



FOREST LITIGATION COLLABORATIVE

February 16, 2024

Dear NAO,

The Partnership for Policy Integrity ('PFPI') and the Lifescope Project ('Lifescope'), operating jointly as The Forest Litigation Collaborative, are non-governmental organisations with a strong interest and considerable legal, scientific and policy expertise regarding bioenergy generally and in the UK specifically.

We have read and considered the NAO's January 2024 report on the Government's Support for Biomass. We welcome its key conclusion that until the Government evaluates monitoring arrangements for ensuring compliance with the established sustainability biomass criteria it cannot be confident that industry is meeting those standards. We further welcome the NAO's recommendations, including that the government commission a report on environmental impacts of proposed transitional support for large-scale biomass generation from 2027 onwards. It is unfortunate that your report was published one week after the government published their consultation on transitional support measures.

Notwithstanding these conclusions, we write to express our disappointment with the NAO's report as a whole. We believe that because the report failed to explore the fundamental issue of whether forest biomass energy is capable of helping the Government to meet its obligations in Carbon Budget 6 and the net zero target, the report fails to deliver on its objectives and on the NAO's mandate itself.

We do note that the report states (p. 36), "*We have not concluded on the value for money of the schemes*". We believe this is an abrogation of a key function of the NAO and of the notion of "value for money" reports. Since value for money was not considered, we have chosen not to make it the focus of this letter. However, even leaving this issue aside, the report additionally fails to deliver on its three stated objectives, which are given on page 6:

1. To support Parliament's understanding of the conditions in which the government considers biomass as a sustainable, low-carbon alternative to fossil fuels;
2. To look into government's compliance regime for the current support schemes and identify lessons that it should incorporate into current and future support schemes;
3. To highlight the main risks DESNZ will need to manage as it takes forward its Biomass Strategy and the impact these risks could have on its overall ambition to achieve net zero.

The report also states that it does not consider the "*scientific assumptions underpinning the government's support for biomass*." However, without at least some evaluation of whether the biomass sustainability criteria protect forests and deliver low carbon or carbon neutral biomass as claimed, there is no way to support Parliament's understanding, "identify lessons" for future support schemes or "highlight the main risks" DESNZ must manage to achieve climate goals.

The failure to evaluate the scientific assumptions underpinning governmental biomass policy, uncritical repetition of false government claims, omission of key information and a failure to evaluate whether the scheme offers value for money mean that overall, the report falls short of the NAO's self-portrayal as an independent watchdog that produces high-quality audits.

Below, we lay out the basic science and facts concerning the UK's use of wood for energy and point out the ways that the NAO report has followed the Government's misleading narrative.

Background on use of wood for energy in the UK

The UK counts the energy inherent in wood and other biomass burned for home heating, industrial and commercial thermal energy, and electricity generation towards its renewable energy targets. The majority of biomass burned in the UK is wood. Much of it is “primary” biomass sourced directly from forests (“forest biomass”) rather than “secondary” materials that are a byproduct of wood products manufacturing.

Government policy treats biomass as having zero emissions, and often refers to biomass as being “low carbon” or “carbon neutral.” However, this approach is invalid under IPCC rules (as discussed below) and simply in terms of common sense. In reality, burning wood and other biomass to generate heat and electricity emits more CO₂ per unit energy than fossil fuels,¹ and it is well-understood via modeling studies, including the 2014 Biomass Emissions And Counterfactual (BEAC) study commissioned by the UK government itself,² that because burning wood emits CO₂ faster than trees regrow, emissions from burning wood are not instantaneously offset as would be required for biomass to truly have “zero” emissions.

