

Episode 56GS July 31, 2023. Drax Biomass (wood) burning plant, United Kingdom's top emitter. Fabulous fakes of gas & wood burning.

RAWSEP View: This article by Ember below concerns CO2 emissions from Drax's wood burning, which hasten climate change. RAWSEP is concerned primarily with wood burning's effects on human health from PM2.5 emissions. But wood burning emits more CO2 and PM2.5 than the fossil fuel coal burning, and wood burning emits 450 times the particulates as the fossil fuel natural gas burning. PM2.5 is particulate matter of 2.5 micrometer size, the perfect size to infiltrate the human lung, setting off a cascade of human health problems and early deaths. PM2.5 also hastens climate change. This article also reiterates that scientists refute the specious claim that wood burning is carbon neutral, and the specious claim that carbon capture (BECCS) is a viable strategy to deal with pollution from wood burning. It isn't a viable strategy, and is expensive to continue with futile "research" to see if Carbon Capture might work in this decade. Is carbon capture a viable method for dealing with wildfire smoke? No. Just don't burn things to begin with. There are alternatives In 2023, like wind and solar energy that are getting cheaper for the consumer every day.

United Kingdom, Drax Biomass (wood) burning plant

[Biomass plant is UK's top emitter - Ember-climate.org](https://ember-climate.org)

Ember-climate.org

Despite its limited role in the UK's power system, burning wood is now the UK electricity sector's second largest CO2 emitter after fossil gas.

Not just the top emitter in the UK, the potential climate impact of Drax's biomass burning is notable even across Europe. Compared across the EU's power sector, the power plant ranks as the eighth largest CO2 emitter. Only five German and two Polish coal plants emitted more than the UK's Drax biomass plant in 2022.

Excerpts edited by RAWSEP for brevity and clarity and relationship to Residents Against Wood Smoke Emission Particulates.

Biomass plant is UK's top emitter

Drax tops the list as the UK power sector's single largest CO2 emitter, despite generating only a small share of power.

July 31, 2023 CO2 emissions in 2022 from the UK's largest emitter, Drax 20%

UK power sector emissions from biomass <5%

UK power generated by biomass About

This report compares CO2 emissions from biomass to other sources of power generation in the UK, and analyses the scale of public subsidy.

Biomass emissions

The UK's largest single source of CO2 emissions is a wood-burning power station

Despite its limited role in the UK's power system, burning wood is now the UK electricity sector's second largest CO2 emitter after fossil gas.

With 12.1 million tonnes (Mt) CO2 emissions in 2022, Drax remains by far the [largest single CO2 emitter](#) in the UK power sector. The second largest emitter, RWE's Pembroke Gas Power Station, is significantly lower at 5.3Mt CO2 emissions. Drax's emissions are also more than double Port Talbot Steelworks, the largest industry emitter, which had 5.7Mt CO2 of emissions in 2022.

Across the UK's electricity sector, burning wood is now the second largest CO2 emitter after fossil gas. Due to its lower energy density than fossil fuels, wood has to be burned in higher volumes to produce the same amount of energy. This means that [burning wood emits more carbon dioxide](#) per kWh of electricity than coal or gas.

Last year over 7Mt of wood (around 6.5Mt at Drax and 1Mt at Lynemouth) were burned in the UK to generate just over 4% of total UK electricity supply. Burning wood at this scale generated 13.1Mt of CO2 emissions, or 20% of UK power sector emissions. 12.1Mt alone came from [one power station: Drax](#), the world's largest wood-burner.

Last year emissions from burning wood in the UK power sector were over double those from burning coal, which amounted to [4.8Mt in 2022](#). This means that wood burning continues to be the second largest contributor to the power sector's CO2 emissions after fossil gas.

Drax among the top 10 power plant emitters in Europe

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Biomass power is classed as carbon neutral, but the science disagrees

Bioenergy companies do not dispute the scale of CO2 emitted by burning wood for power. However, they operate under the assumption that all emissions released are offset by the growth of new trees to replace those harvested for burning. This assumption is widely shared by the EU and the UK government. For this reason, wood is considered a 'carbon neutral' or emissions-free source of energy, making it exempt from carbon-taxation and eligible for significant public subsidy.

