



STRATEGY UPDATE:

# Carbon capture, usage and storage

September 2023



# Sector summary: carbon capture, usage and storage

## Government ambition

**Four CCUS clusters, capturing 20-30 million tonnes of CO<sub>2</sub> per year by 2030.** On a pathway to this ambition, government holds the following aims:

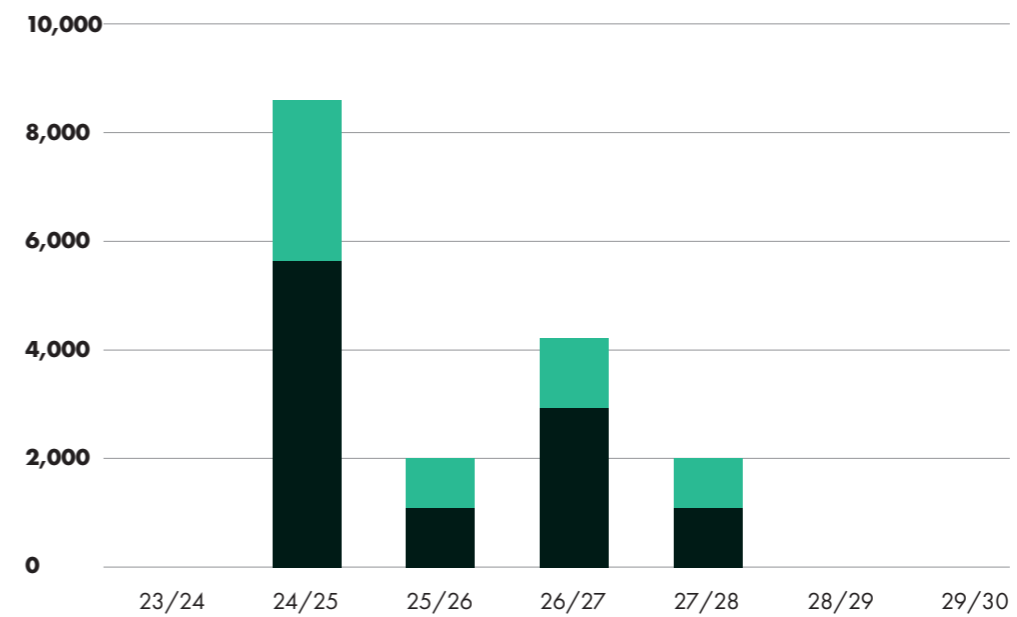
- > two CCUS clusters by the mid-2020s (Track-1), with two more online by 2030 (Track-2)
- > at least one power CCUS project by the mid 2020s
- > 10GW low carbon hydrogen, with up to 1GW from CCUS enabled hydrogen by 2025
- > 6 million tonnes from industrial CCUS by 2030
- > at least 5 million tonnes per year of Greenhouse Gas Removals by 2030

## Government funding

Up to £20 billion of funding for early deployment of CCUS to unlock private investment and jobs, including:

- > **£1 billion CCUS Infrastructure Fund**  
to provide capital support for T&S networks and industrial CCUS
- > **business models providing revenue support**  
RAB model for T&S networks and CfD-like contracts for capture projects

