biofuelwatch

#AXEDRAX FOR THE CLIMATE, FORESTS, AND COMMUNITIES!

April 2023

Since 2012, Drax Plc has morphed from a single-asset company, operating the UK's biggest coal power station to now operating the world's biggest wood-burning plant, as well as being the second biggest producer of wood pellets globally, supplying companies across Europe and East Asia. Drax power station, in Yorkshire, emits more CO_2 than any other facility in the UK.

In return for burning huge quantities of wood from forests that are logged in the Southeastern USA, Canada, the Baltic States and elsewhere, Drax received £606.8 million in subsidies during 2022. Thanks to those generous subsidies, Drax made more than £186.5 million in profits and is once again increasing its dividends, i.e., pay-outs to shareholders. The subsidies were paid despite record wholesale electricity prices following Russia's invasion of Ukraine, which significantly contributed to the cost of living crisis.[i] It is worth noting that the subsidies were even higher in recent years - almost reaching £1 billion in 2021. They fell because electricity prices exceeded the level at which one unit would have been subsidised, and because another unit (one which remained eligible for subsidies regardless) was out of operation for three months due to technical problems.

Drax's biomass electricity counts towards the UK government's goal of decarbonising electricity generation by 2035,[ii] even though scientists around

the world has warned that large-scale burning of forest wood for energy increases carbon emissions for decades if not centuries and is incompatible with limiting global warming to 1.5 degrees.[iii]

Finally, Drax's pellet sourcing and production is harming public health and worsening quality of life amongst local communities. In the Southeastern USA, pellet plants are predominantly located in communities with an above-average level of poverty, many of them African American.[iv]

2022 also saw the start of the planning inquiry into Drax's proposal to install carbon capture equipment on two of its biomass units. The inquiry is ongoing as of April 2023. As discussed below, Biofuelwatch believes that Drax does not have the technical know-how to capture carbon at scale and that the company's chief aim is to use those plans as a means of obtaining new subsidies when current ones expire in 2027, regardless of any actual carbon capture.

DRAX'S WOOD PELLET PRODUCTION AND BIOMASS ENERGY:

During 2022, Drax power station in Yorkshire burned 6.4 million tonnes of pellets[v] made from around 12.86 million tonnes of freshly cut ('green') wood. This was the equivalent of 115% of the UK's entire wood production, to meet just 0.95% of the country's recent final energy demand.[vi]

More than 69% of the pellets burned by Drax that year were imported from the Southeastern US, 11.8% from Canada and 13.4% from the Baltic States. The remainder came mostly from Brazil, Portugal and Belarus. Once again, no UK wood was burned.
In addition to burning more wood than any other company globally, Drax has also become the world's second biggest pellet producer, following the takeover of Pinnacle Renewable Energy in April 2021. That takeover overnight more than doubled Drax's pellet production from 1.5 million to 3.1 million tonnes, a figure that has since then increased to at least 3.61 million tonnes.[vii] It also turned Drax into an international wood pellet supplier to other energy companies in Europe, including Lynemouth Power in the UK, RWE and Uniper in the Netherlands, Engie in Belgium, as well as companies in East Asia.

52.8% of Drax's pellets are produced in the Southeastern USA, the rest in Canada, mostly in British Columbia, but also in Alberta.

Drax previously stated that it aimed to increase its pellet production to 8 million tonnes by 2030, of which 4 million tonnes would be sold to other companies, with the remainder burned for Drax's energy generation.[viii]

In the near term, Drax seeks to develop a 450,000-tonne pellet plant in Washington State, sourcing wood from the Pacific Northwest, and it plans to expand pellet production at an existing plant in Alabama by 130,000 tonnes.

CLIMATE IMPACTS:

Burning wood for electricity – especially wood taken directly from the forest - is no less disastrous for the climate than burning coal.

Per unit of electricity, biomass emits no less CO_2 from smokestacks than burning coal does.[ix] Drax reported in its 2022 Annual report that its wood burning in Yorkshire emitted 12.13 million tonnes of CO_2 into the atmosphere. This makes Drax power station the UK's single biggest source of carbon emissions.

