

**Just Transition Wakefield. Final submission, Deadline 10, 17/07/2023.**

**Interested Party Number:** 20032286

**Drax Bioenergy with Carbon Capture and Storage, PINS Reference: EN01012**

1.0 Throughout the 6 months of this planning enquiry we have read and heard nothing to change our minds that this application for the development consent order is not justified. In fact, throughout this period, the evidence of worsening climate breakdown is building inexorably, with records tumbling – ocean temperatures, surface temperatures across all continents, accelerating polar ice loss, rising methane levels and of course the highest carbon dioxide concentrations for millennia.

**1.1 This is the background against which the Examining Authority's recommendation to the Secretary of State must be made.**

## **2.0 Climate Change**

2.1 We acknowledge Drax representatives concurring with us that the industrial scale burning of forest material is not zero carbon, but “zero rated” within carbon accounting rules. We are pleased to also see Drax's own Advisory Board belatedly insisting on greater clarity on this point. We believe that this is a material consideration, and needs careful analysis and evaluation by the Examining Authority.

2.2 The evidence we submitted in our early submissions, including clarification following oral submissions, are clear on the sources of emissions in the supply chain which are inadequately accounted for, but we continue to argue that the critical failure of the carbon accounting system is in the emissions payback, or re-sequestration time. The applicant has not produced any evidence that counters that which we supplied from EASAC and from Sterman et al.

2.2.1 The evidence we have already submitted is clear that for wood pellet derived from managed plantations, payback time is between 20 and 80 years. The carbon payback time for mature forest can be as long as 200 years because of the greater age of the trees harvested. Further, current climate impacts have increased the frequency and severity of forest fires and pest infestation, further inhibiting regrowth and carbon recapture.

**2.2.2 Neither of these periods required to recapture the smokestack emissions is compatible with the UK's legal requirement to reach net zero by 2050.**

2.2.4 Furthermore, the UK is legally bound to reduce emissions by 68% from 1990 levels by 2030, and 78% from 1990 levels by 2035.

2.2.5 It is clear that estimating the smokestack carbon emissions as zero is in error, especially when the applicant provides a non-zero figure for these emissions but does not use it in the environmental assessment. This is not correctly treating the combustion/smokestack emissions as an Indirect effect of the project for which the likely significant effects and impacts should be assessed (as laid out by Climate Emergency Planning and Policy in REP9-032). **This leaves the project open to a legal challenge under the Environmental Impact Assessment Regulations**

**2017, should the Development Consent Order be granted by the Secretary of State.**

**2.3 Negative Emissions Technology.** The applicant claims that BECCS is a negative emissions technology. This is at best misleading and at worst, false.

2.3.1 Because the burning of biomass is NOT carbon neutral, as acknowledged by Drax, the claim that BECCS is a negative emissions technology requires considerable in-depth study.

2.3.2 Drax plans to capture 95% of the smoke stack emissions during operation, but excluding the start-up and shut-down periods. Clearly this will not be 95% of TOTAL emissions.

2.3.3 In order to claim negative emissions, the applicant is relying on the false assumption that replanting will re-sequester the carbon within a short timescale. As we have pointed out in section 2, this is not actually the case. **Woody biomass is NOT a short cycle biomass source.** Therefore, there is little difference between the capture and storage of carbon dioxide from wood pellets and the capture and storage of carbon dioxide from fossil fuels.

2.3.4 The claim that BECCS is a negative emissions technology is therefore based on erroneous assumptions and cannot be part of any consideration by the Secretary of State.

2.3.5 On this basis, BECCS cannot be the key plank to the UK's decarbonisation strategy as claimed by the applicant.

2.3.6 The questions over BECCS as a genuinely negative emissions technology within the timeframe of the 2050 net zero target also puts additional pressure on the applicant's business plan to sell carbon credits to other industrial emitters, which in our view is both morally and scientifically dubious, but not within scope of this planning process.

## **2.4 Unabated Biomass**

2.4.1 We must recall that the applicant is requesting a variation to its existing operations, where CCS might be retrofitted to **up to two** units, which of course could be zero or one, despite the assumption always being that two units will be adapted.

2.4.2 Irrespective of how many units are fitted with CCS, there will still remain at least two unabated biomass units, each emitting carbon dioxide to the atmosphere, contributing to increasing concentrations of atmospheric and oceanic carbon dioxide concentrations and undermining the UK's legally binding targets of emissions cuts of 68% by 2030 and 78% by 2035, based on 1990 levels.

