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# Drax is still the UK's largest emitter

**Drax power plant tops the list of largest carbon emitters in the UK, followed by Port Talbot Steelworks and Pembroke gas power station as coal and steel closures shake up rankings.**

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Lead author: Frankie Mayo

## 18%

The largest 50 facilities emit the equivalent of 18% of UK national emissions.

## 13.3 Mt

The largest emitter in the UK, Drax power station, emitted 13.3 million tonnes of CO2e.

## 16%

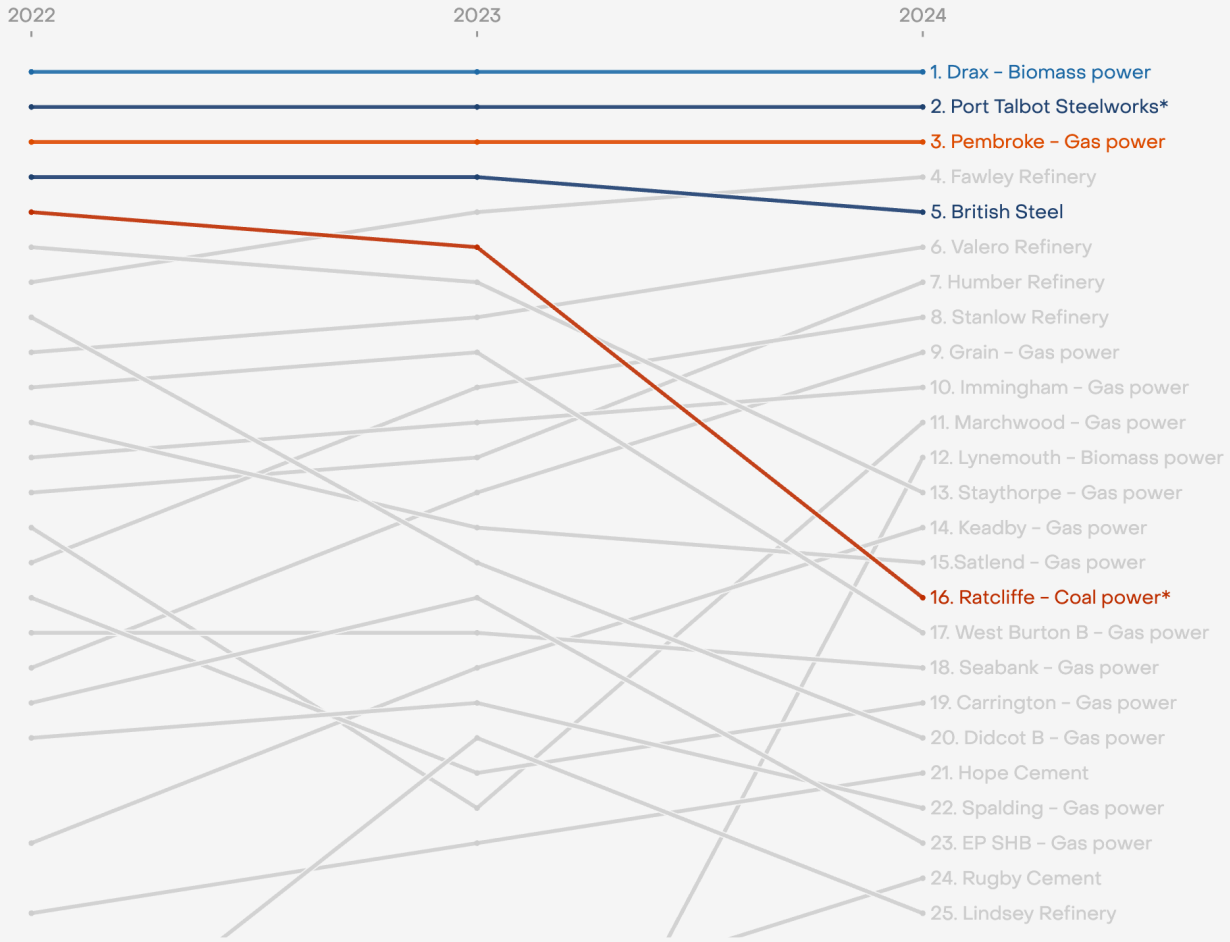
Emissions from Drax biomass power station increased by 16% in 2024.

