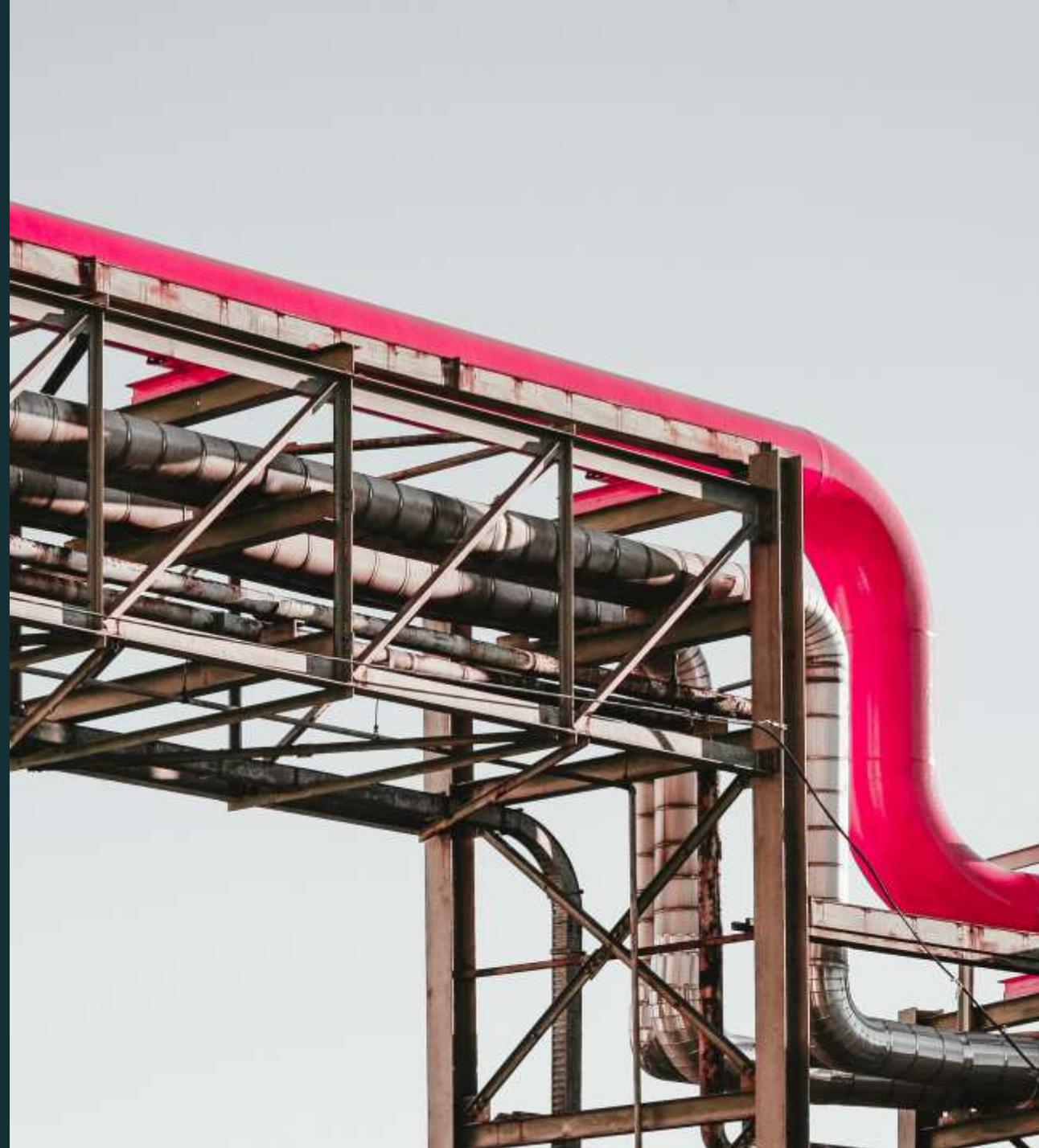


Delivering on COP26: CCS across the world - UK Session

Olivia Powis

Carbon Capture and Storage Association

7th September 2021



About the CCSA



- The Carbon Capture and Storage Association, is the trade association representing the CCUS industry
- To assist policy developments in UK, EU and internationally towards a long-term regulatory and incentive framework for CCUS
- To raise awareness of CCUS as a vital tool in fighting climate change and delivering sustainable long-term clean growth
- Focus on commercial-scale projects
- Technology neutrality (industry, power, hydrogen, bioenergy, direct air capture and different capture technologies)