However, the reality of wood burning is far more complex than this. A large and growing majority of scientific evidence shows that burning wood for power is [often not carbon neutral](#), and in some circumstances can be a worse polluter than coal. There is also [strong evidence](#) that wood-sourcing practices are damaging to natural forests, risking further ecological harm. The [European Academies Sciences Advisory Council](#) (EASAC) states that using woody biomass for power "is not effective in mitigating climate change and may even increase the risk of dangerous climate change".

While the scientific debate increasingly suggests that burning biomass could actually be contributing to climate change, energy bill payers in the UK are bearing the cost. In 2022 Drax received an estimated [£617m in public subsidy](#) under the assumption that it provides emissions-free power.

The science is clear - burning wood for power is far from guaranteed carbon neutral. It doesn't make sense to gamble public money on more biomass projects when there's a risk they could significantly add to the UK's emissions.

Biomass generators are looking for new subsidies through BECCS despite doubts

Several pathways to a decarbonised UK economy, including those set out by the Climate Change Committee, rely on negative emissions generated through Bioenergy with Carbon Capture and Storage (BECCS) to meet net zero. Currently, Drax is the only company in the UK developing BECCS in the power sector and is looking to secure long-term financial commitment from the UK government to support this project.

However, the ability of a BECCS project to deliver negative emissions is entirely dependent on whether the biomass used is carbon neutral. Given the significant carbon risks of burning wood for power, Drax's BECCS project represents a risky method of emissions removals and will also come at [a significant economic cost to the public](#).

Before pursuing BECCS as a carbon removal strategy, the technology needs to demonstrate beyond doubt that it can deliver negative emissions. This could be pursued through a small-scale test plant, ahead of any large and long term commitment of public subsidy.

To achieve a clean power system by 2035 or earlier, the UK now needs to deprioritise technologies which risk high emissions, such as biomass. Instead, solutions that can demonstrably provide low emissions generation, including wind, solar, hydro and nuclear, should be thought of as building blocks to decarbonisation. The UK can confidently prioritise these low risk, high reward sources of generation, alongside vital technologies such as storage solutions and grid connections that will enable a transition to clean power in the targeted timeline.

Methodology

Emission calculations

Ranking of CO2 emitters calculated through analysis of UK and EU emissions trading schemes.

The [UK ETS](#) uses the same biomass emissions factor as the [EU ETS directive 2003/87/EC](#). Annex IV of the Directive 2003/87/EC states: "The emission factor for biomass shall be zero".

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United States, Department of Energy Newsletter

July 31, 2023

DOE Launches First-Ever 'Cleanup to Clean Energy' Initiative to Explore Generating Clean Energy on DOE-Owned Lands

DOE Intends to Lease Land on Sites Across the U.S. for Utility-Scale Clean Energy Projects

WASHINGTON, D.C. — The U.S. Department of Energy (DOE) today kicked off its "Cleanup to Clean Energy" initiative, an innovative effort to repurpose parts of DOE-owned lands—portions of which were previously used in the nation's nuclear weapons program—into the sites of clean-energy generation. Working with a diverse range of stakeholders, including industry, Federal entities, tribes, state, and local officials, DOE will explore opportunities to lease Federal land for the buildout of utility-scale clean energy projects. Cleanup to Clean Energy will help achieve President Biden's ambitious climate goals and the directive in Executive Order 14057 for agencies to use their properties for the development of new clean electricity generation.

“We are going to transform the lands we have used over decades for nuclear security and environmental remediation by working closely with tribes and local communities together with partners in the private sector to build some of the largest clean energy projects in the world,” said U.S. Secretary of Energy Jennifer M. Granholm. “Through the Cleanup to Clean Energy initiative, DOE will leverage areas that were previously used to protect our national security and will repurpose them to the same end—this time, generating clean energy that will help save the planet and protect our energy independence.”