Drax argues that almost all the emissions from biomass burning can be ignored (except for ones from burning fossil fuel in pellet plants, shipping, etc.). This flies in the face of science:

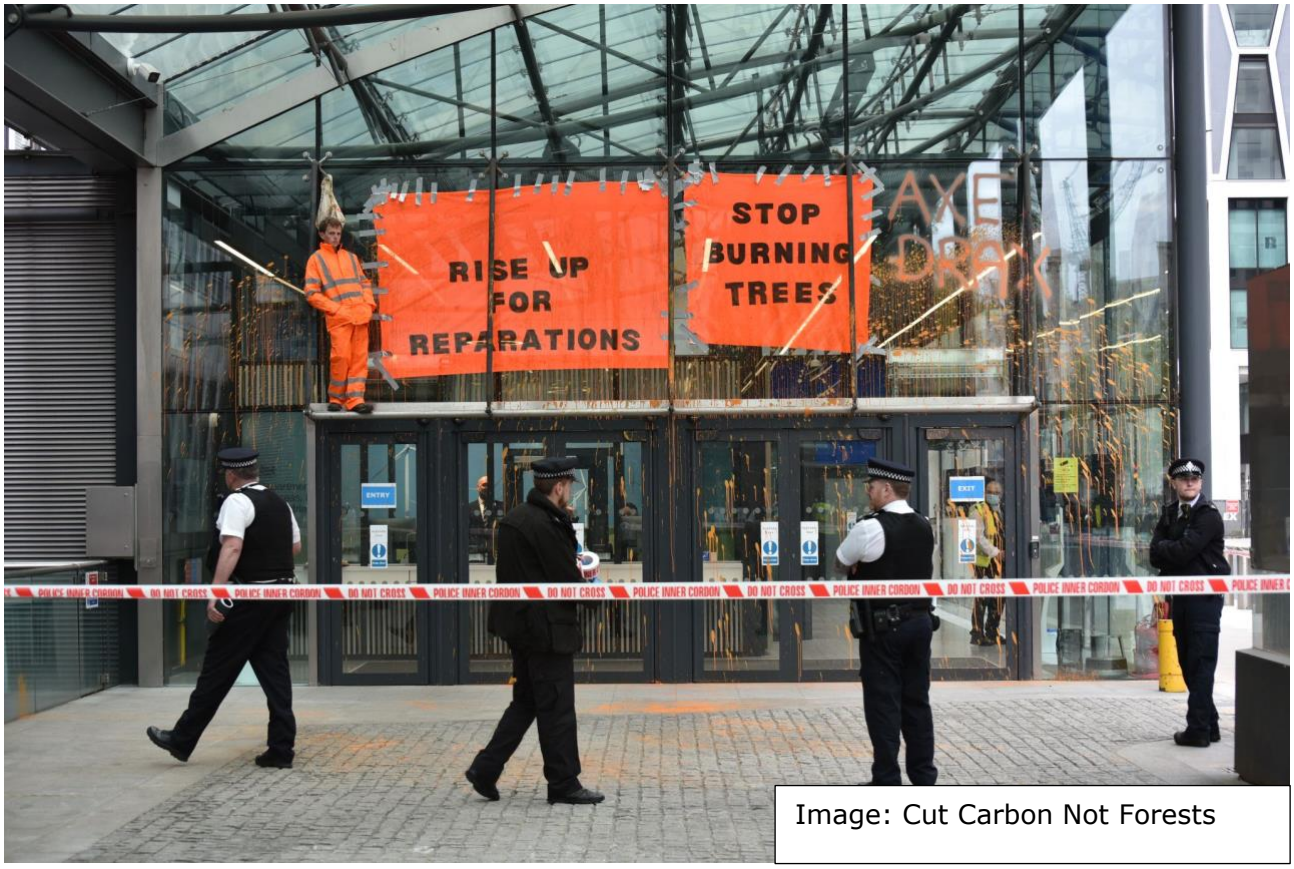

Image: Cut Carbon Not Forests

In February 2021, more than 500 scientists wrote to world leaders, highlighting the impacts of cutting down trees and burning the wood for energy: "*Regrowing trees and displacement of fossil fuels may eventually pay*

