The Biomass Reality Check: Eight Facts About Biomass Energy, Forests and Climate



Environmental Paper Network
BIOMASS ACTION NETWORK

Can you separate the facts from fiction?

Tick the statement supported by science:

1. Burning wood for energy...

- ☐ is carbon neutral
- ☐ creates a carbon debt
- ☐ removes carbon from the atmosphere

2. Biomass feedstocks...

- ☐ are only waste and residues
- ☐ often include whole trees
- ☐ have little impact on forests

3. Old forests...

- ☐ stop absorbing carbon
- ☐ continue storing carbon
- ☐ are less important than young forests

4. Net zero...

- ☐ requires biomass
- ☐ can be achieved without biomass
- ☐ depends on BECCS

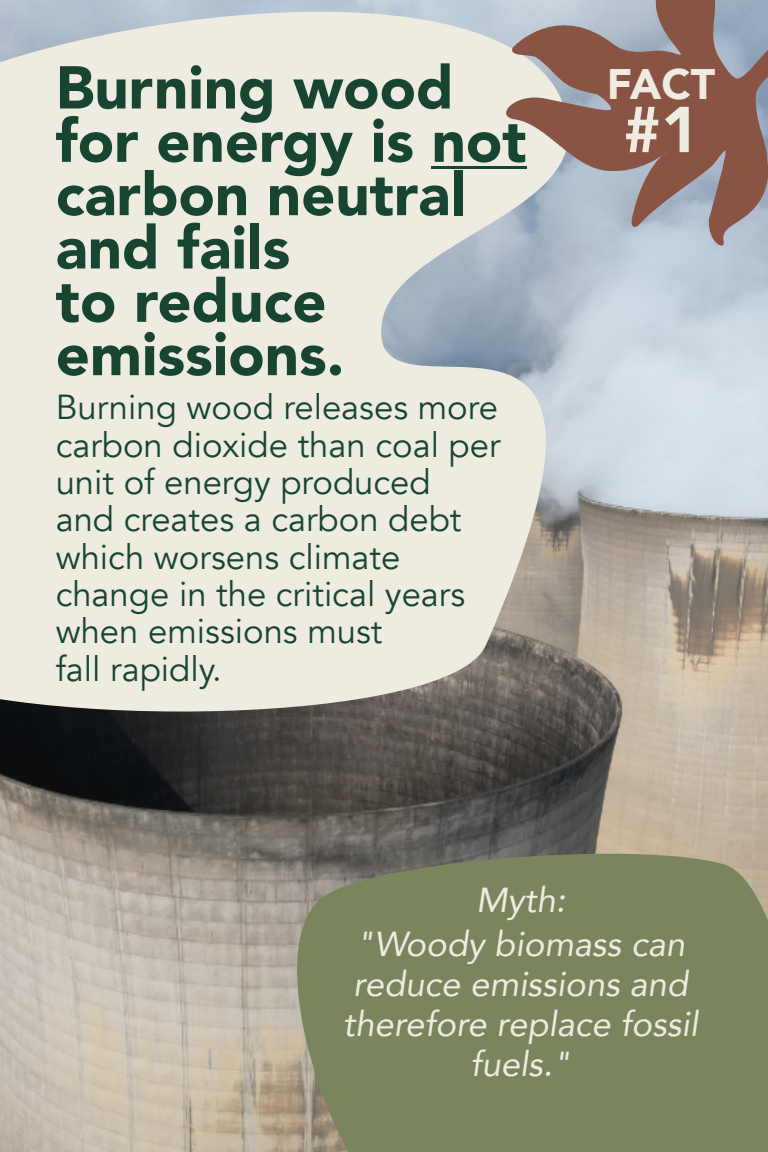
Ready to test your assumptions?

➡ Find the answers in the following cards.

FACT #1

Burning wood for energy is not carbon neutral and fails to reduce emissions.

Burning wood releases more carbon dioxide than coal per unit of energy produced and creates a carbon debt which worsens climate change in the critical years when emissions must fall rapidly.



Myth:
"Woody biomass can reduce emissions and therefore replace fossil fuels."