As the BEAC study and many other studies have concluded, the cumulative atmospheric CO₂ loading associated with logging and burning forest wood can exceed cumulative emissions from a same-capacity fossil fueled unit for decades to centuries. For example, an impact assessment by the European Commission concluded, “*compared to crops which regrow over short periods, forest biomass is part of a much longer carbon cycle. A forest stand typically takes between decades and a century to reach maturity. Recent studies have found that when greenhouse gas emissions and removals from combustion, decay and plant growth (so-called biogenic emissions from various biological pools) are also taken into account, the use of certain forest biomass feedstocks for energy purposes can lead to substantially reduced or even negative greenhouse gas savings compared to the use of fossil fuels in a given time period (e.g. 20 to 50 years or even up to centuries).*”³

The net transfer of forest carbon into the atmosphere from logging forests for fuel shows up in countries’ land-sector GHG emissions reporting to the UNFCCC.⁴ In the EU, some countries that supply biomass to the UK, including Estonia and Latvia, have lost or nearly lost their forest carbon

¹ The UK’s largest biomass plant, Drax, reports emissions from burning biomass as “biologically sequestered” CO₂ 2020 the plant emitted 13,273 kt of biogenic CO₂ (page 50 Drax Annual Report 2020, https://www.drax.com/wp-content/uploads/2021/03/Drax_AR2020.pdf) and generated 14.1 TWh of electricity from biomass (p. 22).

Expressing these emissions as a rate per GWh of electricity generated from biomass, emissions can be seen to be 20% higher (at 941 tonnes per GWh in 2020) when electricity is generated from biomass than from when they were burning coal (784 tonnes of CO₂ per GWh in 2012, as reported at page 58 in the 2022 AFR https://www.drax.com/wp-content/uploads/2023/03/Drax_AR2022_single_pages.final_.pdf).

²https://assets.publishing.service.gov.uk/media/5a75075ae5274a3cb2869166/PED60674_final_report_270416_Tec_Report_FINAL_v2_AMENDMENTS_ACCEPTED.pdf

³ Page 16 at https://eur-lex.europa.eu/resource.html?uri=cellar:1bdc63bd-b7e9-11e6-9e3c-01aa75ed71a1.0001.02/DOC_1&format=PDF

⁴ See explanation at <https://forestitigation.org/wp-content/uploads/2023/11/The-Case-Against-Negative-Emissions-Nov-20-2023-1.pdf>

sink.⁵ The EU's Climate Advisory Panel just published a report recognising that logging forests for fuel is degrading the EU's forest carbon sink and undermining climate mitigation.⁶

IPCC guidance shows the UK government's approach is misleading

The UK government's claims that biomass sustainability criteria render biomass "low carbon" are false. Such claims are also in contravention of IPCC emissions reporting rules for the mandatory national level GHG reporting that the UNFCCC and Paris Agreement require. As the UK is a party to both the UNFCCC and Paris Agreement, the NAO should have critically examined these problems in its report.

In relation to the emissions reporting rules, the IPCC has made clear that the convention of counting biomass emissions in the land sector and thus as zero emissions in the energy sector is simply to avoid double-counting of emissions. It has made plain that this should not be cited as evidence that biomass is "carbon neutral." Yet this is exactly what the UK government does. The point is made repeatedly in IPCC documents, as for example in the following statements:

IPCC FAQ⁷ at Question Q2-10: *"The overall IPCC approach to estimating and reporting bioenergy greenhouse gas emissions at the national level requires complete coverage of all IPCC sectors, including the AFOLU and Energy sectors. All CO₂ emissions and removals associated with biomass are reported in the AFOLU sector. Therefore, CO₂ emissions from biomass combustion used for energy are only recorded as a memo item in the Energy sector; these emissions are not included in the Energy sector total to avoid double counting. The approach of not including these emissions in the Energy Sector total should not be interpreted as a conclusion about the sustainability, or carbon neutrality of bioenergy.... **The IPCC Guidelines do not automatically consider or assume biomass used for energy as "carbon neutral", even in cases where the biomass is thought to be produced sustainably.**"*

The IPCC 2019 reporting guidance states⁸: *"The CO₂ emissions from wood biomass burnt are not reported in either the Energy sector (burnt for energy purposes) or Waste sector (burnt or lost without energy recovery). This is to avoid the possibility of double counting these emissions in two or more GHG inventory sectors because they are already included in the AFOLU sector. **When using inventory estimates to assess the CO₂ emissions arising from energy use, including wood for energy purposes, it is necessary to consider relevant emissions estimated in the Energy and AFOLU sectors.**"*

In other words, claiming biomass was harvested sustainably is not a proxy treating it as carbon neutral, and it is not acceptable to simply act as if the convention of counting biomass as zero-emissions in the energy sector reflects reality, as the UK government does. In fact "it is necessary" to consider all relevant emissions, including in the land sector.

