

Burning forests to save the climate?

The latest developments of Europe's unfortunate biomass idea

A presentation to Friends of the Earth Japan

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The EU biomass sector is driven by policy

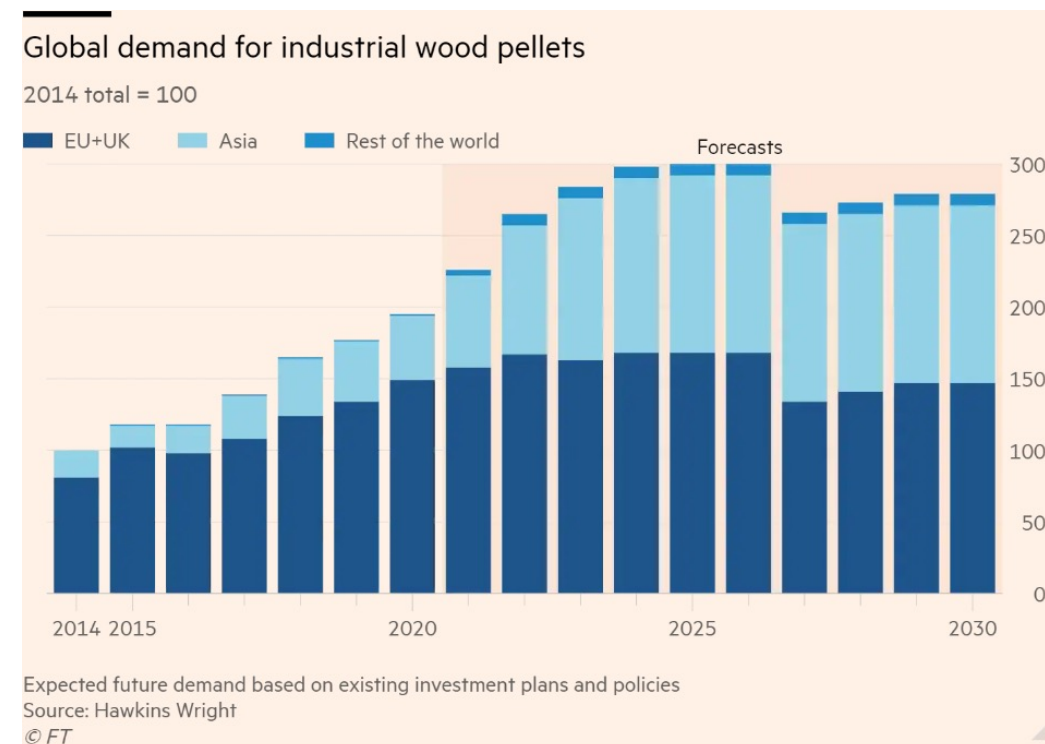
Since 2003 then 2009, the EU created massive incentives for biomass (€16 billion in direct aid in 2020, €12 billion in indirect aid - 2019) as part of its renewable energies policy (Renewable Energy Directive – RED).

This has created a new market: the conversion/adaptation to biomass of coal-fired power stations (UK, Denmark, Netherlands, Germany, Czech Republic, Slovakia, etc.); these burn enormous volumes of wood.

40% of EU renewable energy today comes from wood burning.

More than 50% of the European wood harvest is burned today, it was around 41% in 2003.

“Residues” like sawdust remain a source, but are no longer enough: the biomass industry acknowledges it is now also using whole trees as fuel.



“The company says that we use mostly waste like branches, treetops and debris to make pellets,” [...]

“What a joke. We use 100% whole trees in our pellets. We hardly use any waste. Pellet density is critical. You get that from whole trees, not junk.”

“We take giant, whole trees. We don’t care where they come from. The notion of sustainably managed forests is nonsense. We can’t get wood into the mills fast enough.”

Enviva whistleblower, quoted in [Mongabay](#)