DOE’s Office of Environmental Management, Office of Nuclear Energy, and National Nuclear Security Administration have identified about 70,000 acres for potential development at five sites:

Hanford Site, Richland, Washington

Idaho National Laboratory, Idaho Falls, Idaho

Nevada National Security Site, Nye County, Nevada

Savannah River Site, Aiken, South Carolina

Waste Isolation Pilot Plant, Carlsbad, New Mexico

In [Executive Order 14057](#) in December 2021, President Biden called on agencies to achieve 100% clean electricity by 2030 and directed them to authorize use of their real property assets, including land for the development of new clean electricity generation and storage through leases, grants, permits, or other mechanisms.

As the leading Federal agency on clean energy research and development, DOE has both a unique opportunity and a clear responsibility to lead by example and identify creative solutions to achieve the President’s mandate.

DOE will continue to communicate and partner with industry, Tribal Nations, communities, stakeholders, regulators, and others as a process to potentially develop clean energy projects on DOE land is developed and implemented.

RAWSEP View: See picture of electric range top with blue lights to indicate the electric burners are on. For those who use natural gas burners and indoor residential wood stoves for your own private aesthetic reasons, because you think the blue flame or the orange flame is pretty, there are fabulous fakes with low PM2.5 emissions out there. In 2023 electric ranges are being sold with blue lights to indicate the electric burners are “on” that mimic the, some would say, aesthetically pleasing look of blue natural gas flames. In 2023 there are Heat Pumps that work at temperatures down to 40 degrees below zero Fahrenheit, have almost no emissions, and double as air conditioners, so efficient you immediately start saving on your energy bills. In 2023 some Heat Pumps can come, for an extra charge, with a picture of a fireplace plastered on the front! For the traditionalists out there, did you know that old wood stoves did not work efficiently or with lower emissions if they had glass doors through which you could watch the flames. The old, traditional, least polluting but still very PM2.5 polluting indoor residential wood stoves had heavy solid metal doors that closed as tightly as possible! Very traditional and not catering to your aesthetic visual senses, imagine!

Science Moms Newsletter

July 31, 2023.

Switching to Clean Energy Can Help.

<https://sciencemoms.com/heat>

Are you tired of talking about floods, fires, extreme heat?

Us too! The list of worsening extreme weather goes on, and we’re tired of having to talk about it. It’s time to team up and take action! Learn how you can protect your kids from extreme weather by [switching to clean energy](#). We know that climate change is causing abnormal weather events like extreme heat that put our kids and communities even more at risk. As global temperatures rise, climate change is making for more intense heat, earlier and for longer periods of time. Protect our kids from extreme weather by switching from dirty to clean energy. Visit sciencemoms.com/clean-energy/ to learn how to get started.

United States

[As wildfires burn, scientists race to understand the health dangers of prolonged exposure](#)

STAT News

Particulate matter is a term for solid particles or liquid droplets suspended in the air; PM2.5 is the tiniest and farthest traveling of these. With a ...

[Heart attack: Risk of death soars on days of heat and pollution - Medical News Today](#)

Medical News Today

The fine particles discussed in the article are called PM 2.5, which is short for “particulate matter, 2.5 micrometers or smaller.

[Politicians need to show courage with environmental policies | NationalWorld](#)

NationalWorld

... within the expanded ULEZ to the north and south circular roads, and the original ULEZ has reduced PM 2.5 pollution levels by 41% since 2017.

Colorado, Garfield County

[PI Editorial: Don't breathe a sigh of relief just yet: Fire danger persists in Garfield County](#)

Post Independent

The plan focuses on covering PM 2.5, or particulate matter that is 2.5 microns or less in width. This type of pollution is common to wildfire ...

Pennsylvania, Lehigh Valley

[Canadian wildfire smoke in the Lehigh Valley: How to protect indoor air | LehighValleyNews.com](#)

LehighValleyNews.com

However, air purifiers can be very effective in clearing the air of small particles such as viruses and PM 2.5 depending on the size of the air ...

