

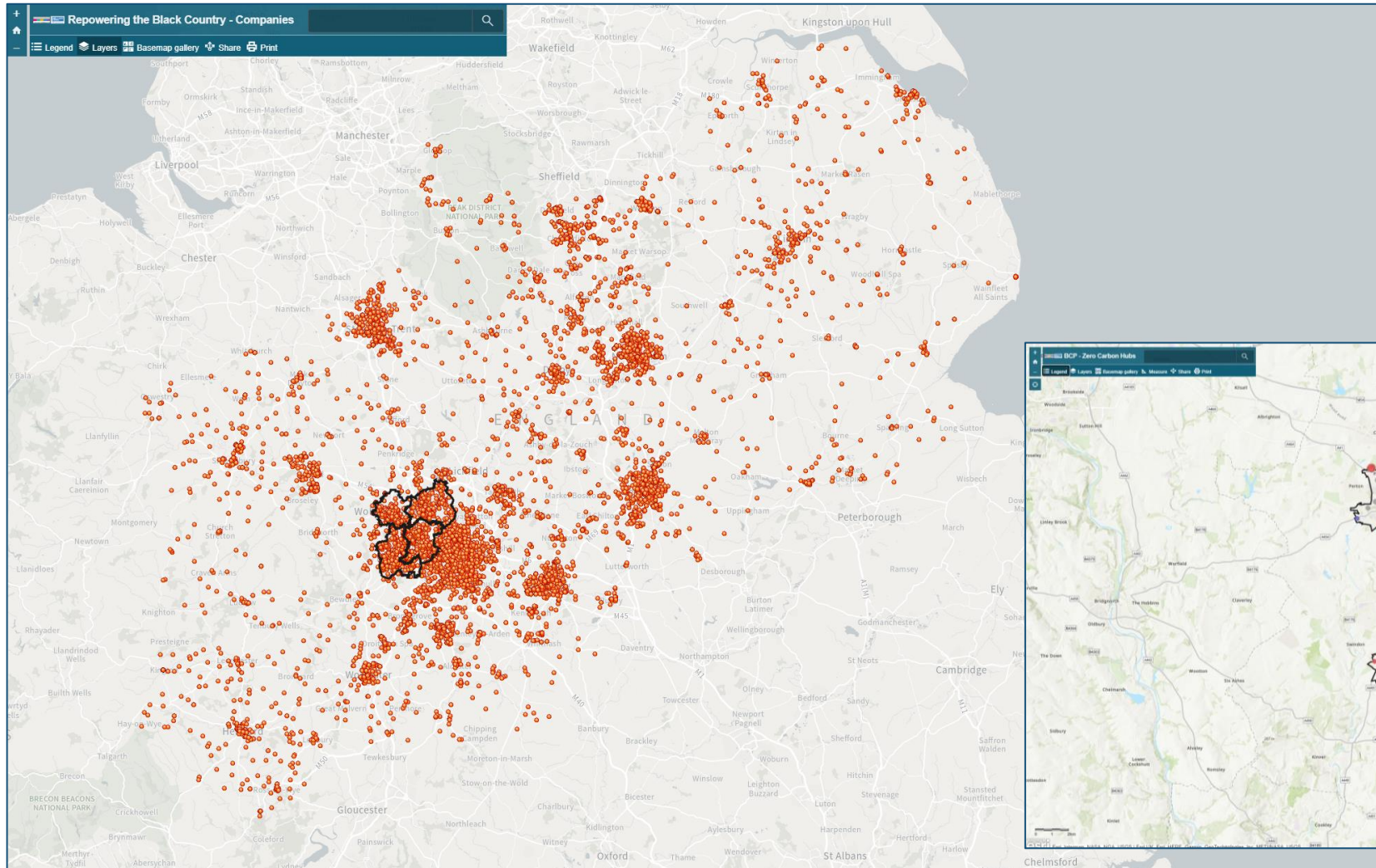


Repowering the
Black Country

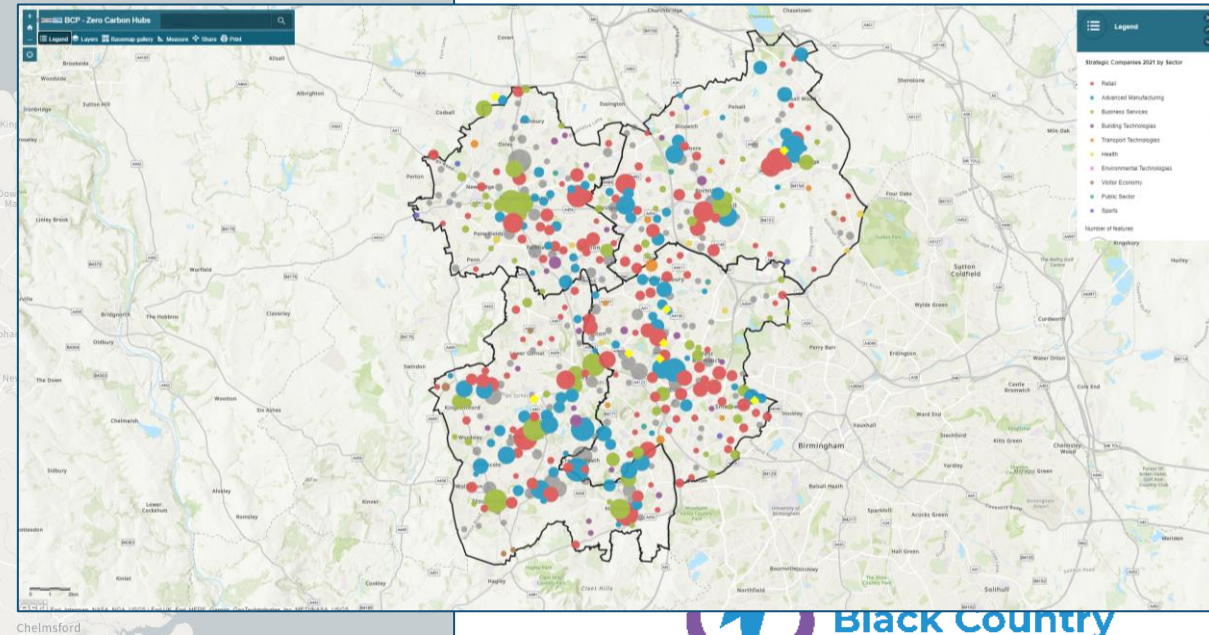
Carbon transport and storage issues and plans



The Black Country is an excellent example of the challenge in decarbonising dispersed sites



Energy intense companies in the Midlands (by SIC code)



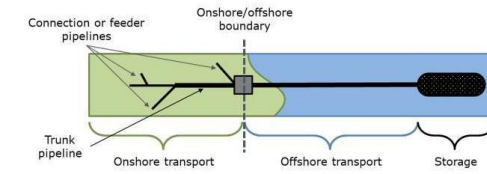
Source: BC EIU/Repowering the Black Country



The challenge for inland industry clusters

- The **Black Country Industrial Cluster** consists of more than **3,500 manufacturing businesses**, accounting for nearly **£8bn** in annual turnover and employing **65,000 people**.
- The **cluster is quite unique** compared to the other UK industrial clusters funded by UKRI as it
 - encompasses a very **large number of relatively small industrial sites** dispersed over a wide geographic area.
 - the **only inland industrial cluster** currently developing a roadmap, without access to CO₂ storage infrastructure or opportunities for CO₂ shipping.
- As a result, the **likely decarbonisation pathways** could include
 - **Electrification** of current processes –
 - with ongoing/subsequent decarbonization of grid electricity (e.g. via more renewable generation and distribution)
 - and/or onsite renewable generation and use of electricity
 - **Carbon capture and Non Pipeline Transport (NPT)** of CO₂ by road/rail
 - **Fuel switching to hydrogen** - provided via the gas grid or through local hydrogen production
- **Deployment of such technologies** within the Black Country will be **more complex and involve higher costs** compared to coastal clusters.
- Without significant policy support to support decarbonisation of inland clusters, **industry may be forced to relocate to the coast**.
- This would significantly negatively impact the local economy and communities, leading to job and skills losses and insecurity. – it would **obviously NOT be a just transition for the local communities**.

