# Issues with Biomass Power Plants
# ～Greenhouse Gas Emissions and Human Rights

**Key Takeaways**

**① The emission threshold value of 100g CO2 /kWh is applied to bioenergy in "Climate Bonds Taxonomy" and "EU Taxonomy.**

**② If CO2 emissions from combustion are included, most woody biomass power plants will not meet the threshold value of 100g CO2/kWh.**

**③ Violations of environmental law have been reported at pellet mills in the US.**

## ① The emissions threshold value of 100g CO2/kWh applied to bioenergy in "Climate Bonds Taxonomy" and "EU Taxonomy."

・In the EU Taxonomy, for activities in the energy sector to be considered as a substantial contribution to reaching Paris Agreement targets, the life-cycle CO2 emissions from a power plant must be lower than 100g CO2e/kWh.[1]

・This threshold value is based on the projected carbon budget for the power sector in the EU to reach net-zero in 2050.

・According to Climate Bonds' Initiative's "Climate Bonds Taxonomy,"[2] for electricity generation facilities such as biomass power station has to be compliant with;

(i) Emissions of electricity generated must be lower than 100gCO2 /kWh AND
(ii) Biofuel must be sourced from a sustainable feedstock (the only timber feedstock allowed is waste wood).

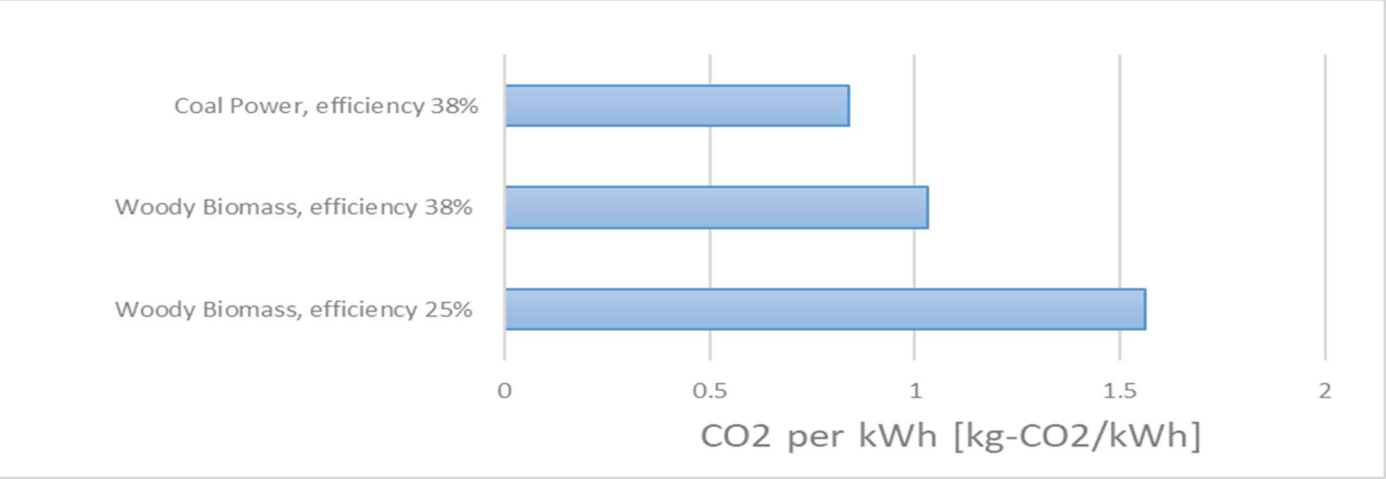
[1] https://ecostandard.org/wp-content/uploads/2021/12/EUTaxonomy_100g_7points.pdf

[2] https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf

*International Capital Market Association's "Green Bond Principles"[3] encourage the issuers to refer to taxonomies[4]. On the other hand, **Japanese's government "Green Bond and Sustainability Linked Bond Guidelines 2022" does not explicitly encourage bond issuers to refer to and to be compliant with certain taxonomies as opposed to "Green Bond Principles."**

## ② If CO2 emissions from combustion are included, most woody biomass power plants will not meet the threshold value of 100g CO2/kWh.

The GHG emission efficiency of wood biomass power plants, including emissions from combustion, calculated by Manabu Utagawa, a Japanese researcher at the National Institute of Advanced Industrial Science and Technology, a research institute under the Ministry of Economy, Trade and Industry, is worse than that of coal-fired power plants.




**Emissions standards in Japan are inadequate.**

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[3] https://www.icmagroup.org/assets/documents/Sustainable-finance/2022-updates/Green-Bond-Principles-June-2022-060623.pdf

Excerpts from Green Bond Principles

"These may give further guidance to Green Bond issuers as to what may be considered green and eligible by investors. These taxonomies are currently at various stages of development. Issuers and other stakeholders can refer to examples in the sustainable finance section of ICMA's website.

"Issuers are also encouraged to:

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• Provide information, if relevant, on the alignment of projects with official or market-based taxonomies, related eligibility criteria, including if applicable, exclusion criteria; and also disclose any green standards or certifications referenced in project selection."

