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**The Real Emissions of Peterhead Carbon Capture**

October 2024

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| **Summary** * New research by think tank Carbon Tracker into the proposed gas-burning power station and carbon capture plant at Peterhead has uncovered a “severe underestimation of the project’s climate impact”. The report *‘The Real Emissions of Peterhead-CCS'* finds: **The lifetime emissions of Peterhead-CCS could be five times higher than the developers, SSE and Equinor, have disclosed to the Scottish Government.**
* The plant could cause 1 million tonnes more CO2 each year than the 250,000 tonnes figure claimed in the Environmental Impact Assessment (EIA).
* The power station is set to continue burning fossil fuels until 2059 - 14 years after Scotland is due to reach net zero.
* The plant would have a “major adverse impact” on Scotland's carbon budget, responsible for emissions up 50-80% of Scotland’s annual total by 2044. This would force other sectors of the economy to reduce emissions much more rapidly.
* There are only 2 pilot projects applying carbon capture on gas turbines, both at a scale approximately 20 times smaller than the proposed Peterhead plant.

This means the Scottish Government are deciding on the planning application without full picture of the project’s climate impact. We therefore urge the Scottish Government to order developers SSE and Equinor to re-do their Environmental Impact Assessment.  |

**Overview**

In February 2022, SSE and Equinor submitted a planning application[[1]](#footnote-2) for a new 910MW gas burning power station with carbon capture plant at Peterhead, Aberdeenshire. The application is currently with Scottish Ministers for decision.

Carbon Tracker assessed the climate impact of the proposed development by reviewing the Environmental Impact Assessment (EIA) submitted as part of the planning application. The research “found serious omissions and shortcomings resulting in a severe underestimation of the project’s climate impact”.

The developers had failed to account for climate emissions from three key areas: the supply of gas to be burned in the power station, emissions during periods when the carbon capture plant is switched off for maintenance or unplanned outage, and lower capture rates.

By factoring in emissions from these areas, researchers found “the lifetime emissions of Peterhead-CCS could be three to five times higher than reported by the developer”.

**Climate impact of the power plant’s gas supply**

SSE and Equinor failed to account for the greenhouse gas emissions produced by extracting and transporting the gas which will be burned to generate electricity at Peterhead (‘upstream emissions’). The rresearch found that the climate impact of the Peterhead- CCS plant would increase dramatically once upstream emissions are included the calculations.

These emissions vary greatly depending on the origin of the gas and how it is transported. As North Sea gas runs out, the UK Government forecasts it will import significantly more Liquified Natural Gas, which has a far higher carbon footprint. By the 2030s, the UK could rely for more than half of its gas supply on imported LNG. SSE and Equinor’s environmental assessment fails to consider the predicted changes in the carbon footprint of its fuel throughout the project lifespan.

The research also highlights that by 2035 the gas demand from the CCS and fossil (blue) hydrogen projects proposed across the UK could be more than twice the projected domestic North Sea production [[2]](#footnote-3), meaning these projects could drive-up higher carbon gas imports.

**Maintenance and outages have not been accounted for**

The developer’s climate impact calculations assume the carbon capture plant would be running 100% of the time. During periods of routine maintenance and outages, CO2 from the gas power station would not be captured but released into the atmosphere, so it is vital to include this in the climate impact.

Carbon Tracker modelled a conservative 18 days a year for maintenance and outages. This **increases the plant’s emissions by 40% compared to the EIA estimate.** The research also highlights that **climate emissions increase ten folds for every hour the carbon capture is not working.**

**Carbon capture rates are assumed to be above global average**

SSE and Equinor’s claims that the plant would capture 90-95% of the carbon dioxide it produces are not supported by evidence. Carbon capture on gas-burning plants has not been tested at scale or evidenced under real-life operating conditions anywhere in the world. The report highlights the only pilot projects in the world trialing carbon capture on a gas plant were found to be just 1/20th of the size of the proposed Peterhead plant**[[3]](#footnote-4).**

By modelling emissions at 75% capture (Figure 1) - a still optimistic assumption but a level at which the plant would still be in receipt of UK Government subsidy as part of the dispatchable power agreement[[4]](#footnote-5)- the total emissions of the development increase fivefold.

**Recommendations for the Scottish Government**

This research makes clear that the developers have substantially underestimated the real climate emissions of the proposed development.

The Scottish Government should order project developers SSE and Equinor to resubmit their Environmental Impact Assessment, addressing upstream emissions, period of outage and more realistic capture rates. As the UK Government’s Planning Directorate ordered of another Equinor gas-CCS project, together with bp, Net Zero Teesside.

The report also makes clear the unevidenced capture claims of carbon capture plants, and that these projects drive up gas demand and far from low carbon. The Scottish Government should abandon support for CCS and focus on building a renewable energy future.

If you have any questions or follow ups from this briefing, please contact:
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1. 1. Section 36 of the Electricity Act 1989 applies to proposals for the construction, extension or operation of an onshore electricity generating station whose capacity exceeds (or, when extended, will exceed) 50 megawatts (MW). [↑](#footnote-ref-2)
2. https://carbontracker.org/reports/kind-of-blue/ [↑](#footnote-ref-3)
3. *Glacier CCS in Alberta Entropy Corporate presentation December 2023 (*[link](https://www.entropyinc.com/investors/corporate-presentation#newsreleases)*) - Tata Chemical in Winnington Integrated annual report 2022/23 (*[link](https://www.tatachemicals.com/upload/content_pdf/integrated-annual-report-fy-2022-23.pdf)*)* [↑](#footnote-ref-4)
4. *The plant would be complying with the minimum criteria for carbon capture rate detailed in the Dispatchable Power Agreement is 70%. DESNZ (2024) - Dispatchable Power Agreement (DPA) Provisional Heads of Terms (*[here](https://assets.publishing.service.gov.uk/media/615b02b6d3bf7f55fe946b62/dpa-provisional-heads-terms-october-2021-annex-a.pdf)*)* [↑](#footnote-ref-5)