass industry. These include companies that operate purpose built biomass boilers or power and/or heat plants, companies that are converting existing coal power plants to biomass, and pellet producers that supply feedstock to those plants, examples of which are listed below.

The paper then analyses the policies of ten major European and US banks that are known to have provided recent, substantial finance to problematic companies operating within the sector despite the well documented impacts of this industry and the risks it poses to nature, and climate. **We found that none of the banks reviewed has adequate policies covering lending for wood biomass.** The paper provides an overview of how these banks are addressing the issues related to the wood biomass sector. It concludes by providing recommendations to banks on excluding finance for wood biomass facilities and feedstock supply chains such as wood pellet producers.

What is wood biomass?

In this paper 'wood biomass' refers to '**all biomass derived from trees that is used to generate energy in a biomass power and/or heat plant**'. This includes wood taken directly from forests and plantations; woody residues from landscape care or gardening; and residues from sawmills.

Biomass power plants can also be fuelled by **other sources of biomass**, such as grassy and woody plants and agricultural residues.

Other sources of biomass can also be turned into **biofuels** to directly power combustion engines, for example food crops, grassy and woody plants, oil-rich algae, and the organic component of municipal and industrial wastes.

In the EU wood biomass currently accounts for over two-thirds of the biomass used for energy production, with mixed waste, biogas and liquid biofuels making up the remainder.

2. Facts and figure on wood biomass

The EU constitutes the world's largest wood pellet market. In 2021, EU consumption of wood pellets rose to over 23 million metric tons and the demand is expected to increase in years to come. This is largely the result of the Renewable Energy Directive II (REDII), which sets an overall renewable energy target of 32% by 2030, a target that most countries consider unachievable without large-scale use of so-called sustainable energy sources, such as (wood) biomass. While the EU also produces wood pellets and chips, it is not enough to meet the demand and therefore it imports a significant amount. The US is the world's largest wood pellet exporter and the second largest supplier of wood pellets to the EU, behind Russia, with pellet production predominantly happening in the Southeast US.

The demand for wood pellets is not limited to the EU. In 2021, Japan and South Korea imported a combined 6 million metric tons of wood pellets. Due to an increase in subsidies for wood biomass in these two countries, demand for wood pellets is expected to increase, rivalling that of the UK and EU by 2027.

Over the last ten years the number of biomass power plants operating globally has more than doubled from 2,000 to 4,500 in 2022. In the same period, there has also been an increase in biomass co-firing - burning coal and biomass together to make electricity. This technology is particularly prominent in parts of Asia that are very coal-dependent, such as Japan, South Korea and Indonesia. Although it is not a major trend in the US, UK or Europe, according to the International Energy Agency (IEA) there were around 150 cofiring plants in the US and Europe as of 2017. You can see a map of existing and planned expansions of the biomass industry globally on the Environmental Paper Network's website.

3. The impact of wood biomass on climate, nature, health and communities

The increase in demand for wood pellets for energy and heat generation across the EU, Japan and South Korea poses serious threats to the climate, nature and biodiversity as well as local communities affected by both where the wood is harvested and where it is burned. Claims that burning wood for energy or heat is carbon neutral or sustainable fail to take into account a range of issues associated with the industry outlined below.

Impacts on climate

Burning wood to generate energy emits no less carbon dioxide per unit of energy than burning coal. Although many claim that burning wood biomass is carbon neutral, this is a fallacy, as it fails to include emissions from biomass combustion, and it fails to account for the loss of carbon stored in and sequestered by forests when they are logged. This is the result of a misinterpretation of carbon accounting and deep flaws in the accounting rules themselves. Under the so called LULUCF framework (Land use, land-use change, and forestry) emissions from wood biomass are accounted for in the land sector, instead of the energy sector. This means they are counted in the country where a tree is cut down, not at the smokestack where the tree gets burned. A company burning woody biomass in a power plant can therefore report that they have zero carbon emissions, but this clearly doesn't reflect the reality. One study shows that even bioenergy sourced from burning genuine logging residues - so no whole logs - results in such high carbon emissions that it cannot contribute to the goal of the Paris Agreement to limit warming to 1.5 degrees.