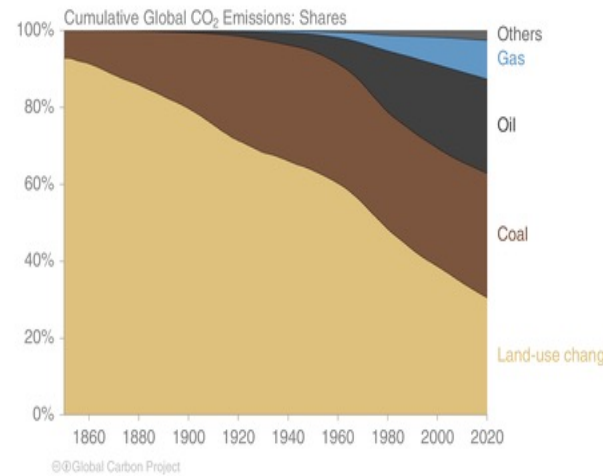


Germany



Estonia

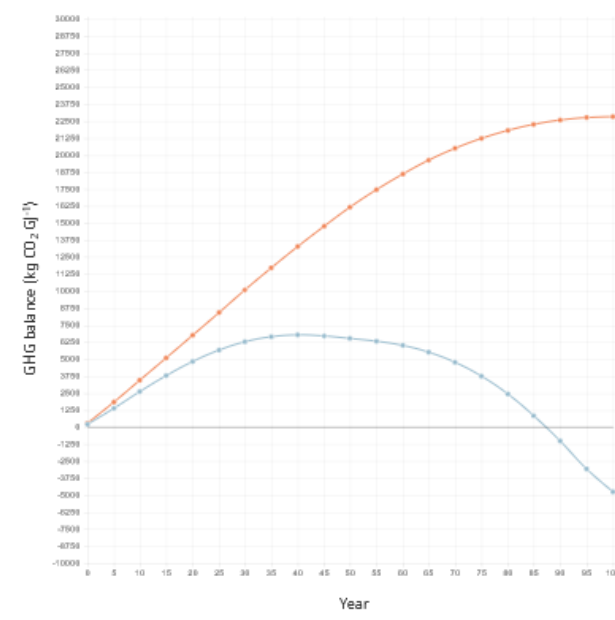
Burning wood emits GHG instantly, but trees grow and capture CO₂ slowly: the carbon debt/payback time problem. Not a new one... but we no longer have the time for trees to grow back (nor the certainty that they will). We're in a climate crisis.



Bioenergy GHG calculator

Results

Green trees intended for export to be used in electricity production (instead of using coal)

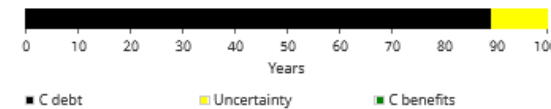


- Best-case scenario
- Worst-case scenario

► Green trees for export to be used in electricity production (instead of using coal) - Table

A positive value represents a net source of CO₂ while a negative value represents a net benefit to the atmosphere.

C debt, uncertainty and C benefits



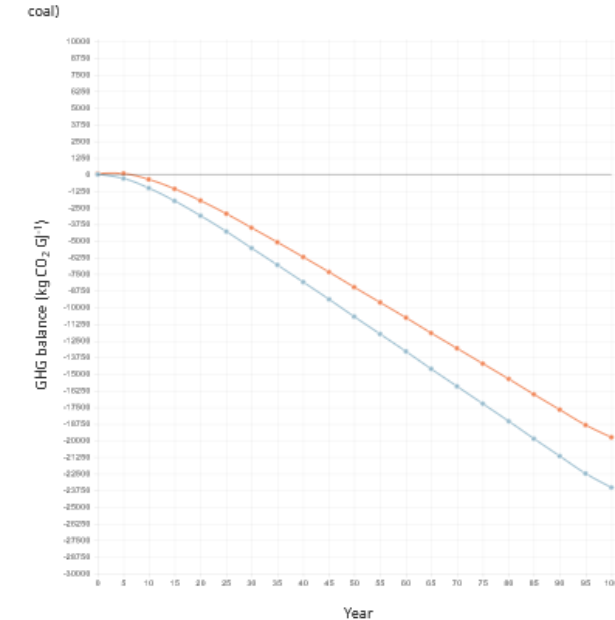
- C debt:** Period of time during which all cases for a given scenario, even the best case, do not provide any atmospheric benefits.
- Uncertainty:** Phase representing the range of potential values between the best and the worst cases. It is unclear if atmospheric benefits have started or not.
- C benefits:** Atmospheric benefits are achieved in all cases.