off this carbon debt, but regrowth takes time the world does not have to solve climate change. As numerous studies have shown, this burning of wood will increase warming for decades to centuries. That is true even when the wood replaces coal, oil or natural gas."[x] Drax's justification for claiming large greenhouse gas reductions for burning wood rather than fossil fuels relies on the fact that emissions from biomass burning "*are counted as zero in official reporting to both UK authorities and under the UK Emissions Trading...This methodology originates from the United Nations Framework Convention on Climate Change*" (UNFCCC).[xi] Yet, while UNFCCC accounting rules do state that such emissions are not counted towards those of a country's energy sector, the Intergovernmental Panel on Climate Change (IPCC) points out: "*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."*[xii] Drax is thus hiding its very real carbon emissions behind a carbon accounting technicality.

SOUTHEASTERN USA:

Drax currently operates seven pellet mills in the Southeastern USA: two in Louisiana, two in Alabama, one in Mississippi, two smaller ones in Arkansas. The majority of the wood sourced by those pellet mills comes from monoculture pine plantations. Across the region, such plantations have been expanded at the expense of the rich forest ecosystems that are being clearcut. They are 'sterile' plantations with virtually no undergrowth, inhospitable to wildlife.

According to a study commissioned by the Southern Environmental Law Centre, burning pellets from Southeastern US pine plantations in the UK will be worse for the climate than the UK's average electricity for a period of at least 40 years.[xiii]

As well as burning pellets produced at Drax's own mills, the company also sources from the world's largest pellet producer, Enviva. Enviva has come under heavy criticism from US environmental NGOs for regularly sourcing wood from clearcut coastal hardwood forests – many of them wetland forests called 'bottomland hardwoods' in the region. Those forests lie at the heart of a global biodiversity hotspot, home to a high number of animal and plant species found nowhere else in the world. Just 20% of the vast hardwood wetland forests once found in the region remain, and only 10% are protected.[xiv]

Photo: Forest clearcut near Enviva's Southampton pellet plant in North Carolina, Dogwood Alliance

It is not just environmental campaigners and local communities (see below) who have denounced Drax's practices: In December 2022, the environmental magazine *Mongabay* published evidence from a former Enviva employee turned whistleblower, who stated: "*We take giant, whole trees. We don't care where they come from. The notion of sustainably managed forests is nonsense. We can't get wood into the mills fast enough*".[xv] In the same month, investors raised a securities class action lawsuit against Enviva, alleging amongst other things that: "Enviva had misrepresented the environmental sustainability of its wood pellet production and procurement".[xvi]

Drax admits that most of the wood pellets from the region burned in its power station are made from whole trees, not residues, however, it describes those trees as 'low grade roundwood' and 'thinnings'. While monoculture tree plantations are indeed thinned prior to clearcutting after further growth, logging of hardwood forests in the Southeastern USA virtually always involves clearcutting. The terms 'low-grade', or 'low value' are routinely applied to any tree cut down and burned for energy, because the size or shape of the tree is unsuitable for local sawmill requirements, or simply because it is surplus to the demand from sawmills.[xvii]

Photo: Prothonotary warbler, one of the bird species seriously affected by logging in the coastal hardwood forests from which Drax sources some of its wood pellets, Dave Inman, Flickr

CANADA:

Drax operates eight pellet mills in British Columbia and two in Alberta. In October 2022, a BBC Panorama programme showed how Drax, having obtained a logging concession, had clearcut oldgrowth forest near one of its pellet plants.[xviii] This was followed by a documentary by Canadian Broadcasting Corporation, CBC, also revealing Drax's involvement in clearcutting such forests in the province.[xix]

This came as no surprise to forest campaigners: In 2021, prior to Drax's takeover of Pinnacle Renewable Energy (a former pellet supplier of Drax

amongst others), Stand.earth had published "Risk Maps" which showed that "*Pinnacle's seven wood pellet facility 'haul zones' overlap with critical primary forests and threatened species habitat*"[xx].

