

# Creating the world's first carbon negative power station in the 2020s

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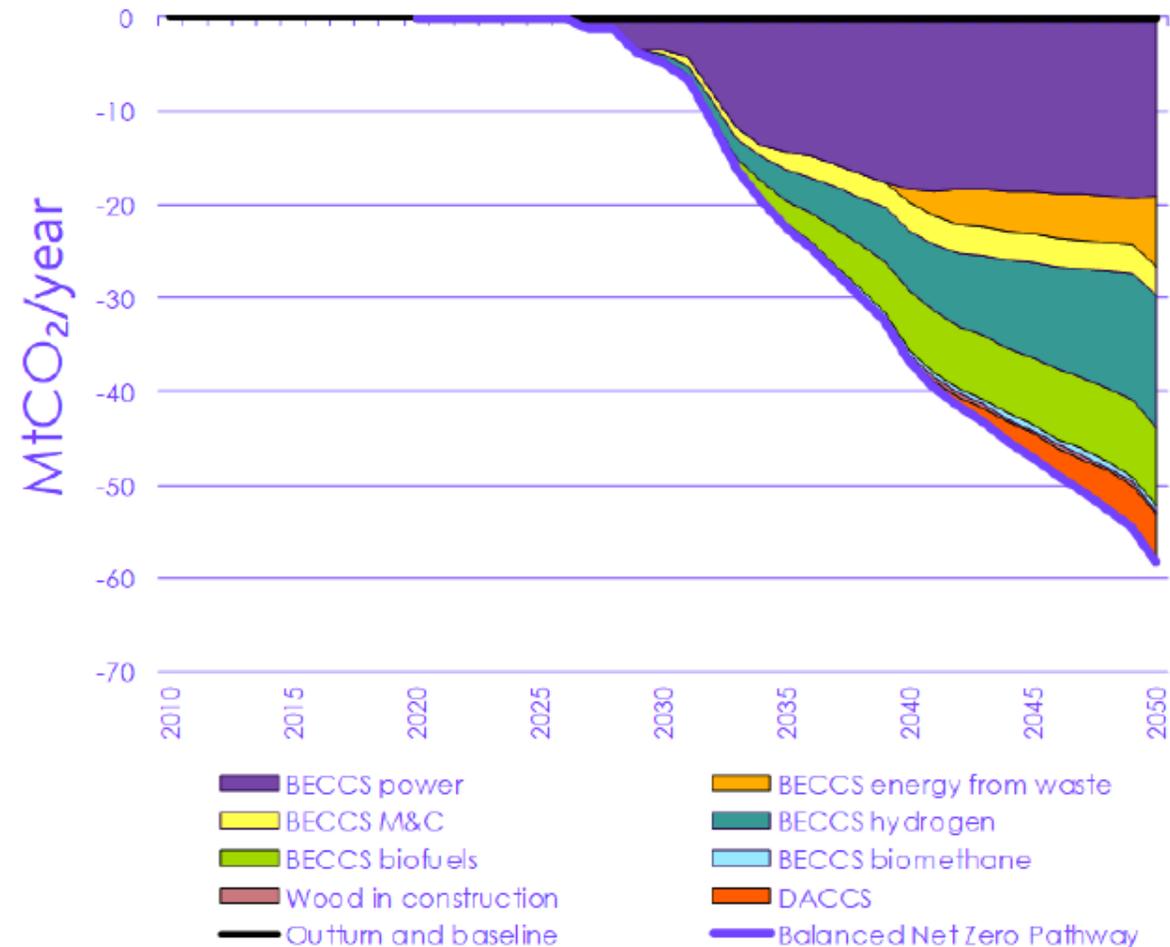
# The strategic need for bioenergy with CCS (BECCS) in the UK

Bioenergy with carbon capture and storage (BECCS) is the technology **that will provide the majority of the negative emissions needed** by 2050.