A key point is that these are radically different investment choices; highly sensitive to transport and infrastructure costs.



Our emerging strategy is highly dependent on national infrastructure and policy choices

OUTSOURCE

1. Decarbonise as much by electrification as possible.

*INDUSTRIAL
ELECTRICITY
COSTS*

RESTRUCTURE

2. Be willing to reconfigure, adapt, relocate – regional industrial strategy

*LAND AND
CONNECTIONS*

INNOVATE

3. Modular small-scale carbon capture and hydrogen generation at optimised hubs

*COMPETITIVE
TECHNOLOGY
COSTS*

FLEX

4. Local non-pipeline transport to and from CCS and H₂ infrastructure (and from hubs to national infrastructure until it arrives locally)

*INFRASTRUCTURE
PHASING*

Current solutions being explored

Use the carbon locally to avoid the need for long haul transport

e.g.,

- soya beans - Remediate
- urban horticulture – District Eating
- Food grade CO₂

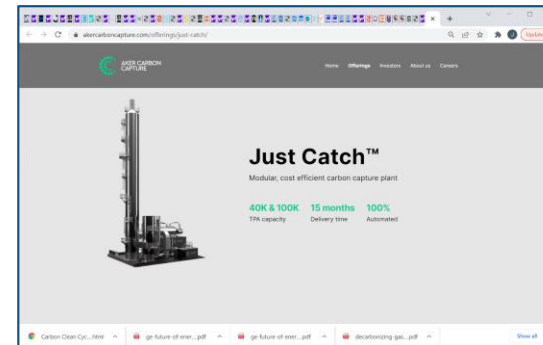


Transport and storage costs??

Emerging modular capture technologies

e.g.,

- Aker Just Catch
- Carbon Clean CycloneCC



Carbon Clean launches breakthrough industrial carbon capture solution

The prefabricated, modular solution will make carbon capture simple, affordable, and scalable

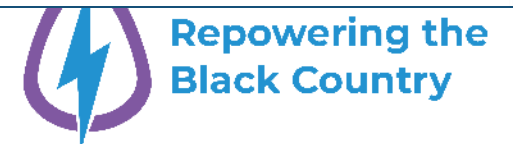
Carbon Clean launches world's smallest industrial carbon capture technology, overcoming a key barrier to widespread CCUS adoption and industrial decarbonisation

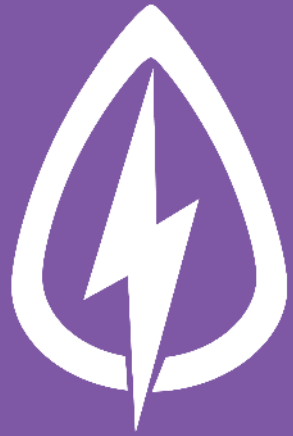
CycloneCC has been developed in the UK, with the support of industrial heavyweights, university partners and the UK government

The world's smallest industrial carbon capture solution - CycloneCC - has been launched today by Carbon Clean, a global leader in cost-effective industrial carbon capture. The innovation is a breakthrough for the sector - bringing the technology within reach of many more and shifting the economics of carbon capture.



MODULAR AND SCALABLE
COST-EFFECTIVE
10 TIMES SMALLER
STRAIGHTFORWARD TO INSTALL





**Repowering the
Black Country**

THANKYOU

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Director