Carbon neutrality claims are also based on the assumption that trees can be regrown and this way recapture the carbon emitted during combustion. This fails to consider the time dimension of how long it takes for forests to regrow and compensate for the immediate emissions resulting from combustion. It also ignores the fact that increasing harvest rates in forests for burning those trees depletes the capacity of forests to act as sinks and therefore degrades the world's carbon stocks. In addition, after logging, natural forests are often replaced with industrial tree plantations which store far less carbon and are far less resilient to impacts of climate change. As such, wood biomass is a false solution to climate change on two fronts: not only is it an inefficient high-carbon energy source, but also the carbon sequestration function of forests is lost if trees are cut down to fuel energy demand.

Drax Power Station.
Photo: Ashley Lightfoot / Wikimedia Commons



Bioenergy with Carbon Capture Storage (BECCS)

BECCS technology is being discussed as a technical fix that will capture emissions from biomass combustion. Carbon capture and storage (CSS) aims to separate carbon dioxide from other gases and store it permanently. BECCS is often used in mitigation pathways in climate change policy and represents a supposedly simple solution to offset sectors that are hard to decarbonise. However, the technology is also associated with several problems. Even though in theory CSS would capture most of the emissions released from burning wood biomass, it does not take into account emissions from logging, sequestration, harvesting, or transport. In addition, the technology for capturing CO₂ from biomass combustion has never been demonstrated at scale. Finally, capturing CO₂ itself requires a lot of energy, so already inefficient biomass plants would become significantly less efficient still and therefore require even more wood for the same amount of heat and/or electricity. Therefore, we are calling for financial institutions to exclude finance for wood biomass facilities regardless of whether they include plans for BECCS.

Impacts on nature

The increased demand for wood, burned as wood chips or pellets, is devastating irreplaceable forest ecosystems. Although companies often claim that they only use logging or processing residues as wood biomass, many reports as well as satellite images show that whole trees, i.e. roundwood, are widely used for biomass energy. Across [British Columbia](#), the [South-eastern USA](#) and [Central-Eastern Europe](#), primary high conservation value forests are being logged to manufacture wood pellets and wood chips to be burned in power and heat plants. But unsustainable forestry practices that not only include the removal of trees but also of branches, roots and deadwood from the forest [eradicates habitats](#) for forest-dependent species.

In addition, large forest areas are being [burned or cleared](#) and converted to industrial tree plantations, which support little to no biodiversity, store much less carbon compared to natural forests, which deplete freshwater and soils, and which are prone to fires. Once a forest has been clearcut, even when trees are replanted, it [takes decades, if not centuries](#), before it can regrow to recover its original level of ecosystem productivity. The increasing demand for wood biomass is beginning to fuel industrial tree plantation expansion globally, especially in the [global south](#). This is exacerbating existing problems related to water scarcity and wildfires, and is also associated with continuing land conflicts between Indigenous communities and the companies operating the plantations.

Clear cutting in Southeast US where Enviva and Drax source. Photo: As You Sow



Impacts on human rights and communities

The wood biomass industry is associated with far-reaching human rights and social impacts, both where forest biomass is harvested and where it is burned. Studies have found that a wood pellet manufacturing plant in southeastern US is 50% more likely to be located in a so-called “Environmental Justice community”, defined as a county where the poverty level is below the state median poverty level and at least 25% of the population is Black, Indigenous, or People of Colour (BIPOC). These communities have historically been disproportionately affected by coal and gas power plants, in addition to waste biomass energy plants and landfills. Wood pellet production facilities further add to the harmful pollutants emitted in such areas, therefore increasing the burdens placed on the local communities.

The impacts of the industry stretch farther than the US and increasingly into countries of the global south, as demand for wood increases and drives industrial tree plantation expansion. The violation of human rights is inherent in the monoculture and plantation system. The expansion of tree plantations explicitly to meet the new bioenergy demand has been reported from Uruguay, Brazil, Indonesia, Australia, China, Russia, South Africa, Laos, Malaysia and Vietnam. Across Brazil, Chile and Argentina there are reports of traditional and Indigenous communities being forcefully displaced as private companies encroach on their land, violating their rights to Free, Prior and Informed Consent (FPIC). The replacement of forests with plantations is hugely damaging to these communities who rely on the forest for their cultural, spiritual and economic livelihood.

This trend represents a form of climate colonialism as richer countries, predominantly in the EU and Asia, import wood from countries in the global south for biomass energy production. Due to the carbon accounting rules in the EU, the emissions are then attributed to the countries exporting this wood, allowing the EU to claim a reduction in emissions when in reality it is instead outsourcing those emissions.

