



Newsletter

Meetings and engagement activities

We started our new series of online discussion activities with a session on 17th September exploring policy and regulatory gaps and challenges associated with offshore energy technologies. We had representation from across all stakeholder groups and some key themes emerged. We will share notes and key themes when they have been compiled. Thank you very much to all those that attended! We are planning our second session on 17th October which will have a more technical focus (agenda to follow). If you would like to attend this session, please let me know by accepting the calendar invitation or contact [Hazel Napier](#)

Work Package 1 update - Optimal use of subsurface geological resources for storage of H₂ and CO₂

Area 1 Southern North Sea, progress and deliverables completed to September 2024:

- Understanding the impact of regional structures on pressure communication within the Bunter Sandstone Formation, UK Southern North Sea. Lucy Abel, presentation, Geological Society, and paper for publication.
- Small-strains and gentle uplift of the seabed: Modelling the regional geomechanical response to industrial-scale injection of carbon dioxide in the Bunter Sandstone. John Williams presentation, Geological Society
- The Röt Halite Member of the Southern North Sea – A critical top seal for carbon dioxide storage in the Bunter Sandstone Formation. Harry Morris, poster, Geological Society.
- Zechstein halites as potential H₂ storage solution – interim results. E Bedda, T Randles, H Morris, E Hough, poster, Geol Soc.
- Microbial constraints on UK geological hydrogen storage, paper in progress and database available online by end 2024.
- Final geophysical analysis of hydrogen-, CO₂- or brine-saturated Bunter Sandstone, paper in progress for publication

Planning for second half of MOET Project, October 2024 to March 2027:

- Area 2 - Central North Sea Outer Moray Firth: main interests are hydraulically connected stacked Tertiary sandstones for CO₂ geological storage, with H₂ storage interest in depleted gas fields and in the nearshore region later in the project.
- Area 3 - East Irish Sea, salt cavern H₂ storage assessment a priority, alongside interaction with commercial CO₂ storage sites and wind farm areas.

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

Modelling of impacts of H₂ leakage – setting up a new state of the art hydrodynamic scheme. Scenarios will be run which will report on footprints and detection length scales.

The outcomes of experiments run at NOC, which have bubbled H₂, CO₂ and N₂ (control) through various North Sea sediment types will be input to above scenarios. Already observing production of sulphides (toxic) in the H₂ treatment.

PML submitted a paper on the impact that structures in the North Sea (oil and gas and wind) have on ecosystem connectivity. This work helps plan optimal places for new structures or likely impact of planned structures on ecosystems.

Gave a talk at the EAGE conference on MMV for CCS and will talk on a similar subject at GHGT in Calgary, in October.

PML leading chapter in a new book, updating the chapter on offshore impacts and monitoring from this 2013 issue [Geological Storage of Carbon Dioxide \(CO₂\) - 1st Edition | Elsevier Shop](#). Team includes Charles Jenkins, Katherine Romanak, Jen Roberts, with PML and NOC staff and the Crown Estate. Working theme is that progress over last 10 years puts us in a position to roll out CCS/MMV with minimal environmental risk and copious benefit.

PML are in contact with a German group who are building on our earlier work on hypersaline release (in the context of geological pressure management) for brine production arising from offshore H₂ production with renewables (Green H₂)

Work Package 3 update - Societal consequences of the energy transition

Presentation at the IEAGHG Workshop on Offshore Geologic CO₂ Storage – general social science overview

Revisiting insights from last year's in person stakeholder workshop - what stakeholders believe are the most important social issues in energy transition

Social survey being developed to measure cultural ecosystem services (CES) of North Sea area, measure current CES in the area & how that might be expected to change with different technologies/structures

Development of CES frameworks and how to measure concepts like sense of place & anticipated changes to them

Discussions held with Dr Christine Boomsma, psychologist at the National Institute for Public Health and the Environment in the Netherlands (RIVM) regarding work on public mental models of hydrogen storage and transport and the potential for international collaboration.