Date modified: 2015-11-20

Bioenergy GHG calculator

Results

Harvest residues intended for export to be used in electricity production (instead of using coal)



- Best-case scenario
- Worst-case scenario

► Harvest residues for export to be used in electricity production (instead of using coal) - Table

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Biomass incentives vs. the land carbon sink & biodiversity

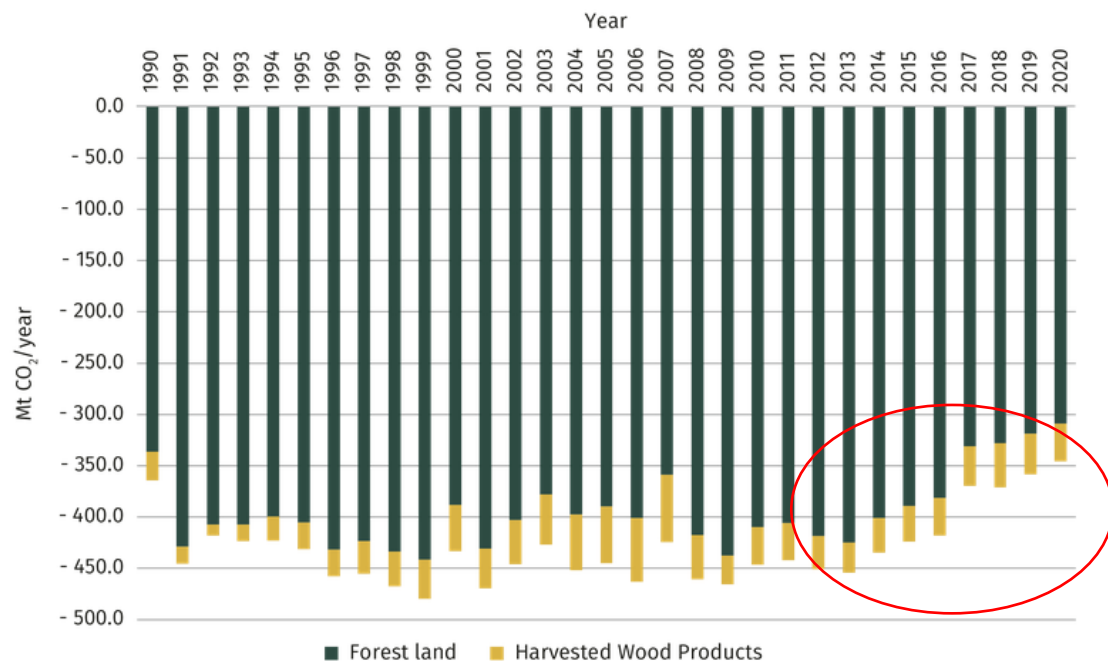
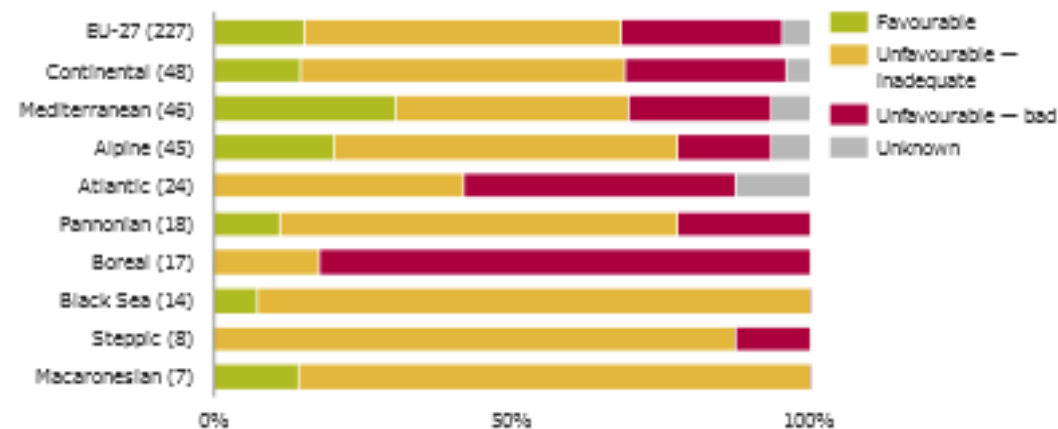
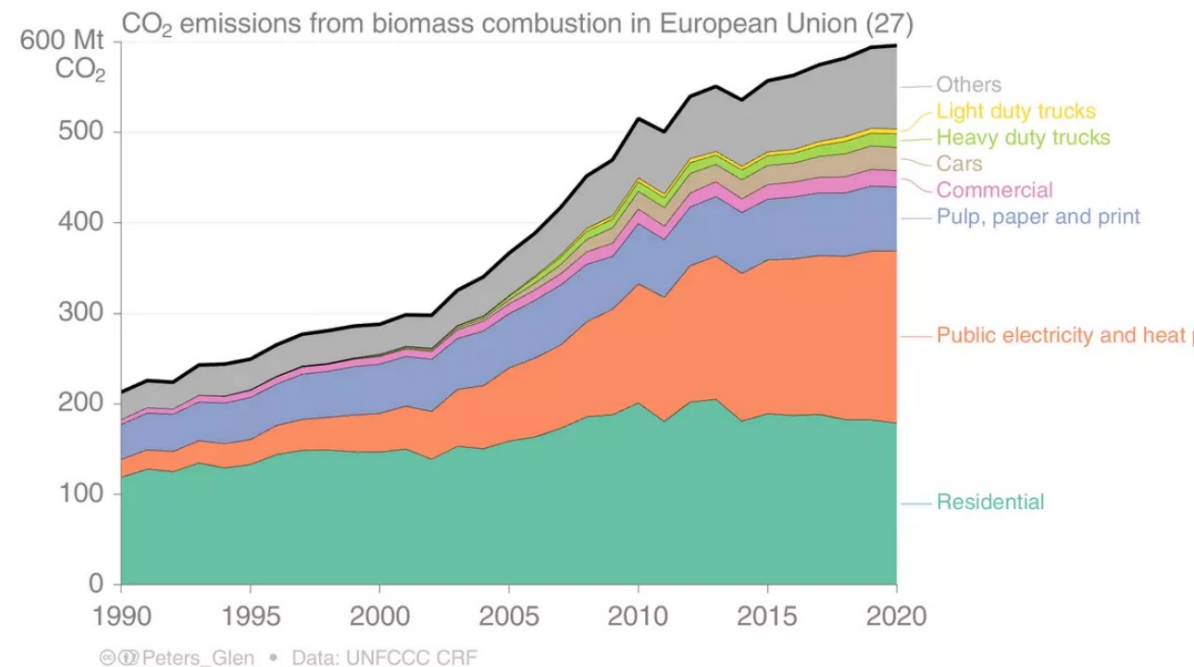


