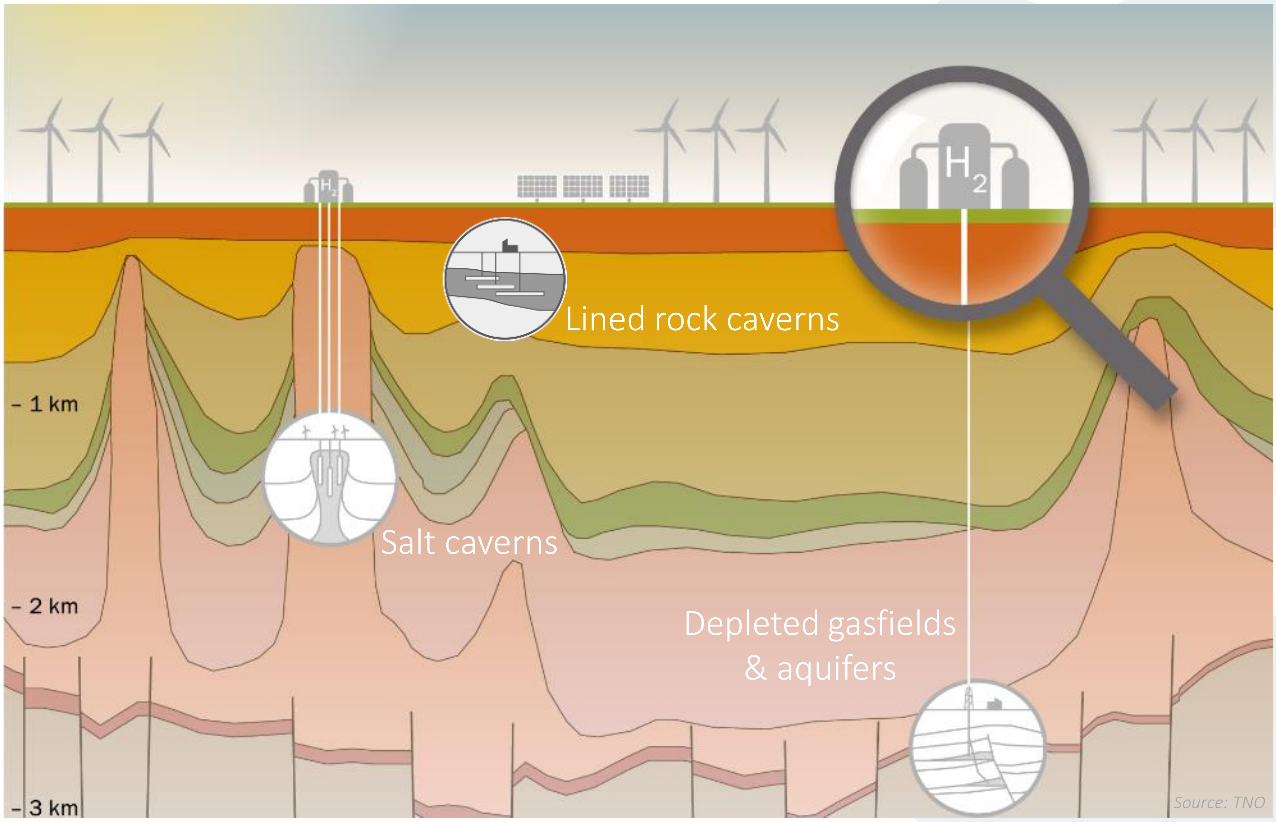
Hydrogen TCP

Task: Underground Hydrogen Storage

Hydrogen is expected to become a pivotal and cross-sectoral energy carrier in the future renewable energy system. While being generated from variable wind and solar energy and foreseeing a wide range of applications in electricity, heating, transport and industry sectors, hydrogen can provide flexibility and balancing capacities at hourly, daily and inter-seasonal timescales. Like for natural gas in the present-day energy system, large-scale underground storage of hydrogen will be vital to maintain secure and affordable supply as the world becomes increasingly dependent on renewable energy sources.

Subsurface reservoirs such as gas fields, aquifers and solution-mined salt caverns represent proven and mature options for large-scale storage of natural gas and its components carbon dioxide and nitrogen. In many places in the world these gases have been trapped in porous and sealed reservoirs over geological time intervals of millions of years. Despite the fact that hydrogen is the most abundant element of the universe, natural accumulations in the subsurface are rare. The storability of hydrogen in subsurface formation is being investigated and tested in both experimental set-ups and demonstration projects. While results reveal that this is a viable technology, many steps need to be taken before underground hydrogen storage is ready for upscaling and commercialization.

The hydrogen TCP aims to accelerate hydrogen implementation and widespread utilization to optimize environmental protection, improve energy security and promote economic development internationally.



Hydrogen TCP

Accelerate underground hydrogen storage implementation

H2 Conversion & Contamination

Impacts of reservoir and fluid processes on quality and recover-ability of stored H_2

Surface Facilities & Wells

Concepts, designs and materials for safe and effective storage of H_2

Storage Integrity

Integrity and stability of subsurface reservoirs and seals under H_2 storage operations

Economics & System Integration

Pathways and business models for commerciali-zation and integration of H_2 storage in the future energy system

Storage Performance

Estimation, ranking and optimization of H_2 injection, production and storage capacities in subsurface reservoirs

Planning, Regulation & Safety

Tools, guidelines and best practices for safe and responsible subsurface H_2 storage development and operations

Get involved

Currently more than 70 experts from over 35 organizations in 18 countries are involved in the task definition with a wide range of disciplines. You can indicate your interest via https://www.ieahydrogen.org/tasks/tasks-in-definition/ or scan the QR code.

- Economics, market & business concepts
- Hydrogeology
- Microbiology
- Energy systems modelling
- Geological modelling, mapping & assessment
- Legal & Regulation
- Geo-engineering
- Risk management & assessment
- Reservoir modelling & simulation
- Geochemistry
- Geomechanics
- Monitoring & verification

The Hydrogen Technology Collaboration Programme was established in 1977 under the International Energy Agency's auspices to pursue collaborative hydrogen research and development and information exchange among its member countries. For more information, scan the QR code!

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