



A NEW INDUSTRIAL FUTURE FOR THE UK

A low carbon future for energy-intensive clusters

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@teescollective

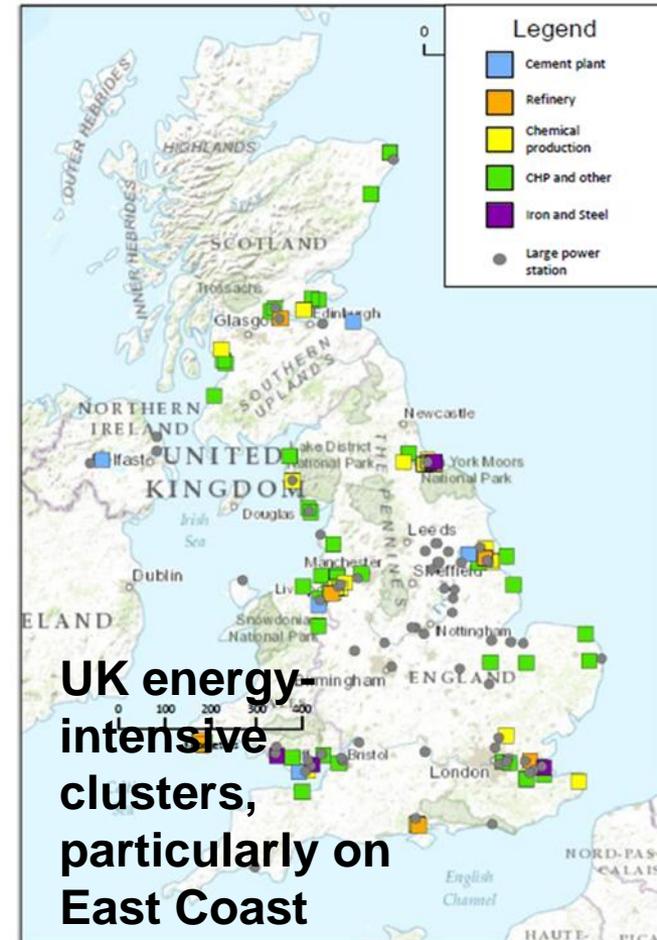
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Economic benefit of clusters

East Coast process industry clusters characterised by:

- Large direct & indirect employment.
- High GVA per employee:
 - Average in chemical sector is £89,000.
 - Average in chemical sector in e.g. Teesside is £104,000.
- High wages:
 - Average UK chemical wage is £30,500.
 - Average chemical wage in e.g. Teesside is £35,600
- Consistent trade surplus.



Why are clusters important?

- Industrial emissions need to be addressed alongside other sectors (domestic; transport).
- Carbon capture is the only solution for addressing CO₂ produced by Industrial processes
- A cluster, rather than an industrial sector approach, allows cost-effective approach
- Demonstration and attraction of carbon conversion and utilisation possible.
 - Clusters are centres of industrial symbiosis and low carbon manufacturing.
 - They include bio-based processing & use of renewable or waste raw materials.
- UK clusters would be competitive with industrial regions across the EU (and beyond) for low carbon production.
- An industrial network would allow other sectors (power, domestic heat, transport) to decarbonise e.g. via hydrogen production & storage.

- Continued industrial support.
- Technically feasible – construct by 2020s and cost competitive.
- Can serve many sectors including power.
- Existing infrastructure.
- Supports innovation for UK:
 - Hydrogen economy & energy storage
 - Biomass/biofuels
- Provides immediate CO₂ utilisation/conversion opportunities.
 - Hydrogen, oxygen and CO₂ at scale.
- Cluster removes a major part of UK industrial emissions in a small area.
- Robust v individual companies.

Teesside Collective now

- Maintaining the Collective and gaining support.
 - Involving additional industrial cluster partners.
- Developing a low carbon action plan.
 - Identifying CO₂ conversion & utilisation options (with Sheffield University).
 - Methanol, liquid fuels, polymers.
 - Existing infrastructure and production can demonstrate at scale.
 - Developing the circular economy including CCS/U.
 - New integration options (cluster study).
 - Industrial heat use (HNDU study).
 - Demonstrating & delivering domestic & industrial zero carbon heat via hydrogen (H₂) with Leeds LEP and NGN, and own study.
 - Energy storage via hydrogen (NE hydrogen partnership).
 - Potential to fuel a decarbonised transport sector – road & rail.
- Seeking to retain infrastructure
- Looking to support policy developments
- Industrial CCS provides the Gateway to a low carbon economy in the UK