

Oil rigs could pump emissions below North Sea

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North Sea oil and gas rigs could be modified to pump vast quantities of carbon dioxide emissions into rocks below the seabed, research shows.

Refitting old platforms to act as pumping stations for self-contained CO₂ storage sites would be 10 times cheaper than decommissioning the structures, researchers say.

The sites would store emissions generated by natural gas production, and could also be used to lock away CO₂ produced by other sources—such as power stations—helping to combat climate change.

Offshore sites

Edinburgh researchers analysed data from the Beatrice oilfield—15 miles off the north east coast of Scotland. They found that existing platforms could be re-used as storage sites by making minor modifications.

Using a computer model, they worked out that, over a 30-year period, the scheme would be around 10 times cheaper than decommissioning the Beatrice oilfield, which is likely to cost more than £260 million.

"Removing platforms at large expense is short-sighted. Re-using them to dispose of CO₂ in rocks several kilometres beneath the seabed will not only be cheaper, but provides a cost-effective means of cutting the UK's CO₂ emissions to meet the 2050 net-zero target," says Jonathan Scafidi of the School of GeoSciences

Underground storage

Large amounts of natural gas and [heat energy](#) can still be extracted from saltwater in exhausted oil and gas fields, the team found. The gas can be used as a fuel or burnt on platforms to generate electricity.

Mixing saltwater from the oil field with CO₂ produced by burning the

gas enables it to be injected deep underground for permanent safe storage, researchers say.

The scheme would bring down the costs of storing [carbon emissions](#) and postpone expensive decommissioning of North Sea oil and gas infrastructure, the team says.

The study, published in the International Journal of Greenhouse Gas Control, was completed as part of the University's GeoEnergy MSc programme.

"Our study shows, for the first time, that natural gas production from saltwater can be combined with CO₂ storage in the North Sea. The potential revenue provided by extending [natural gas production](#) in the North Sea could help kick-start a world-leading carbon capture and storage industry in the UK," says Dr. Stuart Gilfillan of the School of GeoSciences.

Provided by University of Edinburgh

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