Drax claims that logging forests in British Columbia and Alberta is necessary to "*protect the forests from fires, pests and diseases*", by creating "*more space and less dense stands of trees and natural debris*". Such claims are routinely made by the timber industry to justify logging in the world's last remaining old-growth and primary forests, as well as in other highly biodiverse forest ecosystems. Yet the evidence clearly shows that old-growth and primary forests are far more resilient to fires, pests and diseases than logged and degraded forests and tree plantations. For example, the authors of a peer-reviewed study looking at forest fires in the western USA concluded: "*Forests with higher levels of protection had lower [fire] severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading*".[xxi] So-called "salvage logging" promoted by the timber industry and the provincial forestry department, routinely involves clearcutting forest where only a small proportion of trees has been affected by beetle outbreaks, and replacing biodivers forest ecosystems with conifer monocultures that are particularly prone to beetle infestation and other pests and diseases.[xxii]

Photo: Caribous in oldgrowth forest in British Columbia, Stand.earth

BALTIC STATES:

In Estonia and Latvia, Drax buys pellets from Graanul Invest, Europe's largest pellet producer, which was taken over by Apollo Global Management Inc. in 2021. A 2020 report by Estonian Fund for Nature and Latvian Ornithological Society[xxiii] illustrates how the growing demand for wood pellets for export has accelerated logging and is contributing to forest degradation and thereby a loss of carbon sequestration by forests. In Estonia, the amount of wood taken from

forests rose threefold between 2009 to 2018. In Latvia, more logging took place in 2019 than at any time since 2000.

In July 2021, a report by Centre for Research on Multinational Corporations, SOMO, commissioned by Greenpeace Netherlands[xxiv] highlighted "logging in high conservation value forest (HCVF) areas, logging in water sheds and logging in peatland forests." According to the authors: "*the type of harmful logging revealed in this report is also likely to be linked to Dutch wood pellet imports. This is because Graanul Invest is either involved in these controversial felling practices as a forest company or has been linked to them as a forest company client...The company does not have systems and procedures in place to prevent wood from other controversial logging sites being used to produce wood pellets*." Given that this report looked specifically at Graanul Invest, a pellet supplier to both Dutch power plants and to Drax, the same applies to Drax.

Photos: Typical clearcut near Graanul Invest Osula pellet plant, Save Estonia's Forests

Estonia's and Latvia's forests are unique hotspots of biodiversity, and logging that is happening even in the few remaining old-growth forests is destroying vital habitat for rare and endangered species including the Flying squirrel, Capercaillie, Black stork and Hazel grouse. In Estonia, the number of forest birds is declining by 50,000 breeding pairs year on year.

PORTUGAL:

Drax has been increasing its wood pellet imports from Portugal in recent years. Those pellets are primarily made from pine. A 2021 report jointly published by the Portuguese NGO ZERO - Associação Sistema Terrestre Sustentável and Biofuelwatch[xxv] concluded: "*the vast majority of the feedstock is from primary sources, i.e. directly from forestry operations, with secondary sources such as industrial waste representing a much smaller share*." The report included three case studies of pellet mills, all of which "*are clearly using roundwood or sections of tree trunk as their main feedstock, which they are classifying as residues, 'low-grade roundwood' or even secondary materials.*" According to forestry industry association Centro PINUS pellet plants used nearly one

quarter of pine roundwood in Portugal, and pine harvesting exceeded pine regrowth by 56.6%.[xxvi]

IMPACTS ON COMMUNITIES LIVING AROUND PELLET PLANTS BELONGING TO OR SUPPLYING DRAX:

In September 2022, Greenpeace published an in-depth article under the title "Drax accused of driving 'environmental racism' after further pollution claims against wood pellet mills in US deep south".[xxvii] Greenpeace had uncovered that Drax had agreed to two settlements of $1.6m each to settle lawsuits over breaches of air emission permits at two pellet plants in Louisiana. The previous year, the regulatory authorities in Mississippi had fined Drax $2.5 million for exceeding air emission limits over a period of several years - the highest fine ever levied against any wood pellet producer in the Southeastern USA.[xxviii] Both the pellet plant in Mississippi and one of the two affected plants in Louisiana were sited in deprived, majority-Black communities.

In 2018, a peer-reviewed article revealed that across the Southeastern USA pellet plants are more than 50% more likely to be located in Environmental Justice communities, i.e. communities with a higher than average number of Black people and people living in poverty.[xxix]

<u>DRAX'S SUBSIDIES</u>

During 2022, Drax obtained £606.8 million in renewable electricity subsidies[xxx]. More than 99% of those were for burning wood pellets in its Yorkshire power station, with the remainder for Scottish hydro power acquired from Scottish Power in 2019.[xxxi] This translates into subsidies of £1.66m every day for Drax burning wood. Those subsidies are financed through a surcharge on electricity bills. They significantly exceed Drax's gross profits, which means that the company couldn't keep operating the power station and might even fold entirely without them.

