Characterisation of European CO_2 storage

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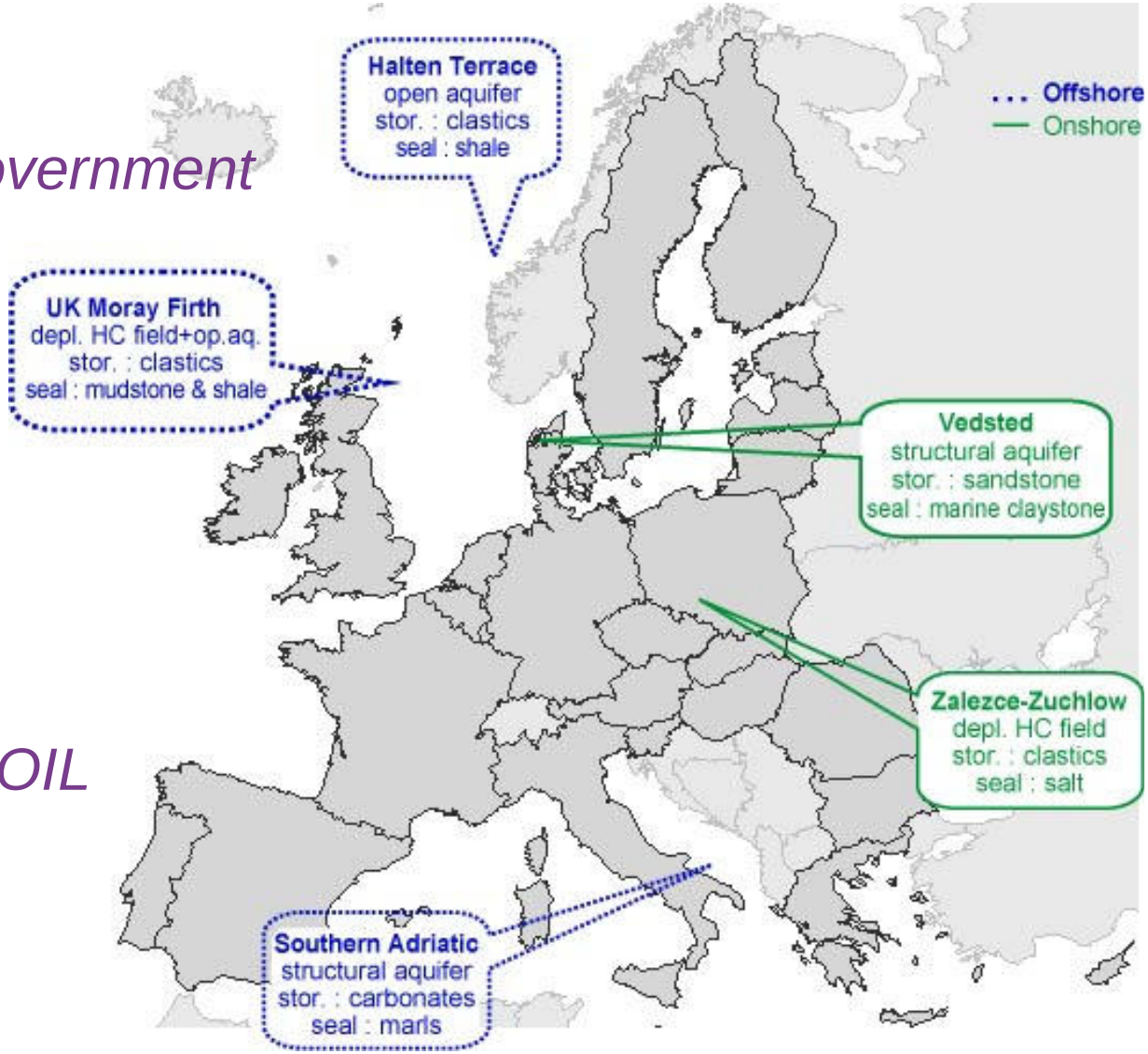
Objective of *SiteChar*

- **Provide the key steps required to achieve readiness for large-scale implementation of CO_2 storage in Europe:**
  - ***Demonstrate the level of geological characterisation and assessment of long-term storage complex behaviour rigorously tested in accordance with the regulatory requirements***
  - ***Refine the complete generic storage site characterisation workflow up to the final stage of licensing***
  - ***Assess dry-run licence applications by a group of geological experts and regulators***
- **Focus on representative sites where CCS is most likely to develop in the near term**

