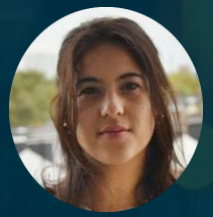
Green Hydrogen as a Sustainable Energy Source



Marion Allayioti
Energy Expert (Satellite Communications)
Business Applications and Space Solutions
Directorate of Commercialisation, Industry and Competitiveness

Maisy Saville
Energy Intern
Business Applications and Space Solutions
Directorate of Commercialisation, Industry and Competitiveness

European Space Agency (ESA)

EUROPE'S GATEWAY TO SPACE

WHAT	23 Member States, 5000 employees
WHY	Exploration and use of space for exclusively peaceful purposes
WHERE	HQ in Paris, 7 sites across Europe and a spaceport in French Guiana
HOW MUCH	€6.49 billion = €12 per European per year

What is ESA Space Solutions?

Directorate of Commercialisation, Industry and Competitiveness

https://business.esa.int/

What we offer

Our aim is to work together to make your idea commercially viable, with:

- Zero-Equity Funding (€50K-€2M+)
- Tailored Project Management Support
- Access to our Network and Partners
- Use of ESA Brand for Credibility

Our impact and focus

Socio-Economic
+ Green

Space Use

Industry
Competitiveness

A variety of markets and space technology

ESA Business Applications and Space Solutions, work across various markets/verticals.

We advocate for space technology (SatCom, SatEO, SatNav, etc.) and complementary tech (IoT, AI/ML, Robotics, blockchain, etc.).

Energy

https://business.esa.int/energy

Shaping the future of Energy

Energy's strategic importance

Energy systems are central to economic stability and national resilience. As countries respond to new demands and shifting geopolitical conditions, the energy sector must adapt to increase its stability, affordability and sustainability.

Clean energy and future technologies

Renewable energy is becoming more cost-competitive, supported by new technologies and changing market conditions. Investments in clean energy are increasingly outpacing fossil fuels.

Digital and space-based solutions

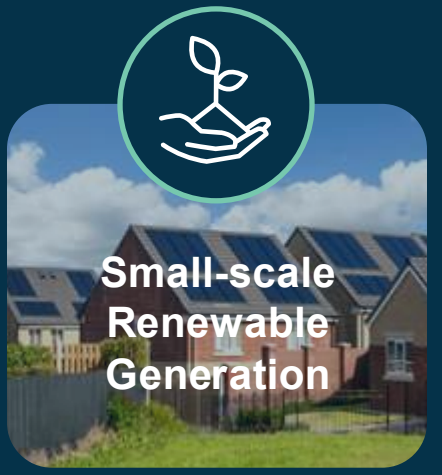
Satellite data and applications as well as digital tools support critical energy infrastructure, enhance planning and monitoring, and help accelerate the transition to greener, more resilient systems.

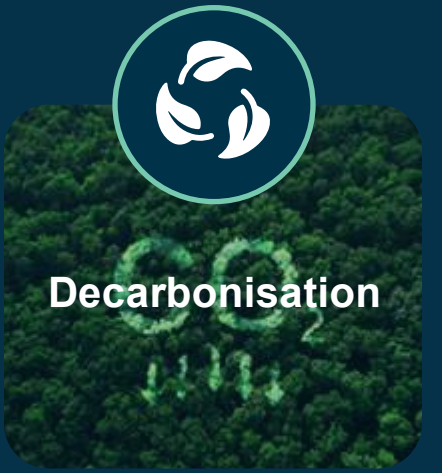
The Energy Task Force

Key Objectives of the Task Force

Promote a sustainable green economy using space tech • Amplify impact through collaboration with energy stakeholders

Priority Areas





Previous Call Outcomes: Integrated Digital Solutions

Call for Proposals (CfP) that aim to optimise electricity grid management, enable predictive maintenance, support energy storage, improve construction logistics, and streamline renewable energy management.

With a focus on digital transformation, the call encouraged innovative solutions that integrate digital tools such as IoT, AI, blockchain, AR/VR, and digital twins.