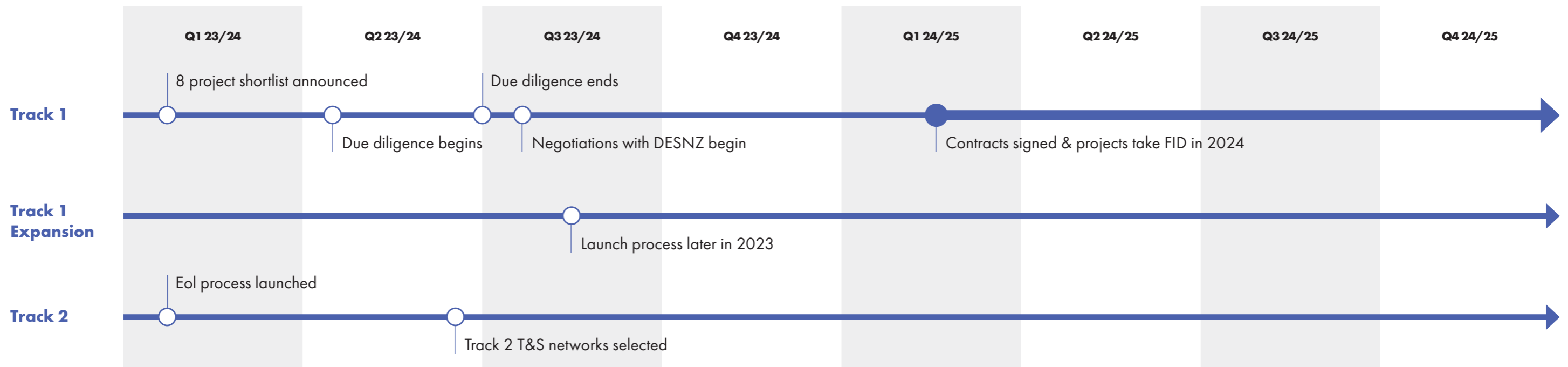
## Private financing need (£m)



### Data note:

UKIB estimates based on the capital required to fund known projects under CCUS Cluster Sequencing Track-1 and 2. Capture projects and T&S projects are included for Track-1, T&S project estimates are included for Track-2 and capture projects are estimates based on public information. Figures relate to the timing of capital commitment to projects, rather than being deployed.

## Investment roadmap



## **Carbon capture, usage and storage (CCUS) infrastructure is vital to delivering government's net zero and regional growth ambitions.**

CCUS projects will be organised into clusters, located in key industrial areas of the UK. Each cluster will contain capture projects – which emit and capture CO<sub>2</sub> – and a transport and storage (T&S) network which will take the captured CO<sub>2</sub> and store it under the seabed.

Government ambition is to deliver four CCUS clusters by 2030, all of which have been selected through the government's [CCUS cluster sequencing process](#) and will be delivered in two distinct tracks.

HyNet in North West England, and East Coast Cluster in Teesside have been selected for Track-1. These projects aim to be operational by the mid-2020s. Eight capture projects across both clusters have been selected as the first projects to connect to their respective T&S network.

Two more clusters, Acorn in North-East Scotland and Viking in Humber, have recently been chosen as the third and fourth CCUS clusters. These projects are on Track-2 and will be operational by 2030.

Successfully developing the UK's CCUS capacity is essential to reduce emissions from power generation and industrial processes, as well as enabling low carbon hydrogen production and greenhouse gas removals. If government's ambition is achieved, the four CCUS clusters will capture 20-30 million tonnes of CO<sub>2</sub> each year by 2030. This is equivalent to taking between four and six million cars off the road.

CCUS will deliver investment into the UK's industrial heartlands. The East Coast Cluster is expected to protect up to 70% of heavy industry jobs in Teesside over time and create thousands more<sup>1</sup>, with HyNet creating 6,000 jobs across the North West.<sup>2</sup>

Government is providing up to £20 billion of revenue and capital support, including up to £1 billion capital support through the CCUS Infrastructure Fund to support T&S networks and industrial carbon capture projects. CCUS enabled hydrogen projects can access capital support through the £240 million Net Zero Hydrogen Fund.

The chart in the sector summary on [page 2](#), based on our analysis and current government policy, sets out our estimates of the private investment required by year to deliver CCUS Track-1 and Track-2.