# Summary

- **Drax power station is once again the UK's largest emitter.** Emissions from Drax increased 16% last year, widening the gap with the next largest emitters. Emissions from Drax power station are larger than the six largest gas power plants combined, despite Pembroke gas power station ranking as the third largest emitter in the UK.
- **Drax power station is likely to remain the UK's largest emitter out to 2030.** Despite an announced cut from 2027 onwards, public subsidies for biomass will likely ensure that Drax remains the largest emitter in 2030.
- **Emitters rankings change following UK coal power phase out in 2024.** Ratcliffe-on-Soar coal power plant ceased generation in September 2024, previously the UK's fifth largest emitter. Port Talbot Steelworks, another large coal user, also ceased operations in September 2024, but retained its second place ranking.

## Coal and steel closures begin to affect the UK largest emitters rankings

Top 5 in 2022 highlighted




Source: UK Emissions Trading Scheme, company-level data
*Closed in September 2024

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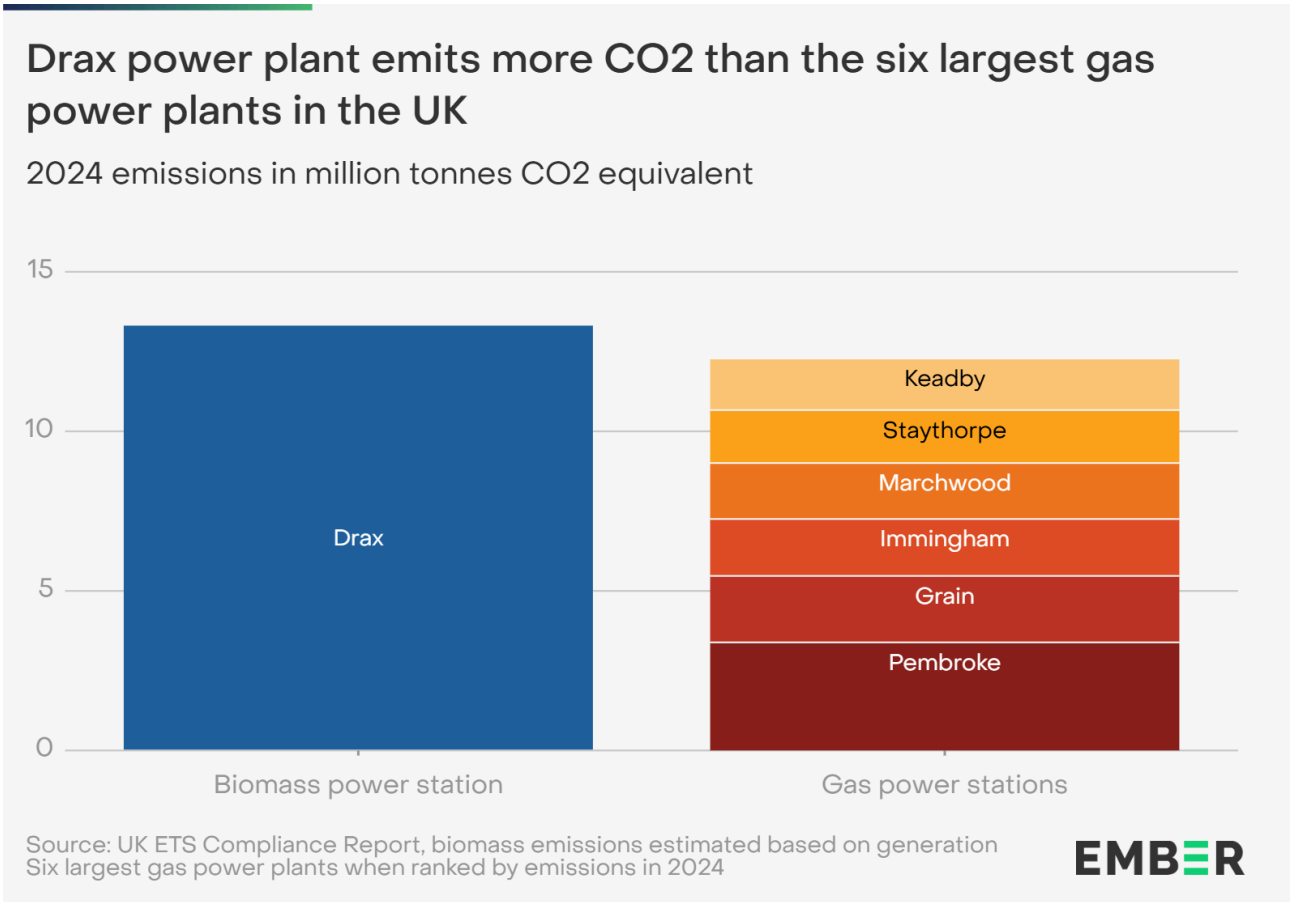
# Drax power station is once again the UK's largest emitter

Emitting 13.3 million tonnes of CO2e last year, Drax power plant is the largest single source of carbon dioxide in the UK, emitting more than the next four largest emitters combined. Increased emissions in the past year widened the gap between it and the second largest, Port Talbot Steelworks, followed by Pembroke gas power plant in third. Drax biomass power plant has now been the UK's top emitter for the last 10 years running.