Figure 1: Annual CO₂ Removals by Forest Land and Harvested Wood Products 1990-2020 in the EU (in Mt CO₂/year, data from the 2022 EU submission to the UNFCCC).



The EU's RED, the legacy of a convenient accounting mistake

Table 1: Greenhouse gas emissions of wood, coal and natural gas, net calorific basis

Source	Emissions (kg CO ₂ /TJ) (1 TJ = 278 MWh)				
	Wood	Anthracite	Bituminous	Lignite	Natural gas
Carbon dioxide	112,000 (95,000–132,000)	98,300 (94,600–101,000)	94,600 (89,500–99,700)	101,000 (90,900–115,000)	56,100 (54,300–58,300)
Methane	30 (10–100)	1 (0.3–3)	1 (0.3–3)	1 (0.3–3)	1 (0.3–3)
Nitrous oxide	4 (1.5–15)	1.5 (0.5–5)	1.5 (0.5–5)	1.5 (0.5–5)	0.1 (0.03–0.3)

Source: Intergovernmental Panel on Climate Change (2006), *Guidelines for National Greenhouse Gas Inventories*, Vol. 2 (Energy), Table 2.2, pp. 2.16–2.17.

Biomass emissions are not “carbon neutral” or “zero carbon”: smokestack emissions are superior to fossil fuels! But accounted for in the land use sector, in the producing country’s climate accounts. They are counted as zero in the energy sector in the consuming country. A very bad idea, in retrospect...

RED II "sustainability criteria": essentially a legality test in the light of a national "risk analysis" (co-produced in France by industry and the Ministry of Energy). No ban on clear-cutting, for example.



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CO₂ emissions from biomass combustion Accounting of CO₂ emissions from biomass under the UNFCCC

Tinus Pulles, Michael Gillenwater & Klaus Radunsky

Pages 181-189 | Published online: 26 Apr 2022

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Air pollution



January 2018

COVERED IN SMOKE

Why burning wood threatens the health of Europeans

- Dr Mike Holland

Tens of thousands of EU citizens are dying prematurely every year as a result of exposure to air pollution from burning solid biomass, mainly wood, to provide heat and electricity (industrial & domestic uses). Part of it is RED incentives, part of it is energy poverty. Other health impacts include cancers, cardiac and respiratory complaints, asthma attacks and working days lost to ill health. The problem worsens in urban environments. ([source](#))

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Energy poverty leads to pollution-related deaths in Albania and Western Balkans

At least **37%** of Albanians are suffering from energy poverty, far above the European average of 5%, according to a study from DOOR and EIHP to address energy poverty in energy community contracting parties. This drives them to use wood to heat their homes, directly impacting the health of those around them.