New York, New York City

[NYC's New Pizza Oven Rule Will Protect Neighborhood Air Quality - NRDC](#)

NRDC

Uncontrolled cook stoves, like wood- and coal-burning pizza ovens, discharge particulate emissions and noxious odors, affecting thousands of ...

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Utah, St. George, Red Hills Parkway

[Fire at spa store on Red Hills Parkway sends up smoke seen throughout St. George](#)

YouTube

Inside a burning house ... ADT Fire Alarm and First Responders Save Oklahoma Family from Burning House. ADT•3.9M views ... DIY Wood Fired Hot Tub.

Canada, Ontario, Rainy Creek

[Firefighters tackle Rainy Creek blazes; fire danger at extreme | Western News](#)

Western News

It's been five years since a fire burned near the OU3 site. ... duff, tree bark, ash from wood burning, surface water and sediment. ... duff, tree bark, ash from wood burning, surface water and sediment. ... on Jennings Haul Road when he saw smoke in the area and called it in.

Canada, Northwest Territories, Fort Smith

[Fire temporarily closes N.W.T.'s Highway 5; still no threat to Fort Smith | CBC News](#)

CBC

The N.W.T.'s Highway 5 was temporarily closed shortly after 1:30 p.m. Sunday due to a fire burning in Wood Buffalo National Park 25 kilometres ...

Australia, Perth

[CSIRO study: HEPA filters a breath of fresh air in bushfire season](#)

CSIRO

"They demonstrate that any smoke emissions, including from neighbouring houses' wood heaters can be managed better." These conclusions were drawn by ..

[Study proves air filters help deal with bushfire smoke | Eastern Riverina Chronicle](#)

Eastern Riverina Chronicle

Bushfire smoke can contain particles so small they get deep into the ... any smoke emissions, including from neighbouring houses' wood heaters can ...

[Study proves air filters help deal with bushfire smoke - Yahoo News](#)

Yahoo News

"They demonstrate that any smoke emissions, including from neighbouring houses' wood heaters can be managed better." The study was focused on fine ...

India, Delhi

[Rain, winds give Delhi best July AQI since 2015 - Hindustan Times](#)

Hindustan Times

"We are seeing a drop in annual PM 2.5 and PM 10 levels each year and that is reflecting in the monthly data too. It shows that since 2015, ...

[Delhi records lowest average Air Quality Index \(AQI\) for 7-month period January to July in ...](#)

Press Information Bureau

A chart depicting PM 10 and PM 2.5 running average ($\mu\text{g}/\text{m}^3$) for the 31 days period of July during the 05 years (2019-2023) is given below: CAQM urges ...

Dear 10 Assistant Attorneys General of U S states preparing to sue the EPA to provide clarity to indoor residential wood stove owners on certification of their currently used, and currently polluting, appliances. Please ask the E P A to use a complaint based system instead, using data from PurpleAir monitors in the yards of near neighbors of indoor residential wood burners. The states involved are Alaska, Illinois, Maryland, Massachusetts, Minnesota, New Jersey, New York, Oregon, Vermont, and Washington, as well as the Puget Sound Clean Air Agency. Contact emails for the 10 Assistant or Deputy Attorney Generals and a General Counsel are:

cody.doig@alaska.gov Alaska Senior Assistant Attorney General email (Cody Doig)

Jason.james@ilag.gov Illinois Assistant Attorney General email (Jason James)

Sgoldstein@oag.state.md.us Maryland Special Assistant Attorney General email (Steven Goldstein)

Turner.Smith@mass.gov Massachusetts Assistant Attorney General email (Turner Smith)

Peter.Surdo@ag.state.mn.us Minnesota Special Assistant Attorney General email (Peter Surdo)

Lisa.Morelli@law.njoag.gov New Jersey Deputy Attorney General email (Lisa Morelli)

Nicholas.Buttino@ag.ny.gov New York Assistant Attorney General email (Nicholas Buttino)

Paul.Garrahan@ag.state.or.us Oregon Attorney-in-Charge email (Paul Garrahan, one of two OR attorneys)