Find out more at www.ccsassociation.org

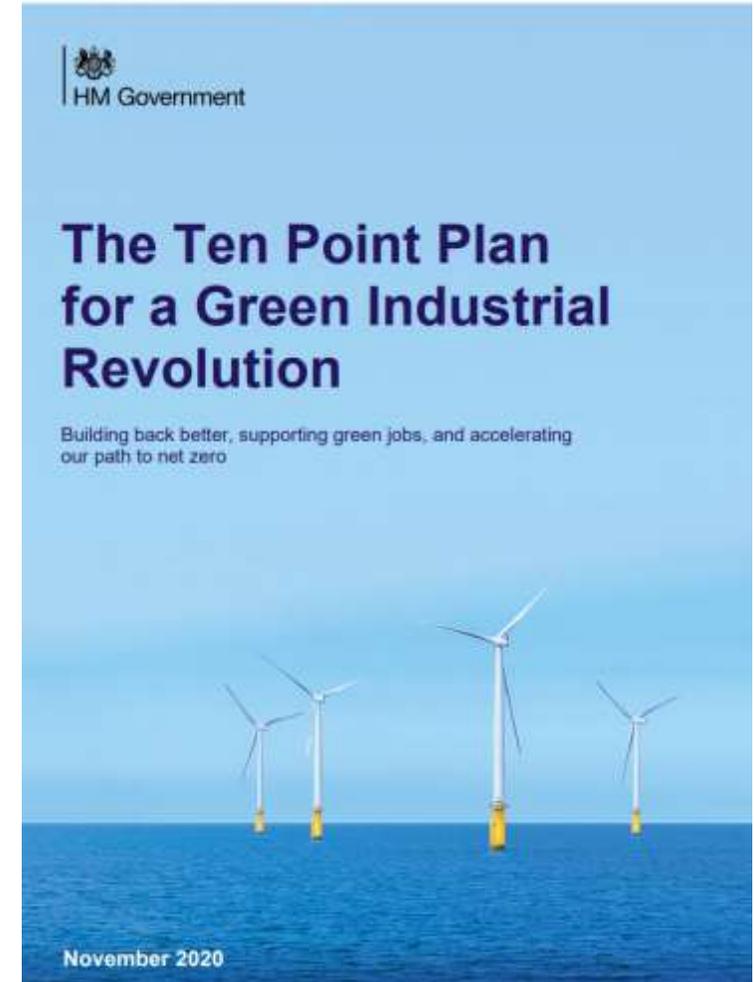
Agenda

1. CCUS in Government Strategy and its role in achieving net zero
2. CCUS ambition and progress in the UK
3. UK Opportunity for CCUS
4. Deploying CCUS in the UK
5. Defining the investment model for CCUS in the UK

