

Environmental Capacity in Industrial Clusters Project

- Humber cluster
- Hynet cluster
- Teesside cluster



Map showing the industrial clusters investigated

Strategic need

We need new technologies to help us to mitigate climate change and achieve the Government's commitment to reach net zero carbon emissions by 2050. Industrial clusters are key areas for industrial activity and at the forefront of UK efforts to decarbonise its economy. New enabling technologies must be fit for the future and able to operate within environmental capacity and a changing climate.

Background

Funded by the Department for Energy Security and Net Zero (DESNZ), this Environment Agency 4-year project has been conducted to understand the cumulative environmental impacts of industry deploying decarbonisation technology and enabling environmental capacity in the Humber, Teesside and Hynet clusters.

Evidence has been gathered through data, literature review and stakeholder engagement. Four reports were produced, one from each year of the project, to evaluate the environmental capacity to support carbon capture and storage technology and hydrogen production technology on: water quality, water availability and air quality in the three industrial clusters.

Findings and recommendations from the reports will help Government, industry, regulators and other stakeholders find solutions to the challenges to the environment from these technologies.

Key environmental challenges

Water quality

Some existing poor water quality, contaminated land and nutrient challenges. Lack of understanding of wastewater and cumulative impacts of discharges.

Water availability

A lack of current and long-term, transparent and sustainable resource planning. Insufficient engagement between industry and the water sector.

Air quality

Additional challenges from new emissions. Carbon capture will emit novel emissions to air - lack of baseline monitoring data and public disclosure requirement challenges innovation.

Flood risk

Industrial cluster locations are highly vulnerable to climate impacts. Industrial infrastructure resilience to extreme weather is needed, including infrastructure dependence.

Strategic planning

Local Plans recognise and support Net Zero as a growth driver, especially flagship projects, but there's limited evidence of a strategic approach to wider cluster growth needs.

Environmental permitting

Environmental permitting takes a 'first come, first served' approach. Existing capacity challenges limit headroom for new industries with no easy mechanism to create headroom.

Recommendations

To effectively deploy low-carbon technology in the cluster regions we need to prioritise environmental capacity challenges and strategic planning in order to promote sustainable development.

Planning

- Integrate industrial cluster growth into planning reforms
- Develop cluster-focussed strategic plans
- Use Strategic Environmental Assessments at the cluster-scale
- Develop industrial cluster growth forecasts

Permitting

- Consider new approaches to permitting and review existing cluster permits
- Review regulatory approach to land remediation
- Model cumulative emissions to air and water
- Commission study on pollution off-setting

Water availability

- Bring water abstraction licensing into environmental permitting
- Develop cluster-scale water reuse and recycling schemes
- Create water demand forecasts

Water quality

- Greater transparency on wastewater impacts
- Develop an approach for mitigating nutrient pollution from industry

Air quality

- Establish a cluster-scale ambient air monitoring programme
- Support research and development of innovative alternative non-amine-based carbon capture products

The success of the Government's growth and clean energy missions in industrial clusters will rely on the Government, the Environment Agency, industry and local government understanding the challenges and working together to unlock the environmental capacity for sustainable net zero growth.