Reality

Evidence



Why this matters

- When wood is burned, carbon is released instantly, while tree regrowth can take anything from 40 to 100 years or more and is not guaranteed.
- Even if forests regrow, climate impacts such as sea-level rise, ice-sheet loss, and permafrost thaw cannot simply be undone.
- Replacing coal with wood delays the transition to genuinely low-carbon energy systems based on efficiency and renewables.

FACT #2

Whole trees - not just waste and residues - are burned for energy.

Often whole trees are classified as “residues” and burned while biomass is portrayed as a waste-based energy source.



Myth:

"The biomass industry only uses forest residues and waste, not trees."

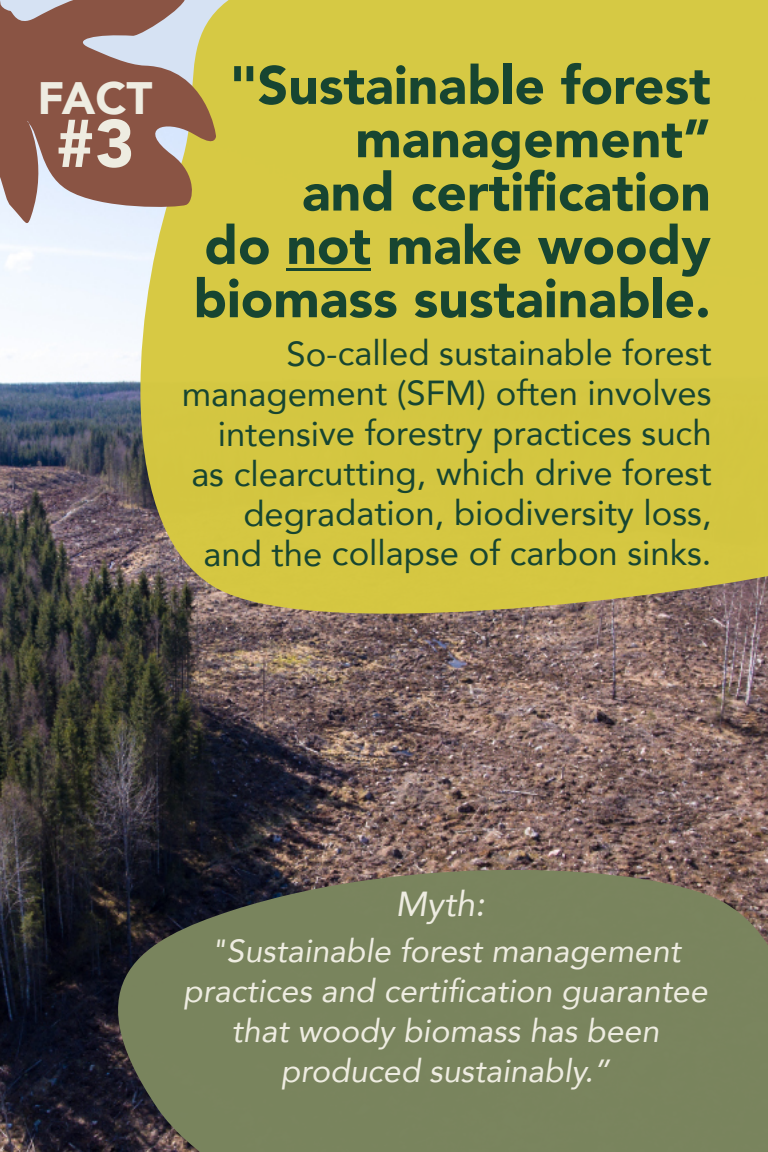
Why this matters

- Broad definitions of "residues" allow whole trees to be labelled as waste and burned for energy.
- Biomass demand often drives additional harvesting rather than simply using genuine waste and by-products.
- Leaving dead and fallen wood in forests supports biodiversity and soil carbon, while burning it releases carbon immediately.

Reality

Evidence





FACT #3

"Sustainable forest management" and certification do not make woody biomass sustainable.

So-called sustainable forest management (SFM) often involves intensive forestry practices such as clearcutting, which drive forest degradation, biodiversity loss, and the collapse of carbon sinks.

