UK CCS RC Conference

Project no 271501, ACT – Accelerating CCS technology

Accelerating Low-carbon Industrial Growth through CCUS

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ALIGN-CCUS -Accelerating Low-carbon Industrial Growth through CCUS

- Large-scale, cost-effective CCUS by 2025:
  - Capture: improving performance and reducing costs
  - Transport: Optimising large-scale CO_2 transport
  - Utilisation: Establish the contribution of CCUS as an element for large-scale energy storage and conversion
  - Storage: Reduce uncertainty in large-scale storage networks
  - Implementing social acceptance of CCUS in society

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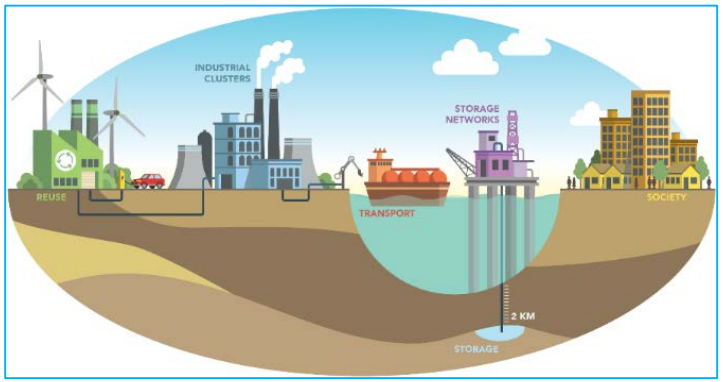
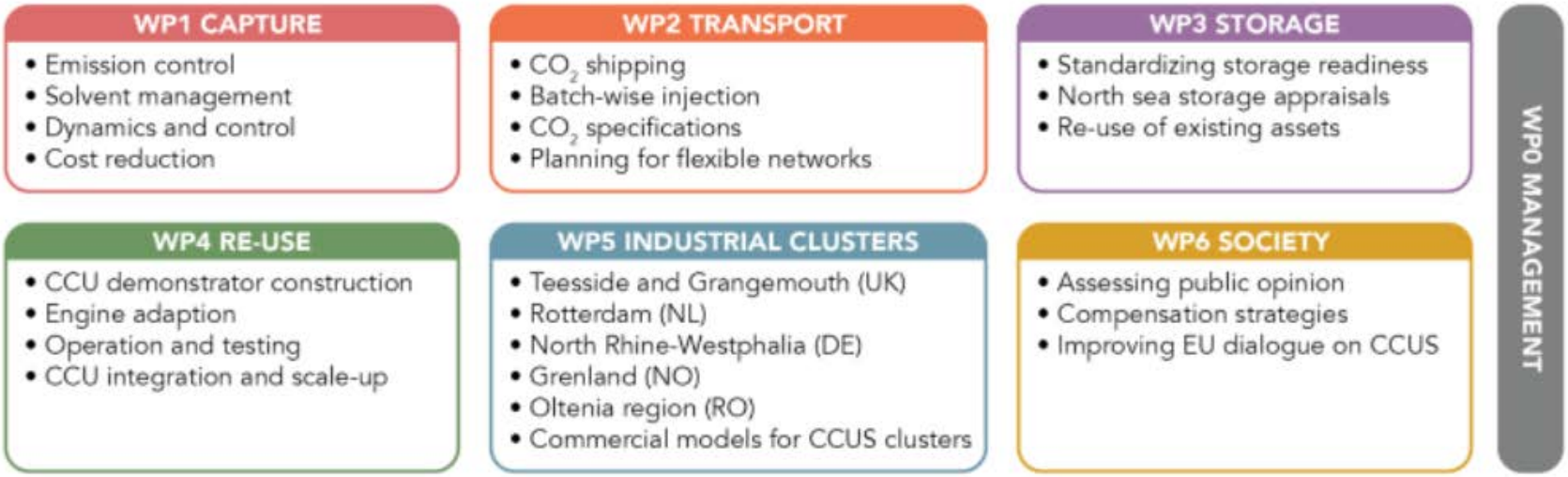


ALIGN – chain integration



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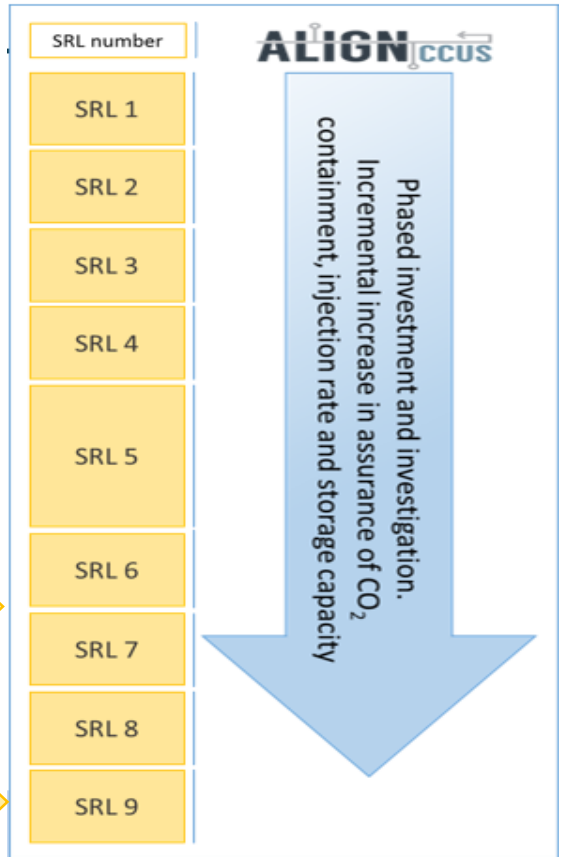
Standardised framework of CO_2 Storage Readiness Levels

