

Industrial Decarbonisation Challenge: Comparison of the industrial clusters in the UK

Mai Bui, Matthew Ball, Victoria Whitehouse, William Joyce, Natalie Robertson, Kelly Aldis, Bryony Livesey*

Industrial Decarbonisation Challenge, Industrial Strategy Challenge Fund, Innovate UK, UKRI, UK

*Corresponding author Bryony.Livesey@iuk.ukri.org

Abstract

The Industrial Decarbonisation Challenge (IDC) supports development of low-carbon technologies and infrastructure in six of the largest industrial clusters in the UK. Most of the industry in the UK takes place in clusters where several industrial sites are located in close proximity to one another. The key industrial cluster regions in the UK and the sectors within them are summarised below.

Cluster region	Key sectors
Scotland	Over 80% of the UK's oil and gas sector is located, other key sectors include chemicals, fertilisers, power, paper, cement, beverages, waste and glass
Teesside	Chemicals, steel, biofuels, pharmaceuticals, oil & gas, mining, energy from waste
Black Country	Iron and steel processing Manufacturing, particularly fabricated metal products, automotive manufacturing and food and beverage
South Wales	Steel and metals, petrochemicals, chemicals, cement, power, insulation, paper, general manufacturing
Northwest	Oil refining, chemicals, glass, cement, food, automotive, biomass, energy from waste
Humber	Iron & steel, refining, chemicals, energy from waste and biofuel, cement and lime, glass
Solent	Refining

These clusters have different characteristics and vary in terms of types of industries, size of the emissions, geographic spread, existing infrastructure, access to ports, energy/resource availability, economic scale (e.g., imports, export revenues, jobs and GVA growth). The decarbonisation strategy and technology selection/design would need to account for these unique characteristics and challenges for each industrial cluster.

This contribution provides a comparison of the differences and similarities between the UK industrial clusters, as well as two detailed case studies for one a coastal industrial cluster (Teesside) and the only inland cluster, the Black Country. The Teesside cluster is one of the most compact clusters and is characterised by access to the Teesside Port, which provides access to the North Sea and handles around 16% of the UK's natural gas imports. Teesside has access to CO₂ storage sites in the North Sea and large-scale assets for industrial decarbonisation, e.g., pipelines, tunnels, salt caverns for hydrogen storage. In contrast, the industrial landscape of the Black Country cluster is completely different to the other clusters as it is the only non-coastal cluster. It consists of a large number of energy-intensive SMEs and the emission sources are small scale and dispersed.