Impacts on health

Burning wood emits similar levels and a similar range of pollutants as burning coal, including oxides of nitrogen, carbon monoxide, small particulates and sulphur dioxide. There is detailed evidence that these pollutants cause a wide range of health impacts, including increased risk of heart disease and strokes, lung and bronchial disease and cancer, as well as increased symptoms of bronchitis and asthma. In addition, residents in the US who live close to wood treatment plants and are exposed to dust from wood chipping operations report health problems like skin disease, respiratory problems, asthma and chronic bronchitis. Coupled with the fact that biomass production and burning facilities are often located in socioeconomically disadvantaged or deprived areas where communities are often already impacted by high pollution levels, it is clear that the wood biomass industry has wide reaching health impacts.

Wood biomass is associated with high rates of forest destruction as well as monocultures. There is a growing body of evidence that shows the connection between forest loss and an increased risk for disease outbreaks and pandemics. For example, monocultures like eucalyptus plantations reduce biodiversity, leaving species like rats and mosquitoes, which are more likely to spread dangerous pathogens, to thrive. This biodiversity decline results in a loss of natural disease regulation and poses a risk for human, animal and environmental health.

4. Key wood biomass companies

The wood biomass industry is comprised of numerous companies operating in different geographies and conducting different activities along the biomass supply chain. Below we highlight the harmful impacts of only a few key companies that represent the different operations across the whole supply chain. This includes wood pellet producers, biomass power plant operators and also a company looking to convert coal power plants to burning wood. This list of companies operating within the sector is far from exhaustive. Other examples of companies in the sector with harmful impacts on climate, nature and communities include: [Albioma](#), [Arauco](#), [Vattenfall](#), [Sumitomo](#) and the [Ngodwana Mill and biomass plant](#) in South Africa.

Drax - United Kingdom

[Drax Group PLC](#) is an energy company focused on electricity generation and pellet production. It is the world's second largest producer of wood pellets, with several pellet mills in the Southern US and Canada, and operates the world's largest wood-burning [power plant](#) in the UK. Its activities have significant impacts on the climate, environment and social justice. Drax burns the [equivalent of 155% of the UK's total annual wood production](#). Its power station is the UK's [single biggest emitter of CO₂](#), with 13.9 million tonnes of CO₂ emitted [in 2021](#), 13.4 million tonnes of which were from burning wood. Drax's main sourcing regions are the Southern US, Canada and the Baltic States and its biggest external wood pellet supplier is Enviva.

In Drax's annual report (2020), **Barclays**, **Royal Bank of Canada** and **JPMorgan Chase** were all mentioned as having provided finance and financial services to the company. You can see more details on the banks' financing Drax on the [BankTrack website](#).

Enviva - United States

[Enviva](#), headquartered in Maryland, United States, is the world's largest producer of industrial wood pellets, producing 6,065,000 million tons of wood pellets annually. It has been heavily criticised for regularly [sourcing wood](#) from clearcut coastal hardwood forests in the Southern US. As well as being home to black bears, salamanders and many bird species, these forests offer [crucial protection](#) from extreme weather events such as floods and droughts that are becoming increasingly common due to climate change. In the South-eastern US, where Enviva operates [ten manufacturing plants](#), wood pellet plants are 50% more likely to be located in [environmental justice communities](#), which are those [counties where](#) the poverty level is above the state medium, and at least 25% of the population is non-white. One example of this is in Hamlet, North Carolina where Enviva operates a wood pellet production plant. When the plant was announced in 2014, a grassroots community organisation [opposed the plant](#), arguing that, in addition to a freight train station, natural gas pipeline, chicken processing facility, and gas-fired power plant already located in the county, Enviva's plant would represent an "additional injustice" in the community. Hamlet is [considered](#) an environmental justice community and it is also recognised as a high risk area for pollution and cancer risk among minority and low-income communities. Despite this, Enviva's wood pellet production plan became operational in June 2019.

Between January 2016 and August 2022, Enviva received US\$ 3.2 billion in loans and underwriting from financial institutions, including **Citi**, **Barclays**, **JPMorgan Chase**, **Goldman Sachs**, **Royal Bank of Canada**, **BMO**, and **HSBC**.