SRL 1 - Initial identification of storage potential of a geological formation

SRL 6 - 'Contingent storage resource'

SRL 9 - storage site 'on operation'



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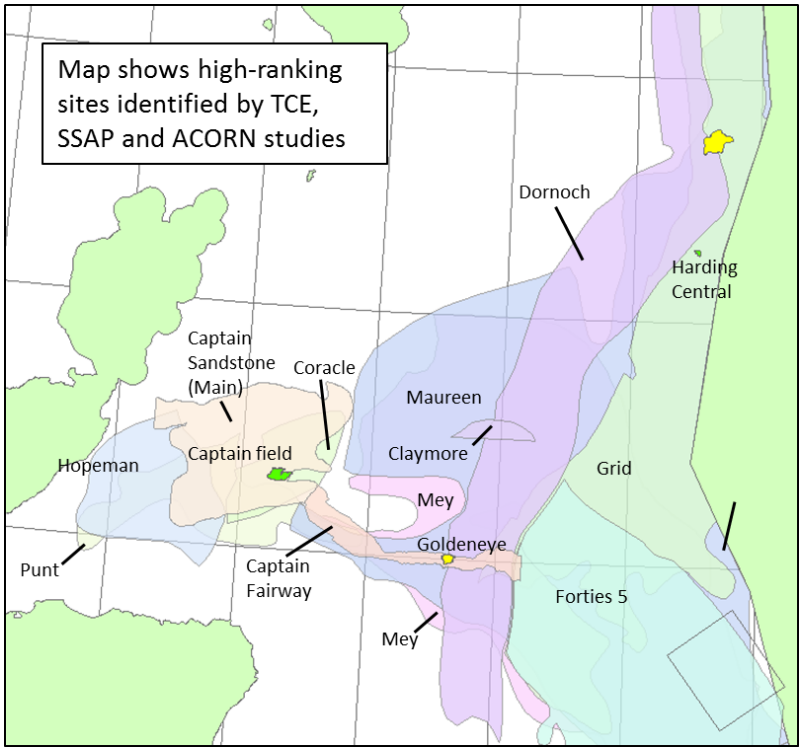
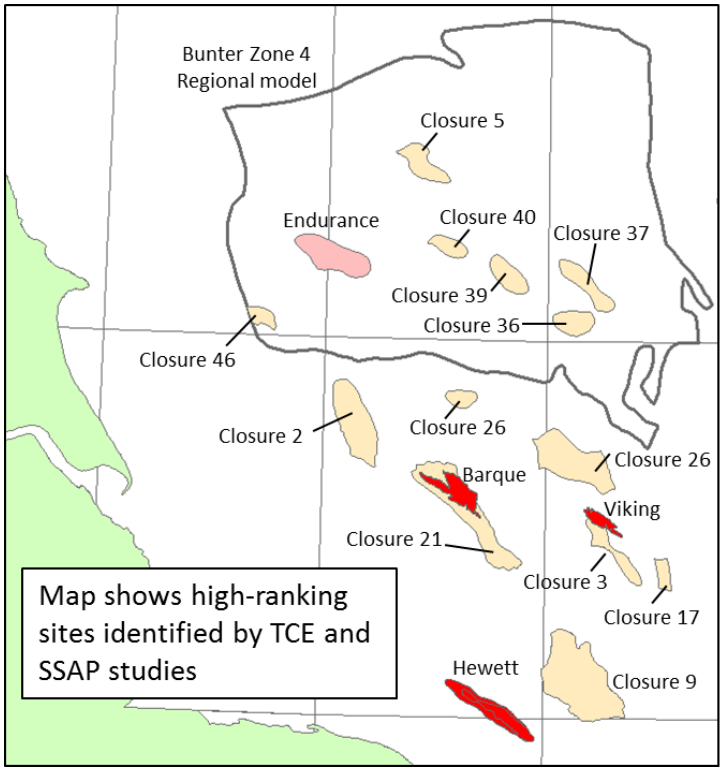
Work in progress in ALIGN-CCUS project, to be presented at a project webinar, Autumn 2019

CO_2 storage options - Grangemouth & Teesside industrial clusters

- Informed by rates and duration of projected CO_2 supply, in collaboration with ELEGANCY & ACORN
- Integrated supply profile with three variants for initial, growing and maturing CCS projects to 2100

