



A draft of guidance from the scientific Research Programme GEOTECHNOLOGIEN to underpin the implementation of the CCS Directive in Germany

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In 2004 the Federal Ministry of Education and Research of Germany launched the programme GEOTECHNOLOGIEN with one key aspect being the development of technologies for sustainable storage of carbon dioxide in geological formations. Within this research field more than 30 projects in three consecutive programme phases have been funded up to the end of 2014.

In order to benefit from the gathered knowledge and use the experiences for the policy/law making process the umbrella project AUGER has been launched in October 2012 with a life time of three years. The aim of the project is to review and compile all results of projects funded during the three phases to underpin the appendices of the German transposition of the EC Directive 2009/31/EC the “Carbon Dioxide Storage Law” (KSpG).

The results of the projects have been structured along the lines of the two appendices of the KSpG which are similar to the ones of the EC Directive. The detailed structure follows the CSA Z741, Canada’s first CCS standard for the geological storage of carbon emissions deep underground. This document also serves as the draft version for the ISO Technical Committee 265 “Carbon dioxide capture, transportation, and geological storage”.

From the risk management perspective, according to ISO 31000, most of the research performed in the above mentioned scientific programme dealt with contextual background of geological CO₂ storage asking the question which physical, chemical and biological interactions of CO₂ are most important to understand to evaluate if CO₂ storage in general is feasible. This led to risk identification, risk analysis and risk evaluation.

Major topics of the scientific programme were

- site characterisation with development and optimisation of laboratory procedures and implementation amongst other activities at the pilot site at Ketzin;
- optimization of seismic procedures for site characterisation and the detection of injected CO₂;
- physical, chemical and microbiological interaction of CO₂ with the reservoir and the impact of pressure elevation in saline reservoirs;
- cap rock and well integrity;
- development and test of monitoring methods from the atmosphere down to the reservoir;
- development and improvement of numerical methods to simulate injection and spreading of the CO₂ plume.

During all three phases the knowledge has been incorporated in the risk assessment approach has been further developed.

Within this paper we will present a draft of the guidance document which is based on the compilation of results of the early projects and input provided by project partners of the final funding phase of GEOTECHNOLOGIEN.