RED III, or how the EU almost managed to protect forests from the biomass industry...

- Commission legislative proposal: insufficient, despite good direction, wanted to reserve woody biomass for uses with higher added value (bioeconomy): cascading principle, eliminate support to electricity production...
- European Parliament: **much more ambitious proposal**, a **60% majority of MEPs wanted to exclude primary biomass** (based on the international definition of roundwood) **from RED incentives** (except for wood from fire & pest control activities), **including from the zero-rating in the ETS!**

“ ‘primary woody biomass’ means all roundwood felled or otherwise harvested and removed. It comprises all wood obtained from removals, i.e., the quantities removed from forests, including wood recovered due to natural mortality and from felling and logging. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form, e.g. branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed.

This does not include woody biomass obtained from sustainable wildfire prevention measures in high-risk fire prone areas, woody biomass obtained from road safety measures, and woody biomass extracted from forests affected by natural disasters, active pests or diseases to prevent their spread, whilst minimising wood extraction and protecting biodiversity, resulting in more diverse and resilient forests, and shall be based on guidelines from the Commission ”

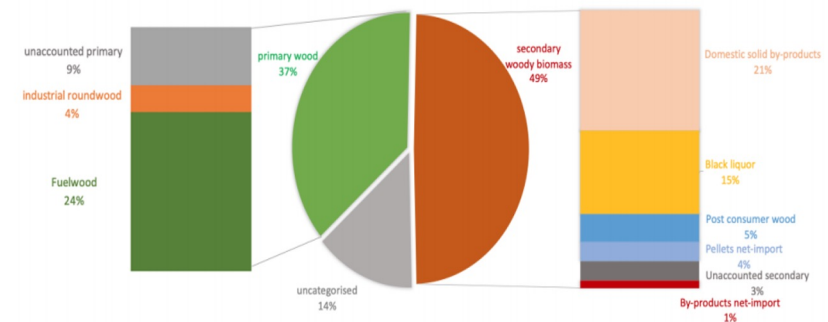


Figure 8. Origin of wood fibres used for bioenergy in the EU (2015)

...but didn't (for now) because the Swedish government could ignore the EU's Parliament

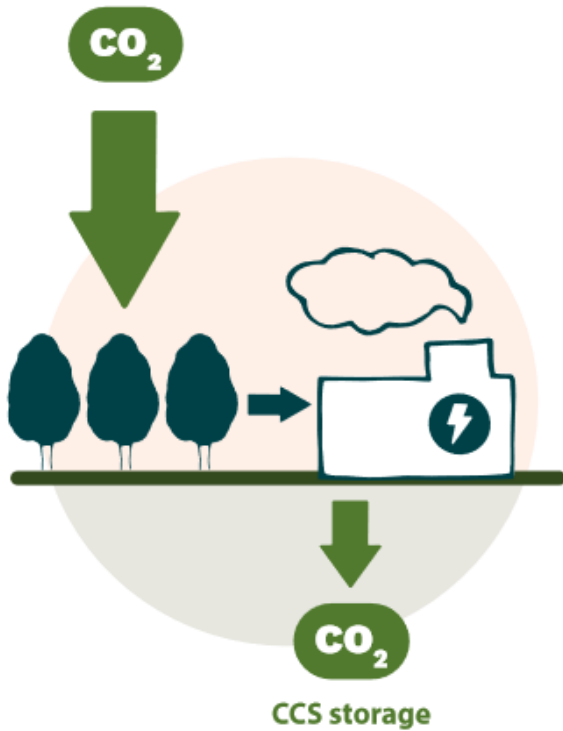
- But for many governments, which are being asked to increase the share of renewable energy to 42.5% of the mix by 2030 (a doubling in 7 years!), doing without around 15-20% of what they can count today as renewable energy was hardly tempting...
- And the current Swedish Presidency was able to take advantage of the very complex nature of the negotiations (nuclear, hydrogen, REpowerEU, biomass, etc.) and the fact that it was impossible for the Member States to agree on a clear negotiating mandate on it to impose its own red lines in this area during the triologue negotiations. The result is still a progress but much more modest than could have been achieved.