Government CCUS Strategy

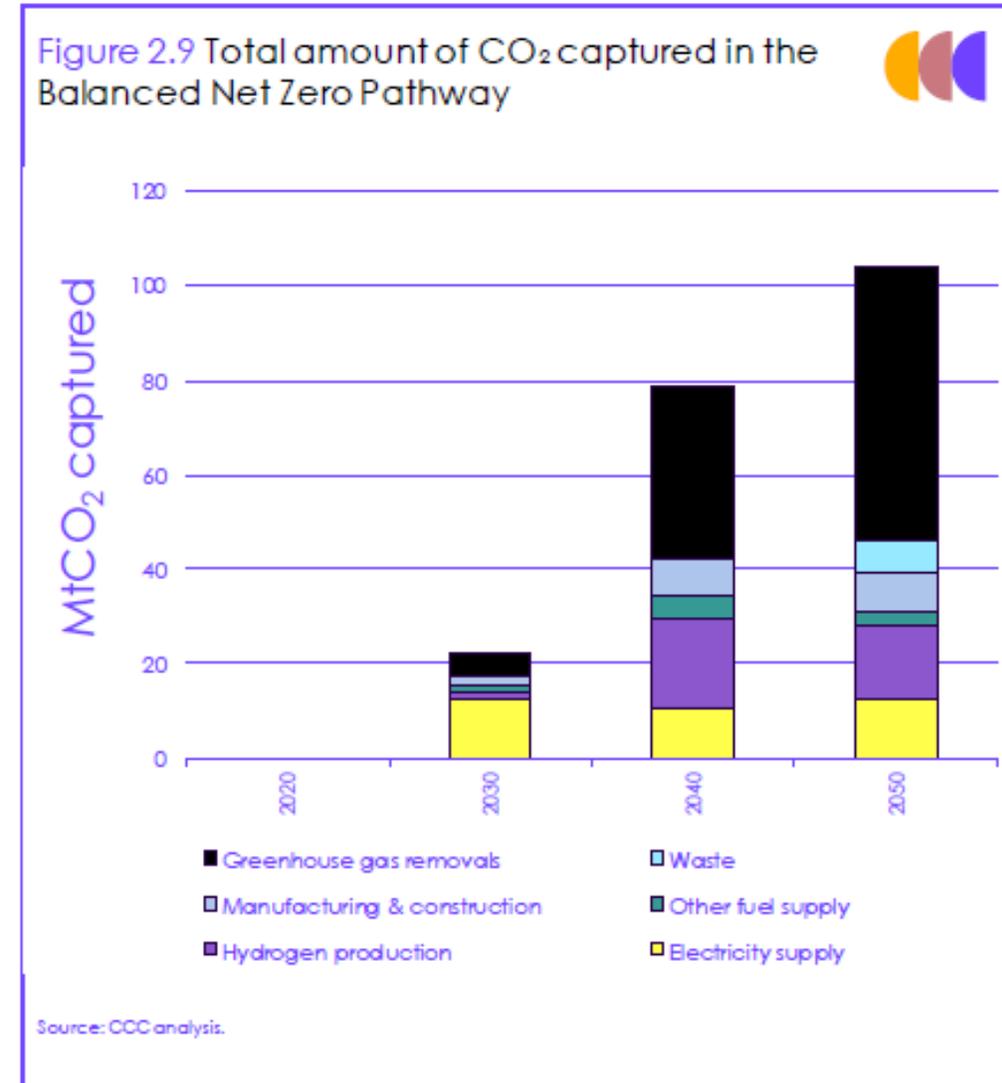
- Introduced an ambition to capture 10 MtCO₂ a year by 2030
- Four CCUS clusters with two operating by the mid-2020s and another two by 2030
- An extra £200m for the CCS Infrastructure Fund (CIF), now totalling £1bn
- Aim of having 5GW of hydrogen production capacity by 2030 with an interim goal of 1GW by 2025. Aided by a £240m Net Zero Hydrogen Fund

Investing in carbon capture usage and storage could potentially deliver...		
Support for around 50,000 jobs by 2030 ³	Up to £1.bn of public investment by 2025	Savings of around 40MtCO₂e between 2023 and 2032, or 9% of 2018 UK emissions