Power sector emissions are a large part of the top emitter rankings, though coal and gas power plants are dwarfed by biomass. Emissions from Drax are larger than those from the six most polluting gas power plants combined. Overall, power plants make up 16 of the top 25 largest emitters, but with the coal phase-out complete, biomass and gas power plants will continue to dominate power sector emissions until they too are phased down.

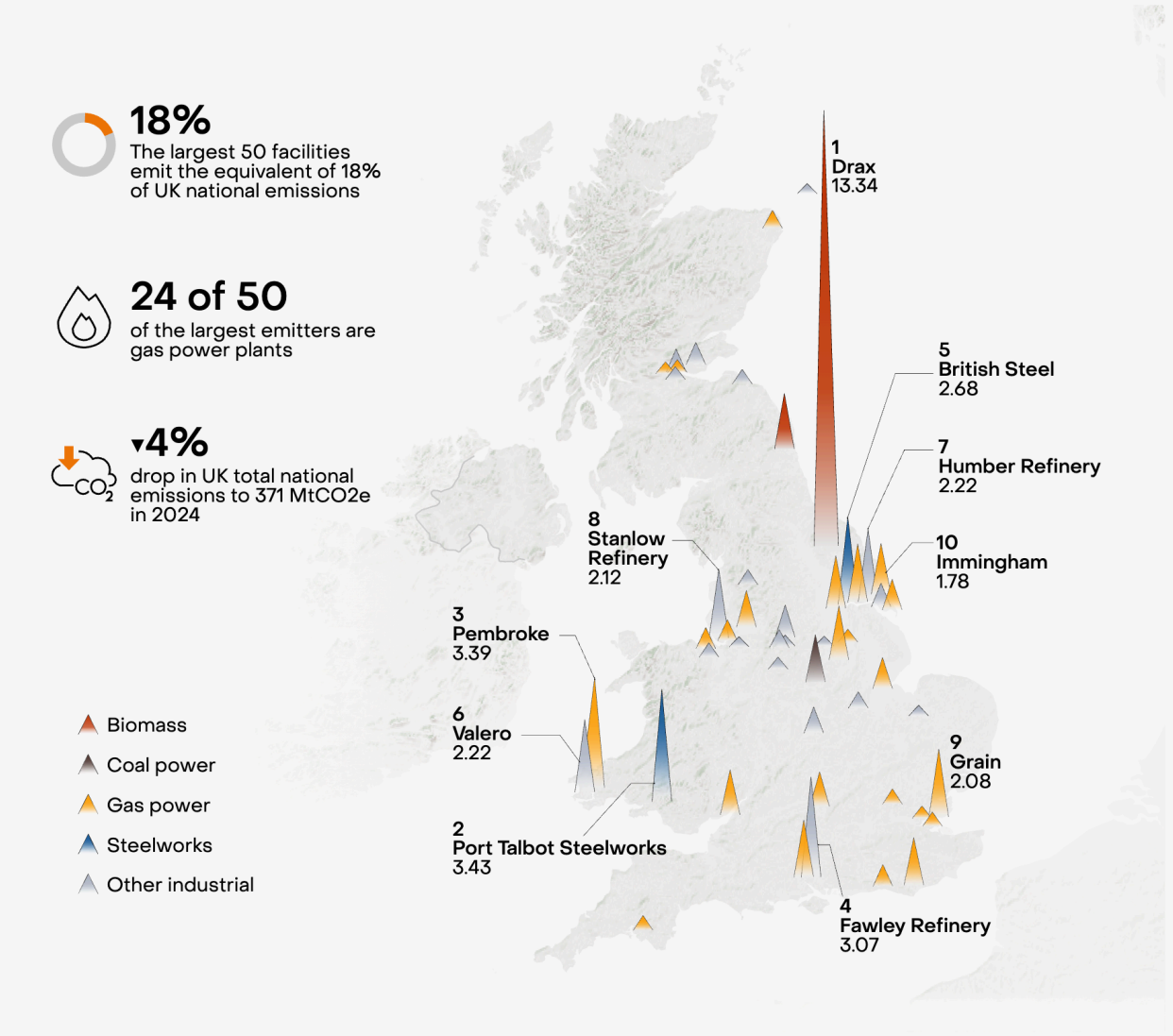



Large-scale biomass burning continues to top the UK emissions rankings, and despite Drax earning around £2 million per day in public subsidies, concerns remain about the high level of direct emissions. The carbon content of wood and high volumes burned ensured that Drax power station remained the UK's largest emitter. Emissions from Drax increased 16% in one year, and are equivalent to more than 10% of the UK's entire emissions from transport. Drax generated 15 TWh in 2024 by burning 7.6 million tonnes of wood, of which 99% was imported.

Despite these high emissions, biomass generation is currently defined as carbon neutral in UK carbon budgets, meaning it has been eligible for subsidies earmarked for renewable energy - see Methodology for further details. Unfortunately, the assumed carbon saving from biomass power is far from guaranteed.

## Drax biomass power station is the largest emitter in the UK

50 largest emitters in the UK (in MtCO2e, 2024)




Source: UK Emissions Trading Scheme, company-level data

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Lynemouth biomass power station is now the 12th largest emitting facility in the UK, emitting around 1.7 MtCO2e. Though not as large as Drax, increased generation at Lynemouth, backed by a publicly funded Contract for Difference subsidy, significantly boosted its emissions in 2024. Despite this public subsidy, during the energy crisis biomass generation fell significantly as profitability fell. As earnings from its Contract for Difference increased, Lynemouth re-entered the top 25 largest emitters for the first time since 2021. However, generation at Lynemouth is still around a quarter lower than average, meaning emissions could rise further next year.

Despite a reduction in generation, gas power plants have the most entries in the largest emitters list, with 13 out of the top 25. As well as power generation, gas power currently plays an important grid stability role, but this can increasingly be replaced by clean solutions which have both lower emissions and import reliance. Clean flexibility technologies, such as batteries and long-duration energy storage, will therefore be critical to reducing gas powered generation and associated emissions.

