

ARE NORTH LINCOLNSHIRE COUNCIL'S OWN CARBON EMISSIONS REALLY ON A PATHWAY TO REACH NET ZERO IN 2030?



By Mark Bannister

The Council's Climate Targets

In its 'Green Futures' strategy [1], North Lincolnshire Council says “**every day we will leave the environment in a better state than we find it.**” Fine words, but meanwhile facts show that this is patently not true: [Local Green Party research](#) shows that North Lincolnshire's carbon emissions are still increasing each year instead of the required reductions of more than 14% each year to meet even the 1.7deg limit to global heating.

Perhaps what is even worse than this statement not being true is that it leads the reader into thinking that everything is fine. The council surely must have everything in hand. This is not leadership.

Will the Council Achieve 'Net Zero' by 2030?

In its 'Green Futures' strategy [1], North Lincolnshire Council says “*The council has a strong track record of reducing carbon emissions, achieving significant reductions since 2009. But we are still directly responsible for putting around 12,200 tonnes of CO2 into the atmosphere every year. By 2030 we end this*”

and

“..... *We will source all our energy from renewable sources.*”

Are North Lincolnshire Council's own emissions really on a pathway to reach net zero in 2030 as claimed?

A significant number of council-owned buildings are heated using biomass boilers, which are claimed by the council to be near-zero carbon with only supply-chain emissions counted, combustion emissions considered as non-existent.

In the council's document ['Planning for Renewable Energy Development'](#), it says:

"Biomass is the combustion of wood and other plant materials in a stove or boiler to produce heat which can be used to generate electricity or other processes. Although biomass combustion gives off carbon dioxide, this represents release of the gas that was absorbed when the plant material grew, and thus biomass fuels are regarded as carbon neutral."

The argument in favour seems obvious: wood, a renewable resource, must be better than burning fossil fuels. But studies [2,3,4] show wood emits more carbon dioxide per kilowatt-hour than the natural gas it generally replaces. Therefore, the first impact of wood bioenergy is to increase the carbon dioxide in the atmosphere, worsening climate change. But the situation is even worse: As the figure from [2] below shows, if the forest had not been cut to produce the wood pellets, it would have continued to grow, removing additional carbon from the atmosphere. Carbon losses from the soil due to harvesting are also substantial and ongoing, typically for decades. Compared to allowing the forest to grow, cutting it for bioenergy therefore increases carbon dioxide emissions and worsens global warming for at least 50 years and possibly over 100 years depending on forest composition and climatic zone – time we do not have to reach net-zero emissions and avoid the worst harms from climate change.

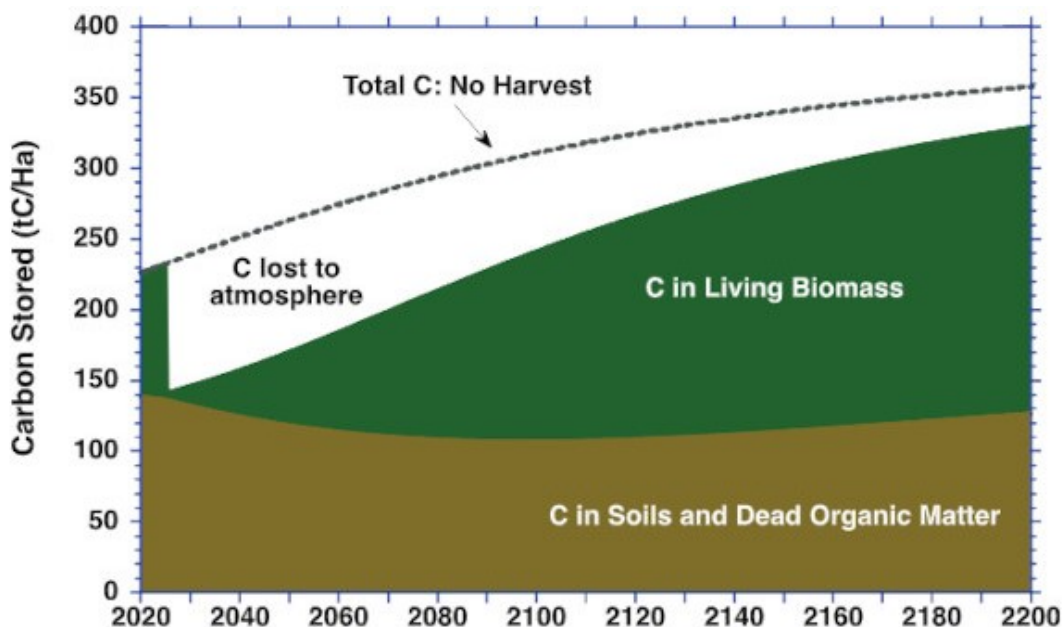


Figure reproduced from ref [2] 'Does wood bioenergy help or harm the climate?', Bulletin of the Atomic Scientists, 78:3, 128-138. Showing how carbon (C) remains in the atmosphere long after being burnt in biomass boiler system

The harms caused by that additional warming are not undone even if the carbon debt from wood energy is eventually repaid by new tree growth: The Greenland and Antarctic ice sheets melt faster, sea level rises higher, wildfires become more likely, permafrost thaws faster, and storms intensify more than if the wood had not been burned. Eventual full forest recovery will not replace lost ice, lower sea level, undo climate disasters, put carbon back into permafrost, or bring back homes lost to floods or wildfires. The excess warming from wood bioenergy increases the chances of going beyond various climate tipping points that could lead to runaway climate change: emissions “pathways that overshoot 1.5°C run a greater risk of passing through ‘tipping points,’ thresholds beyond which certain impacts can no longer be avoided even if temperatures are brought back down later on” (IPCC 2018, 283). Carbon neutrality is not climate neutrality.