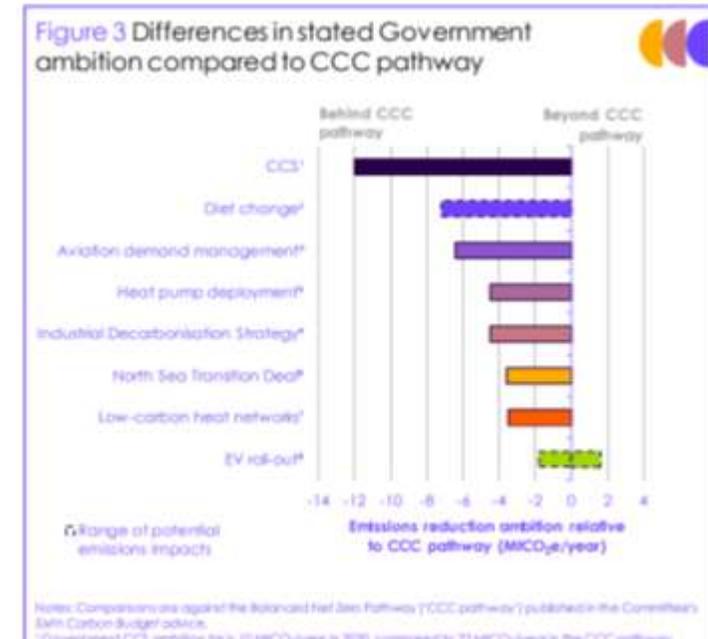
CCC 6th Carbon Budget Advice

- CCUS reaches harder to decarbonise sectors – it plays a critical role in;
 - Clean Hydrogen production
 - Greenhouse Gas Removals (BECCS & DACS)
 - Heavy Industry Decarbonisation
 - *Flexible* zero carbon power
- CCC 6th Carbon Budget: The UK will require 75-180Mt of CO₂ storage pa by 2050
- In the Balanced Net Zero Pathway, the UK requires 104Mt of CO₂ storage pa by 2050.
 - 22Mt pa in 2030
 - 53Mt pa in 2035
 - 79Mt pa by 2040
- CCS is “a necessity not an option” for reaching net zero – accelerated action requires first cluster mid-2020s
- Sixth Carbon budget advice of 78% GHG emissions reduction by 2035 enshrined in law
- At least two CCS clusters in the mid-2020s, at least four by the late 2020s, and further clusters around 2030.



Ambition vs Progress

Ambition in CCUS pledges is strengthening, but global conversion rate of announcements into operational CCUS projects remains fairly low.



- IEA's *Net Zero by 2030* report analysis indicates that in their Net Zero Emissions scenario, 1.6Gt CO₂ per year is captured globally.

- Chart above illustrates considerable gap to bridge between ambition and operation

- CCC's *Progress in reducing emissions 2021 Report to Parliament* shows Differences in stated Government ambition compared to CCC pathway

- CCS has biggest difference between Govt ambition of 10Mt CO₂/per year compared to CCC pathway ambition of 22Mt CO₂/per year

UK Opportunity: Creating new jobs and opportunities in regions earmarked for levelling-up



- Ideal CCUS locations are in former industrial heartlands
- Will create 10,000 new green jobs and help retain 50,000 jobs in steel, cement, refining, chemicals, ceramics and glass
- Will utilise UK's world leading oil and gas skills and infrastructure
- Potential for additional jobs supporting exports