With support from DENA, E.DSO, ENEL Group, EPRI, and Eir-Grid

https://business.esa.int/energy-task-force

Use-Cases:

Preventing energy grid congestions

Demand and response, and energy storage

Predictive maintenance

Construction and inspection

Renewable energy management

Outcomes:

- Closed 02 May 2025
- 13 activities Moving Forward:
  -> **9 Demonstration Projects, 4 Feasibility Studies**

ESA Funding Call

https://business.esa.int/funding/open-competition/green-hydrogen-sustainable-energy-source

Green Hydrogen as a Sustainable Energy Source

Invitation to Tender (ITT):

Proposals should aim to assess the feasibility of satellite-based solutions in supporting hydrogen technology, emphasising environmental sustainability, operating efficiency, and cost-effectiveness.

With a focus on evaluating practical applications of green hydrogen across multiple sectors, including:

Energy, Transportation, Maritime, Smart Cities

With support from the Energy Task Force members:

https://business.esa.int/energy-task-force

and **WWF Germany**

Use-cases of the partners are listed in the SoW (in the Tender Package to be released in ESA–STAR)

Important info:

- Feasibility Studies
- Funding: ESA will co-fund 80% of the acceptable cost, up to €200K, per awarded study
- No IP or equity retention
- Open to Feasibility Studies

Read More

Green Hydrogen as a Sustainable Energy Source

Potential Use-Cases:

- Infrastructure and accessibility analysis
- Solar and wind resource assessment
- Identifying locations for offshore hydrogen production
- General land use and topography analysis
- Monitoring emissions and environmental compliance
- On-demand maintenance assessment

Space Value:

- SatCom – low-latency connectivity in remote locations + reliable data transfers
- SatEO – identify optimal production sites + impact initiatives
- GNSS – support safe transportation and distribution

Important Dates:

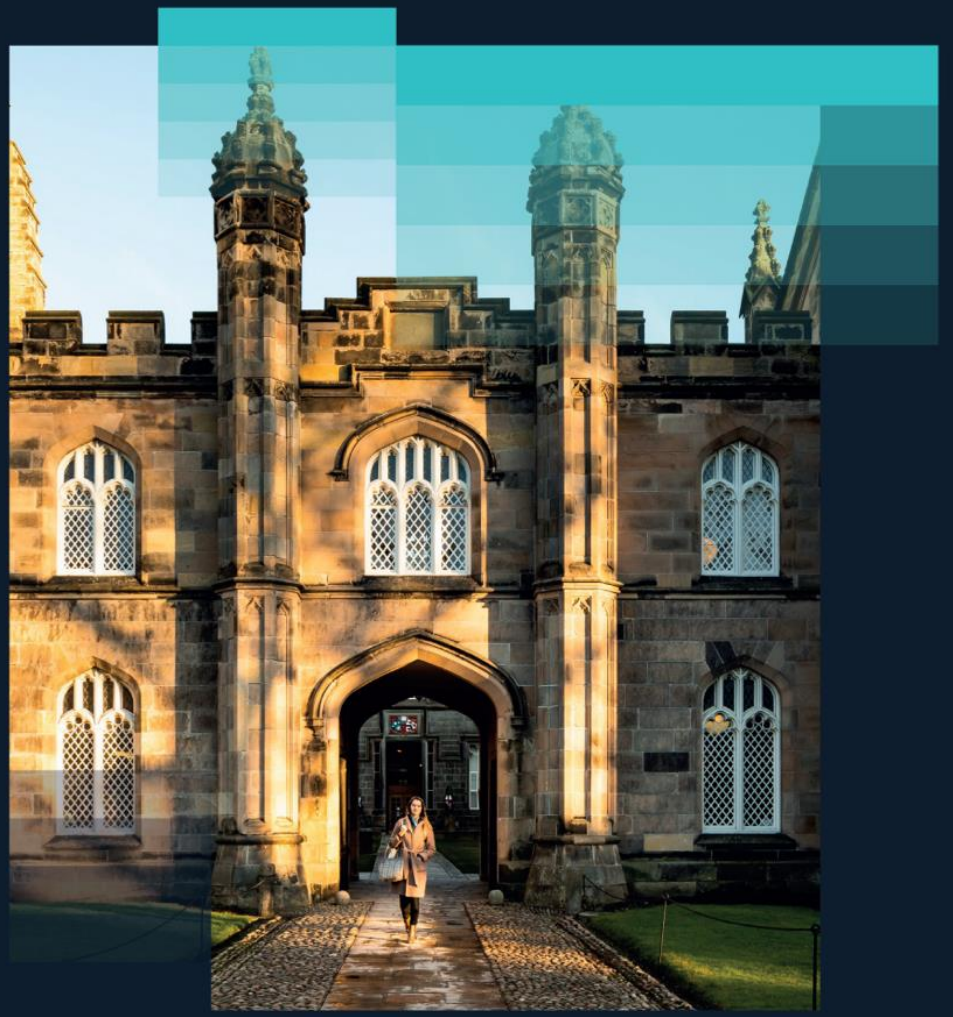
- Workshop in London, UK: 08 October 2025
- ITT Opening Date: 09 October 2025
- ITT Closing Date: 06 November 2025

