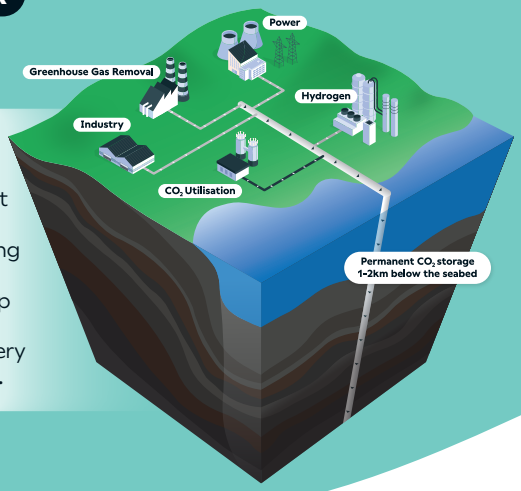
Carbon Capture, Utilisation and Storage in the South West

THE 7CO_2 CLUSTER



A CCUS Cluster

Multiple industries sharing CO_2 transport and storage infrastructure, enabling industrial and power decarbonisation, deep emissions reductions and supporting delivery of net zero pathways.

What is CCUS?

Carbon Capture, Utilisation and Storage (CCUS) captures carbon dioxide (CO_2) from industry, power plants or even directly from the air. The process involves three key steps:

1. **Capture:** CO_2 capture technology captures CO_2 from industrial or energy-related emissions or directly from the air.
2. **Transport:** The captured CO_2 is compressed and transported by ship, road, rail or pipeline to storage sites.
3. **Storage or utilisation:** CO_2 is injected into geological formations offshore 1-2km below the seabed (e.g., depleted oil and gas fields or saline aquifers) or used in products like concrete or fuels.

CCUS industry is delivering in the UK:

CCUS is being developed in **regional industrial clusters**. The first projects are under construction in **Merseyside, North Wales and Teesside**, where industries share transport and storage infrastructure. Further projects are in development in the **Humber, Scotland, Derbyshire & Staffordshire, East Anglia, South Wales, the South Coast and Avonmouth**.

The UK Climate Change Committee highlights that CCS is essential to meeting the UK's climate commitments.[1]

CCUS is a vital tool for:

Cutting emissions from foundational industries: CCUS is the only realistic way to decarbonise industries like cement, chemicals and refining by capturing emissions created as a by-product of the production process.

Delivering deep emissions reductions: CCUS can capture 50–60 million tonnes (Mt) of CO_2 annually by 2035 – a level the Climate Change Committee says is essential for meeting the UK's climate targets, equivalent to offsetting the carbon footprint of Greater London twice over.

Retaining UK industries: CCUS enables industry to cut emissions, remain competitive the global low-carbon products market and supports up to 50,000 jobs by 2050.

Producing low-carbon hydrogen: CCUS enables low-carbon hydrogen for industry by capturing CO_2 during production.

Removing CO_2 from the air: Greenhouse Gas Removal (GGR) technologies actively remove CO_2 from the atmosphere, complementing decarbonisation efforts by helping address emissions from hard-to-abate sectors, such as agriculture and aviation.

Powering millions of homes: Gas-fired power stations with CCUS will produce 2-7 Gigawatts (GW) of low carbon, flexible power by 2030, enough for up to 5.25 million homes and balancing the grid when renewables are not available.

Boosting the UK economy: Building out CCUS will help unlock £26 billion in private investment by 2030, supporting a growing UK CCUS supply chain worth up to £2.6 billion by 2040, generating up to £30 billion in taxable revenue annually by 2050 and adding £94 billion Gross Value Added (GVA). With around a third of Europe's CO_2 storage potential, the UK is well positioned to lead in carbon storage and exports.

[1] Climate Change Committee (2025) The Seventh Carbon Budget (pg.14). Available here.

CCSA

What comes next?

The UK now has a credible pipeline of CCUS projects, but the next projects and clusters must move forward without delay. To secure a self-sustaining CCUS industry and realise its industrial, economic and climate benefits, the CCSA urges Government to:

1. **Deliver the actions required** to progress the build-out of the East Coast Cluster and HyNet as well as confirming the allocation of the development funding committed to Viking CCS and The Acorn Project.
2. **Provide an allocation framework** for government support contracts in the 2027 Spending Review and a clear nationwide route to market for CCUS deployment. This should include enabling Viking CCS, The Acorn Project, East Coast Cluster Humber Expansion and MNZ | Peak Cluster to reach financial close within this Parliament, and supporting other projects and clusters to deploy, including those using CO_2 transport by ship, road and rail.
3. **Implement policies and regulations** to stimulate low carbon products, carbon removal and European-wide CO_2 storage markets to enable the transition to a self-sustaining market.

CCUS in the West of England: 7CO_2; The Severnside Carbon Capture and Shipping Hub

7CO_2 is a carbon capture hub at Avonmouth Docks, linking large emitters across the West of England to permanent offshore storage. The hub sits at the heart of the West of England Industrial Cluster Decarbonisation Plan, aiming to capture over 7 million tonnes (Mt) of CO_2 per year, create 15,000 jobs by 2040, and contribute £3.4 billion Gross Value Added (GVA) to the regional economy.

The hub will collect CO_2 from industries across the region and transport it offshore using both shipping, road and rail, strengthening the UK's carbon capture network.

It will support industrial decarbonisation by giving companies the confidence to invest in carbon capture. It will also help remove greenhouse gases by **enabling Energy from Waste plants to capture up to 4 Mt of CO_2 annually**, about half of which comes from plants and other natural sources, delivering carbon removals.

In parallel, the hub will enable investment in clean fuels, including Sustainable Aviation Fuel (SAF) and hydrogen production, driving low-carbon growth across the West of England.

Using ships, road and rail instead of relying solely on pipelines makes it easier to reach multiple storage sites, support merchant CO_2 stores, and catalyse private investment for regional emitters not connected to a pipeline. For the CO_2 stores, it also **opens up opportunities to facilitate CO_2 storage exports**, bringing in CO_2 from other countries in the future.

Key benefits include:

- **Decarbonisation potential:** Can capture around 7 Mt of CO_2 per year, including up to 2 Mt of negative emissions from biogenic sources – roughly equivalent the annual emissions of around 5 million cars.
- **Economic impact:** Can add £3.4 billion GVA to the West of England economy and supports 15,000 jobs by 2040, protecting local industry while enabling new investment.
- **Regional catalyst:** Can unlock CCUS deployment across diverse sectors, from Energy from Waste to sustainable fuels and hydrogen production.
- **Innovation in transport:** Could establish a leading UK hub for non-pipeline CO_2 transport, enhancing resilience and flexibility of the CCUS network.
- **Cross-border opportunity:** Is positioned to export storage services and support CO_2 imports from Europe, generating new revenue streams.

Leading industry partners

Viridor, Suez, SSE, Seabank, Heidelberg, Enfinium, Varme, Bristol Port, ECOLOG, Storegga and Veri/Enquest.

Project overview: 7CO_2

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