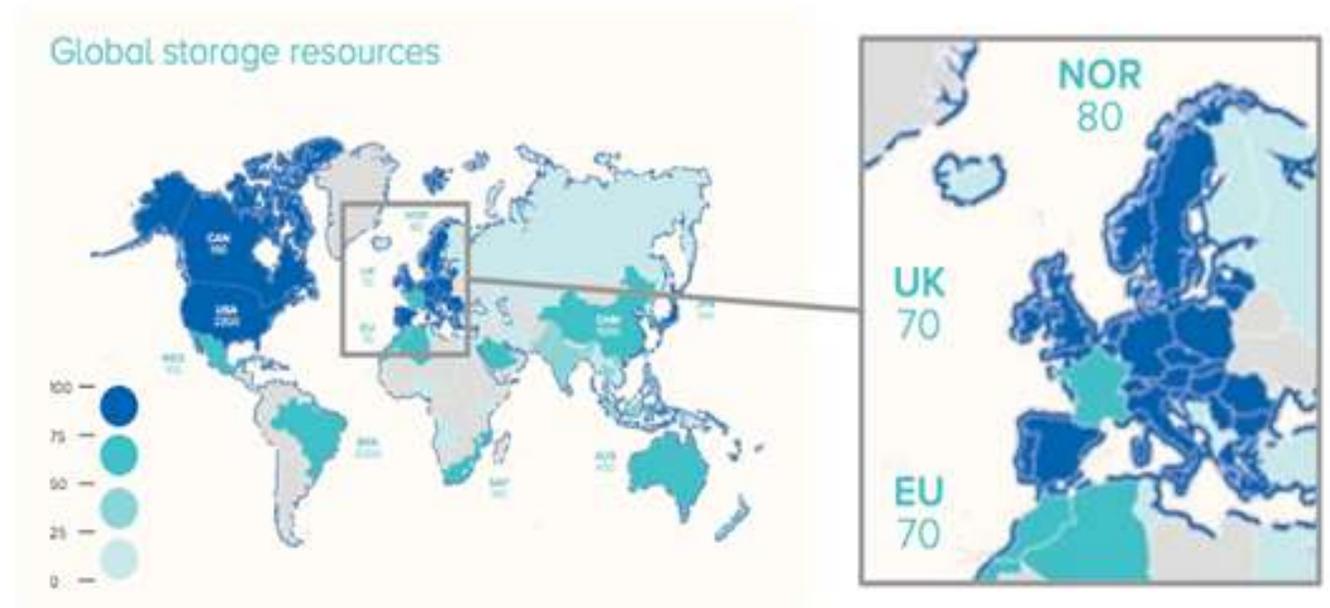
HyNet



HUMBERZERO

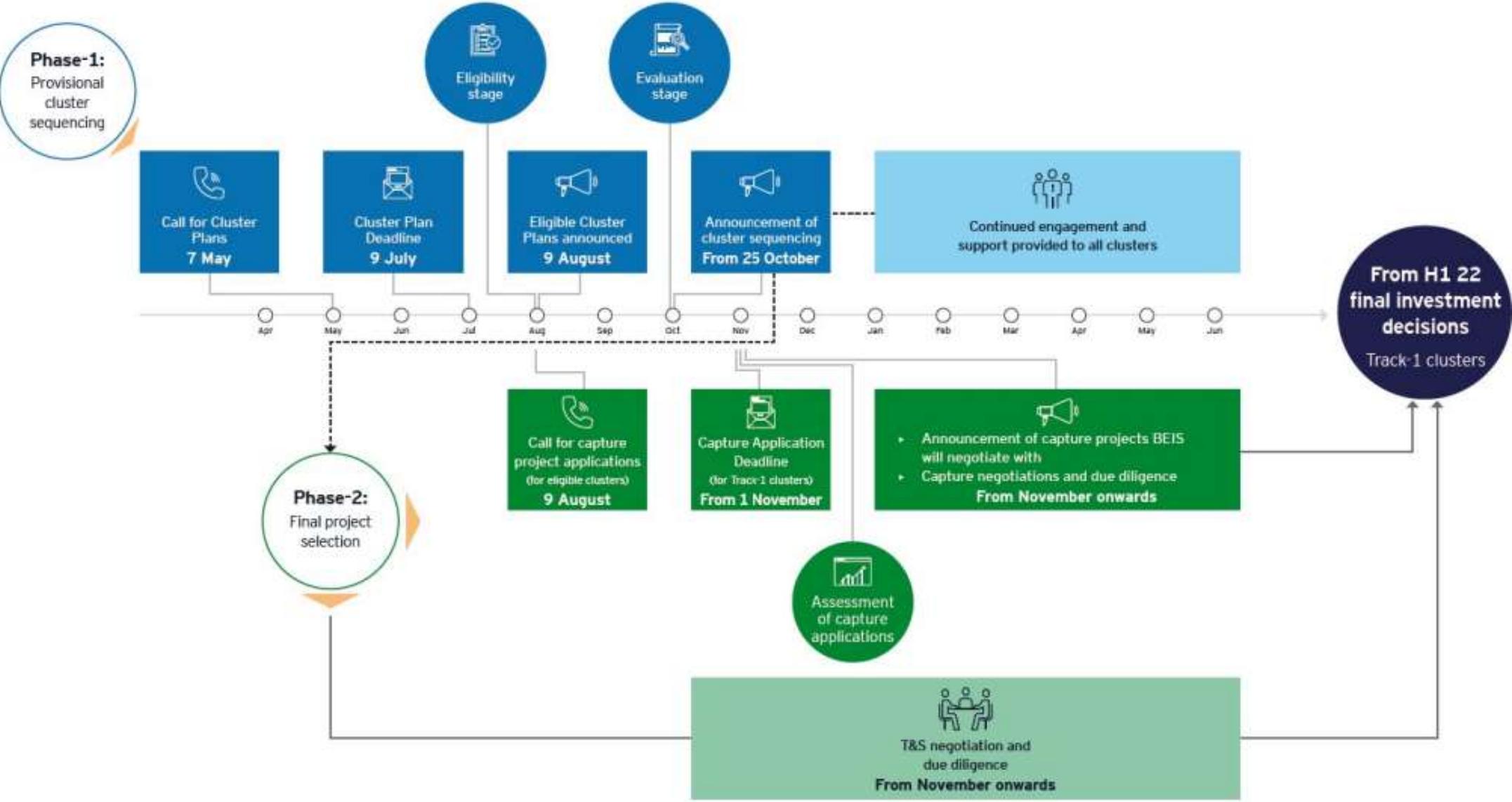
Helping the UK become an international leader in green technology