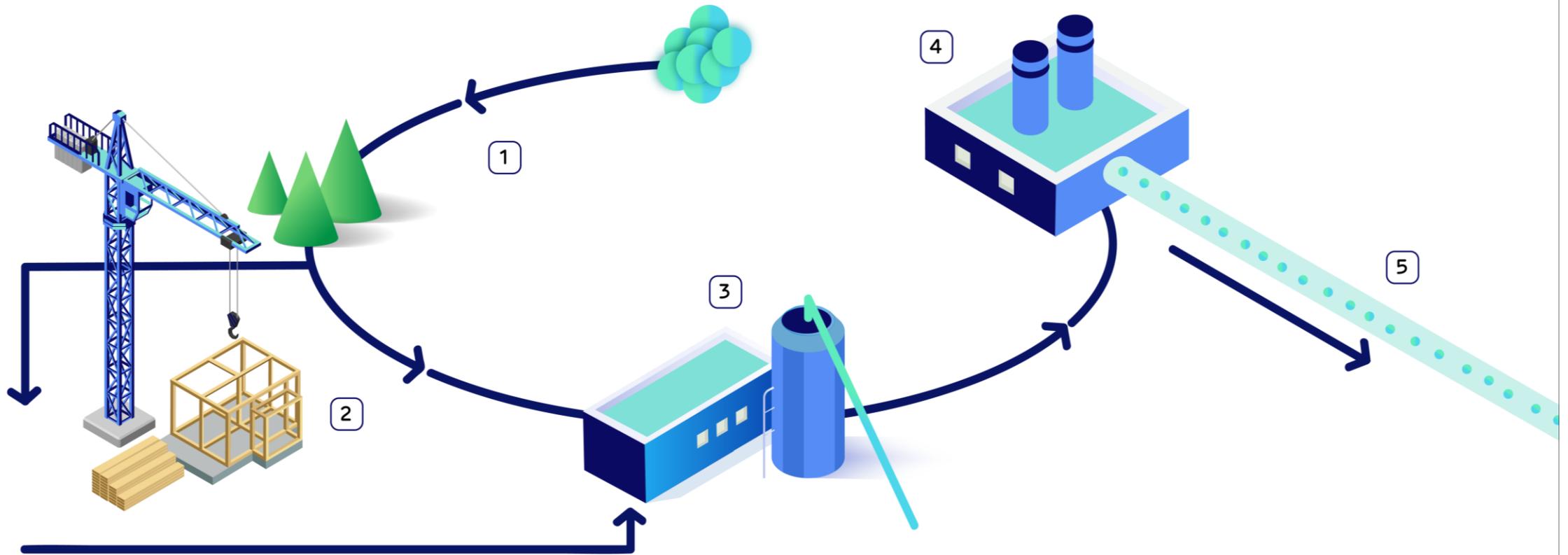
The Climate Change Committee (CCC) estimates that **97MtCO<sub>2</sub> of total removals will be needed to reach net zero** by 2050. They also estimate that **53MtCO<sub>2</sub> of negative emissions per year will need to come from BECCS**, 19 MtCO<sub>2</sub> of which are from carbon capture.

**BECCS in power is deployed from 2027 in all CCC scenarios.**

Sources of abatement in the Balanced Net Zero Pathway for the GHG removals sector



# An overview of the BECCS process



KEY  
● CO<sub>2</sub>

- 1 Sustainably managed working forests absorb carbon dioxide (CO<sub>2</sub>) from the atmosphere as they grow
- 2 Wood is used in industries such as construction
- 3 Low-grade, waste wood and residues from saw mills and forests are turned into biomass pellets
- 4 Biomass is used to generate carbon neutral electricity
- 5 CO<sub>2</sub> produced is captured, transported and stored permanently – removing it from the carbon cycle