The final outcome of RED III (12/09/2023)

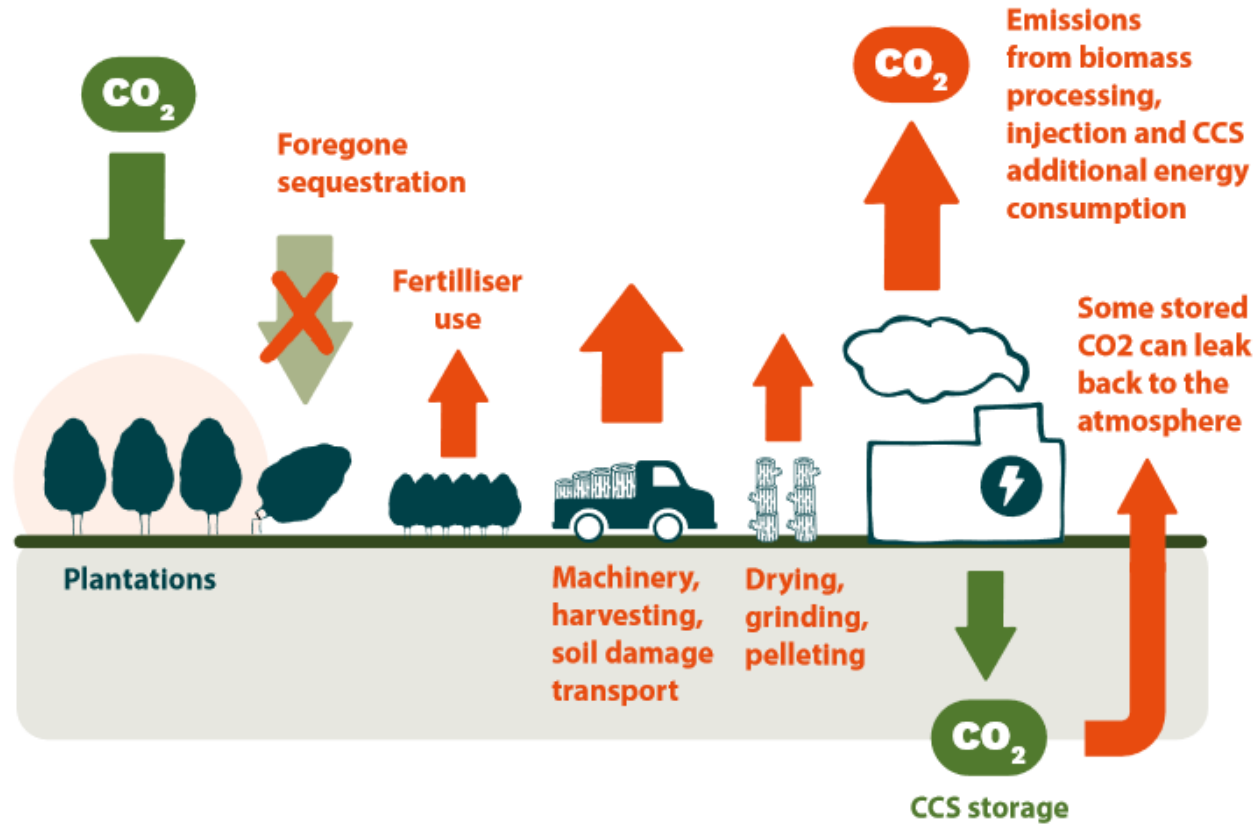
- **Much less ambitious than the Parliament had wished. Energy companies will keep enjoying public money for the burning of millions of trees... But not insignificant either.**
- Much more explicit reference to the cascading principle: EU countries must organise their support schemes for biomass *“ensuring that woody biomass is used according to its highest economic and environmental added value in the following order of priorities: (a) wood-based products; (b) extending the service life of wood-based products; (c) re-use; (d) recycling; (e) bioenergy; and (f) disposal”*, also to reduce/end the current big market distortions in the wood sector.
- No more subsidies to electricity-only biomass plants (unless they’re in special zones, overseas territories, or use BECCS)
- No more subsidies to energy from burning “saw logs, veneer logs, **industrial grade roundwood**, stumps and roots”
- Stronger link between RED sustainability criteria and LULUCF targets (biomass from countries that lose their forests carbon sink might no longer be considered renewable, and therefore benefit from EU biomass market incentives)
- Tightening the sustainability criteria: stronger harvesting criteria, introduction of “no-go zones” (primary and **old growth forests**, wetlands, peatlands) in countries whose legal framework doesn’t already aim for the same objectives (BUT: **problem of the legality test...**)
- Tightening the GHG savings criteria: all plants above 7.5 MW capacity must comply with RED criteria, 80% energy efficiency by 2030 (much earlier for new plants). Enough to prevent transatlantic pellets imports? Not sure...
- Partial renationalisation of key definitions. **Member States have a lot of margin of manoeuvre in the implementation of RED III.**
- Risk: grandfathering clause until 2030...
- **Last but not least: EUDR (EU regulation against imported deforestation) applies. Wood fuels from primary or natural forests that have been converted into plantations cannot be imported in or within the EU anymore.**