- Geological assets, industrial infrastructure and skills capability means the UK has competitive advantage and could become a global leader in CCUS, low carbon hydrogen production and industrial decarbonisation
- UK can capture a significant share of global CCUS market - £4.3 billion GVA/yr from exports by 2050 according to BEIS
- UK has one third of Europe's storage capacity, and as much as the other EU member states combined

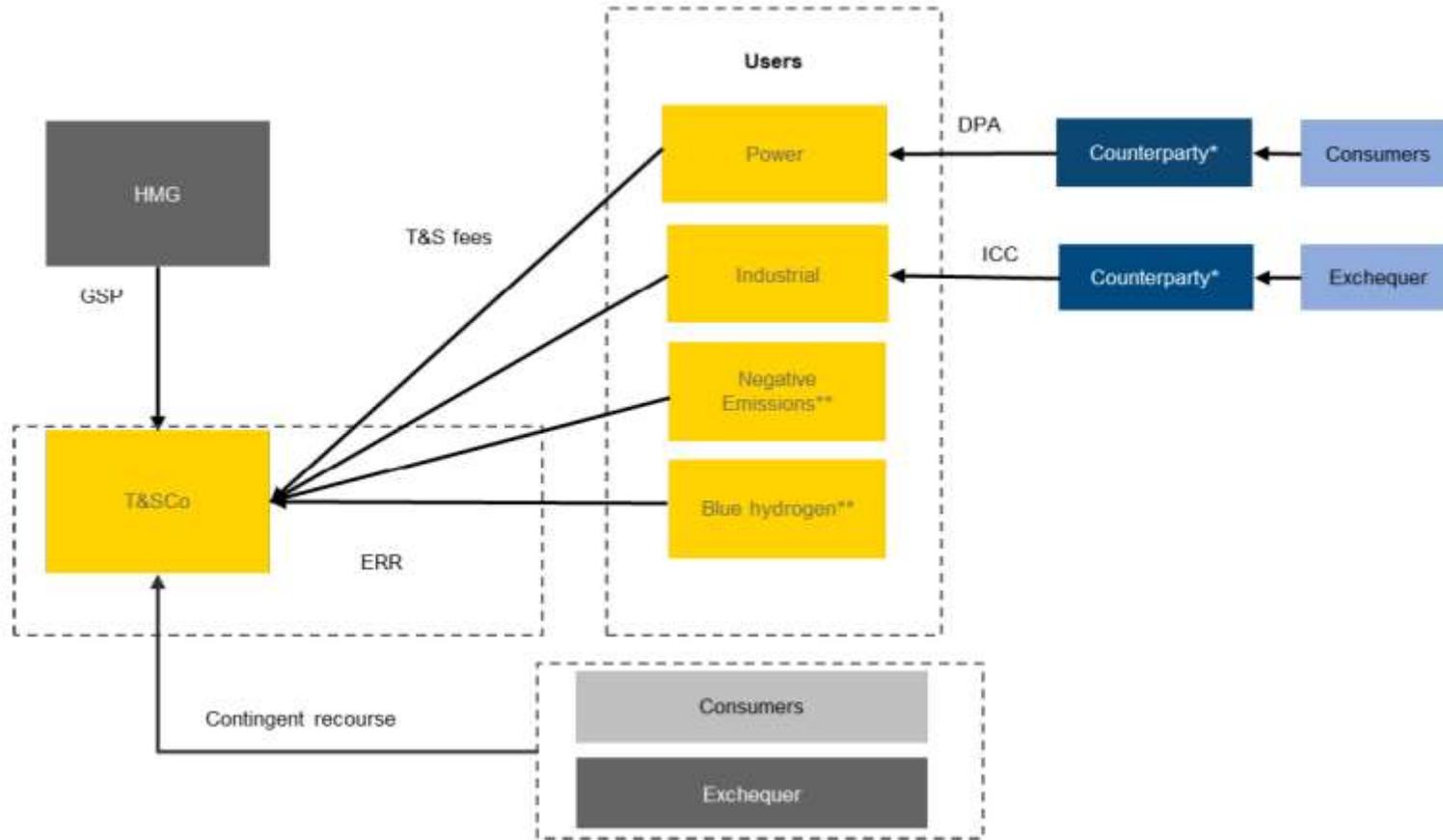


Global CCUS Institute map showing storage capacity in gigatons CO2 of the UK vs Europe and the Rest of the World

Deploying CCUS - Cluster sequencing



CCUS Business Models



BEIS –Progress on CCUS Business Models;

1. **CO₂ Transport and Storage Regulatory Investment Model (T&SCo)** - user pays (T&S) fees (*further updates due*)
2. **Economic Regulatory Regime (ERR)** – transparent, predictable model (*Role of Regulator Consultation open*)
3. **Dispatchable Power Agreement (DPA)** provides Generator with payments comprising of an availability and variable payment for flexible, low carbon power at the market price
4. **Industrial Carbon Capture (ICC) CfD** model where subsidy reduces as carbon prices rise and low-carbon product markets emerge
5. **Hydrogen Business Model** (*consultation open*) - a producer-led incentive model (similar to CfD)
6. **Bio CCS business model** under development

Investing in CCUS to enable deployment

- CCSA commissioned economic analysis from Afry and Cambridge Econometrics to aid Treasury decision making on funding support for CCUS
- The study outlines:
 - The **funding required to deploy CCUS in the 2020s** to meet two 2030 CO₂ capture target scenarios – the 10 Point Plan target & the CCC’s 6th Carbon Budget “Net Zero Pathway”
 - The **economic impact of CCUS investment** in 2020s in terms of net jobs and GDP
 - Gap analysis of **lessons learned from Government support for offshore wind** deployment
- From this **the CCSA propose the Treasury use the Spending Review to introduce a Levy Control Framework (LCF)-style funding mechanism for CCUS between now and 2030**
- A **CCUS Levy Control Framework** will help the Government facilitate a green economic recovery by:
 - Delivering critical net zero infrastructure
 - Creating new jobs and opportunities in regions earmarked for levelling-up
 - Helping the UK become an international leader in developing and exporting green technology



