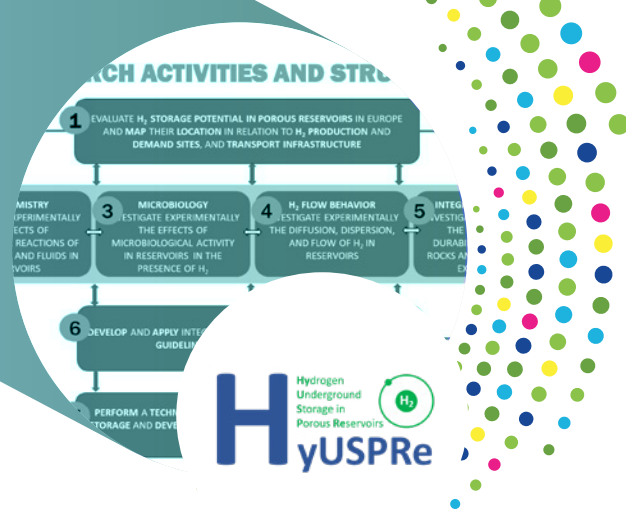


HYUSPRE

HYDROGEN UNDERGROUND STORAGE IN POROUS RESERVOIRS



Project ID:	101006632
PRD 2023:	Panel 2 – H2 storage and distribution
Call topic:	FCH-02-5-2020: Underground storage of renewable hydrogen in depleted gas fields and other geological stores
Project total costs:	EUR 3 714 850.00
Clean H₂ JU max. contribution:	EUR 2 499 850.00
Project period:	10.1.2021–31.12.2023
Coordinator:	Nederlandse Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek, Netherlands
Beneficiaries:	Centrica Storage Limited, Energie Beheer Nederland BV, Energieinstitut an der Johannes Kepler Universität Linz Verein, Equinor Energy AS, Fondazione Bruno Kessler, Forschungszentrum Jülich GmbH, Magyar Foldgazarolo Zartkoruen Mukodo Reszvenytarsasag, Nafta AS, Neptune Energy Hydrogen BV, RAG Austria AG, Shell Global Solutions International BV, Snam SpA, Technische Universität Clausthal, University of Edinburgh, Uniper Energy Storage GmbH, Wageningen University

<https://www.hyuspre.eu/>

PROJECT AND OBJECTIVES

HyUSPRE studies the potential of large-scale hydrogen storage in porous reservoirs in Europe. This includes the identification of suitable geological storage reservoirs and a techno-economic feasibility assessment for hydrogen storage in these reservoirs. The project is addressing specific technical challenges regarding storage, and conducting an economic analysis to facilitate the decision-making process for the development of a portfolio of potential field pilots. The techno-economic assessment will allow for the development of a roadmap for widespread hydrogen storage towards 2050.

NON-QUANTITATIVE OBJECTIVES

- HyUSPRE aims to conduct a study assessing the potential matching of hydrogen supply and demand sites, including the necessity of hydrogen to buffer time-varying renewable energy demands.
- The project aims to conduct a study on the potential of European hydrogen underground storage to facilitate a zero-emission energy system by 2050.

QUANTITATIVE TARGETS AND STATUS

Targetsource	Parameter	Target achieved?
	GIS-based, visualise suitable H ₂ underground stores and their H ₂ storage potential	✓
	Establish geochemical, microbial, flow and transport, and geomechanical processes of H ₂ in porous reservoirs	⚙️
Project's own objectives	Establish cost estimates and identify the business case for H ₂ storage in porous reservoirs	⚙️
	Map the proximity of hydrogen stores to large renewable energy infrastructure	✓
	Evaluate the amount of renewable energy that can be buffered in relation to time-varying demands	✓
	Develop future scenario roadmaps for EU-wide implementation	⚙️

PROGRESS AND MAIN ACHIEVEMENTS

HyUSPRE recently completed the first periodic reporting period, covering months 1–15; overall, the project is on track. Nearly all projected research activities were carried out, and related deliverables realised and published on the project website. Several activities and reports have been delayed – these are all related to the experimental work programme and show that laboratory experiments often do not proceed exactly as planned and need flexibility in execution. Part of the projected output and key exploitable results were able to be achieved by the end of the first reporting period.

FUTURE STEPS AND PLANS

It is expected that HyUSPRE will be executed in line with the project plan. The technical work is ongoing. For the laboratory experiments, agreements have been made with industrial partners, and rock and fluid samples and data have been collected from them. All but two deliverables planned in the first reporting period (months 1–15) were achieved. The consortium will continue to execute the research programme in the second period (months 16–27; ends in December 2023) and is optimistic that all activities, evaluations and reporting will be finalised within the originally agreed project timescales.