⁵ See <https://forestdefenders.eu/wp-content/uploads/2022/11/PFPI-Burning-up-the-carbon-sink-Nov-7-2022.pdf>

⁶ See an overview at <https://www.hs.fi/politiikka/art-2000010119878.html>; full report at https://climate-advisory-board.europa.eu/reports-and-publications/towards-eu-climate-neutrality-progress-policy-gaps-and-opportunities/esabcc_report_towards-eu-climate-neutrality.pdf/@_@download/file

⁷ <https://www.ipcc-nggip.iges.or.jp/faq/faq.html>

⁸ Page 12.33 at https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch12_HarvestedWoodProducts.pdf

The centrality of BECCS in the Biomass Strategy and its role in supposedly delivering net zero warrants additional focus. It is critical to understand the difference between simply preventing smokestack emissions from entering the atmosphere by storing CO₂ belowground, versus actually removing CO₂ from the atmosphere and then storing it belowground, often referred to as “negative emissions.” The government claims BECCS will deliver true negative emissions, at a cost of tens of billions of pounds. However, a necessary precondition for BECCS to deliver negative emissions is that the biomass burned is genuinely carbon neutral.⁹ Thus to the extent that UK government claims about biomass carbon neutrality are false, so too are claims that BECCS will deliver negative emissions.

It appears that the government has confused simply storing carbon belowground with actually removing CO₂ from the atmosphere, which in this context¹⁰ only plant growth can accomplish. Burning trees (which represent a pool of non-atmospheric carbon that was removed from the atmosphere decades or even centuries ago) then capturing and storing that tree-CO₂ in another non-atmospheric pool (geological storage) moves carbon from pool to pool but does nothing to reduce the amount of CO₂ now in the atmosphere. IPCC rules¹¹ for how to calculate net carbon flux associated with use of CCS confirm that burning forest wood can at best reduce the amount of CO₂ entering the atmosphere but will not result in “negative” emissions.

Misleading claims and omissions in the NAO report

Having provided this context, we turn to some of the problematic statements in the NAO report.

Claims concerning the government’s term “sustainable” biomass as “zero” or “low” carbon

The report states (p. 14): *“The government recognises that burning woody biomass releases carbon dioxide into the atmosphere. However, if it is sustainably sourced (for instance, from a managed forest) biomass can be regrown in a relatively short time and reabsorb carbon. It considers that the carbon released from biomass has been removed from the atmosphere recently, whereas burning fossil fuels releases carbon that has been stored for millions of years.”*

The idea that simply regrowing biomass achieves carbon neutrality is a gross simplification that does not address the complexities of bioenergy carbon accounting and the need for counterfactual modeling (as acknowledged even by bioenergy proponents¹²). Such modeling, including that done in the BEAC report, shows that compensating emissions from burning trees requires decades to centuries, if it occurs at all. The UK biomass sustainability criteria treat biomass burning as *instantaneously* “low carbon” and do not include any acknowledgement of any time period needed for regrowth, nor any condition to ensure that wood harvested for biomass fuel can be “regrown in a

⁹ See <https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-5/>, subsection 5.6.2.2.1

¹⁰ Technological solutions like direct air capture can also bind atmospheric carbon into other forms

¹¹ See explanation and IPCC approach for calculating carbon storage with CCS at <https://forestlitigation.org/wp-content/uploads/2023/11/The-Case-Against-Negative-Emissions-Nov-20-2023-1.pdf>

¹² Eg see Cowie, A. L., et al. (2021). Applying a science-based systems perspective to dispel misconceptions about climate effects of forest bioenergy. *GCB Bioenergy* 13(8): 1210-1231. At <https://onlinelibrary.wiley.com/doi/abs/10.1111/gcbb.12844>. This paper states, “As described in methodology developed over 20 years ago for the evaluation of climate effects of bioenergy (Schlamadinger et al., 1997), both biogenic carbon flows and GHG emissions associated with the life cycle of the bioenergy system need to be considered, and GHG emissions associated with the bioenergy system need to be compared with GHG emissions in a realistic reference situation (counterfactual scenario) where energy sources other than bioenergy are used.”

relatively short time”. The criteria contain nothing that mitigates the simple physical reality that burning wood emits carbon faster than trees regrow.¹³ Nor will any future criteria be able to address this basic problem.