Reminder on BECCS : not a single project to date has achieved substantial negative emissions in the world, and never from wood burning

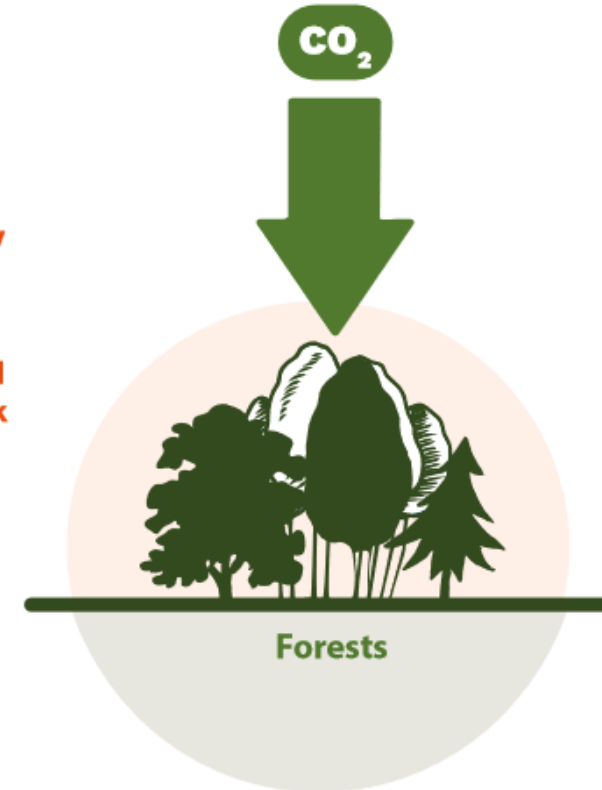
WHAT INDUSTRY CLAIMS BECCS LOOKS LIKE



WHAT BECCS ACTUALLY LOOKS LIKE



WHAT WE NEED

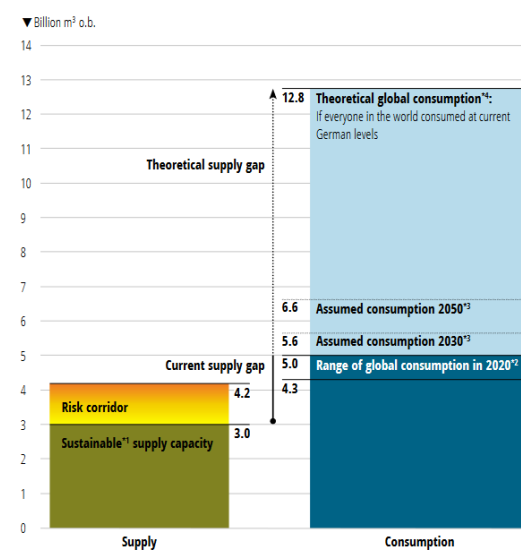


...But the promise of BECCS works well to extend the fossil fuels industry's social license to operate!

And now?

Figure S.2:
The planetary boundary for global wood consumption: comparing the sustainable¹ supply capacity and the risk corridor to consumption levels

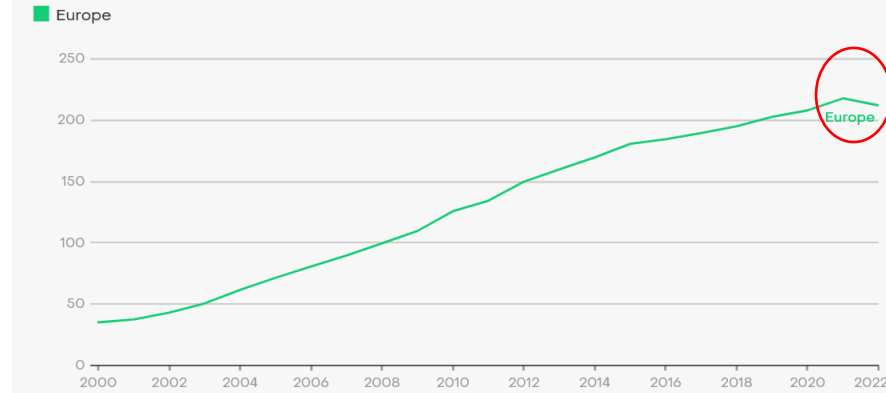
Notes:
¹ Sustainability here refers to quantity considerations, which is only one consideration when aiming for holistic forest management.
² Global consumption in 2020 is depicted as a range to depict uncertainty in conversion values (e.g. adjustments for bark and harvest losses), share of global consumption that stems from the sources outside the forest (e.g. roadsides), illegally sourced timber and statistical data uncertainty.
³ The global consumption values in 2030 and 2050 depict the highest boundaries respectively and are based on an extrapolation of historical trends over the decade 2010–2020.
⁴ The average annual German consumption level between 2015 and 2020 was taken as a reference for calculating "current consumption" because calamities (including massive beetle outbreaks) caused a spike in German harvests in 2020.



