

Consultation response to “Business model for power bioenergy with carbon capture and storage (‘Power BECCS’)”

This response is on behalf of [Cut Carbon Not Forests](#), a coalition of UK, US and Canadian environmental NGOs campaigning to redirect dirty biomass electricity subsidies to true clean energy, due to the adverse impacts of large-scale biomass electricity on forests and biodiversity, on the climate, and on communities affected by polluting pellets plants and power stations.

We are deeply concerned about the framing of the consultation and the government’s preferred option which appears to mirror Drax Plc’s [key policy asks](#) in relation to BECCS. This consultation seems to be tailor-made for the bioenergy industry, underplaying risks around impacts on the climate, on nature, on the public purse, and on technology-readiness issues.

The proposal seeks to “enable a FOAK [first of a kind] power BECCS project to deploy on a timeline that will enable it to provide negative emissions for Carbon Budget 5”. Carbon Budget 5 starts in 2028, and Drax is the only company currently operating a biomass power station that has proposed delivering BECCS by 2028. If BEIS wanted to support new biomass plants being built with CCS then surely it would not have restricted the remit of the proposal to electricity as opposed to heat generation, considering that burning biomass for heat, or heat plus electricity, is at least twice as efficient as burning it for electricity. Please note that this observation should not be interpreted as support for biomass heat plants with CCS, but as evidence that the proposal consulted upon is essentially tailor-made for Drax.

We are also deeply concerned that the consultation has been published ahead of the new Biomass Strategy, which is supposed to set out the government’s policy on different types of bioenergy, including in relation to greenhouse gas limits and sustainability criteria.

We believe that:

- a) Power BECCS should not be supported by the government. Biomass electricity already has the [highest land footprint of any energy source](#) other than biodiesel, because it is the least efficient way to convert solar radiation (via photosynthesis) to useful energy. Carbon dioxide capture and compression results in a significant further reduction of net efficiency. [Drax states in its Environmental Impact Assessment for its BECCS planning application](#) that the net efficiency of its boilers with carbon capture will be no more than 28.8%. This means that Drax could get even more financial support for generating significantly less electricity.
- b) The large-scale demand for wood by a power station such as Drax cannot be met without sourcing roundwood from forests, resulting in greater forest degradation and reduction in forest carbon stores and forests’ ability to absorb CO₂ from the atmosphere. Adding CCS cannot make this model of energy generation carbon negative.
- c) If, on the other hand, a future different power station with BECCS was to burn energy crops, it would result in large-scale land-use change at the expense of food security and protecting and restoring biodiverse and carbon-rich ecosystems. If the government’s

target of capturing 5 million tonnes of CO₂ was met through new dedicated biomass plants with carbon capture, this would require [1.3 million hectares of land converted to miscanthus, an area of land that could otherwise grow enough wheat for 15 billion loaves of bread, or, more generally, enough food for 4 million people every year.](#)

- d) According to research by the environmental think tank Ember, the total cost of Drax's BECCS project is around £31.7 billion. Investment on such a scale would be unlikely without significant public support, either via public funds or through higher costs borne by bill-payers. Instead of funding a technology unproven to work, which would rely on millions of tonnes of wood being burned every year, public support should go to measures proven to reduce greenhouse gas emissions: home insulation, heat pumps, expansion of wind, solar, tidal and wave power. The Government has not ruled out financing a new CfD for BECCS using either levies on energy bills or taxpayer money.
- e) The government's preferred option is a dual CfD, with separate strike prices for energy generation from biomass combustion on the one hand and for carbon capture on the other hand. This will allow Drax and any other company to benefit from this scheme via a potentially generous strike price for electricity, even if it does not capture any actual carbon. Such an outcome appears likely because carbon capture from biomass combustion is not a mature technology and has not been demonstrated at scale.

Q1. Have we identified the most important challenges in considering the development of power BECCS projects?

No, the consultation fails to address two vital questions:

- 1) How can "power BECCS" possibly be carbon negative when existing generation of biomass electricity in the UK and elsewhere relies heavily on burning forest wood, including pellets made from mature roundwood logged in highly biodiverse forests overseas? Note that the European Academies Scientific Advisory Council (EASAC), which includes the UK's Royal Society, [concluded](#): "In view of the leakage of greenhouse gas (GHG) in the production, treatment and extended transport supply chains of existing large power stations, the science does not support launching into the conversion of existing large-scale forest biomass power stations to BECCS".
- 2) Why does BEIS consider it realistic for a FOAK biomass power station with BECCS to be capable of capturing millions of tonnes of CO₂ a year by 2030 when the authors of a [report published by BEIS in 2021 and referenced in this consultation](#) concluded that "power BECCS" has only achieved Technology Readiness Level 7, meaning it has not reached the stage at which "technology is proven to work - actual technology completed and qualified through test and demonstration", let alone the stage at which the "system [is] proven and ready for full commercial deployment"?

Q2. Do you agree with the market barriers we have identified?