Register for the Workshop

Guest Speaker #1 Dr. Alfonso Martinez-Felipe

Non-Executive Director – **Aberdeen Renewable Energy Group**
Senior Lecturer in Chemical Engineering – **University of Aberdeen**

Aberdeen, 30 September 2025



Green Hydrogen as a Vector to Decarbonise Energy Systems

Dr Alf Martinez-Felipe

Senior Lecturer in Chemical Engineering

Just Transition Lab

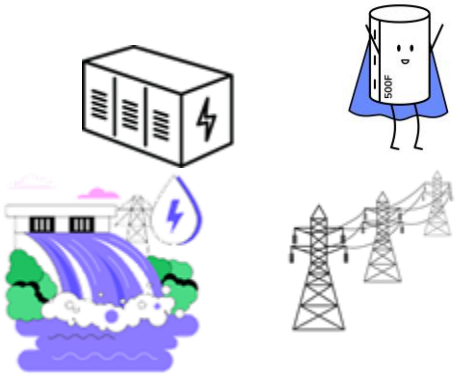
Aberdeen Renewable Energy Group

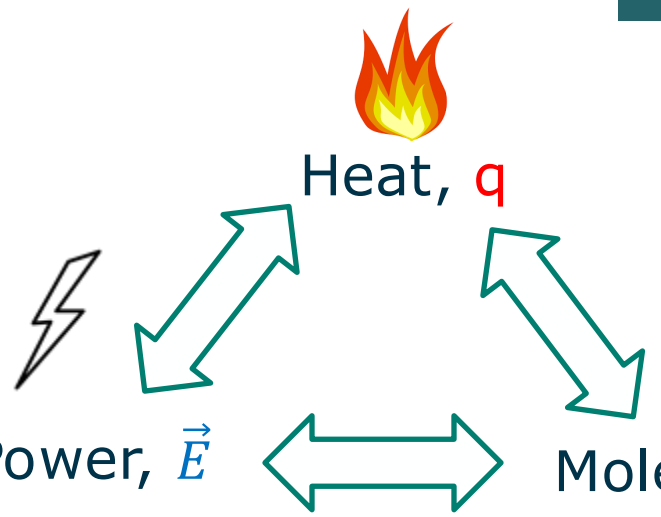
a.martinez-felipe@abdn.ac.uk

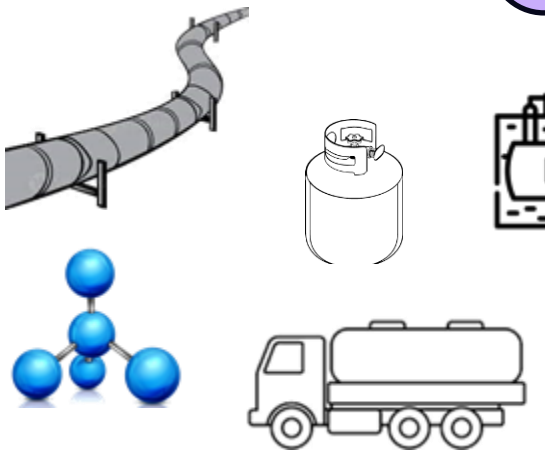
UNIVERSITY OF ABERDEEN

Why hydrogen?