Myth:

"Sustainable forest management practices and certification guarantee that woody biomass has been produced sustainably."

Why this matters:

- In forestry language, "sustainable" refers to the sustainable supply of timber rather than ecological sustainability.
- Clearcutting, including in old-growth forests, can occur under SFM and is only recorded as forest degradation, a term which lacks proper definition in climate frameworks.
- Certification schemes have not prevented harmful sourcing due to weak oversight and industry influence.
- Certification does not change the climate impact of burning wood.

Reality

Evidence



FACT
#4

Harvesting old forests and replacing them with young trees is not good for the climate.

Old forests store vast amounts of carbon and continue to absorb more throughout their lifetime.



Myth:
"Young trees absorb carbon dioxide faster than old trees, which makes harvesting good for the climate."

Reality

Evidence



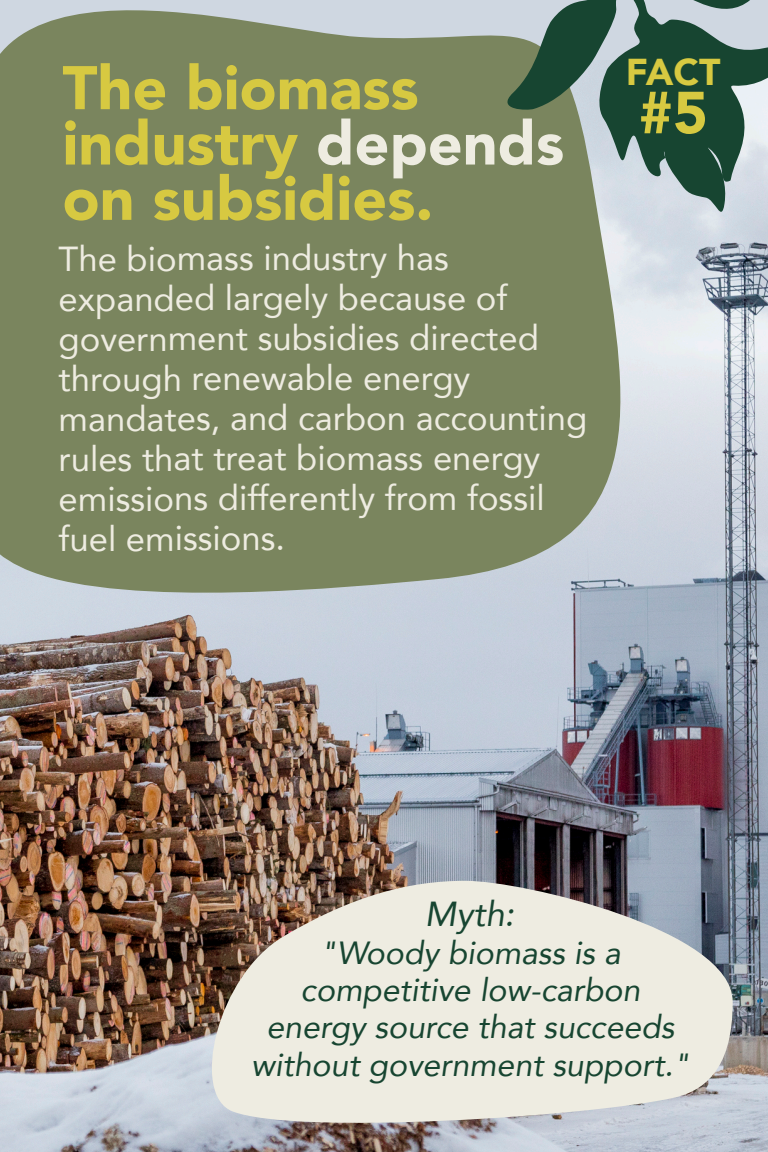
Why this matters:

- Old-growth and mature forests store vastly larger carbon stocks in trees, soils and dead wood while continuing to act as carbon sinks.
- When these forests are harvested, the carbon released can take many decades or even centuries to recover through regrowth.
- Protecting existing carbon-rich forests should therefore be prioritized and replacing them with plantations should be avoided.