# What changed in the last year?

**Coal drops down the UK rankings with final power plant closure**

The final coal power plant in the UK, Ratcliffe-on-Soar, ceased generation in September 2024, previously the UK's fifth largest emitter in 2023. The UK's coal

power phase-out policies raised the cost of coal, tightened air quality regulations and supported new low-carbon power to displace coal generation. Coal power provided almost 40% of UK generation in 2012, shrinking to 2% by 2019, and finally fell to zero by October 2024. Importantly, coal power generation was mainly replaced by increased wind and solar generation, with only a slight increase in the gas share of total generation.

**Steel plants face uncertain future**

There were significant changes among the largest industrial emitters in 2024. On the 30th of September, the day the final UK coal power plant closed, production also ceased at Port Talbot Steelworks, the second largest emitter in the UK. High levels of emissions are associated with steelworks due to the use of coal in the production process. However, despite its closure in September and the subsequent 40% fall in its annual emissions, the steelworks retained its 2nd place position, producing 3.4 MtCO2e.

The only remaining primary steelworks in the UK, British Steel, has had its immediate future secured after government intervention. Despite falling to 5th place, British Steel is likely to continue to feature in the largest emitters in the UK in the immediate term as parliament passed emergency legislation in April 2025 to ensure operations continued.

**Electrification is recognised as key to accelerating industrial decarbonisation**

Energy intensive users, such as oil refineries, steelworks and cement works, continue to feature in the largest emitter rankings this year. A government consultation into industrial electrification (September 2024) has highlighted its importance, but also key barriers such as high electricity prices, grid connection delays and the readiness of technologies that can provide high-grade heat. UK

industries face several existing challenges, including the energy crisis, international competition and tariffs on accessing export markets. These make strategic action on energy all the more important. The recently published UK Industrial Strategy (June 2025) has identified several supportive policies, including energy bill reductions and grid connection reform.

**Carbon capture sites have made slow progress**

Several large emitters are in line to retrofit carbon capture, but limited progress has been made in the past twelve-months. Despite confirming up to £21.7 billion in carbon capture, utilisation and storage (CCUS) funding over a 25-year period, the government has admitted its 20-30 MtCO2e/year carbon capture ambition for 2030 is unachievable, and has not yet declared a new target.

