EUROPEAN DOCTORAL NETWORK
CALL FOR RECRUITMENT

RESEARCH FIELD: **Hydrogen storage technologies,** embedding geology, *microbiology, geochemistry, geophysics, fluid dynamics and geomechanics monitoring.*

OVERVIEW OF THE RESEARCH AND TRAINING OBJECTIVES. Hydrogen is expected to play a key role in a future climate-neutral economy, enabling emission-free transport, heating and industrial processes as well as inter-seasonal energy storage. It is anticipated there will be a requirement for TW scale storage with discharge durations of many months, which can only be delivered by underground hydrogen storage in porous reservoirs**.** The overarching objective of this European Doctoral Network "*Safe underground Hydrogen storage IN Earth subsurface reservoirs* " (acronym: **SHINE**) is to investigate the hydrogen/rock/pore fluid processes with the aim of assessing the feasibility of underground hydrogen storage technologies within subsurface porous reservoirs, through **10 cutting edge research and training projects at doctoral level** *(https://www.shine-edn.eu/projects-on-offer/).* The research projects span many disciplines, including *microbiology, geology, geochemistry, geophysics, fluid dynamics, and geomechanics, and will utilize laboratory, computational and field study approaches*. All the projects are interlinked and focused on the characterization of the reservoir and caprock properties including modelling their mechanical integrity, geochemical stability and multi-phase flow properties during hydrogen storage operations. The training will involve both industrial and academic sector partners with the aim of creating a new generation of scientists able to develop technologies, propose new solutions to sub-surface exploration challenges, and provide better scientific understanding and guidance to support our energy transition. They will support all stakeholders (e.g., policy makers, regulatory authorities, industry, interest groups representing civil society, etc.) to frame strategic choices concerning future low-carbon energy resource options. The recruited PhDs will be equipped with the skills necessary for their thriving future careers including a unique combination of "hands-on" research training, industrial placements, training courses and workshops on leadership, capacity building, and entrepreneurship. These are facilitated by the academic and industry partners across this intra-European consortium. While secondments are already set for each project on offer each recruited DC PhD will also be given the opportunity to work in non-academic and business environments at international level. All recruiting research and academic organization are fully equipped with human resources, administrative, research, technical and academic staff essential for supporting the recruited PhDs during their career development as Hydrogen-oriented scientists. For more info, visit the page: **https://www.shine-edn.eu/**

RECRUITING ORGANISATIONS

There is a need to select 3 doctoral candidates/PhDs for the projects listed below:

Project N	Recruiting organisation short name	Research project title	Research focus
5	TECHNISCHE UNIVERSITEIT DELFT (TUDelft)	Integrated Numerical-Experimental analyses of the safety of porous rocks under cyclic loading	Assessment of caprock and reservoir porous rocks (sandstone) elasto-plastic characteristics under cyclic loading relevant for H2 storage for integrity monitoring.
6	TECHNISCHE UNIVERSITEIT DELFT (TUDelft)	Multiscale modelling and simulation of cyclic storage of H2 in heterogeneous porous rocks	Performing multi-scale numerical simulations to quantify the interaction of H2 with the reservoir rocks and fluids across scales and to test technical feasibility including purity assessments.
9	AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONE SCIENTIFICAS (CSIC)	Fault stability and induced seismicity under cyclic injection and production of H_2	Use numerical modelling to gain knowledge on the processes that may induce seismicity during hydrogen storage and develop mitigation measures to minimize the magnitude of induced seismicity

This project has received funding from the European Union's Horizon Europe Research and Innovation programme under the Marie Skłodowska-Curie Grant Agreement No. 101073271

DOCTORAL CANDIDATES' ELIGIBILITY CRITERIA. The Call for recruitment is open to Doctoral Candidates (DC) of any nationality, age and gender that respect all the following eligibility rules at the date of the Call deadline:

1.MSCA Eligibility requirements	Applicants must satisfy the MSCA definition of Doctoral Candidates (DC): "All researchers to be recruited must be **doctoral candidates and have not been awarded a doctoral degree** at the time of the Call deadline (i.e. not already in possession of a doctoral degree)". *Researchers who have successfully defended their doctoral thesis but who have not yet formally been awarded the doctoral degree will not be considered eligible.*
2.MSCA Mobility requirements	Applicants must not have lived or carried out their main activity (e.g. study, work, research) in their **main PhD host school and recruiting country/organisation** for more than 12 months in the past 3 years immediately prior to the Call deadline. *Compulsory national service and/or short stays such as holidays are not taken into account.* ***Less restrictive mobility rule:*** *The time spent in applying for refugee status or found refuge in Europe in accordance with the 1951 Geneva Convention and the 1967 Protocol and career breaks for compulsory military service and vacation leave will not be taken into account.*
3.SHINE Academic qualifications	Applicants must hold a relevant ***Master's degree or equivalent (EQF 7)*** at the time of the application. The educational background should preferably be in **geology, biology, chemistry, applied mathematics, physics and engineering***, or* ***combinations thereof. Other consistent backgrounds will be considered within the scope of the project***. ***Exception to this rule***: in case the Master's degree has not been obtained at the Call closing date (by the 23d of June 2023), candidates can nevertheless apply. If a candidate is then part of the final ranking list and bound to be selected, before being offered a contract of employment he/she will be required to send a declaration signed by his/her supervisor or from the University stating that the degree will be obtained within the PhD enrollment starting date (between July 2023 and January 2024).
4. SHINE Proof of English	Applicants that are not native English speakers must provide proof of their English language capability as established via an internationally recognised test such as: IELTS: minimum 6.5 for PhD; TOEFL paper test: 550 (TWE 4); TOEFL internet test: 79 (R18, L17, S20, W17). In alternative, applicants have to prove to have a sufficient level of English (e.g. providing a Master certificate of bilingual studies).

CALL PLANNING:

Activity	Dates
Call opening	14/08/2023
Call closing	15/09/2023 (5pm CET)
Eligibility check of candidates and organisation of evaluation panels	By the 18th of Sept 2023
Remote (CV) Evaluation	From 18/09 to 19/9 2023
Interview	From 20/09/2023 to 21/09/2023
Final ranking list	21/09/2023
Offer of contract /Enrolment of successful candidates in a doctoral course/ starting of the fellowships	By the end of Sept 2023
Duration of each fellowship	36 months (with a full-time employment contract)

WHAT IS FUNDED. The 3 selected DCs/PhDs will be recruited with a full employment contract of 3 years (36 months) by the chosen recruiting organisation, which will comprise:
- a living allowance, corresponding to the gross salary (employer/employee) paid in monthly instalments to the DC fellows, inclusive of all social security coverage, contribution to pension funds and unemployment indemnity - a mobility allowance for fellows' expenses linked to their mobility (relocation expenses)
- for each DC fellowship a contribution to costs needed to carry out research projects (e.g. consumables, publications, others) and a contribution to the training activities (e.g. local and network trainings) managed directly by the main hosting organisation is provided.

Fiscal treatment, social security (SSC) and sick/maternity or paternity leave will be fully covered according to the national Social Security regulation of the country of recruitment.

HOW TO APPLY. Applications need to be submitted through the online application platform available at **(https://www.shine-edn.eu/recruitment/)**, by the given deadline. In order to be eligible, the online application form must be submitted together with a set of due application documents. To this end, specific **Guide for proponents** will guide candidates for the application stage, available for easy downloading from the **recruitment page. https://www.shine-edn.eu/recruitment/**

FURTHER INFORMATION AND CONTACT: Please visit SHINE website at: https://www.shine-edn.eu/
For more information, please send your mail to support@shine-edn.eu

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