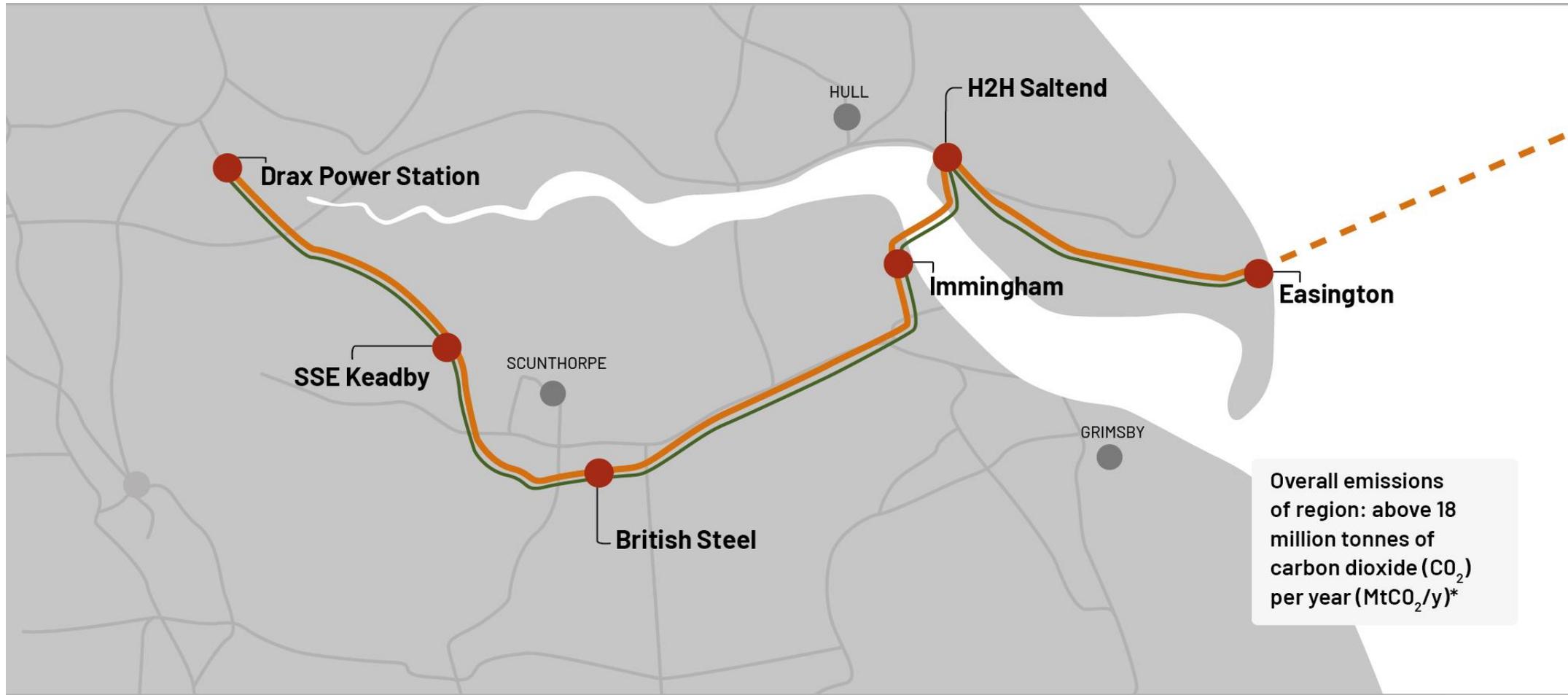
# Drax is the UK's most technically advanced CCS project

drax

- **We have had two technology pilots operating at Drax since 2019 (C-Capture & Mitsubishi)**, providing significant data on the performance of solvents with biomass flue gas
- **We completed our pre-Front-End Engineering Design (FEED) work in Q1 2021**, focusing on initially retrofitting two of our four biomass units with CCS
- **Our Development Consent work has started**, with a target date for DCO submission Q1 2022 for Secretary of State approval H2 2023
- **First CCS project to put in place a licence agreement for a capture technology** when decision is made to progress with Mitsubishi or Shell amine solution in Q2 2021
- **We are currently tendering for an Engineering, Procurement and Construction (EPC) partner**, with selection due H2 2021
- **We have signed a licence agreement with Mitsubishi Heavy Industries to use their CCS technology** – the first agreement of its kind in the UK