Overall, three large emitters have been identified as part of the Track 1 CCUS clusters. These are all in the HyNet cluster, and include Padeswood Cement Works, Buxton Lime works, and the Viridor Runcorn energy-from-waste plant. There are also additional facilities considered for future support, which could connect to the recently announced Viking and Acorn clusters - such as the Phillips 66 Humber Refinery, the 7th largest single emitter in the UK. Therefore, alongside electrification, in specific regions carbon capture may help abate emissions from several of the largest emitters, though the cost and timescale is currently uncertain.

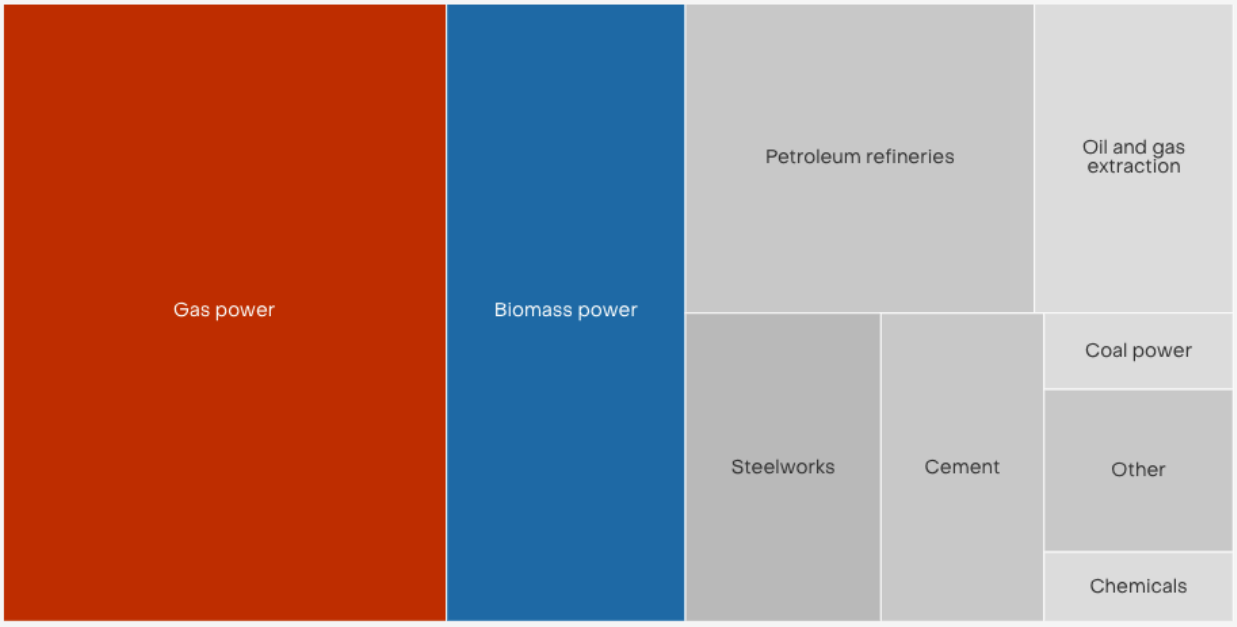
# Interconnection and clean power pushed gas generation to record low

Gas generators make up over half of the top 25 largest emitters, despite gas generation declining last year. In 2024, gas generation in the UK fell to its lowest level in over 25 years, 84 TWh or 30% of total generation. Expensive gas power was displaced by cheaper imports from interconnected European neighbours (up 9.9 GWh) and record zero-carbon power from wind and solar (up 3.7 GWh).

The resurgence in polluting bioenergy generation (up 5.4 GWh) also further displaced gas generation. However, the emissions from these two sources remain significant. Combined, gas and biomass power make up over half (55%) of the emissions of the top 100 largest UK emitters.

## Gas and biomass power plants make up over half of the emissions from the top 100 largest emitters in the UK

Emissions by facility type, 100 UK largest emitters (MtCO2e)




Source: Ember

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# Biomass emissions to remain high out to 2030

**The 2027-2031 subsidy cut for Drax biomass power plant begins the long-term phase out, but it also likely ensures that Drax will remain the UK's largest emitter until 2030.**

### Support for polluting biomass power cut as part of longer term phase-out

In February 2025, the UK government announced a decision to cut subsidies for biomass generators by around half for an additional four-year period once the current scheme ends in April 2027. Under these new terms, Drax power station will generate at around half its current level, supplying less than 2% of forecasted UK electricity supply in 2030. It is currently unclear what support scheme will be open to Lynemouth power station, or to smaller biomass power generators.