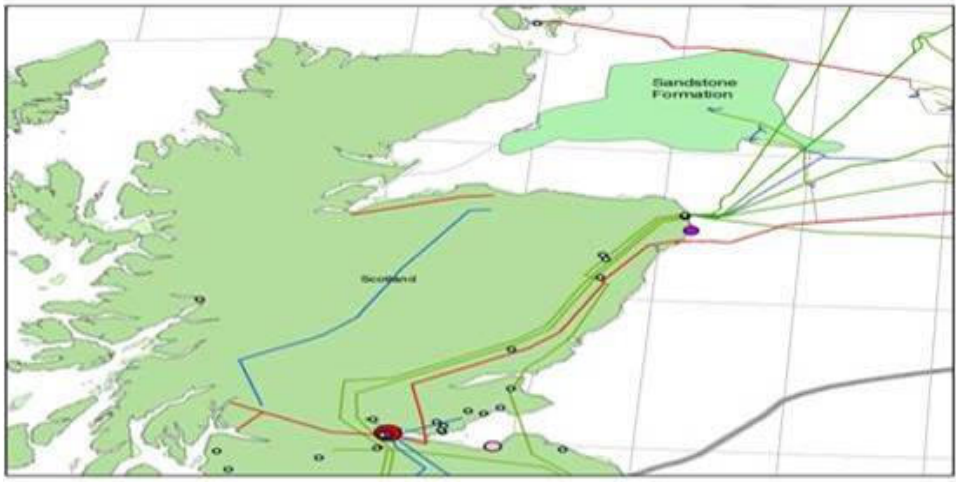
The portfolio of sites

- **UK North Sea**
  ***NERC** / Scottish Government*
- **Vedsted**
  ***GEUS** / Vattenfall*
- **Zalecze & Zuchlow**
  ***PGNiG** / AGH*
- **Halten Terrace**
  ***SINTEF-PR** / STATOIL*
- **Southern Adriatic**
  ***OGS** / Enel*



The North Sea Moray Firth site, UK

- **A multistore site, comprising hydrocarbon field together with associated saline aquifer**



- **Development of a credible CO_2 storage injection history over a 25 - 50 years term, compatible with likely current and future industrial sources**
- **Full-chain techno-economic assessment to reach readiness for storage licence application**
- **Investigation of the relationship between a HC field and the associated saline aquifer store**

The Vedsted site, Denmark

- **An onshore Upper Triassic-Lower Jurassic aquifer at 1800-1900 m depth**
- **Storage structure situated in a small graben bounded by NW-SE trending faults and part of a larger graben structure.**

- **Perform a full-chain characterisation of the site to reach readiness for storage licence application**
- **Investigate different ways to supplement the sparse data**
- **Explore the impact on the surrounding region, especially pressure development in the saline aquifer**
- **Design a monitoring program / risk management**

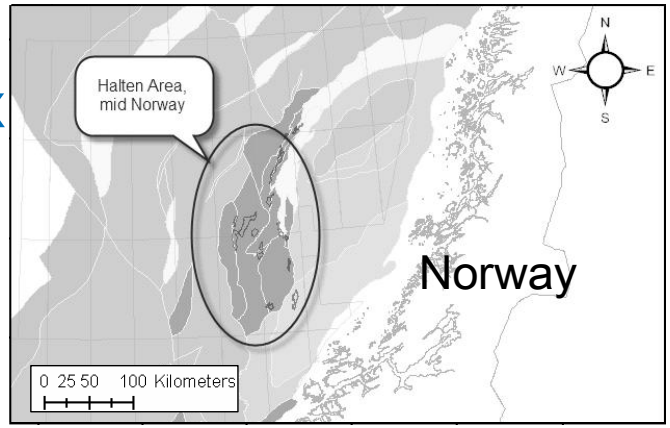
The Zalecze & Zuchlow site, Poland

- **Representative of sites in the Polish Lowland, which offer a series of natural gas reservoirs with CO_2 storage potential**

- **Undertake the whole workflow from the first stages through to the development of an injection strategy**
- **Integrate the results of laboratory experiments on the behaviour of the reservoir rock and caprock during CO_2 injection and perform reactive flow simulations coupled with geomechanical simulations**
- **Peform long term injection storage risk assessment**

The Halten Terrace site, Mid Norway

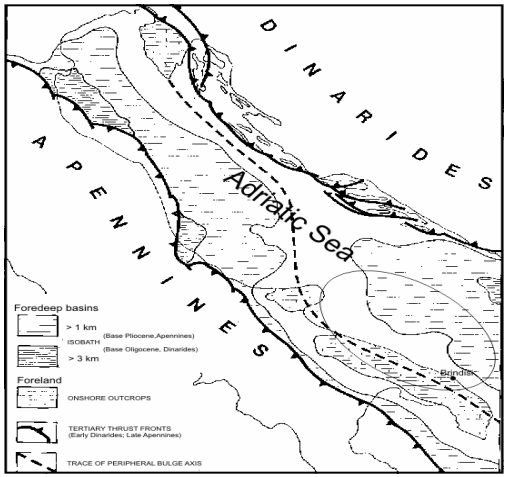
- **Multi-compartment storage complex with structural traps and/or open saline aquifer**



- **Develop site characterisation procedure for a multi-storage complex**
- **Quantify CO_2 saturation and possible flow and leakage**
- **Assess the impact of stress and pressure changes on CO_2 storage performance and related risk**
- **Determine effective injection, monitoring and remediation strategies**

The South Adriatic site, Italy

- **A structural trap in a carbonate saline aquifer, located in a relatively stable area**



- **Develop a robust methodology for storage site characterisation in carbonate formations**
- **Refine the static model through a more detailed geophysical/petrophysical characterisation**
- **Simulate the geomechanical and dynamic behaviour of the storage complex due to the CO_2 injection in the reservoir consisting of fractured carbonate formations**

SiteChar issues

- **Development of a generic CO_2 storage site characterisation workflow**
- **Impartial reviews of licence applications**
- **Comparative economic assessment of the sites**
- **Social site characterization and public engagement activities**
  - **Raising public awareness and enable informed opinion formation**
  - **Making available site-specific information**

SiteChar outcomes

➔ **Technical recommendations for storage site characterisation and best practice guidance for storage licensing from the perspective of both applicant and regulator**

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