2.4.3 It is highly likely that these unabated units will not receive subsidy from bill payers after 2027, questioning the longevity of these units in the electricity market.

## **2.5 Carbon Sinks**

2.5.1 Whether land is being clear felled for sawmill timber or for the biomass industry, clear felling necessarily removes existing carbon sinks, releasing additional carbon dioxide into the atmosphere.

2.5.2 Once the land is replanted, the carbon sink gradually re-establishes. However, there are problems with this simplistic analysis:

- As we have highlighted previously, the re-establishment of the carbon sink is too slow to be compatible with the UK's legally binding emissions targets;
- Also highlighted previously, replacing biodiverse forest with mono-culture plantation will never fully recapture the carbon released from clear felling, and so the carbon sink will never be fully re-established;
- If the regrown plantations are felled again for biomass, the carbon sink will never be permanently re-established.

2.5.3 This loss of carbon sinks is a serious problem for global emissions over time, and when considering the planned global expansion of the biomass industry, we have serious concerns that both current and future generations are being wilfully damaged by short term financial considerations.

2.5.4 We also point out that carbon sinks are also biodiversity reserves – we cannot afford to lose these either.

## **3.0 Carbon Capture and Storage**

### **3.1 Capture rates**

3.1.1 The applicant claims an average capture rate of 95%, which excludes the start-up and shut-down operations. However, the pilot testing was extremely limited, and the basis for the claimed 95% capture rate seems to be optimistic and unfounded.

3.1.2 We have already provided evidence that historically, CCS installations have consistently failed to deliver claimed capture rates, or even to sustain themselves over time. Too many have never made it to construction, and the majority of those that have been built have closed early for financial and technical reasons.

3.1.3 New evidence has arisen in the last few weeks that further reinforces our doubts of the applicant's ability to deliver an average 95% capture rate over an extended period. This evidence also questions the security of undersea storage.

3.1.4 In June this year, the Institute for Energy Economics and Financial Analysis published a report entitled Norway's Sleipner and Snøhvit CCS: Industry Models or Cautionary Tales? The key findings from this report are as follows"

- Sleipner and Snøhvit demonstrate carbon capture and storage is not without material ongoing risks that may ultimately negate some or all the benefits it seeks to create.
- Every project site has unique geology, so field operators must expect the unexpected, make detailed plans, update the plans and prepare for contingencies.
- Ensuring storage is securely maintained implies a high level of proactive regulatory oversight, activities for which governments may not be adequately equipped.
- Sleipner and Snøhvit cast doubt on whether the world has the technical prowess, strength of regulatory oversight, and unwavering multi-decade commitment of capital and resources needed to keep carbon dioxide sequestered below the sea – as the Earth needs – permanently.

3.1.5 Therefore it is clear that there are now doubts that the captured carbon dioxide, whatever the actual capture rate, can be permanently stored, with further doubts about the planned storage capacity and therefore the number of projects that can be linked to it.

3.1.6 We fully understand that the applicant will maintain that this application is solely for the CCS system at Drax power station, but this application is incontrovertibly linked to the coming applications for the low carbon pipeline AND the undersea storage. We have consistently maintained, and still do, that **this application cannot be consented without the whole capture, transport and storage system being consented**. To consent the capture of emitted carbon dioxide without any means to transport and store the captured carbon does not make any sense and cannot permanently remove the carbon dioxide from the atmosphere.

## **3.2 Amine and other emissions**

3.2.1 Biofuelwatch and others have highlighted the potential impact of amines and their degradation products emitted from the CCS process, as have we. We have to highlight, as we did in our deadline 9 submission, that this is not the only likely CCS project in the region.

3.2.2 Current UK Government policy is clear that all Energy from Waste plants must be retrofitted with CCS. If all EfW plants upwind of Drax were fitted with CCS, and the proposed gas turbine at Eggborough, then the combined emissions will have impacts that have not been considered. If each individual project is consented without considering cumulative emissions, then the public and the environment will be at serious risk of further degradation from toxins and carcinogens (amines and nitrosamines).

3.2.3 This is a regulatory oversight that must be raised with the Secretary of State before ANY CCS application can be granted.

3.2.4 In addition to the above consideration of cumulative pollutant load which we introduced at deadline 9, there is also the question of real time continuous monitoring and deposition monitoring at sensitive sites to continue to consider.

