MANAGING THE OFFSHORE ENERGY TRANSITION

Newsletter

Project information

We are now half way through year four of the MOET project. The project team is planning to hold some short focused sessions this autumn to share selected project outputs. The aim will be to better understand how outputs will be used by selected stakeholders, how they could be modified to increase their value and any thoughts you have on future work that could be developed in the final year of the project, and beyond. The first session is likely to cover the work completed as part of work package 1. Whilst invitations will be sent out to specific stakegolders, do feel free to get in touch if you would like to be included by emailing Hazel Napier.

Work Package 1 update - Optimal use of subsurface geological resources for storage of hydrogen and CO_2

Area 1 - Southern North Sea – Throughflow experiments with brine, H_2 and CO_2 in the Bunter Sandstone and measurement of petrophysical properties have been completed. A pair of samples, one perpendicular and one parallel to bedding, have been analysed to consider the role of sedimentary heterogeneity. The output data are being analysed to assess the response in resistivity, P- and S-wave values. Publication of the results is anticipated at the end of 2025. A series of Bunter Sandstone samples have been exposed to a H_2-rich environment, at high temperature and pressure laboratory conditions, 90°C and 150 bar, from the Rough storage facility, Sole Field and Caythorpe borehole. Geochemical and petrographical analysis of the Bunter samples is in progress to enable comparison of pre- and post-H_2 exposure.

Papers have been prepared and submitted for journal peer-reviewed publication on geomechanical modelling of the Bunter Sandstone and mapping of the Rőt Halite seal rock to conclude this MOET Area 1 research. A paper is in preparation on the completed Permian salt mapping, and the cavern capacity is to be calculated within a selected nearshore area. An abstract has been submitted on the sedimentology of the Bunter Sandstone to an international conference. The paper on structural controls on pressure communication across the Bunter Sandstone is now published and can be accessed at https://www.lyellcollection.org/doi/full/10.1144/geoenergy2024-027.

Area 2 - Central North Sea, Outer Moray Firth – A stratigraphic framework has been set up, based on well data, for a corridor of interpretation of the stacked sequence of Palaeogene sandstone mapped from seismic data. The focus is on the channel systems within the interval between the top Balder and top Ekofisk formations around the East Mey site. Future research is planned to assess the impact of injection at the East Mey site.

Area 3 – East Irish Sea – Seismic mapping has focused on the Crosh Vushta graben structure. The techno-stratigraphic interpretation reveals unusual structures and stratigraphic thicknesses with the structural interpretation indicating much strike-slip displacement and extension. The MOET mapping of the Sherwood Sandstone Group provides a good basis for assessment of porous rock H_2 and CO_2 storage. Mapping of salt thicknesses within the Crosh Vusta graben for H_2 cavern storage assessment is in progress. Rock samples from Sherwood Sandstone Group have been collected from Area 3 East Irish Sea aquifer closures. Future experimental exposure to hydrogen is to be scheduled in the hydrothermal, petrographic and geomicrobiology laboratories and samples selected for batch exposure experiments.

Work Package 3 update - Societal consequences of the energy transition

PML is developing a public perception survey on offshore technologies and cultural ecosystem services which will include questions on understanding, awareness and support for technologies. The team plans to organise a MOET stakeholder focus group in the autumn to test the survey questions to help ensure they address any outstanding research questions stakeholder have. Invitations to join the focus group will be sent out some time in late October. If you have any questions on this activity or would like to get involved, please contact Lizzi Gabe-Thomas.

PML is progressing work on a generalised GIS-based impact assessment which aims to spatially represent and evaluate cultural, environmental, and contextual impacts of offshore technologies in the MOET case study areas. To support this, DEFRA has facilitated the collation and harmonisation of cultural datasets from diverse sources including MMO, JNCC and CEFAS. These datasets encompass tangible and intangible cultural assets, heritage sites, community-valued spaces, and archival records. Following analysis of the data, risk maps will be produced.

Please also note this recently published paper: Watson, S. C. L., Szostek, C. L., Edwards-Jones, A., Wills, B., Watson, G. J., & Beaumont, N. J. (2025). Assessing, monitoring and mitigating the effects of offshore wind farms on biodiversity. *Nature Reviews Biodiversity*. SharedIt link: https://rdcu.be/eBrZ4 https://doi.org/10.1038/s44358-025-00074-5