WHY BIOENERGY IS NOT A CLIMATE SOLUTION

THE FACTS

Tackling the climate crisis requires sustainable, just, solutions. Burning wood that comes directly from the forest (primary forest biomass) releases vast emissions. Yet the industry has boomed in the last decade, leading scientists, NGOs and civil society to raise concerns.

The current Renewable Energy Directive is financially rewarding types of bioenergy that actively increase emissions compared to fossil fuels over the timeframe we still have to limit the climate crisis - the next 30 years. Even the European Commission's Joint Research Centre found, in its latest report on the issue, that most forest biomass (primary wood that is taken out of the forest) being burnt in the EU is harmful to the climate, to biodiversity, or both.

All the while, the climate crisis intensifies, as more carbon dioxide is emitted.

Less and less carbon is stored in Europe's forests due to harvesting. Action to protect and restore forests in the EU could double the amount of carbon dioxide (CO_2) they absorb and contribute to halting biodiversity decline. If protected and restored instead of logged and burned, natural forests can fulfil their role as the world's most efficient carbon sinks. This factsheet explains the climate impacts of burning forest biomass, and why burning forest biomass is not a climate solution.

FACT 1 • BIOENERGY CAN BE JUST AS DIRTY AS FOSSIL FUELS

• Over a 20-year period, power generation using wood from conifer plantations emits **1879 grams of CO_2 per kilowatt hour.**

THESE WOOD EMISSIONS ARE

80 %

greater than coal power

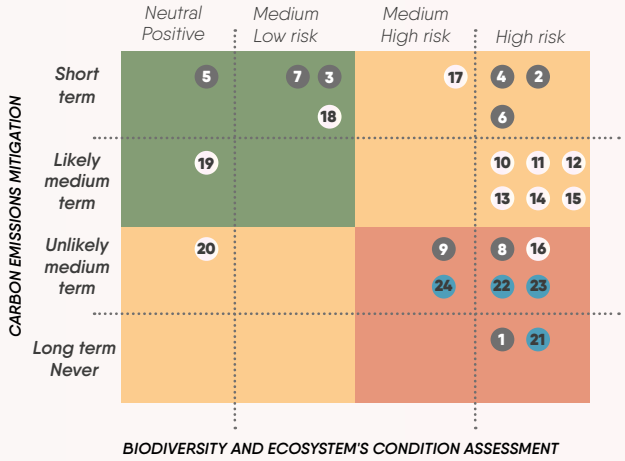
• Over a 40-year period emissions are reduced because the trees have had longer to re-capture carbon, but **biomass emissions would still be 49 % greater than coal power, greater than coal power emissions**.

FACT 2 • **RE-ABSORPTION OF CARBON DIOXIDE RELEASED FROM LOGGING AND BURNING TAKES TIME**

• When a forest is logged and burned for energy, CO_2 is immediately released to the atmosphere, but it takes time for new trees to re-absorb it – this is known as the carbon debt.

• Depending on the volumes and species of trees involved and how much of the forest is able to re-grow, **the carbon debt may take decades or centuries to pay back**.

Carbon payback times and ecosystem degradation from different types of biomass use



LOGGING RESIDUES REMOVALS

1 • Coarse Woody Debris removal
2 • Fine Woody Debris (Slash + foliage/ needles) removal above landscape threshold
3 • Fine Woody Debris (Slash + foliage/ needles) removal below landscape threshold
4 • Fine Woody Debris (Slash-Coniferous) removal above landscape threshold
5 • Fine Woddy Debris (Slash-Coniferous) removal below landscape threshold
6 • Fine Woody Debris (Slash -Deciduous) removal above landscape threshold
7 • Fine Woody Debris (Slash -Deciduous) removal below landscape threshold
8 • Low stumps removal above landscape threshold
9 • Low stumps removal below landscape threshold

