



Newsletter

Project information

We are now in year four of the project and planning how to disseminate project findings in formats that suit our wide range of stakeholders. We will be in touch to gather views in the next 2-3 months. If you would like to discuss any of the work package activities, please contact [Hazel Napier](#) or the relevant work package lead. Please also visit our website at www.projectmoet.org

Work Package 1 update - Optimal use of subsurface geological resources for storage of hydrogen and CO₂

Area 1 - Southern North Sea - Experimental reactions of hydrogen with porous rock in potential storage closures in progress. Eight rock samples were equilibrated at 90°C and 100 bar pressure for over ten weeks and exposed to a head of nitrogen gas. In mid-January a microbial inoculant was added to some samples, with others left uninoculated as a control, and the head gas exchanged with hydrogen. Fluid samples are being tested to track the evolution of the fluids and the pH and Eh (reduction-oxidation potential) have been measured. Compositional analysis of the fluid awaits the completion of the experiments. A paper on the microbial constraints to hydrogen storage in UK offshore sites and dataset is in preparation.

Majority of mapping and modelling work is completed for Area 1, and peer-reviewed publication is in preparation. The structural controls on Bunter Sandstone pressure paper has been accepted by Geoenergy, the GHGT-17 conference paper is available on website [here](#). A paper on the Röt Halite seal rock for the Bunter Sandstone has been drafted. Salt mapping is now completed, [emerging findings are on the website [here](#)]. Scripts will be run to evaluate potential for cavern storage of hydrogen in halite for parts of Area 1.

Area 2 - Central North Sea, Outer Moray Firth - The completed mapping of Palaeogene sandstone aquifers and output stratigraphic framework will be used to target detailed CO₂ storage investigations. The interpretation is at a very high level, resources for future detailed investigation and response to injection will be identified or sought.

Area 3 - East Irish Sea - First pass seismic mapping completed in the East Irish Sea and has highlighted structural complexity and areas of thick salts. A modern stratigraphic scheme for the Mercia Mudstone Group has been applied to well data around the Morecambe Field; the main halite bearing unit and cap rock in the underlying Sherwood Sandstone Group. This consistent approach, used widely in the East Irish Sea, has increased confidence in the seismic interpretation and depth conversion. Experimental investigation of the porous storage strata has started by the initial identification and sampling of porous rock closures. An experimental programme is to be planned with the hydrothermal, petrographic and geomicrobiology laboratories.

Work Package 2 update - Understanding the shallow subsurface, seeps and the marine environment

The NOC experimental exposure of marine sediment to N₂, CO₂ and H₂ has now been completed. The experimental investigations found contrasting chemical changes and these are perhaps related to the presence of microbial communities. The sediment samples are to be sent to the BGS for microbial laboratory analysis.

Building on data delivered from the boom of the offshore windfarm industry over the last decade, an open-source BGS report collates geological information of the seabed and near subsurface in the Southern North Sea (SNS). Utilising reports and data available on the Marine Data Exchange (<https://www.marinedataexchange.co.uk/>), BGS have collated age-dating, lithological information and depth to bedrock data, synthesising information into a broad chronostratigraphic framework of the SNS. The aim is to build a scoping diagram to better understand the distribution of formations, useful for future offshore infrastructure activities. This report builds from Stoker et al. (2011) and identifies gaps in research for possible joint venture activities and future collation of geotechnical datasets per geological formation.

Work Package 3 update - Societal consequences of the energy transition

PML is developing a generalised GIS-based impact assessment which aims to spatially represent and evaluate cultural, environmental, and contextual impacts across identified regions of interest. To support this, work is ongoing with DEFRA on collating and harmonising cultural datasets from diverse sources. These datasets encompass tangible and intangible cultural assets, heritage sites, community-valued spaces, and archival records. The goal is to ensure comprehensive and representative coverage that will inform the spatial layers and analytical components of the impact assessment.

Related work has been undertaken at PML on developing an Emotional Connectedness to the Ocean (ECO) scale. This is the first validated scale measuring the emerging psychological construct known as ocean connectedness, facilitating scientific understanding of how strongly individuals and communities feel connected to the sea and coastlines. This work will contribute to ongoing work in WP3 on societal impacts.