3.2.5 It is our view that the harm to human and ecological health from amines and their degradation products is an on-going, cumulative risk that has the potential, like many other pollutants assumed to be harmless until found otherwise, to damage the health and ecological integrity of all living things within Drax's deposition zones. We can see no justification for abandoning the precautionary principle for airborne amines and nitrosamines.

## **4.0 Sustainability**

### **4.1 Forest Ecology**

4.1.1 Firstly we must highlight the difference between **forests** and **timber plantations**.

4.1.2 A forest, is a biodiverse, mixed age community of plants, animals, insects, fungi and other microbial species. A timber plantation on the other hand is a monoculture of trees with little understorey, diminished animal and insect life, and reduced diversity in soil life.

4.1.3 If mature, biodiverse forests are clear felled and replaced with monoculture timber plantations, this is automatically a diminishing of biodiversity incompatible with UK contributions to global efforts to protect and restore nature.

4.1.4 We know that some of Drax's licences in Canada include old growth, biodiverse forests. Whether these deliver timber to sawmills as well as pellets, we know that all multi age forest contains trees which the forestry industry regards as

“low value” but that ecologists value for the full diversity of life in the ecosystem. These include dead and dying trees which provide vital habitats for insects, birds and microbial life – without decomposers, the forest life-cycle and associated biome is incomplete.

4.1.5 Therefore, when Drax claims to only take low value timber rejected by sawmills, we are very aware that this “low grade” timber is vital for forest sustainability and ecological health.

4.1.6 We also recognise that the majority of Drax’s wood pellets are sourced from the Southern US, and Drax does not manufacture all of its own pellets. We have sound evidence from NGOs on the ground that Enviva consistently buy private woodlots which are cleared for development and never replanted – clearly this carbon is never recaptured and sequestered into a circular carbon economy.

4.1.7 Ofgem is investigating the sustainability of the wood pellet supply chain, and until this is complete, we have to assume that the weight of evidence is falls against supply chain sustainability.

4.1.8 Global agreements through both the Climate Change COPs and the Biodiversity COPs will continue to question the sustainability of industrial biomass burning as a sustainable technology. Both COPs (COP26 in Glasgow and COP15 in Montreal) have policy to halt deforestation.

4.1.9 The biomass industry makes it harder to meet these policy objectives, for two reasons.

- As forests are cleared for commercial uses, even if they are replanted promptly, there is a delay of decades while these new forests establish their own ecology, meaning within this century there will be biodiversity losses;
- As forests are replanted, biodiverse forests are replaced with monoculture plantations with depleted biodiversity, again ensuring biodiversity losses.

4.1.10 For both of these reasons, there will be increasing pressure on the biomass industry from both UN COP processes.

4.1.11 For all of these reasons, we remain confident that the industrial burning of forest material is not ecologically sustainable and will not deliver either protection or restoration of natural ecosystems, and is therefore incompatible with the UK’s global biodiversity commitments.

4.1.12 We have written in detail about this in earlier submissions.

## **5.0 Policy Frameworks**

### **5.1 Biomass Strategy**

5.1.1 Throughout this enquiry, we have argued that the Examining Authority cannot be expected to make a serious and well-informed recommendation to the Secretary of State without an up-to-date policy framework.

5.1.2 Throughout this enquiry, we have been awaiting the publication of the new Biomass Strategy. The latest indication is that it will be published on July 20<sup>th</sup>, after the close of the enquiry. We cannot know whether the delayed release it to bury the strategy at the end of the parliamentary session, to release it after the enquiry, or simply unreasonably slow process, but the effect is that the most important policy document to inform the Examining Authority’s decision, and our comments as an Interested Party, has effectively been excluded from the process.

5.1.3 We therefore ask again that all Interested Parties are given opportunity to comment on the Biomass Strategy in writing once it is published.

## **5.2 Climate Change Strategy**

5.2.1 The Government was required by Judicial Review to resubmit its Net Zero Strategy by March 31<sup>st</sup> of this year. Whilst it did comply with this instruction, the re-drafted strategy is undergoing further legal challenge.

5.2.2 The Chair of the UK Climate Change Committee, Lord Deben, has recently written to the Prime Minister about the government's lack of climate action, saying *"Our children will not forgive us if we leave them a world of withering heat and devastating storms where sea level rises and extreme temperatures force millions to move because their countries are no longer habitable. None of us can avoid our responsibility. Delay is not an option."*

5.2.3 The Office for Budget Responsibility has just released a report criticising the UK Government's reliance on fossil fuels as being too expensive a policy when renewables are so much cheaper. The UK biomass industry is reliant on subsidies, and in our view, has the same economic weaknesses as the use of fossil fuels in the energy industry.