Government subsidies mean that Drax is very likely to remain the largest emitter out to 2030. Despite subsidised generation likely halving from 2027, as Drax produced more than triple the emissions of Pembroke gas power station, the next largest operational emitter, it looks set to keep the number one spot.

Gas and biomass are the largest sources of power sector emissions. However, the Clean Power 2030 target aims to reduce gas to 5% to the generation mix, and the biomass subsidy cut in 2027 indicates a longer-term phaseout. Gas and

biomass power emissions will fall as they are displaced by cheaper, home-grown clean power sources.

**No progress in carbon capture deployment at Drax**

The phase-out of unabated, polluting biomass is in sight. However, the future of bioenergy with carbon capture and storage (BECCS) is less clear. While the overall UK government scheme to support carbon capture, the CCUS cluster process, makes slow progress, BECCS remains excluded. Neither Drax or Lynemouth biomass power stations are included in the CCUS 'Track 1' projects nor were they included in the 2025 spending review announcements supporting the Acorn and Viking sites.

While some greenhouse gas removals may still be included by the government in future CCUS rounds, the deployment pathway for BECCS looks less certain than ever. What is certain, given delays to date, is that delivering BECCS with large-scale biomass generators will require significant public investment at cost to households, with serious questions raised about the claimed carbon savings and delivery timescales.

# Supporting information

## Acknowledgements

Report written by Frankie Mayo. Data visualisation by Rey Dizon. Edited by Alison Candlin and Burcu Unal Kurban.

Image credits: Mike Erskine / Unsplash

## Methodology

**Direct emissions**
The ranking focuses on direct carbon dioxide equivalent (CO2e) emissions in the full 2024 calendar year, emitted within UK borders.

The ranking of CO2e emitters is mainly analysed using UK Emissions Trading Scheme data. The UK Emissions Trading Scheme data published for 2024 is for direct emissions, so excludes upstream and downstream indirect emissions. For example, this excludes upstream emissions from purchased electricity, or downstream emissions from the sale of fossil fuels. Data cleaning of account

holder and site name entries has been performed for clarity. Currently, energy from waste facilities are not required to submit emissions into the UK ETS, but will need to from 2028.

Biomass burning for power generation is effectively excluded from UK carbon accounts, so Ember has sourced emissions from biomass power station annual reports. 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". Drax emissions are taken from the Drax Group plc Annual report.

Lynemouth emissions have been calculated by Ember from facility generation data published by the LCCC, as biogenic emissions are not published publicly. An emissions factor has been used to align with average large-scale biomass emissions factors. While this is a likely accurate estimate, and shows inter-year changes well, it is not as precise as self-reporting in the ETS.

**Notes on biomass emissions accounting concerns**

Serious concerns remain about the overall emissions of using biomass for power generation. The EU and UK emissions trading schemes do not require wood-burning power plants to report their emissions, assuming the emissions are offset by forest regrowth. Unfortunately, the assumed carbon savings from biomass is far from guaranteed.

There is a mounting body of evidence and expert opinion that this assumption is critically flawed and must be overturned. The European Academies Sciences Advisory Council states that using woody biomass for power "is not effective in mitigating climate change and may even increase the risk of dangerous climate change". Furthermore, BBC investigations have shown examples of rare old growth forests being cut down and turned into wood pellets, increasing the potential ecological harm inflicted. It is therefore likely that burning biomass to

generate power is failing to deliver any carbon savings and is in fact a contributor to climate change.

**Comparison to total UK territorial emissions**

The Office of National Statistics reports on UK total greenhouse gas emissions in different ways. 'Territorial emissions' focuses on emissions within national borders and excludes, for instance, imported goods. It also excludes 'biogenic emissions', i.e. from burning woody biomass in Drax. Due to this exclusion, emissions from these rankings are presented as 'equivalent to' when compared to national figures.

Please note that although this is a review of the UK Emissions Trading Scheme, Northern Ireland electricity generators remain in the EU ETS under the Ireland / Northern Ireland Protocol.

**Classification of facilities**

The UK ETS uses 'NACE' descriptions, which offer some insight into the facility type, but do not specify for instance fuel type used within '3511 - Production of electricity'. Ember has independently researched the sub-sector description for individual facilities. For most, particularly the largest facilities, this is clear, but for smaller sites or sites which occupy the same industrial park for instance, sub-sector classification has not been possible.