DRAX'S "BECCS" (BIOENERGY WITH CARBON CAPTURE AND STORAGE) PROJECT AND CLAIMS:

Drax's current biomass subsidies are due to end in 2027. In order to continue operating its power station, Drax needs a guaranteed market price for its electricity regardless of any future drops in energy prices. Such a guarantee is called a Contract for Difference (CfD). CfDs for renewable energy have provided substantial subsidies since they were introduced in 2014, with the exception of 2022, when the wholesale market price of electricity rose to record levels.

Drax hopes to succeed in getting such subsidies by re-framing its UK strategy in order to fit within the government's 2021 Net Zero Strategy.[xxxii] That strategy includes a highly ambitious target for "greenhouse gas removals", with BECCS as a supposed key technology.

In May 2022, Drax submitted a planning application to install carbon capture equipment at two of its biomass units.[xxxiii] As of April 2023, the application is still being examined by the planning inspectorate. The final decision will eventually be made by the Secretary of State.

However, there are strong reasons to doubt that Drax will be able to capture significant amounts of CO_2 any time soon:

- Drax's proposal to capture 8 million tonnes of CO_2 is based on a small trial of a new type of amine solvent during which the company captured just 27 tonnes of CO_2.
- Carbon capture from biomass combustion has not been proven at scale anywhere in the world.[xxxiv] Although the basic technology is the same as that used for capturing carbon from coal plants, flue gases from biomass combustion have quite different properties and pose new challenges.[xxxv] However, Drax is not planning any further carbon capture testing, nor a pilot project that might help them acquire greater technical know-how.
- An actual Carbon Capture and Storage (CCS) project at Drax would also require a CO_2 pipeline and an operational carbon sequestration site. Both are proposed, however, the National Grid's planning application for such a pipeline has not yet been submitted.
- To date, the UK has no experience with sequestering CO_2.The only European country with such experience is Norway, and it has not so far succeeded in sequestering even 2 million tonnes per year, i.e. a quarter of what Drax Group says it wants to capture annually.[xxxvi]

Not surprisingly, therefore, Drax has asked the government for two separate CfDs: one for any tonne of CO_2 captured and fed into a future pipeline, and another for

1) ongoing renewable energy subsidies per unit of biomass electricity generated, via a further Contract for Difference (effectively more of what the company is getting today);
2) additional subsidies for 'negative emissions' for any tonne of CO2 actually captured for carbon sequestration or commercial use.[xxxvii]

Drax has succeeded in persuading the government to endorse such "dual CfDs". The government claims in its response to a consultation about funding for "power BECCS" that Drax could only take advantage of such a dual CfD if it had installed capture equipment and was capturing the large majority of CO_2 emitted from the biomass units in question.[xxxviii] However, Biofuelwatch has serious concerns that the decision whether or not to terminate the CfDs if little or no carbon is captured would be outsourced to a state-owned company with a track record of not exercising existing powers to terminate CfDs but putting 'investor confidence' first.[xxxix]

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[i] https://www.ons.gov.uk/economy/inflationandpriceindices/articles/costoflivinginsights/energy
[ii] gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy
[iii] woodwellclimate.org/letter-regarding-use-of-forests-for-bioenergy/
[iv] liebertpub.com/doi/10.1089/env.2017.0025
[v] drax.com/wp-content/uploads/2022/03/Drax_AR2021_2022-03-07.final_.pdf, p. 46

[vi] Total UK wood production in 2020/21 was 11.2 million tonnes: forestresearch.gov.uk/tools-and-resources/statistics/forestry-statistics. At a 2:1 tonnes conversion, Drax burned the equivalent of 12.86 million tonnes of green wood. It generated 14.8 TWh of electricity from burning biomass in 2021 (https://www.drax.com/investors/full-year-results-for-the-twelve-months-ended-31-december-2022/). Final energy demand in the UK in 2021, was 149.7 million toe: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1094282/DUKES_2022_Chapter_1.pdf. The 2022 figure has not yet been published. Note that the total electricity generation from Drax's hydro power schemes came to less than 0.0001 TWh, so is not relevant here.