# We are working with partners to deliver a Zero Carbon Humber



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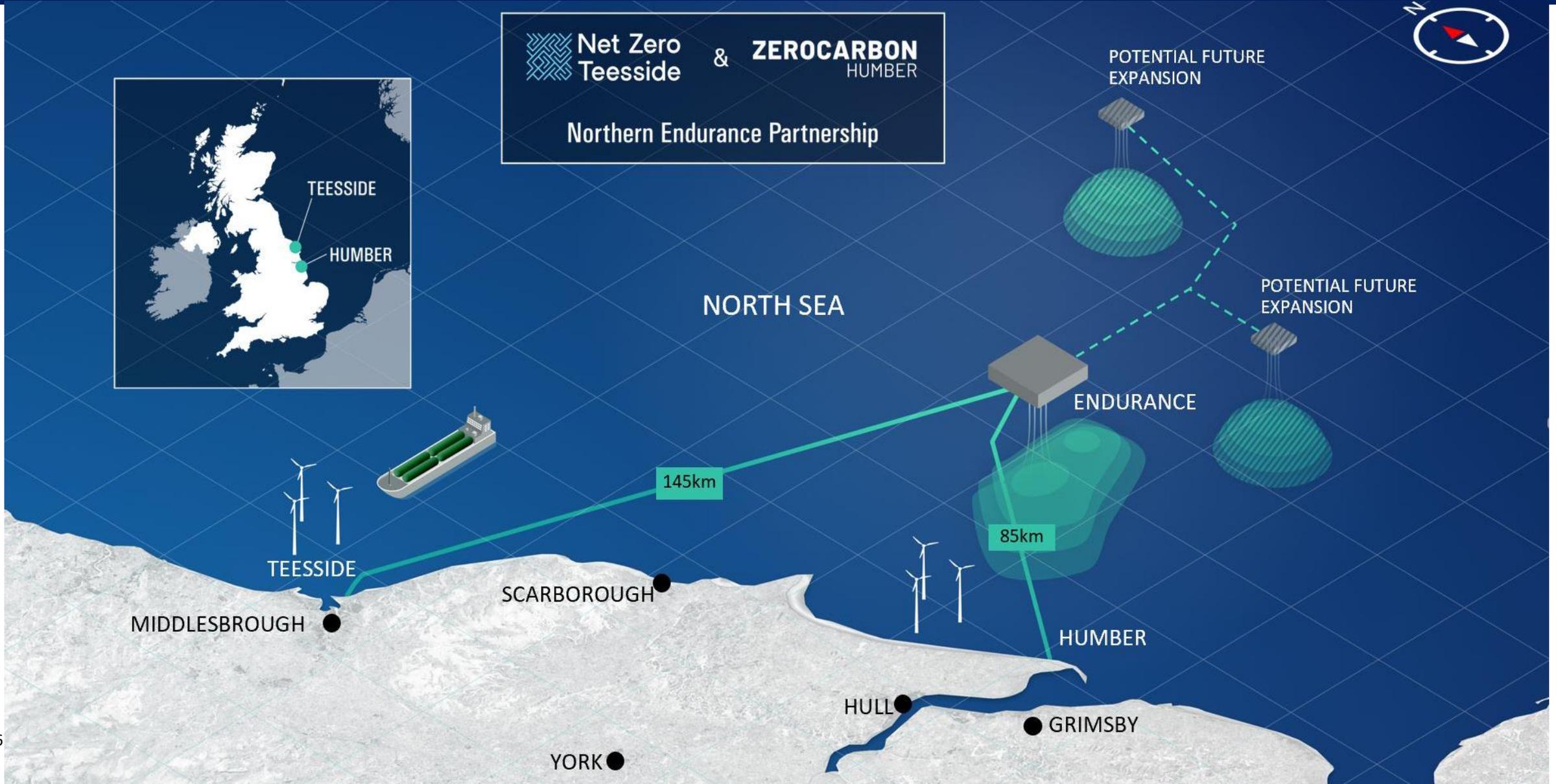
— Hydrogen pipeline (illustrative)

— CO<sub>2</sub> pipeline (illustrative)

● ZCH businesses / facilities

\*Combined industry and power emission for the Humber, excluding Drax Power Station

