

GEO ENeRGY

Excerpt – also see <http://www.energnet.eu/issue23.pdf>

CO₂CARE – Research Requirements of CO₂ Storage Site Abandonment

CO₂CARE – “CO₂ Closure Site Assessment Research”, started in January 2011 and ends in December 2013. It is a collaborative project funded within the frame of the 7th Framework Programme of the European Commission. CO₂CARE deals with the CO₂ storage part of the CCS technology chain focusing on three key areas: a) well abandonment and long-term integrity, b) reservoir management and prediction from closure to long-term and c) risk management methodologies for long-term safety.

The research in CO₂CARE aims at developing the necessary operational and post-closure site management technologies which will ultimately lead to a concept of robust procedures for site abandonment including long-term integrity of the storage complex. In detail, the project objectives will be achieved by carrying out the following activities:

Existing international practices and requirements on CO₂ geological storage and site abandonment will be assessed and compared with up-to-date industrial practices. Legacy data from other abandoned CO₂ sites will also be included into the research.

By means of combining laboratory experiments, numerical



CO₂CARE

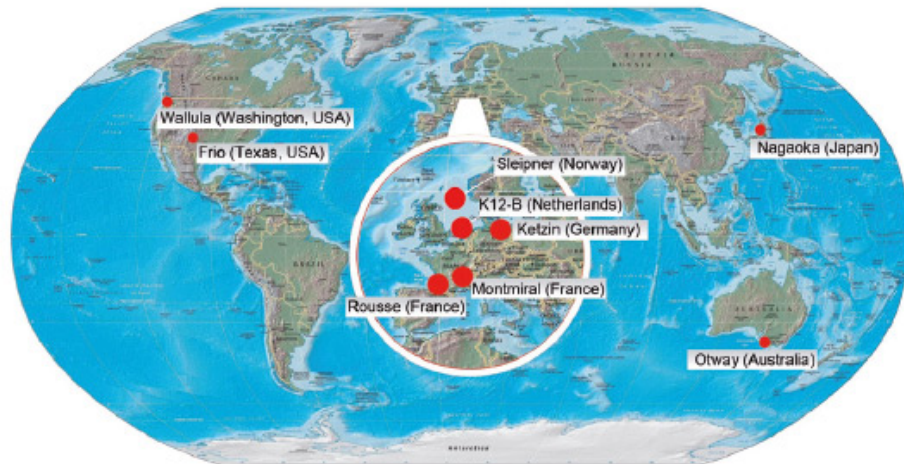


Fig. 2. European and overseas CO₂ injection sites studied in CO₂CARE – field site portfolio (GFZ 2011)

modelling and field work, the development of testing technologies to safely abandon CO₂ injection wells and to assess their performance in the long-term will be achieved.

One project topic deals with post closure reservoir management of a storage site and focuses on the reservoir, caprock and neighbouring hydraulic units. Key elements are the demonstration of long-term integrity and stability of storage sites, development of an associated monitoring programme and the development and numerical assessment of the feasibility of a number of remediation technologies.

The procedures and criteria for the assessment and mitigation of risk at abandonment and post-closure stages of a CO₂ storage project, including the formulation of monitoring

and remediation plans for the transition between site closure and transfer of responsibility will also be developed.

Based on the research findings, guidelines for regulatory compliance and Best Practice for site abandonment will be established. So-called “dry-runs”, a tool for hypothetical closure scenarios, will be applied at real storage sites such as Sleipner, K12-B and Ketzin.

The EU CCS Directive (2009/31/EC) does not define technical acceptance criteria for site abandonment in detail. However, the following three criteria are reflecting the essentials for future site abandonment:

- Observed behaviour of the injected CO₂ conforms with the modelled behaviour;
- No detectable leakage is observed;

- Site is evolving towards a situation of long-term stability.

The identification of such criteria and the development of site abandonment procedures and technologies, which guarantee the fulfilment of these criteria, are the main objectives of CO₂CARE.

The CO₂CARE consortium, consisting of universities and research institutes from the EU, USA, Canada, Japan and Australia, as well as industry, will provide best-practice guidelines at the end of the project, for which a worldwide impact is expected.

Project coordinator is GFZ – German Research Centre for Geosciences in Potsdam, Germany. For more information see the project website at www.co2care.org.

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