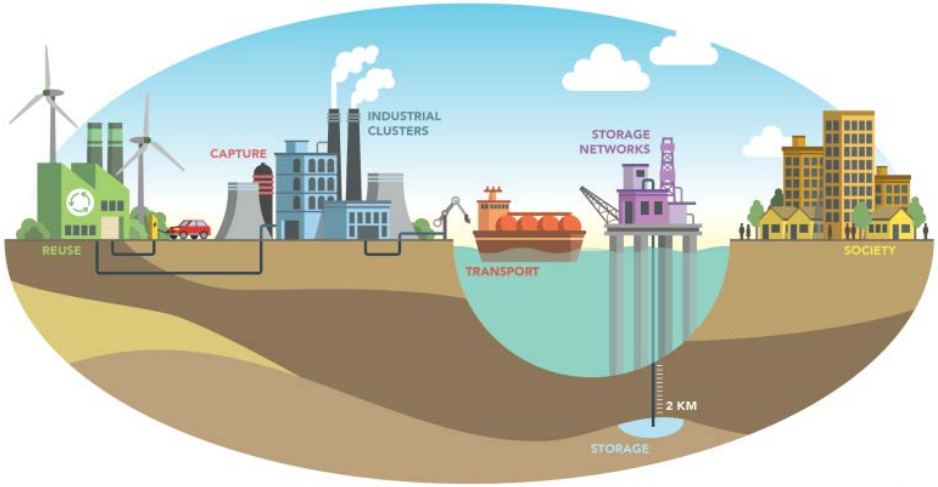


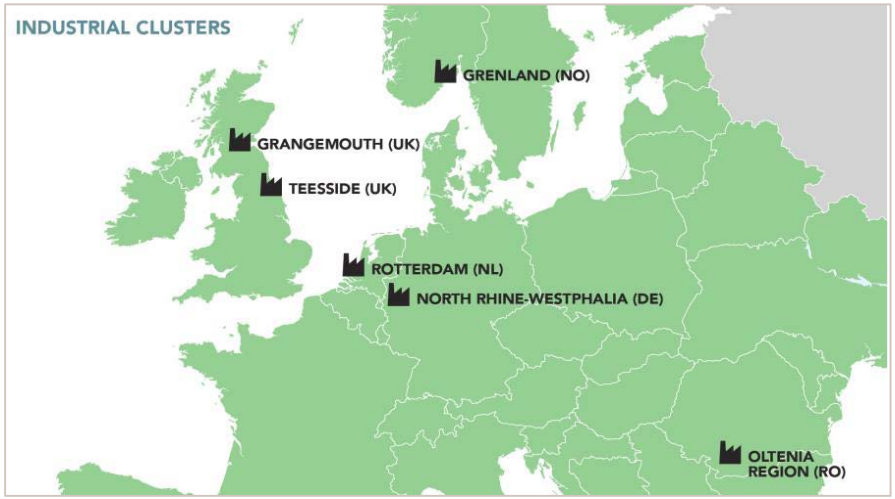


Re-use of UK infrastructure for CO_2 storage

- Re-use to reduce cost and accelerate CCS deployment
- Published criteria for screening and selection
- Methodology developed by international collaborators
- Tested on national infrastructures
- Criteria ranked on ease of use and effectiveness for screening suitable infrastructure
- Overall, ranking of criteria is similar for each country

ALIGN-CCUS: industrial CCUS clusters





Acceleration of CCUS in specific industrial regions in ERA-NET ACT countries:

- Teesside and Grangemouth (UK),
- Rotterdam (NL),
- North Rhine-Westphalia (DE),
- Grenland (NO)
- Oltenia (RO).

Deliver actionable blueprints in each region for low-emission industries, through geological storage or utilisation of CO_2.

- Advancing the Technology Readiness Levels of CCUS technologies
- Transnational benefit

ALIGN UK cluster objectives

- Present profiles of CO_2 supply from published plans and project concepts
- Develop and test options to meet North Sea storage demand for the two UK CCUS clusters for:
  - Differing rates of CO_2 storage project growth
  - Present day to 2100
- Present optimal CCS transport and storage options, including transport by shipping, for
  - Teesside
  - Grangemouth
  - Expansion options
- Storage options investigations as input to least-cost network development modelling (Imperial College London)
- Identify cost reduction opportunities around CCUS for the Teesside and Grangemouth industrial clusters including:
  - production of clean hydrogen for use in industrial heating
- Business case assessment and commercial models for cluster development (SDL)

Summary

- ALIGN-CCUS project research is working to reduce the cost and accelerate industrial CCS in:
  - capture, transport, storage, business case, least-cost networks & social acceptance
- Project research is being applied to five industrial regions in four countries
- Transnational benefit is being gained from experience of other North Sea industrial clusters
- ALIGN-CCUS project, research findings outcomes and events are made available at:

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Acknowledgements

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