Graanul Invest (Apollo Global Management) - Estonia

The Estonian company [Graanul Invest](#) is the biggest producer of wood pellets in Europe and the third biggest worldwide. It has 12 pellet plants across Estonia, Latvia, Lithuania and the US. It is involved in [unsustainable forestry practices](#) and is known to have cut down forests in Natura 2000 areas, watersheds and peatlands, destroying important ecosystems and the habitats of rare and protected species. In 2019, [41%](#) of the raw material Graanul Invest sourced to produce wood pellets originated from Estonia and 54% of this raw material consisted of whole logs of trees. One-fifth of Estonian forests are part of the Natura 2000 network. Between 2001 and 2019, forest cover in Natura 2000 areas in Estonia decreased by 15,000 hectares. This was partly due to the activities of Graanul Invest and its subsidiaries in these areas. Moreover, Graanul Invest is known to have [purchased wood](#) from logged High Conservation Value Forests (HCVF) habitats. The Estonian HCVFs are home to multiple protected species whose [habitats are harmed by Graanul's logging activities](#).

In 2021, Graanul Invest's pellet business was acquired by Apollo Global Management, while the forestry business remains with the original owners. However, the pellet business continues to operate under the name of Graanul Invest despite the new ownership.

In 2021, **Barclays**, **Goldman Sachs**, and **Royal Bank of Canada** provided underwriting services to Graanul Invest in the form of a US\$ 243 million "sustainability-linked" bond.

An aerial of a forest after clearcutting (Kurgja case); Kurgja, Pärnu county, Central Estonia.
Photo: Greenpeace / Karl Adamia



RWE - Germany

German energy multinational [RWE](#) operates two coal power stations in the Netherlands where wood pellets have been co-fired together with coal in increasing amounts since 2019. The [Amer Power Station](#) is currently scaling up the burning of wood pellets from 1 to 1.7 million tonnes per year, firing both biomass and coal, with the ambition to increase this to 2.5 million tonnes. The [Eemshaven Power Station](#) is co-firing 0.8 million tonnes of pellets a year (equivalent to 15% of its coal capacity), and it has been granted a permit to double this amount to 1.6 million tonnes annually. The trend to co-fire coal and wood for energy not only extends the life of destructive coal power plants but also fails to address carbon emissions, since burning wood emits more carbon per unit of energy than burning coal. All of the pellets burned in Dutch coal power stations of RWE are imported, and RWE refuses to disclose where its pellets are sourced from. However, it is known that the company has supply agreements with Drax (from British Columbia), Enviva and Graanul Invest.

Between November 2018 and December 2019, RWE received US\$ 4.9 billion in credit from financial institutions including **Barclays**, **BNP Paribas**, **Citi**, **JPMorgan Chase**, **HSBC**, **Santander**, **Société Générale**, and **Crédit Agricole**.

5. Bank policies on wood biomass

Commercial banks are an important driver of the growth of the biomass sector through their finance and investments in companies operating wood biomass power plants, including companies looking to convert power plants from coal to biomass, and companies that manufacture pellets used as feedstock in those facilities.

In order to understand how financial institutions are managing the risks and impacts associated with the wood biomass industry, BankTrack has analysed the policies of ten major European and US banks against a set of criteria developed in consultation with civil society organisations involved in campaigns against the wood biomass industry. These criteria seek to identify whether a financial institution has committed to excluding and/or phasing out finance for wood biomass facilities and feedstock supply chains. In addition, the criteria ask if the financial institution identifies wood biomass as a high-risk sector and therefore has a process of enhanced due diligence in place and whether it adequately engages with its clients operating within the wood biomass industry.

The ten banks listed below were selected based on evidence of recent, substantial finance for problematic companies active in the biomass sector.

[Barclays](#) (UK)
[BBVA](#) (Spain)
[BNP Paribas](#) (France)
[Citi](#) (US)
[Crédit Agricole](#) (France)
[HSBC](#) (UK)
[ING](#) (Netherlands)
[JPMorgan Chase](#) (US)
[Santander](#) (Spain)
[Société Générale](#) (France)

The assessment identified that wood biomass has so far not been adequately addressed in the policies of any of the assessed banks. Seven out of the 10 banks assessed do not mention any form of biomass in their policies or formulate criteria for the financing of biomass projects. Only three of the analysed banks; ING, Barclays and Santander, explicitly mention biomass in their policies. However, these banks all classify biomass as a renewable energy and lack exclusions of wood biomass facilities and feedstock supply chains.