As clean energy vector







$$H_2O(l) \rightarrow H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(l)$$

As building feedstock

$H_2(g)$

$CH_4(g)$

$CH_3OH(l)$

$CH_3CH_2OH(l)$

$CH_3OCH_3(g)$

$Gasoline$

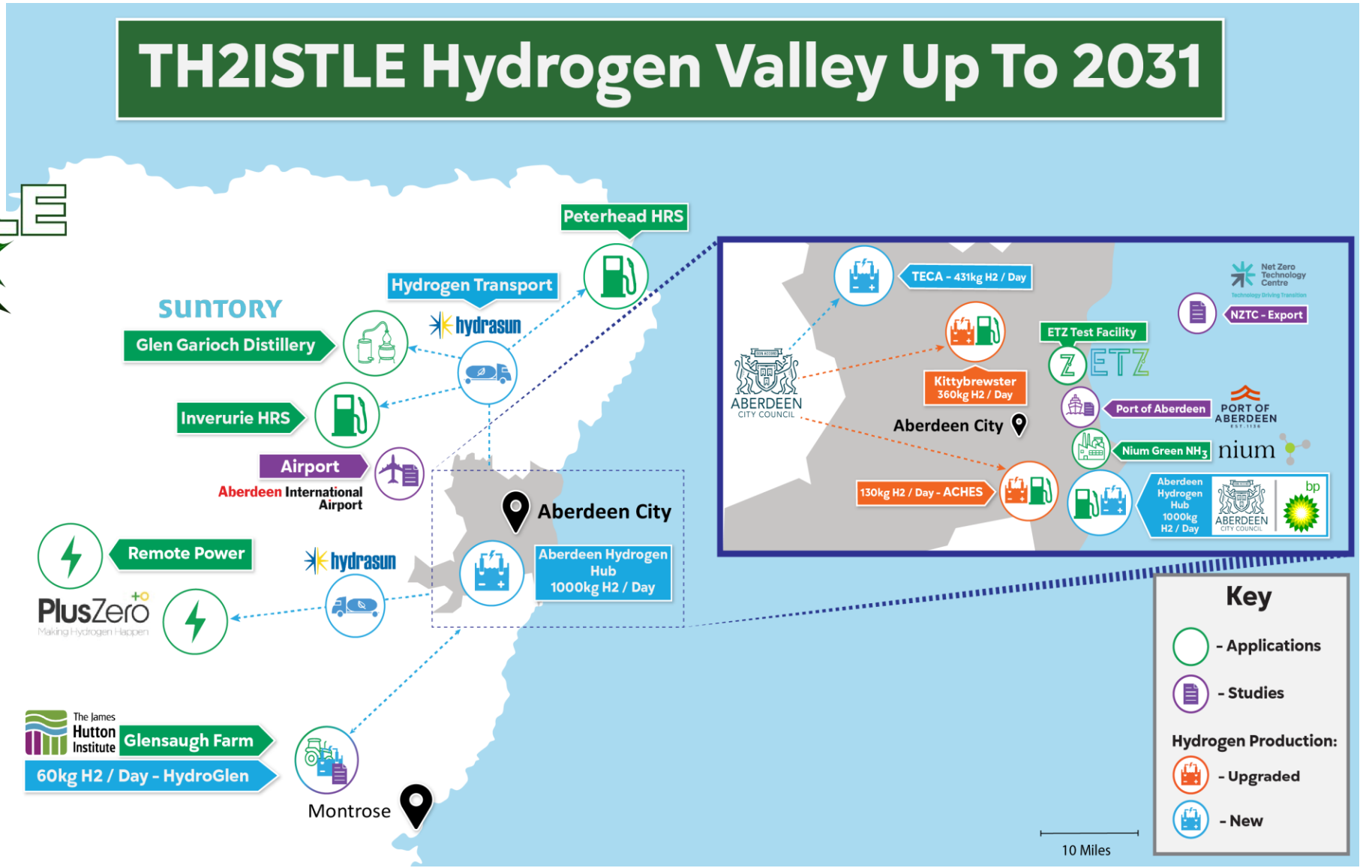
Transport (SAF/Road/vessel)