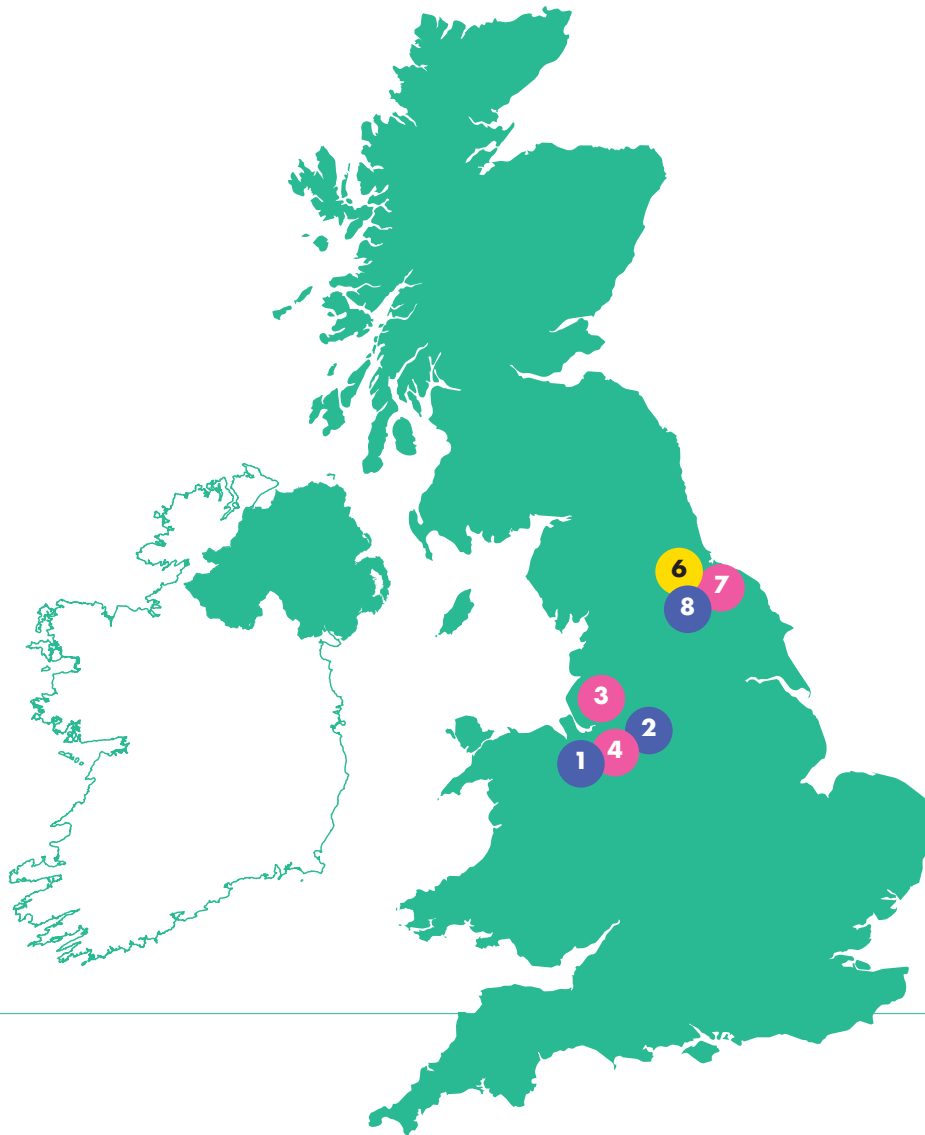
CCUS is a first-of-a-kind technology in the UK and deployment is capital intensive. Around £8-10 billion is required to deliver the HyNet and East Coast Clusters. T&S projects will require the most capital, with each network needing to raise around £2 billion. Capture projects will require approximately £0.5-1.5 billion per project, depending on the scale and type of the project.

We are working closely with government as we develop our approach to the sector and targeting our focus on how we can help finance the first two CCUS clusters when contracts are awarded by government in 2024.

Our market engagement suggests there is appetite to invest in CCUS in the UK. That said, there are three potential problems that may make investors nervous and which we feel we could help address.

<sup>1</sup> [East Coast Cluster](#)

<sup>2</sup> [HyNet \(2022\)](#)



### HyNet

- 1 Hanson Padeswood Cement Works Carbon Capture and Storage Project
- 2 Buxton Lime Net Zero
- 3 Viridor Runcorn Industrial CCS
- 4 Protos Energy Recovery Facility
- 5 HyNet Hydrogen Production Plant (HPP1)

### East Coast Cluster

- 6 Net Zero Teeside Power
- 7 bpH2 Teeside
- 8 Teeside Hydrogen CO<sub>2</sub> Capture

● Power   
 ● Industrial Carbon Capture (ICC)   
 ● Waste ICC   
 ● Hydrogen

# Problems we want to address

## Delivery risk

Though carbon capture has been deployed in other countries, with around 30 operational projects globally<sup>3</sup>, the UK's CCUS projects will use the technology in a new application, in a more integrated way and at a larger commercial scale.