FACT #5

The biomass industry depends on subsidies.

The biomass industry has expanded largely because of government subsidies directed through renewable energy mandates, and carbon accounting rules that treat biomass energy emissions differently from fossil fuel emissions.



Myth:
"Woody biomass is a competitive low-carbon energy source that succeeds without government support."

Why this matters:

- The biomass industry has expanded largely because subsidies and carbon accounting rules treat biomass emissions differently from fossil fuel emissions.
- Public subsidies for biomass divert funding away from genuinely low-emission energy solutions.
- The costs of wind and solar have fallen dramatically over time while biomass remains one of the most expensive renewable energy technologies.
- Biomass subsidies increase pressure on forests while undermining climate and biodiversity goals.



Reality

Evidence

FACT #6

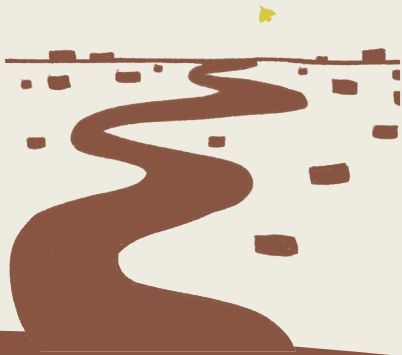
Burning woody biomass does not lead to net zero.

Myth:
"Biomass is needed for reaching net zero."

Harvesting woody biomass from forests to burn in energy facilities worsens climate change and causes significant harm to biodiversity. Its inclusion in climate plans undermines both the goals of the energy transition and of halting biodiversity loss.

Reality

Evidence



Why this matters:

- Burning woody biomass allows countries to claim they are making progress toward net zero without actually delivering equivalent real-time emissions reductions.
- Many net-zero pathways rely on woody biomass because of accounting assumptions rather than real emissions reductions.
- Reliance on biomass and BECCS risks delaying faster, lower-emission alternatives.
- Protecting and restoring forests is critical for reaching climate and biodiversity goals, while burning them for energy undermines the very same goals.

FACT #7

Large-scale deployment of woody biomass for energy would require <u>enormous</u> areas of land.

Land used for woody biomass production competes directly with food production, local livelihoods, biodiversity conservation and ecosystem restoration.



Myth:
"There is enough spare land to grow woody biomass at scale."



Reality

Evidence

Why this matters:

- Land used for biomass is no longer available for food production, nature conservation, or ecosystem restoration.
- So-called "marginal land" often stores carbon, supports wildlife, sustains local communities, or presents major restoration opportunities.
- Large-scale BECCS could increase pressure on forests, biodiversity, water resources, and other competing land uses.

Logging and forest degradation can increase the risk and severity of wildfires.

FACT #8



Logging, road construction, drainage of peatlands and wetlands, and other forms of forest degradation can fundamentally alter ecosystems that have historically been resistant to fire.

Myth:

"Increased logging helps prevent forest fires."

Reality

Evidence



Why this matters:

- Mature forests create cooler, more humid microclimates that can help reduce fire intensity. Logging opens forests, dries them out and increases wind exposure.

- Industrial forestry often transforms forests into simplified, plantation-like systems that are more vulnerable to severe fires during drought and heatwaves.

- Protecting forest integrity is therefore an important part of climate adaptation and fire resilience.

Policy recommendations:

1. Stop treating woody biomass as a carbon-neutral energy source
2. Fix carbon accounting for woody biomass
3. Phase out subsidies for woody biomass
4. Protect forests as climate, biodiversity and community assets
5. Exclude reliance on woody biomass and BECCS in net-zero strategies

Protect forests. Reduce emissions. Invest in low-carbon energy systems.





Forests are most valuable for the climate when they remain standing, continue accumulating carbon, support biodiversity, and provide resilient ecosystems. Burning wood for energy does not reduce emissions; on the contrary, it transfers decades or centuries of stored forest carbon into the atmosphere while causing significant harm to biodiversity and local communities. We need to transition away from fossil fuels without replacing them with biomass, while investing in energy efficiency, renewable energy, and forest protection.

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