Summary and next steps



UK CCUS Ambition

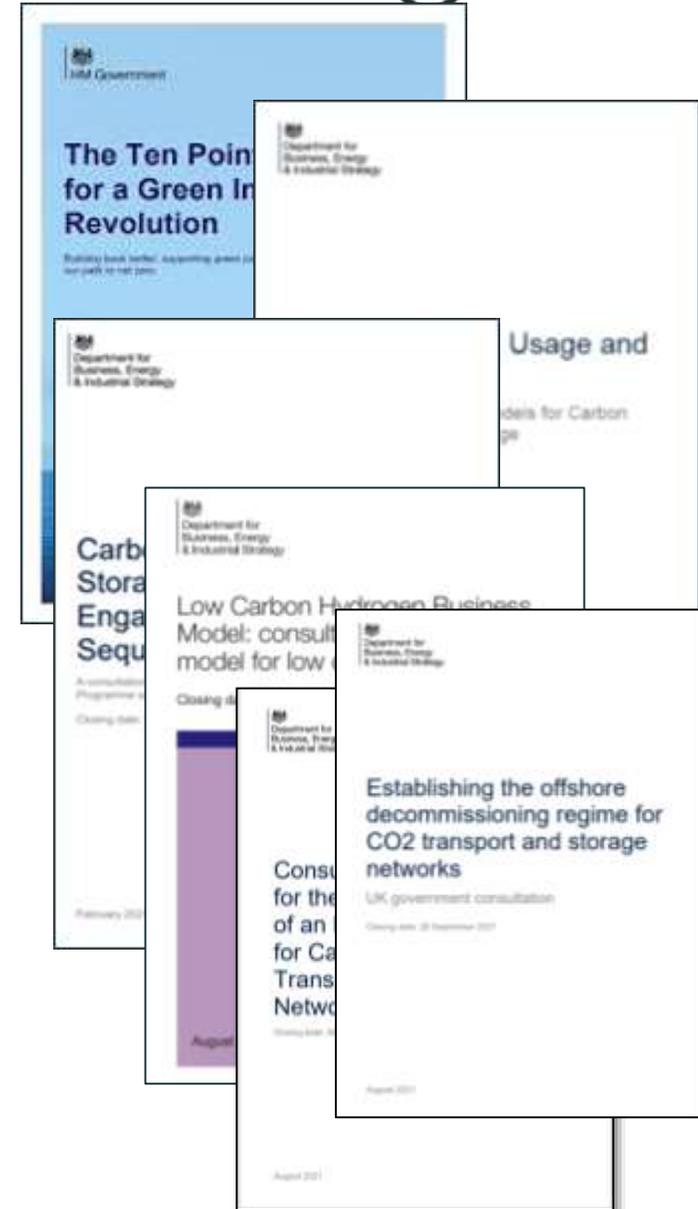
- Ø 10 Point Plan: Ambition to capture 10 MtCO₂ per year by 2030
- Ø 6th Carbon Budget: UK to capture 22MtCO₂ per year by 2030

CCUS Cluster Sequencing

- Ø Sets out option for delivery of 10 Point Plan commitment – at least two clusters operational by mid-2020s and two by 2030
- Ø Momentum must be maintained for both Track 1 (Phase 1 and 2) and Track 2 to enable investment decisions from 2022 and to deliver at scale throughout the 2030s

CCUS Business models and funding

- Ø Good progress on T&S, flexible, power, industry and now hydrogen – need to accelerate Greenhouse Gas Removals
- Ø Spending Review 2021 – to establish affordability envelope for CCUS



Questions?

Email: Olivia.Powis@ccsassociation.org

Website: www.ccsassociation.org