# Supporting an East Coast Cluster that would capture ~50% of the UK's industrial emissions

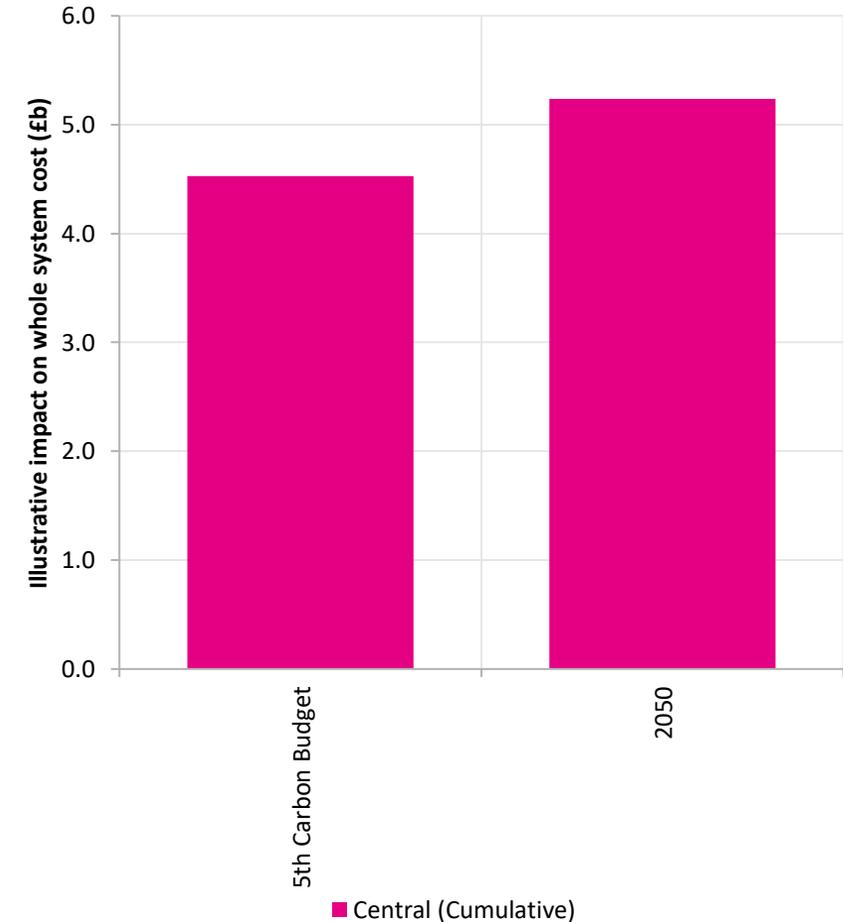


# Achieving Net Zero is significantly more expensive without BECCS at Drax in 2027

## It is much more challenging and more expensive to achieve the 5<sup>th</sup> carbon budget and net zero without early deployment of BECCS

- If the option to build Drax BECCS in 2027 is not taken, **it will cost the UK £4.5bn more to achieve the 5<sup>th</sup> carbon budget, and over £5bn more to achieve net zero.**
- **If you don't deploy Drax in 2027 you have to spend more money sooner**, because of the lead times for deployment – you have to build more wind, solar and storage in the period 2021-27.
- **If you don't deploy Drax in 2027, the UK will be more reliant on measures that require consumer action in heat and transport** – both of which are much more challenging to achieve than a single large negative emissions project delivered by a private company.

Cumulative cost of not building Drax-BECCS



# Supporting the levelling up agenda in the North of England



**10,300 jobs**

As a result of Drax BECCS project



**47,800 jobs**

As a result of deploying CCUS & hydrogen in the Humber



**193,000 jobs**

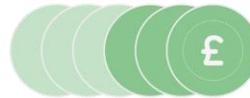
As a result of deploying CCUS & hydrogen across the UK

● Supported by direct capital expenditure ● Supported through the supply chain and the wider UK economy



**£673m**

As a result of Drax BECCS project



**£3.1bn**

As a result of deploying CCUS & hydrogen in the Humber



**£13.9bn**

As a result of deploying CCUS & hydrogen across the UK

● Direct economic benefit ● Economic benefit in the supply chain and wider economy

- **There is a growing consensus that BECCS is essential to meeting near-term Carbon Budgets and achieving Net Zero.** Recent analysis from the Climate Change Committee, Electricity System Operator and others support this.
- **Drax is pioneering one of the most technically advanced CCS projects in the UK, which can deploy in 2027.** We have undertaken significant technical development already and plan to enter FEED by the end of this year.
- **Our BECCS project is a critical component of the Humber cluster.** It can provide a significant anchor load for the western end of the cluster's CO<sub>2</sub> transport and storage infrastructure.
- **Our project will support the levelling up agenda.** It will support thousands of jobs during construction and generation hundreds of millions of pounds in the regional economy. It will also protect thousands of existing jobs.
- **Our project will support GB climate leadership.** Converting Drax to BECCS in 2027 would create the world's first carbon negative power station – a significant statement to the rest of the world.

thank  
you