Steve.Novick@ag.state.or.us Oregon Special Assistant Attorney General email (Steve Novick, one of two OR attorneys)

Nick.persampieri@vermont.gov Vermont Assistant Attorney General email (Nick Persampieri)

Caroline.cress@atg.wa.gov Washington Assistant Attorney General email (Caroline Cress)

Jenniferd@psccleanair.gov General Counsel, Puget Sound Clean Air Agency (Jennifer A. Dold)

A new icon has been added to the RAWSEP Website, which is now the nearest right icon. The icon is an ask that has already been described in Episodes 56GB (description of the parties who should be at the table when deciding on "safe" wood stove emission limits and fence line measurements, rather than wood stove certification) and (emails to contact 10 Deputy or Assistant Attorney Generals and one General Counsel) (those PDFs are included at the icon link).

Residents Against Wood Smoke Emission Particulates, see <https://RAWSEPresidents.wordpress.com> and click on the nearest right icon for The Ask: Contact 10 Attorneys General <https://rawsepresidents.wordpress.com/1-please-contact-10-attorneys-general-about-august-2023-suit-versus-e-p-a-asking-for-certainty-for-wood-stove-users-rawsep-asks-for-complaint-based-sytem-based-on-pm2-5-monitor-data-exceeding-e-p/> To the right of that "Barbie Goes To The Dating Game" <https://rawsepresidents.wordpress.com/1-barbie-goes-to-the-dating-game/> To the right of that "Cookies that may contain Rocks are recalled" <https://rawsepresidents.wordpress.com/cookies-that-may-contain-rocks-are-recalled/> to the right of that "The Fox Owns the Forest" card game <https://rawsepresidents.wordpress.com/the-fox-owns-the-forest-card-game-tba/> then to the right of that, the latest month, July 2023, of PDFs of articles with U R L's to search on <https://rawsepresidents.wordpress.com/1-july-2023-pdfs-of-urls/> To the right of that, Stickers to handout for RAWSEP, Games such as 1) Bingo for RAWSEP, 2) Crosswords for RAWSEP 3) EndWoodSmokeJeopardy 4) EndWoodSmokeMonopoly

5) "Vending Machines for PM2.5 monitors", and icon links to 30 minute Youtube videos and Spotify podcasts as well as podcasts.google.com, Castbox and PocketCast. PocketCast is only Free on the phone App. Pocket Cast works on Apple phones) and, below those icons, icon links to monthly URL's of PDFs from June 2023 to May 2022.



Methodology

Emission calculations

Ranking of CO2 emitters calculated through analysis of UK and EU emissions trading schemes.

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Highlights

12.1Mt

CO2 emissions in 2022 from the UK's largest emitter, Drax

20%

UK power sector emissions from biomass

<5%

UK power generated by biomass

Biomass emissions

The UK's largest single source of CO₂ emissions is a wood-burning power station





















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Europe

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Drax biomass plant amongst Europe's top 10 emitters

Power plant emissions, 2022

Rank	Power Plant	Owner	Fuel	Emissions 2022 (Mt CO2e)
 1	Bełchatów	PGE	Lignite	 35.1
 2	Neurath	RWE	Lignite	 24.2
 3	Boxberg	EPH	Lignite	 19.1
 4	Niederaußern	RWE	Lignite	 17
 5	Kozienice	ENEA	Hard Coal	 15.6
 6	Jänschwalde	EPH	Lignite	 15.3
 7	Weisweiler	RWE	Lignite	 14.9
 8	Drax	Drax Power PLC	Biomass	 12.1
 9	Lippendorf	EPH/EnBW	Lignite	 11.9
 10	Turów	PGE	Lignite	 11.2

Source: EU-ETS, [Drax Group plc Annual report and accounts 2022](#)

When taking into account lifecycle emissions, biomass is considered to be carbon neutral at the point of combustion by the EU ETS. Europe covers EU-27, Switzerland, Norway, Iceland, Liechtenstein and the UK.

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Biomass generators are looking for new subsidies through BECCS despite doubts

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