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Investigation and Assessment of CO₂ Potential and Economic Viability of CCUS Project in Scotian Shelf

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ABSTRACT

Scotian shelf is considered potential site for CO₂ storage, as reported by IPCC (2005). However, no qualitative and quantitative assessment have been made unlike basins in Norway and UK. The objectives of this work are to assess the carbon storage potential of Scotian Shelf, and to develop a flexible strategic plan aimed at net zero emission by 2050. A combination of volumetric and material balance approaches was used. Firstly, data was acquired and analyzed, and reservoir characterization was conducted. Afterwards, the storage capacity of different aquifers was determined through an extensive volumetric approach. Furthermore, the storage assessment of depleted gas fields was performed using a material balance approach. While the capacity of other stranded fields was assessed using data from the literature. Finally, the surface facilities and monitoring system were designed and supported by an economic analysis. The results show that the Scotian shelf has a huge capacity to store up to 660 GtCO₂ in both deep saline aquifers as well as depleted and stranded gas fields. The Missisauga formation and Alma field have the highest capacity to store CO₂ among the saline aquifers and other fields, respectively. Finally, an US\$ 2 billion profit can be generated by implementing this project.

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