Networks are expected to take around 2-3 years to deliver and unforeseen technology problems may emerge, that are difficult to identify and resolve in a project's planning phase.

Competition for skills and supply chains between projects could also materialise as several projects aim to be operational by the mid-2020s.

Most delivery risk problems that emerge can be managed by projects but may result in delays and cost overruns during the construction period.

In addition, Engineering, Procurement and Construction (EPC) contractors may struggle to provide fixed price contracts for projects, which is a change from the type of contracts that are often used for project finance transactions. This can create problems for lenders as alternative EPC models will provide less certainty over costs for project sponsors.

While some of these costs could be recovered for T&S networks through the regulated asset base business model contract, capture projects face some exposure to construction cost overrun risk that may not be fully addressed by EPC contracts.

## Initial performance risk

In the early years of operation, both T&S and capture projects could face performance issues that lead to higher costs or lower revenues. For example, technology underperformance or unexpected maintenance costs. These risks sit with developers and should resolve over time, as assets performance becomes better understood. This could, however, create problems for lenders.

## Coordination risk

Clusters are made up of individual projects. But, for the cluster to function and generate sufficient revenue, coordination is required between capture and T&S projects. For example, if there is an issue with a T&S network, capture projects may not be able to function as intended if a T&S network is not able to accept CO<sub>2</sub>. These coordination risks are sometimes referred to as cross chain risks. This risk is partially addressed by the Government's business models, but residual risks or risks that persist for a long period of time can lead to a temporary reduction in revenue that can reduce appetite to invest.

<sup>3</sup> [Global CCS Institute '2022 Status Report'](#)

# Our solution

**We want to help create solutions to address these problems, working closely with government. At this early stage, we have identified three products we think can help.**

**Senior debt** capacity for projects where there are market capacity gaps.

**Senior debt guarantee**, which offer credit substitution of project risk with sovereign risk and can help address market capacity gaps. We will work with the covered lenders to agree percentage cover of the guarantee. We expect to provide between 50-80% coverage for commercial lenders, ensuring some project risk exposure.

**Credit enhancements** to senior lenders through a mezzanine or subordinated debt tranche, either lent directly or through a guarantee. This product would:

- > act as an intermediate capital tranche that permits deferral and catch-up allow for temporary reductions in revenue;
- > Enhance base case senior debt service cover ratios; and
- > Reduce the probability of default and loss given default estimates for senior lenders, therefore reducing pricing on senior tranches.

We can use these products in combination, where appropriate, to support financing of the first CCUS projects. We will do this by:

- > Working with the projects to confirm their exposure to the problems identified and other investment barriers faced, and how our product suite can help them.
- > Committing to match the tenor of government business models for products offered.

We want to lead in shaping and scaling the market. By offering solutions to address problems in Track-1, we hope to help accelerate the next phase of projects.

**Across all our private products, our indicative minimum ticket size is £25 million.**

# Moving forward

**We will operate flexibly to respond to problems as they emerge and focus on areas that need the most support.**

Looking ahead to the late 2020s, developers and lenders should be expected to take on more market risk as government business models evolve and as there is progress in understanding and managing the key risks faced by projects and investors. This will enable the Bank to evolve with the market to identify and tackle new problems to help deliver government ambition. We remain open to supporting CCUS projects outside the cluster sequencing process, although we expect there will be limited opportunities closing in the near term.

The lessons we learn from the Track-1 CCUS projects will allow us to tailor our support for:

- > **CCUS cluster sequencing Track 2 projects**

we expect government to set out the process to be set out in due course to deliver the Acorn and Viking clusters by 2030.

- > **Track 1 expansion projects**

a process led by government is expected to launch this year to select new capture projects to connect to the East Coast and HyNet Clusters.

# Get in touch

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