

Feasibility study on CO₂ geological storage through non-structural trapping in aquifers of Quaternary basins of Japan

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In Japan, metropolitan areas with large stationary CO₂ emission sources such as power plants, refineries and steel plants, are located on younger sedimentary basins with huge aquifers, which means the best matching for source and sink is possible. We can expect a combination of dissolution and residual gas trapping mechanism in these basins, although any physical and structural traps in terms of petroleum geology do not exist.

Through simulation with 2D and 3D models we examined the technical feasibility and concluded CO₂ storage with industrial scale is possible. After 25 years- injection at the rate of 1 million tons per year, leakage to shallow aquifers will be unlikely over 1000 years, and roughly 30% of injected CO₂ will be sequestrated through dissolution and the rest will remain as gas condition.