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Industrial Energy Transformation Fund

SCCS response to the Department of Business, Energy and Industrial Strategy consultation

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Industrial Energy Transformation Fund SCCS consultation response

1 Introduction

The Industrial Energy Transformation Fund (IETF) must be targeted to where it will make the greatest difference in reducing greenhouse gas emissions. This means that it must focus on decarbonising industrial emissions: both from fossil fuel used for heat, and from the chemical reactions that are part of many industrial processes.

The least cost – and for many industries, only – way to do that is with carbon capture and storage (CCS). CCS enables CO_2 emissions to be captured and separated at source, then permanently sequestered in geological layers deep beneath the North Sea.

CCS can remove process CO_2 emissions from industries such as steel and cement manufacture, and petrochemicals operations. It can also remove CO_2 emissions that result from burning fossil fuels to meet a high heat demand in industry: in many cases that heat demand cannot reasonably be met by electrification. Where this heat demand could be met by hydrogen, CCS enables this to be produced in bulk from methane.

CCS has wider benefits across the economy: hydrogen can be used in heating and transport, decarbonising these otherwise hard-to-treat dispersed emissions sources. Furthermore, CO_2 transport and storage infrastructure can be used to permanently sequester emissions from biogenic sources of CO_2 - such as bioenergy or fermentation – and CO_2 captured directly from the air, allowing for negative emissions, which can offset residual greenhouse gas emissions elsewhere in the economy.

2 IETF objectives

We welcome the recognition in the consultation document[1] that around half of industrial decarbonisation will come from CCS directly, and a further 25% from fuel switching which, for processes with a high heat demand, is likely to be to hydrogen supported by CCS.

As shown in Chart 2 of the consultation document, energy efficiency has a very limited role to play in further industrial decarbonisation: in large part, we can assume that this is because reducing energy consumption, but retaining the same level of output, makes financial sense, and therefore industries will already have invested in it. Indeed, informal discussions with high-emitting industries in Scotland suggest that there is little or nothing more they can do to improve energy efficiency in their operations.

The limited role for energy efficiency in reducing emissions, and the fact that energy efficiency is a cost-saving measure for companies, and therefore should make business sense without additional government investment, are strong arguments for why the Industrial Energy Transformation Fund should move away from its objective of supporting energy efficiency: it would have little impact, and provide little additionality.

[1] https://www.gov.uk/government/consultations/designing-the-industrial-energy-transformation-fund

Instead, the focus should be strongly on carbon capture and storage, particularly establishing the infrastructure that is needed to transport and permanently store CO_2, and thus create the conditions that will enable companies to invest in CO_2 capture into the future.

The Committee on Climate Change found that meeting a net zero target will require the UK to capture and store 75-175 $MtCO_2$ annually by 2050. They state that:

> "Carbon capture and storage (CCS) is essential. We previously recommended that the first CCS cluster should be operational by 2026, with two clusters, capturing at least 10 MtCO2, operating by 2030. For a net-zero target it is very likely that more will be needed. At least one of the clusters should involve substantial production of low-carbon hydrogen. The Government will need to take a lead on infrastructure development, with long-term contracts to reward carbon capture plants and encourage investment."[2]

The delivery of the CO_2 storage element of CCS will be a core enabler of industrial decarbonisation: CO_2 storage is not yet in operation in the UK, but the ACT Acorn Project found that 200 kt/yr CO_2 storage could be operational in 2023, given the right support, building up to 3Mt/yr CO_2 stored at a single site by 2027[3]. Other parts of the CCS chain – CO_2 transport and CO_2 capture – are better known and should therefore require less support to deploy, once market conditions drive CO_2 capture and storage.

3 Benefits the IETF could deliver by investing in CCS

CCS enables industry to keep producing, retaining jobs that would otherwise be lost if production was transferred overseas or shut down altogether. Through this, and in other ways[4], deployment of CCS contributes to a just transition to a low-carbon economy.

Research commissioned by Crown Estate Scotland found that CCS could have a key role in sustaining over 44,000 jobs in Scotland alone: these include indirect and induced jobs, as well as direct employment in oil and gas and industrial production[5].

[2] Committee on Climate Change (2019) *Net Zero – The UK's contribution to stopping global warming*. Available at: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/
[3] https://www.actacorn.eu/sites/default/files/Acorn%20options_0.pdf
[4] For more on this, see the SCCS briefing, *The role of CCS in a just transition*, available at: http://www.sccs.org.uk/images/expertise/reports/working-papers/WP_SCCS_2019_01_Just_Transition.pdf
[5] Turner, Karen and Alabi, Oluwafisayo and Low, Ragne and Race, Julia (2019) *Reframing the Value Case for CCUS : Evidence on the Economic Value Case for CCUS in Scotland and the UK (Technical Report)*. Available at: https://strathprints.strath.ac.uk/67391/

The BEIS Committee concluded that:

> "CCUS could play a significant role in supporting productivity growth outside London and the South East, offering a route to redress some of the regional imbalance evident in the Government's Industrial Strategy. Of the five clusters identified as well-suited to early CCUS deployment, four are in regions with below-average productivity, and witnesses from all five consider CCUS to be critical to future operations."[6]

4 Complementary policies to maximise the impact of IETF funding

Complementary policies to maximise the impact of IETF investment in CCS have been identified in the Oxburgh Report[7], the CCUS Cost Challenge Task Force Report[8], and by the BEIS Select Committee[9]. These include policies to incentivise CCS, to reduce the cost of CCS by enabling re-use of existing infrastructure, and to create a market for low-carbon products.

5 Future engagement with IETF

Scottish Carbon Capture & Storage (SCCS) is a research partnership of the British Geological Survey (BGS), Heriot-Watt University, the University of Aberdeen, the University of Edinburgh and the University of Strathclyde with associate member the University of St Andrews. SCCS researchers are engaged in innovative applied research and joint projects with industry and government to support the development and commercialisation of carbon capture and storage (CCS) as a climate change mitigation technology.

Knowledge exchange is a key part of SCCS's work, and as such we work with industry, government, the public sector and other stakeholders to understand the barriers and opportunities around CCS. We are well place to support the design of the IETF scheme, and to facilitate engagement with high-emitting industries that are keen to reduce their emissions.

[6] BEIS Committee (2019) *Carbon capture usage and storage: third time lucky?* Available at https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1094/1094.pdf
[7] http://www.ccsassociation.org/news-and-events/reports-and-publications/parliamentary-advisory-group-on-ccs-report/
[8] https://www.gov.uk/government/publications/delivering-clean-growth-ccus-cost-challenge-taskforce-report
[9] https://publications.parliament.uk/pa/cm201719/cmselect/cmbeis/1094/1094.pdf