[4] The aforementioned Climate Bonds Initiative Taxonomy is listed as one of the major market based taxonomies.

https://www.icmagroup.org/assets/documents/Sustainable-finance/ICMA-Overview-and-Recommendations-for-Sustainable-Finance-Taxonomies-May-2021-180521.pdf

Ministry of Trade, Economy, and Industry of Japan sets the greenhouse gas emissions standards[5] for biomass power plants to cut emissions by 70% beyond 2030, which will be 54g-CO2／MJ, or 194.4g-CO2／kWh. This value is far above the 100g-CO2／kWh, the value considered to be compatible with the Paris Agreement. And what's more, carbon emissions from combustion are ignored in this standard.

**Japan's "Transition Roadmap for the Electricity Sector" includes biomass co-firing power.**

The "Transition Roadmap for the Electricity Sector" developed by Japan's Ministry of Economy, Trade and Industry[6] to support transition finance includes biomass co-firing of coal-fired power plants as a transition technology, but as we have already seen, **biomass co-firing and biomass dedicated power plants, especially those of woody biomass, are not consistent with the goals of the Paris Agreement.**

## ③ Violations of environmental law have been reported at pellet mills in the US.

**In the Southeast of the United States,** from which exports of wood pellets for power generation in Japan are expected to increase in the coming years, **the Clean Air Act limits emissions of air pollutants, but investigations have revealed that many wood pellet mills have and are violating these limits and are operating without the required pollution control measures.**

Many of the pellet mills in the Southeastern U.S. are located in minority communities with black-majority population, low average incomes and education levels. This is **a serious problem in terms of climate justice and "business and human rights"**.

**Webinar, "Air Pollution Emissions and Health Hazards from U.S. Wood Pellet Mills,"**

**(Hosted by Global Environmental Forum, August 9th)**

URL: https://www.gef.or.jp/news/event/230809biomasspollution/

Patrick Anderson, an attorney with the Environmental Integrity Project, a U.S. NGO, gave a lecture on the air pollution and health hazards caused by wood pellet plants in the U.S. (*The archived video is available).

[5] https://www.enecho.meti.go.jp/category/saving_and_new/saiene/kaitori/dl/fit_2017/legal/guideline_biomass.pdf

[6] https://www.meti.go.jp/policy/energy_environment/global_warming/transition/transition_finance_roadmap_electric_jpn.pdf

**"Health Impacts of Air Pollution from Wood Pellet Production in the Southeastern United States."**

**Roger Smith, Mighty Earth.**

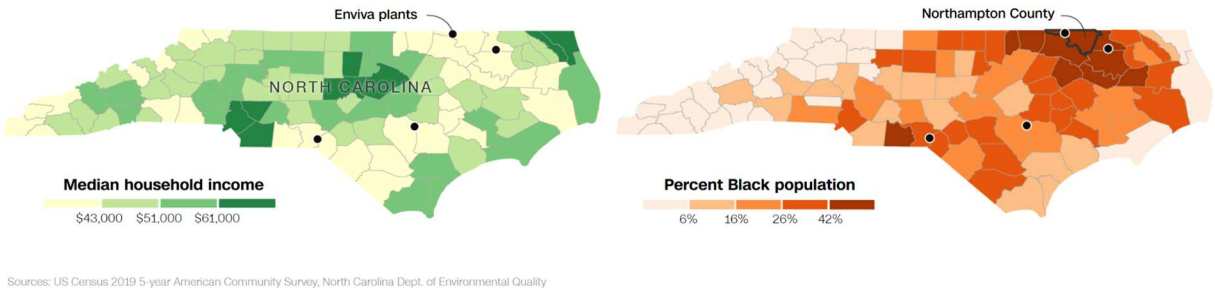
URL: https://www.mightyearth.org/wp-content/uploads/biomasshealth2023.pdf

・ **"Wood pellet plants are a major source of exacerbated air pollution in the inherently economically disadvantaged communities of the southeastern United States.** Even if federal pollution standards are enforced, they may not be sufficient to protect the health of residents. In addition, the federal Clean Air Act is applied differently in different states, exposing communities to **toxic air pollutants in excess of the law's standards**."

**・The production of wood pellets generates pollutants such as harmful particulate matter (PM) and volatile organic compounds (VOCs) at each stage of the process.**

・ One study in 2018, which defines "Environmental Justice Communities" as "areas (communities) where poverty rates are higher than the state median and minorities make up 25% or more of the population" and found that **wood pellet mills across the Southeastern United States are 50% more likely to be located in such environmental justice communities. In North Carolina and South Carolina, all pellet plants were found to be located within environmental justice communities.**

・ In CNN's investigation in 2021, they conducted the analysis of census tracts and wood pellet mills. What they found is that eight of Enviva's nine plants are located in areas with a higher percentage of black residents than the state average, and all of those areas have median household incomes lower than the state average."




(Left figure) Median household income in North Carolina (Right figure) Percentage of black population in the state (%)

"How marginalized communities in the South are paying the price for 'green energy' in Europe" (CNN, July 9, 2021)