10 | Everything from wood – The resource of the future or the next crisis?

Electricity generation – Bioenergy

Terawatt hours



Source: Ember Electricity Data Explorer, ember-climate.org

EMBER

- When everyone was expecting 2022 to be a year of record consumption because of Russia's attack on Ukraine, the winter was exceptionally mild... while prices soared in August-September because Russian imports were banned and industry couldn't supply enough.
For the first time, industrial demand went down, while residential use (wood pellets stoves & boilers) kept growing, although more slowly than expected. This reduction in industrial demand is expected to continue in 2023.
- States can go further than RED III if they wish in terms of sustainability criteria for biomass. **They can also, and we will keep pushing for this, simply end biomass incentives!**
- Will the collapse of the carbon sink mean that biomass can continue to be considered renewable?
- The market is global: Russian pellets have gone to South Korea. Global demand for wood (biomass, paper, construction, etc.) is already exceeding the production thresholds considered as renewable, while alternative projects using wood as a raw material are multiplying.
- There is a 66% probability that the +1.5°C threshold will be reached by 2027. This represents around 400 million people pushed out of the "human climate niche"...

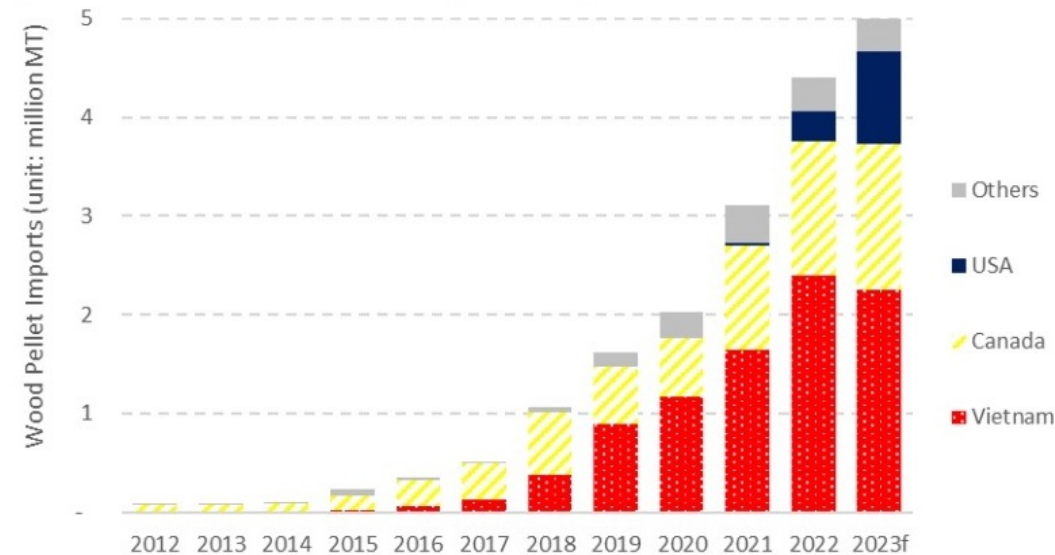
Japan's use of woody biomass?

“Fastest growing biomass market in the world” according to industry sources, mainly driven by industrial uses (conversions of coal power plants to biomass).

Imports mainly from Vietnam (new producer) and North America – volume is 4.25 million tonnes in 2022.

My hope: that more and more decision-makers in Europe and abroad realise that wood is scarce, precious, and that **giving taxpayers' money to energy companies to burn it instead of keeping it for material uses or in forests for their resilience rewards a destruction of value.** A biomass industry in expansion is making our future worse, not better, by burning forests in the name of renewable energy.

Figure 6. Growth of Wood Pellet Imports to Japan



Note: 2023f is based on first five months of trade.

Source: Japan Customs

Thank you for your attention!