5.2.4 As stated in 2.2.4 above, this project, were it to be consented by the Secretary of State, would be vulnerable to legal challenge under the Climate Change Act.

## **5.3 Humber Low Carbon Cluster**

5.3.1 Grant Shapps, the Secretary of State, was reported to have lowered expectations of the use of hydrogen in domestic heating. For example, the Guardian reported on July 13<sup>th</sup> that *"Shapps said he believed hydrogen would form part of Britain's overall energy mix but predicted it was "less likely" that the gas would be routinely piped into people's homes, amid growing concerns about cost, safety and perpetuating a reliance on fossil fuels."*

5.3.2 This realisation will necessarily change the economic assessment of the Humber Low Carbon Cluster, which may well have a material effect on this DCO.

## **5.4 Financial**

5.4.1 There are serious questions being asked in parliament and in the media about the value of the subsidies that the applicant currently receives.

5.4.2 There are serious questions being asked about the longevity of subsidies to unabated biomass, with indications that these will end in 2027 when the current subsidy regime ends.

5.4.3 The applicant has always been explicit that it regards biomass as a global growth industry, but one that is based on a fixed (and unsustainable, non renewable) resource – the world's forests. As the industry grows, pressure on the world's forests will grow, and biomass costs will rise because of market pressures. An industry that is already barely profitable without subsidy, will become an economic millstone around the UK's economic neck. Chatham House have written in detail about this, as we highlighted in our April submission in response to PPL2.3.

## **5.5 Energy Policy**

5.5.1 Loss of generational capacity, sometimes referred to as the "energy debt"

5.5.2 UK energy policy (EN-1) is clear that permits are for new or increased generational capacity as well as for low carbon generation. This Development Consent Order will actually **decrease** dispatched power through two mechanisms:

- the losses associated with running the CCS plant, taking the efficiency of the two biomass units from up to 36% down to around 29%, or less in some projections;
- the changing economics of unabated biomass generation which is likely to leave the unabated units running to supplement peak load when spot prices are high enough to overcome the lack of subsidy.

5.5.3 This is a double loss to the grid which in our view makes the DCO invalid through being incompatible with UK energy policy, even if the government continue to classify biomass as low carbon.

## 5.6 Powering Up Britain

5.6.1 We highlighted weaknesses of the applicant's case in our April submission.

5.6.2 We highlighted that the scale of biomass burning at Drax cannot be met from UK sources, and therefore is entirely reliant on imported feedstock. This is not compatible with the UK's drive for energy security and "homegrown energy".

5.6.3 Furthermore, the aging equipment at Drax is only compatible with wood pellet burning, and cannot take crop waste, for example. Therefore, there is no likelihood of this application being sustained from biomass sourced within the UK.

5.6.4 Subsidies – in Powering Up Britain, the government stated "*We do not wish to participate in a discriminatory subsidy race, which will be harmful to many nations' intentions to transition.*"

5.6.5 It is clear that the applicant fully intends to continue its reliance on subsidy, and it is a reasonable assumption to make that the applicant's future profitability depends on subsidy as does its current profitability.

5.6.6 There are clearly many other, better, options for the UK government and private capital to invest in than the biomass industry.

## 6.0 Delay

6.1 As we said in our deadline 9 submission, there are significant issues associated with the delay. These include:

- developing climate policy through the delay period through a potential new government;
- developing climate policy through the delay period because of climate driven extreme weather;
- developing climate policy through the delay period because of financial considerations including the rising costs of biomass feedstock, relative costs of different low carbon technologies and concern about subsidy costs to the public purse and directly to tax payers;
- consenting and permitting – or otherwise – of the Humber Low Carbon Pipeline and the Northern Endurance under sea storage;
- investor confidence as a result of the delays.

## 7.0 Future Climate impacts on the operation of the plant

## **7.1 Sea Level Rise**

7.1.1 In the applicant's Environmental Impact Assessment Scoping Report, in Section 4.4, there is acknowledgement that the site is at risk from sea level rise during its operational phase. Exactly the point that we made in our submissions, including in our detailed submission in February of this year.