It is also irrelevant that biomass carbon was “removed from the atmosphere recently.” What matters is the net carbon balance globally, going forward.

The NAO report (p. 14) also states, “*In the past, the government has acknowledged that, if it is not sourced in a sustainable manner, burning biomass can have a larger carbon footprint than burning fossil fuels.*”

In fact the overwhelming amount of forest biomass burned for energy has a greater carbon footprint than fossil fuels for a period of at least a decade, and much of it has a significantly greater carbon footprint for several decades to more than a century to even indefinitely. As noted in the IPCC quote above, the concept of “sustainability,” however it is defined, is irrelevant to the net carbon impact of bioenergy.

Claims about BECCS delivering “negative emissions”

The report (p. 9) addresses “Risks to implementing the Biomass Strategy.” Risks identified include biomass scarcity, “*Biomass’s ability to generate negative emissions relies on the success of government’s programme to develop carbon capture utilisation and storage (CCUS),*” and “*If biomass cannot make the contribution to achieving net zero that government currently expects, DESNZ may need to increase activity in other areas.*” This last risk represents the actual physical reality facing the government due to the fact that burning trees and storing the carbon belowground will never deliver negative emissions.

Further, the concept of BECCS is still new and unproven, and it is not even clear which country would legally take credit for carbon stored belowground. When the US exports harvested wood products like sawtimber, paper, or panelboard to other countries, the carbon stored in those products is credited to the US’s account under UNFCCC GHG reporting, even if the carbon is stored in another country. Biomass fuels are generally considered to be oxidized within a year of harvest, so are not counted in national accounts as stored carbon, but if that carbon were captured using CCS and stored belowground in the UK, it would be consistent with current convention to credit that carbon to the US, not the UK (note that counting the carbon as stored would still not mean it represented “negative emissions.”)

The NAO’s failure to engage with any of these issues in its report results in an approach that is insufficiently robust given the critical issue of mitigating climate change and the wasteful allocation of billions of pounds to a “green” technology that actually makes climate change worse. We cannot imagine the audit office showing such deference to the Government’s approach with, for instance, standards and protocols for nuclear safety.¹⁴ Yet despite the fact that the UK government’s claims on biomass actively flaunt IPCC’s protocols and undermine the integrity of its climate mitigation plan, the NAO has failed to fully examine these issues.

¹³ For a brief analysis, see page 11 at <https://forestlitigation.org/wp-content/uploads/2023/11/The-Case-Against-Negative-Emissions-Nov-20-2023-1.pdf>

¹⁴ See, for example, <https://www.nao.org.uk/wp-content/uploads/2020/01/Managing-infrastructure-projects-on-nuclear-regulated-sites.pdf> and <https://www.nao.org.uk/wp-content/uploads/2022/01/The-decommissioning-of-the-AGR-nuclear-power-stations.pdf>

Claims about sources of biomass

At p. 14, the report states, “*The main biomass fuel used in the UK power sector is woody biomass. Much of this is imported from other countries, primarily in North America, in the form of wood pellets, produced from, for example, offcuts from the forestry industry and from residues, such as sawdust, from timber mills.*”

The claim about pellet production is misleading. Drax, which burns the majority of wood burned in the power sector, shows in its own reporting¹⁵ that the majority of wood pellets it imports are from forest roundwood, not “offcuts” and “sawdust.”

Also at page 14 the report says: “*Much of the biomass used in the UK, including many feedstocks for biomethane generation and wood pellets is derived from waste, co-products or residues. If they were not used as fuel, they would either be burnt (in the case of thinnings) without the energy generated being captured or released directly into the atmosphere (in the case of methane created by decomposing biological waste). Burning these products for power or heat therefore does not create additional carbon emissions.*”

Again, this is misleading. Thinnings are rarely burned for disposal. If not used for wood pellet feedstock or biomass chips, they would probably be used for other wood products, or might not be generated at all. To this last point, a study focused on Drax’s pellet mills in the southern US found that the existence of the pellet mill itself is driving thinning activity, to the overall detriment of forest carbon stocks on a long-term basis.¹⁶ In any case, it is not legitimate for the Government to claim, and for NAO to repeat, that the “counterfactual” fate of feedstocks matters when the scenario concludes that burning for energy does *not* increase net emissions, whilst ignoring the need for a counterfactual when it would inconveniently conclude that logging and burning biomass increases net emissions and/or decreases forest carbon storage.

