

Re-using existing wells for CO2 storage operations

Publieke samenvatting / Public summary

Aanleiding

Substantial cost-savings could be achieved by re-using wells for CO2 injection, monitoring or pressure management. Re-using wells can also offset the significant costs associated with decommissioning of offshore oil and gas infrastructure or drilling new offshore wells solely for CO2 storage. Conversely however, existing wells pose a risk as potential CO2 or brine migration pathways (Watson and Bachu, 2009). While the integrity and remediation of abandoned wells has been the focus of several previous studies (Carey, 2013; Wiese et al., 2019, Carroll et al., 2016; Sminchak et al, 2016), this project will for the first time assess the potential for re-using existing wells at scale in the context of CCUS. The re-use of wells is the inverse of the problem of identifying defective wells. The process of certifying well integrity can therefore also be used to identify wells that are suitable for continued use in a CO2-rich environment. Some degree of workover or remediation is expected to be required to enable existing wells to be safely repurposed for CCUS.

Korte omschrijving

We will develop a qualification process that will simultaneously reduce time and cost for developing CO2 storage projects by identifying existing well infrastructure suitable for re-use. For wells identified with re-use potential, we will determine the workover and remediation requirements to ensure their long-term efficacy. Re-use can benefit projects in all geological settings but may be particularly important in offshore environments such as the North Sea or the Gulf of Mexico, where new well

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development costs might otherwise prove prohibitive. Developing a procedure and tools for evaluating the re-use potential of existing wells will require a dedicated investigation encompassing the interrelated technical, environmental, economic, regulatory and social aspects.

Resultaat

For this project, we will develop a publicly-available, dedicated well-screening-tool for Re-using EXisting Wells for CO₂ storage operations (REX-CO₂).

Currently no such publicly-available tool exists. The tool will inform decision-making on re-use of existing well infrastructure to accelerate CCUS technology deployment through reduction of project and decommissioning costs for industry and regulators. Tool development will be underpinned by laboratory validation and numerical modelling of fundamental processes, and its practical applicability will be ensured by inclusion of industry and regulatory bodies within the consortium.

Application of the tool will be demonstrated through dedicated case studies for representative wells from a selection of hydrocarbon fields and CO₂ storage sites. The case study sites will represent different geological settings across six international regulatory authorities. The tool will underpin recommendations for best practice which will incorporate technical, regulatory and techno-economic aspects of re-using existing wells for CO₂ storage.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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