AFFORESTATION

10 • Natural grassland afforestation with monoculture plantation
11 • Natural grassland afforestation with polyculture plantation
12 • Natural grassland afforestation with other planted forest
13 • Anthropogenic heathland afforestation with monoculture plantation
14 • Anthropogenic heathland afforestation with polyculture plantation
15 • Anthropogenic heathland afforestation with other planted forest
16 • Natural forest expansion on anthropogenic heathland
17 • Former agricultural land afforestation with monoculture plantation
18 • Former agricultural land afforestation with polyculture plantation
19 • Former agricultural land afforestation with other planted land managed with low intensity
20 • Natural forest expansion on former agricultural land

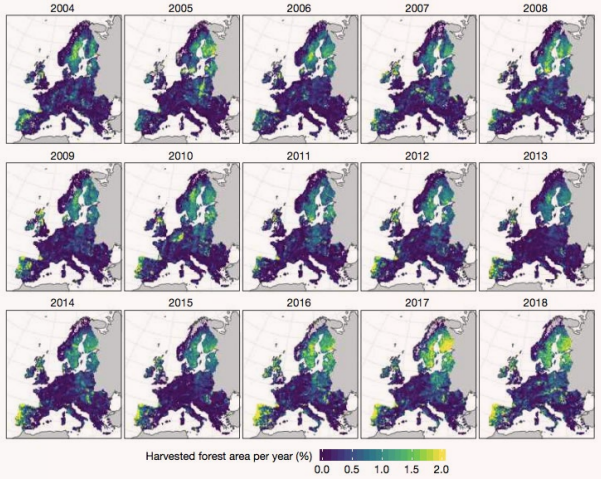
CONVERSION TO PLANTATION

21 • Conversion of primary, old growth forest, to plantation
22 • Conversion of native naturally regenerating forest to monoculture plantation
23 • Conversion of native naturally regenerating forest to polyculture plantation
24 • Conversion of native naturally regenerating forest to other planted forest managed with low intensity

FACT 3 • **BIOMASS HARVESTING IS INCREASING**

• Between 2016 and 2018, **total biomass harvested from forests across Europe increased by 69 % compared to 2011 to 2015.** Clear cuts increased by about 30 %.

• The maps demonstrate the increase in harvesting across Europe from 2004 to 2018, with particularly high intensity harvesting taking place in Estonia, Finland, France, Latvia, Poland, Portugal, Spain and Sweden.



Harvested forest area per year. Percentage of harvested forest area (expressed as the relative amount of forest area affected by management practices) per year in a 0.2° grid cell, excluding forest losses due to fires and major windstorms and areas with sparse forest cover. For the generation of this map, land areas were classified only as forests when the tree cover exceeded a 20 % threshold, uniformly throughout EU26, whereas the rest of the analysis was performed on the basis of a country-based tree-cover threshold. Grey areas represent countries not included in the analysis.

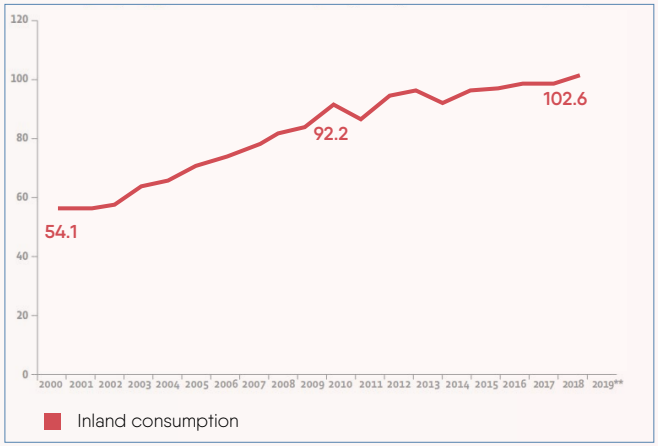
Source: Ceccherini, G.; Duveiller, G.; Grassi, G.; Lemoine, G.; Avitabile, V.; Pilli, R.; Cescatti, A. (2020)

FACT 4 • **DEMAND FOR WOOD FOR ENERGY IS INCREASING**

• **EU biomass use has increased 100 % since 2000**. In their National Energy and Climate Plans, Member States foresee an 18 % increase in the use of biomass for electricity, and a 10 % increase in its use for heating. This is likely to be an underestimate since these plans were drawn up before the new more ambitious target to reduce net emissions by 55 %.