Acknowledging the role that forest biomass plays in the UK’s biomass sector should also entail acknowledging logging impacts on forests. The UK biomass sustainability criteria do nothing to prohibit biomass sourcing from the most damaging types of forestry, including clearcutting. All logging unavoidably impacts forest ecosystem function, from soil and biomass carbon stocks to biodiversity and structure. However, logging for biomass is especially damaging because the biomass industry creates a lucrative market for types of so-called “low value” wood (forestry slash, naturally downed deadwood, standing dead “den” trees, stumps, and roots) that would often normally be left after logging and that are essential to maintaining ecosystem function and foodweb biodiversity. As we have outlined elsewhere,¹⁷ the UK’s criteria for biomass do not meaningfully address any of these issues. The knowledge about the inadequacy of the criteria is not esoteric – it has been widely

¹⁵ Page 41, 2022 Drax AFR https://www.drax.com/wp-content/uploads/2023/03/Drax_AR2022_single_pages.final_.pdf

¹⁶ Buchholz, T., et al. (2021). When Biomass Electricity Demand Prompts Thinnings in Southern US Pine Plantations: A Forest Sector Greenhouse Gas Emissions Case Study. *Frontiers in Forests and Global Change* 4(42). At <https://www.frontiersin.org/article/10.3389/ffgc.2021.642569>

¹⁷ <https://forestitigation.org/wp-content/uploads/2023/11/The-Case-Against-Negative-Emissions-Nov-20-2023-1.pdf>

reported for years in the mainstream media and in publicly available reports accessible to the NAO.¹⁸ Yet there is no discussion of this in the NAO report.

NAO's assessment of how current criteria are unlikely to be met

Regarding the issue the report did assess, i.e. the degree to which the Government ensures that companies actually comply with the biomass criteria, the NAO report presents a truly damning narrative (pp. 28 – 29). Ofgem's own admission that its monitoring is insufficient to monitor non-compliance with the sustainability criteria is telling. As irrelevant as the sustainability criteria are to protecting forests and climate, the Government cannot even ensure they are being met.

Conclusion

Returning to the three main objectives of the report as stated at page 6, we conclude that the report fails to deliver on its main objectives. The report's tendency to uncritically recite misleading statements from Government and the omission of key information means that the first objective has not been met. The report as it stands provides only a partial, and inaccurate, picture of the rationale for the Government's support for biomass to Parliament. With such a picture, Parliament cannot perform its critical scrutiny and oversight role of the ongoing and proposed subsidies.

With respect to the second objective, absent at least some evaluation of whether the biomass sustainability criteria protect forests and deliver low carbon or carbon neutral biomass as claimed, there is no way to "identify lessons" for future support schemes or "highlight the main risks" DESNZ must manage to achieve climate goals. The second objective has therefore not been met.

As to the third objective, key risks have been omitted from the report, specifically the inability of sustainability criteria to ensure bioenergy using forest biomass feedstocks is low carbon, and therefore the impossibility of BECCS delivering negative emissions. The report's failure to meet its own stated objectives, and to evaluate whether the subsidy regime offers value for money, means that overall, the report falls short of the NAO's self-portrayal as an independent watchdog that produces high-quality audits.

Given the stated objectives of the NAO's report and the role of value for money studies, we believe the NAO can and should assess the validity of the Government's claims about biomass, and the value for money of current and proposed subsidies for bioenergy and BECCS.

At a minimum, as a resolution to our concerns, we would appreciate the opportunity to brief NAO report authors on the actual science concerning biomass sourcing and climate impacts.

Thank you for your consideration.

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¹⁸ For example, Camia, A., et al. (2021). The use of woody biomass for energy production in the EU Publications Office of the European Union, Luxembourg, Joint Research Centre.
https://publications.jrc.ec.europa.eu/repository/bitstream/JRC122719/jrc-forest-bioenergy-study-2021-final_online.pdf