[vii] This figure is from page 41 of Drax's Annual Report. Note that on page 13, a figure of 3.9 million tonnes if given.

[viii] https://www.drax.com/wp-content/uploads/2021/03/Drax_AR2020.pdf

[ix] tuc.org.uk/sites/default/files/2021-04/TheRoleUnionRep.pdf, Table 2.2

[x] woodwellclimate.org/letter-regarding-use-of-forests-for-bioenergy/

[xi] drax.com/wp-content/uploads/2022/03/Drax_AR2021_2022-03-07.final_.pdf, page 50, footnote 5

[xii] ipcc-nggip.iges.or.jp/faq/faq.html, Q2-10

[xiii] southernenvironment.org/wp-content/uploads/legacy/publications/2019-05-27_Drax_emissions_-_SIG_report_Phase_II.PDF

[xiv] dogwoodalliance.org/2015/10/crosspost-bioenergy-in-europe-threatens-north-american-wetland-forests/

[xv] https://news.mongabay.com/2022/12/envivas-biomass-lies-whistleblower-account/

[xvi] bloomberg.com/press-releases/2022-12-27/enviva-securities-fraud-class-action-lawsuit-pending-contact-levi-korsinsky-before-january-3-2023-to-discuss-your-rights

[xvii] biofuelwatch.org.uk/2020/residues-briefing/

[xviii] bbc.co.uk/news/av/science-environment-63123774

[xix] cbc.ca/news/canada/wood-pellets-bc-forests-green-energy-1.6606921

[xx] stand.earth/publication/forest-conservation/forests-and-wood-pellets/risk-map-primary-forest-and-threatened

[xxi] Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States?. Curtis M. Bradley et.al., Ecosphere, October 2016, /esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.1492

[xxii] https://www.focusonvictoria.ca/forests/90/

[xxiii] media.voog.com/0000/0037/1265/files/Biomass_report_ENG%20_2020.pdf

[xxiv] somo.nl/wp-content/uploads/2021/07/Wood-pellet-damage.pdf

[xxv] zero.ong/wp-content/uploads/2021/10/Big_Biomass_in_Portugal.pdf

[xxvi] centropinus.org/news/consumo-de-madeira-de-pinho-em-2020

[xxvii] unearthed.greenpeace.org/2022/09/26/drax-accused-environmental-racism-further-pollution-claims-against-wood-pellet-mills-us/

[xxviii] dogwoodalliance.org/2021/02/release-drax-facility-fined-2-5m-for-major-pollution-violations/

[xxix] Siting of Wood Pellet Production Facilities in Environmental Justice Communities in the Southeastern United States, Stefan Koester and Sam Davis, Environmental Justice, April 2018 liebertpub.com/doi/full/10.1089/env.2017.0025

[xxx] This figure consists of the Contract for Difference subsidy element and the 'earned' Renewable Obligation Certificates figures in Drax's Annual Report.

[xxxi] Calculated from the most recent annual ROCs figures for Drax power station and Drax's hydro power sites at ref.org.uk/generators/.

[xxxii] assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

[xxxiii] /infrastructure.planninginspectorate.gov.uk/projects/yorkshire-and-the-humber/drax-bioenergy-with-carbon-capture-and-storage-project/?ipcsection=overview

[xxxiv] https://www.biofuelwatch.org.uk/wp-content/uploads/BECCS-report-2022.pdf

[xxxv] BAT Review for New-Build and Retrofit Post-Combustion Carbon Dioxide Capture Using Amine-Based Technologies for Power and CHP Plants Fuelled by Gas and Biomass as an Emerging Technology under the IED for the UK, Prepared by Jon Gibbins and Mathieu Lucquiaud, July 2021, /ukccsrc.ac.uk/wp-content/uploads/2023/02/BAT-review-update-doc-for-website.pdf

[xxxvi] ieefa.org/resources/carbon-capture-crux-lessons-learned

[xxxvii] committees.parliament.uk/writtenevidence/40493/pdf/

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