According to the consultation document, "*independent and internal research note that market-based investment in power BECCS is hindered by a variety of operational and economic*

challenges common to bioenergy and CCS technology. This is in addition to wider market risks and challenges, which any commercial framework should seek to address.” Yet, despite acknowledging “operational challenges” (i.e. the fact that this is an entirely unproven and not yet mature technology), all of the focus is on overcoming supposed “market risks”. The only nod to the technical challenges is one sentence: “BECCS projects will benefit from learnings derived from frameworks recently developed for other CCS technologies”. Yet carbon capture technology needs to be adjusted to different flue gas compositions and proven to work with different types of fuel, something that neither Drax nor any other company has done so far in relation to wood biomass combustion.

One supposed ‘market risk’ listed in the consultation that we would question is “biomass fuel price risk”. As noted above, this consultation appears tailor-made for Drax. Drax is the second biggest wood pellet producer in the world, supplying pellets to other companies as well as burning them in Drax power station. This gives Drax significant control over the pellet prices it charges and pays. High pellet prices will increase profits of Drax’s pellet business, which is held by the same company as Drax power station.

Nonetheless, the [bioenergy industry itself frequently raises biomass feedstock supply chains and prices as a concern](#). If the Government’s objective is energy security, then relying on imports of wood from other countries would undermine this, rather than using home-grown sources such as solar and wind. Future forest wildfires or greater protections for forests in other countries could result in a constrained supply of biomass and volatile prices - biomass could suffer exactly the same problems that have been recently seen with the gas price.

Q3. Are there any other power BECCS-specific risks that need to be considered? If so, what are your proposals for mitigating them?

The consultation fails to consider:

- The serious risk of BECCS failing to deliver any climate benefits and indeed worsening climate change through reliance on industrial-scale logging which depletes forest carbon sinks, reduces carbon sequestration, and causes severe harm to biodiverse ecosystems. Current demand for wood pellets cannot be met without using whole trees for pellets. Drax’s own reports show that more than 50% of their existing pellets come from harvesting trees.
- The fact that [BECCS creates emissions throughout its supply chain that cannot be captured at the smokestack](#), including through logging, pellet production, transportation, and foregone sequestration in the harvested forests.
- The high risk of technology failure which, given the dual CfDs proposed, would result in long-term support for ‘business as usual’ combustion of forest biomass.

Q4. Do you agree with the overarching objectives of our policy framework for power BECCS?

No, we do not agree with the objectives, as set out in the introduction to this consultation

response.

5. Do you agree with the minded-to position of a combined CfD for electricity generation (£/MWh) and a CfD for Carbon (£/tCO₂) under a CfD contract framework? If not, please provide rationale for why not?

No. We are deeply concerned about this proposal because it would allow power station operators such as Drax to benefit from a strike price guarantee and, depending on the future wholesale market price of electricity, from potentially significant subsidies, even if they do not capture any or much CO₂. This would be a de-facto U-turn on the [2020 BEIS decision to end further CfDs for coal-to-biomass conversions](#), and [BEIS decisions in 2017 and 2018](#) to require a minimum net efficiency of 70% and strict minimum greenhouse gas savings (based on life-cycle fossil fuel emissions) for biomass plants to enter into CfD auctions.

Q6. Should the power BECCS project be incentivised to run as baseload or flexibly? Please provide rationale for your answer.

Power BECCS should not be incentivised at all, for the reasons set out above.

Q7 and Q8:

N/A

Q9. The CPI indexed strike price option requires the project to bear the risk of biomass costs and is the option in current contracts. Is this an appropriate allocation of risk? Please provide rationale and evidence for your answer.

As pointed out in our response to Q2, putting the burden of risk for fluctuating biomass prices onto bill-payers or the government would allow Drax to profit from high prices of the pellets they themselves produce, as the world's second largest pellet producer. This would create a completely inappropriate conflict of interest and penalize British citizens to further benefit a corporation.

Q10 - 20:

N/A

Q 21. Do you agree that a power BECCS project should report against a suitable threshold to ensure that we achieve a minimum level of net-negativity from any power BECCS project is achieved?

The government must adopt a science-based methodology for accounting for the greenhouse gas emissions associated with all forms of bioenergy. At present, the only emissions taken into account when assessing eligibility for CfDs and other subsidies are life-cycle fossil fuel

emissions. Upfront emissions of CO₂ from biomass combustion (in the absence of carbon capture), the reduction of carbon stocks in forests following logging, and the reduction in CO₂ sequestration due to logging are entirely ignored. Please see our [joint NGO submission to the BEIS Call for Evidence on Greenhouse Gas Removals](#) last year for a fully referenced discussion. See also the [letter from Scientist and Economist to BEIS](#) dated February 26, 2021 outlining the extensive flaws with BECCS.

Q 22. Do you have any evidence to share that could support the determination of a suitable supply chain GHG emission threshold for power BECCS, including by how much they could be strengthened?

See response to Q21 above.

Q 23 - 25

N/A