The Chatham House report [4] noted “Many of the models used to predict the impacts of biomass use assume that mill and forest residues are the main feedstock used for energy, and biomass pellet and energy companies tend to claim the same, though they often group ‘low-grade wood’ with ‘forest residues’, although their impact on the climate is not the same. Evidence suggests, however, that various types of roundwood are generally the main source of feedstock for large industrial pellet facilities. Forest residues are often unsuitable for use because of their high ash, dirt and alkali salt content.....mill residues can also be used for wood products such as particleboard”.

It is not as if there are no alternatives to biomass- there are more effective ways to cut greenhouse gas emissions already available and affordable now, allowing forests to continue to serve as carbon sinks and moderate climate change.

What is the Council’s target for reducing it’s own emissions?

In the North Lincolnshire Carbon Management Strategy (2017), the council outlines how it will meet it’s target of reducing its own carbon emissions by at least 25% from:

18,200 tCO₂ in 2015/16 to 13,617 tCO₂ by 2020/21.

A reduction target of -4,583 tCO₂ (-25%).

How Much Carbon Emissions Are Actually Released by the Council’s Biomass Boilers?

The data on how many biomass boilers are used by North Lincolnshire Council and what carbon emissions are assumed to be saved by them are not easily available. We can, however, make a good estimate:

- It was reported in 2019 that “[renewable energy sources have helped to save 672 tonnes](#)”, after the installation of the biomass boiler at The Pods.
- In the [North Lincolnshire Carbon Management Strategy](#) (2017), the council outlines how it will meet its target for reducing its own carbon emissions. As part of the overall reduction, it says 3 additional biomass heating systems will be installed, projected to ‘save’ a total of 292t CO₂. This is in addition to an existing 10 biomass heating systems installed between 2009/10 to 2015/16, making 13 in total.
- One estimate is therefore to simply scaling the CO₂ ‘savings’ from 3 to 13 boilers, which gives an estimated total of **1,265t CO₂ per year**. This, of course is a very rough estimate. It may be higher or lower than this.
- As an alternative and more accurate estimate, we can add the projected ‘savings’ for the 3 new biomass boilers to the existing 2019 figure, to give 672t CO₂ + 292t CO₂ = **964 t CO₂ for the total ‘savings’ of all 13 biomass heating systems.**

If we now assume the lower figure for estimated total ‘savings’ of 964t CO₂ per year are due to moving from the old natural gas or propane boilers to the ‘zero carbon’ biomass boilers, we can now make an estimate for the actual carbon emissions of the biomass boilers themselves by comparing carbon emissions of natural gas/propane (assumed for the old boilers) to wood pellets in the new biomass boilers for the same energy usage:

- Emissions from wood pellets for heating have been found to be approximately 2.5x that of natural gas, per unit energy produced [3]
- Estimated actual biomass boiler emissions = 2.5 x 964t = **2,410t CO₂ every year**

Given that the council was aiming to reduce its carbon emissions by -4,583t CO₂ (-25%), this means that even if it claims to meet this target, in reality, emissions will actually have been reduced by only:

-4,583 tCO₂ + 2,410 t CO₂ = -2,173 t CO₂ (-13%) every year, less than half the target claimed.

What should be done?

The council policy that treats wood bioenergy as carbon neutral must end. The carbon dioxide emitted from burning biomass pellets should be counted in the same way as emissions from other fuels are: fully, at the point of combustion and accounted for in the council’s own carbon emissions. We estimate this to be an additional 2,410 tCO₂ per year.

No new biomass heating systems should be installed and existing biomass systems replaced at the earliest opportunity. Existing low-carbon technologies such as energy efficiency, solar PV and air or ground source heat pumps should be used instead.

Notes:

t CO₂ = tonnes CO₂ (carbon dioxide)

[1] North Lincolnshire Council's Green Futures Strategy

<https://www.northlincs.gov.uk/your-council/a-green-future/our-strategy/>

[2] [Does wood bioenergy help or harm the climate?](#), Bulletin of the Atomic Scientists, 78:3, 128-138, John Sterman, William Moomaw, Juliette N. Rooney-Varga & Lori Siegel (2022)

[3] ['Range and uncertainties in estimating delays in greenhouse gas mitigation potential of forest bioenergy sourced from Canadian forests'](#), Wiley Online Library, Jérôme Laganière, David Paré, Evelyne Thiffault, Pierre Y. Bernier