ING - Netherlands

ING is the only bank that has explicit criteria for transactions related to wood biomass, outlined in its [Environmental and Social Risk Management Framework](#). It asks clients to establish a sustainability management system to ensure that wood biomass is harvested in a sustainable manner. The bank also, in the case of feedstock for biofuels coming from countries of food insecurity or scarcity, expects clients to demonstrate that “their sourcing does not negatively impact local food supply”.

Barclays - United Kingdom

Barclays formulates requirements for biomass and biogas from “waste materials or certified sustainable crops” in its [Sustainable Finance Framework](#). It excludes finance for “bioenergy production that competes with food production or decreases forestation, biodiversity, or carbon pools in soil”. In addition, the bank excludes finance for biomass or biogas from “palm, peat and non-sustainably produced crops”. The bank does not explicitly mention wood biomass.

Santander - Spain

Santander labels transactions involving biomass power plants for heat or electricity generation as “requiring special attention” to assess the “sustainable use of biomass” in its [Environmental, Social and Climate Risk Policy](#). The bank excludes finance for the extraction and sale of native tropical wood that is not certified to the Forest Stewardship Council (FSC) standard, however this does not explicitly cover the sale of wood for biomass nor do certification requirements address the impacts of the industry. Although the bank excludes new clients with coal-fired power plants, it includes an exception for the specific financing for renewable energy, which could therefore include the conversion of coal to wood biomass power plants.

Other banks

Other banks, including Crédit Agricole and Citi for example, formulate criteria for forestry, which may also be partially applicable to wood biomass but do not mention wood biomass specifically. These criteria require clients to align with “industry best practice”, such as the Forestry Stewardship Council (FSC), or abide by local or national forestry and logging laws. These policies do not address the harmful impacts of the wood biomass industry. We found no explicit mention of wood biomass or criteria that would require enhanced due diligence or exclude clients that are operating within the sector in any of the remaining banks policies.



Whole trees being transported to Enviva pellet mill. Photo: As You Sow

6. Call to action

None of the banks assessed have taken any steps to exclude finance or investment for wood biomass companies or projects, nor have they adequately acknowledged or addressed the harmful impacts of this high-risk industry. As such, financial institutions are opening themselves up to **reputational and financial risks** since there is growing awareness that wood biomass is far from being a low carbon or renewable energy source. The impacts of the wood biomass industry that have been outlined in this paper translate into reputational risks for financiers who continue to provide money to the industry.

Growing criticisms from scientists, policymakers and NGOs about the sustainability of wood biomass highlights the urgency of financial institutions reassessing their own approach to wood biomass. In addition, financial institutions that have committed to the goals of the Paris Agreement but are exposed to biomass investments and projects, risk reducing their credibility on portfolio decarbonisation.

Banks must recognise that wood biomass is not a renewable or low-carbon energy source and exclude direct finance to companies generating the majority of revenue from wood biomass facilities and/or their feedstock supply chains, such as wood pellet producers. Therefore we are calling on banks to commit to the following:

1. Exclude direct finance for all new wood biomass facilities, including
 - a. Wood biomass facilities involving energy generation from forest wood, including forest residues and wood from tree plantations and forests
 - b. Wood biomass facilities reliant on bioenergy with carbon capture and storage technologies (BECCS)
 - c. Coal power plants that are being converted to wood biomass power plants or co-firing power plants, where coal and wood are burned together
2. Exclude direct finance for new feedstock supply chains for wood biomass facilities, including
 - a. Projects harvesting wood for wood pellets or log wood
 - b. Pellet mills
3. Engage with existing clients to call on them to put in place an adequate phase-out plan for their existing wood biomass heat and power infrastructure, and feedstock for wood biomass. The bank should publicly report on the results of this engagement and should cease financing companies that do not show progress towards developing such a phase-out plan.
4. Identify wood biomass as a high-risk sector and conduct enhanced due diligence on all existing clients operating within the sector that ensures the social, environmental and health impacts of both wood biomass facilities and feedstock supply chains will be halted and remedied.

Acknowledgements

Author: Leonie Schmitt & Hannah Greep, BankTrack
Design and layout: Raymon Van Vught, BankTrack
Use and copyright: This report is in the public domain and may be freely quoted or otherwise used, provided that the source is mentioned

This paper is endorsed by the Environmental Paper Network and Biofuelwatch