7.1.2 It is clear from the evidence we submitted that mid-risk scenarios of temperature rises of 3.2°C by the end of this century will increase significantly the risks from sea level rise in the Drax area. This includes Drax being within the 10 year flood risk area by 2050, and potentially within the tideline also by 2050.

7.1.3 The fact that the applicant acknowledges this risk, but has made little apparent effort to mitigate it, is concerning to say the least. It is our view that the Examining Authority will need to seek independent expert advice from academics who can accurately model climate impacts of sea level rise throughout the operational phase, within the known accelerating impacts that we are currently experiencing. In the absence of such advice, the projections that we supplied from ClimateCentral.org are sufficiently concerning to block recommendation for approval by the Secretary of State.

## **7.2 Flood and Drought**

7.2.2 Also in Section 4.4 of the Environmental Impact Assessment Scoping report, the applicant references flood from rainfall events and from prolonged drought.

7.2.3 It is clear that there are risks to the continuing operation of the CCS plant from both of these extreme but expected conditions.

7.2.4 From drought, low river levels will cause shut down of the CCS plant, meaning that there is higher risk of unabated burning with associated increased carbon dioxide emissions.

7.2.5 From flood, there is also risk of shut down of the CCS plant, because the sediment load of the river in spate will risk overwhelming the water purification plant. Again, this risks running the generators without CCS, to the considerable detriment of the climate.

## **7.3 Overview**

7.3.1 We are extremely concerned that these issues fall between the NSIP planning enquiry and the Environment Agency permitting process. If they are not considered with due care by either permitting process, these risks, recognised by us and the applicant, will be effectively ignored – but may yet prove to be the biggest risk to the safe and efficient operation of any installed BECCS plant at Drax.

## **8.0 Health and Safety**

8.1 We, like others, are very conscious of the dangers of wood dust. This is why joinery workshops are required to have extraction and filtration systems, and why contractors working with wood wear dust masks. These dangers include cancer, emphysema and industrial asthma.

8.1.1 Despite the Health and Safety Executive dropping the case against Drax that was expected to be heard in June of this year, it is clear that the workforce (particularly contractors) are at risk of industrial injury and disease from wood dust. Indeed a workforce representative is on record saying "*our members don't retire – they go on permanent sick.*"



8.1.2 Train drivers from the Drax trains also report to us that in the case of spillage, they are required to fully “suit up”, including breathing apparatus, in order to clean up the spillage. This is not a harmless material.

8.1.3 Consenting this DCO will not protect the workforce from the hazards associated with wood dust created by the pellets.

8.2 It is not only the workforce injured by the wood dust. Communities surrounding pellet plants in South Eastern US States suffer the same health issues, from both Enviva and from Drax pellet plants. Indeed, Drax has received the largest ever fine for air pollution violations in the US (\$2.5 million) and has since also settled out of court in two other cases totalling over \$3 million.

8.2.1 We understand that in Gloster Mississippi, the community at the centre of the first fine, the Drax pellet mill is again facing new legal action for air pollution violations.

8.2.2 The evidence that manufacturing, handling and burning wood pellets made of compressed wood dust is injurious to health in both US communities and the UK workforce.

## **9.0 Conclusions**

### **9.1 The application for the Development Consent Order to retrofit Carbon Capture and Storage to (up to) two out of four units at Drax Power Station should not be recommended for permission.**

9.2 We are clear that the biomass industry is not compatible with the UK’s legally binding climate targets nor its biodiversity commitments. Biomass burning cannot be carbon neutral, never mind a negative emissions technology, **within the timeframe of the climate emergency and legally binding targets.**

9.3 We are clear that the application to retrofit CCS to Drax Power Station is not only linked, but reliant on the successful construction and operation of both the Humber Low Carbon Pipeline AND the Northern Endurance Partnership undersea storage facility, and therefore should not be consented unless and until both of these projects are consented and approved by the regulatory bodies as well as the Secretary of State.

9.4 We are clear that there are serious questions over the financial viability of both unabated biomass and BECCS between now and 2050.

9.5 We are clear that the application of BECCS and the use of the unabated units for peak load operations will both reduce the power supply to the electricity grid, which itself is incompatible with government policy.

9.6 We are clear that there will be measurable health impacts on UK communities, including the workforce, from a combination of wood dust and amine/nitrosamine pollution.

**9.6 We are clear that the application of CCS to such an old power station is poor value for money, even if it met all other sustainability criteria.**