Power

Heating

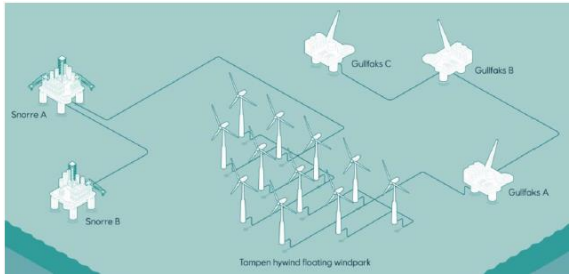
Chemicals

Hydrogen in Aberdeen

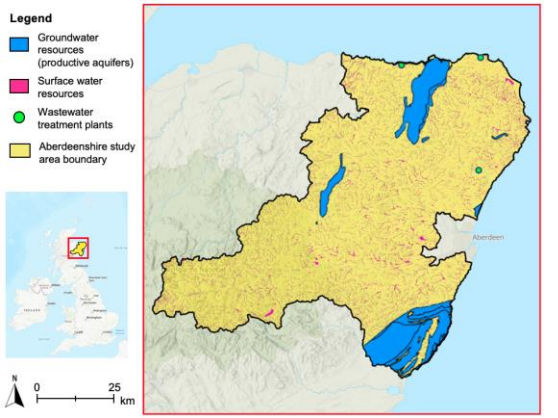


Examples of potential case studies

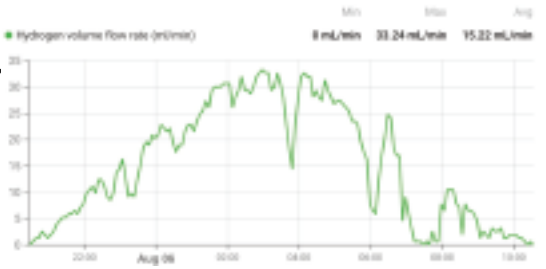
Identifying locations for offshore hydrogen production. Satellite data can help locate offshore wind farms for producing green hydrogen at sea. This involves assessing offshore wind resources, ocean currents, seabed topography, and other factors that can influence the feasibility of setting up offshore hydrogen facilities.

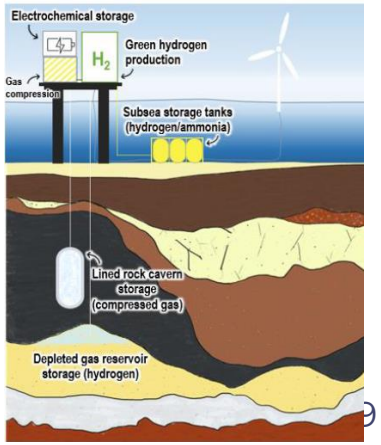


Water availability assessment. Electrolysis requires substantial quantities of water. Satellite data can be used to monitor freshwater availability and groundwater resources. Remote sensing can identify regions with sufficient water supplies, while also ensuring that hydrogen production doesn't negatively impact local water availability for other uses, such as agriculture and drinking