• Research suggests that in the EU **increasing amounts of wood residues and other raw materials will be required to meet demand, which will increase by 30-40 % in the next five years**.

EU-28 bioenergy consumption has dramatically increased since 2000

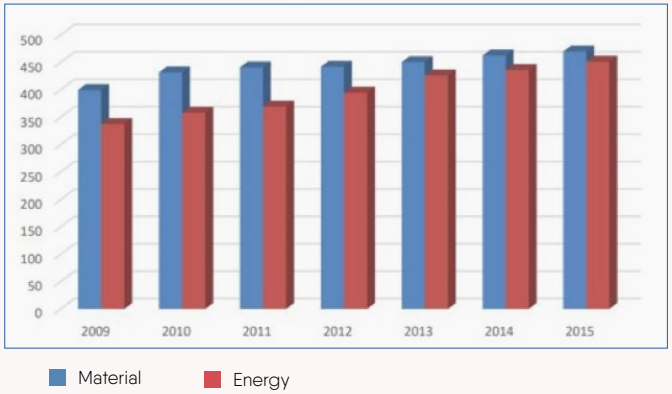


Source: https://ec.europa.eu/jrc/en/publication/analysis-wood-resource-balance-gaps-eu

FACT 5 • **FOREST BIOENERGY IS COMPETING WITH OTHER WOOD USES**

• The use of wood for energy is increasing, taking up an increasing proportion of the total harvested biomass, and **is growing much more rapidly than wood for material uses.**

Woody biomass used in the EU (million m³ solid wood equivalents including bark)



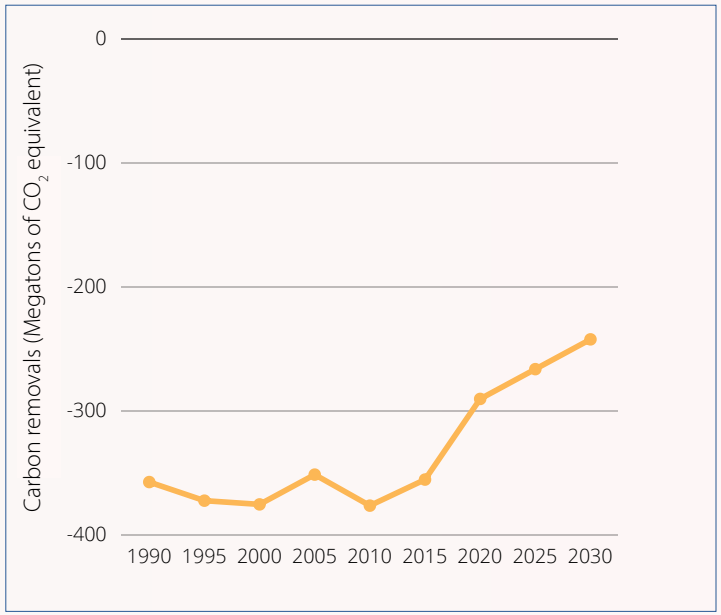
Source: https://ec.europa.eu/jrc/en/publication/analysis-wood-resource-balance-gaps-eu

FACT 6 • **INCREASE LOGGING IS CONTRIBUTING TO EUROPE'S DECLINING CARBON SINK**

- Harvesting intensity (the volume of timber extracted per hectare) has a strong impact on forest carbon stocks.
- The 2019 EU action progress report shows that between 2013-2017, increased harvesting significantly contributed to reducing the carbon sink.
- If Member States move forward with their proposed land-use plans for over the next decade, by 2030 forests could be absorbing a third less CO_2 than they were in 2005.
- The Land Use, Land-Use Change and Forestry (LULUCF) sector, which accounts for emissions and removals of CO_2, could become a net emitter after 2030.

Source: UNFCCC GHG data 2020

Decline of carbon dioxide absorbed by Europe's managed forests



Photos : logging in estonia, by raigo pajula/ec audiovisual service and unsplash.com – Design : Jane Mery