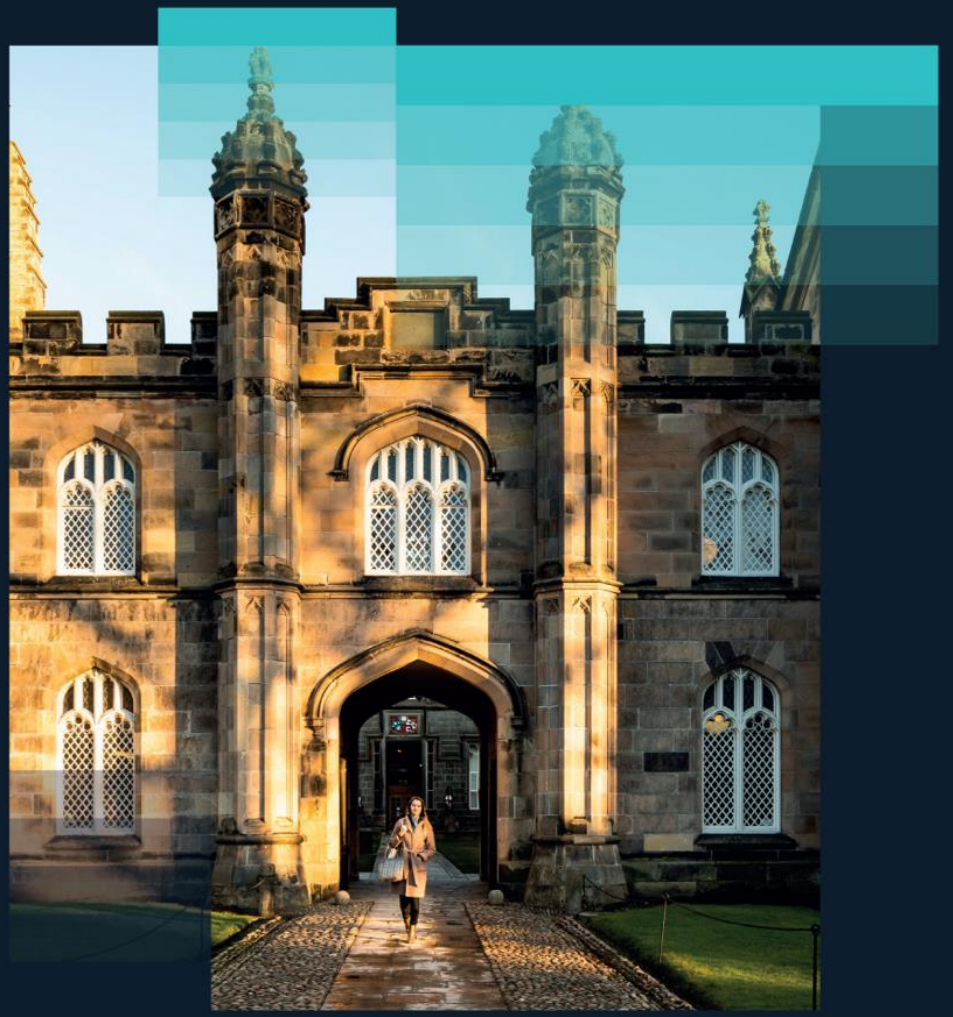
Safety, monitoring and operation. When dealing with underground storage or extraction, space technology can support monitoring operational parameters and materials properties, which vary dependir on pressure and temperature in loading cycles.





Credit: Robert Swinton-Blancke, Dr Anna Peecock, Ruba Al Shabibi, Dr. David Haro, Dr Raffaello Secchi

Aberdeen, 30 September 2025



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Just Transition Lab

Aberdeen Renewable Energy Group

a.martinez-felipe@abdn.ac.uk

Guest Speaker #2 Dr. Eva Schmid

Director Hydrogen and Resilience – **German Energy Agency**

How to Apply

https://business.esa.int/funding/open-competition/green-hydrogen-sustainable-energy-source

How to apply [1/2]

1. Register by completing online questionnaire on *ESA-STAR Registration* (minimum “light registration")

https://doing-business.sso.esa.int/

2. Download the official tender documentation (Invitation to Tender) via *ESA-STAR Publication* “**AO 1-12743**”

3. Create a “**Bidder Restricted Area**” in *ESA-STAR Tendering*

4. Write your proposal and request "**Authorisation of Funding Letter"** from the National Delegation

5. Submit your proposal via "**Bidder Restricted Area**" in *ESA-STAR Tendering* before the deadline of the ITT (06 November) and don't wait until the last minute!

How to apply [2/2]

The Tender Package includes:

eli	Letter of Invitation
ews	Statement of Work
ecc	Draft Contract
etc	Tendering Conditions for Procurement Procedure
ept	Proposal and Cover Letter Template

Proposal Template

Your Proposal shall include the following information:

1. TECHNICAL PART
2. MANAGEMENT, ADMINISTRATIVE AND IMPLEMENTATION PART
3. FINANCIAL PART
4. CONTRACTUAL PART

Who can Apply?

This opportunity is open to companies that intend to develop space-enabled services and products related, but not restricted, to the topics of relevance outlined previously.

To be eligible for funding, your team must be based in one of the following countries: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Luxembourg, Norway, Poland, Portugal, Romania, Slovenia, Sweden, Switzerland and United Kingdom.

Teams can involve non-European entities, but their contribution to the activity cannot be funded by ESA.

National Delegation

Authorisation of Funding letters from the corresponding **National Delegations** are required as part of the application.

Prospective applicants must contact their National Delegation as early as possible.

The contact information of the National Delegations can be found at https://business.esa.int/national-delegations

Thank you, Q&A.

Asimina Syriou
Energy Lead
Business Applications - Space Solutions
Directorate of Commercialisation, Industry and Competitiveness
LinkedIn
Energy BASS webpage