

Underground storage natural gas – hydrogen a similar story?

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Natural gas and hydrogen storage, same story?

- Similar **contribution** to energy systems ... but differences will impact the way we use hydrogen storage
- Similar industrial facilities ... but different **gas properties** reduce the storage potential
- Conversion of natural gas storage to hydrogen is credible ... but will not be enough to cover future needs



Both contribute to energy security ... and much more

Volume risk management

- ✓ Fluctuating green hydrogen production + imports
- ✓ Rather **stable industrial needs**
- ✓ **Intermittent electricity production** and more electricity **seasonal needs**
- ✓ Insure against temporary **disruption** in production and transport

Economic and financial role

- ✓ Reduce the overall **system cost** and **curtailment cost**
- ✓ **Hedge** against price risk (electricity and hydrogen)



Intraday flexibility



Multiday and multiweek flexibility



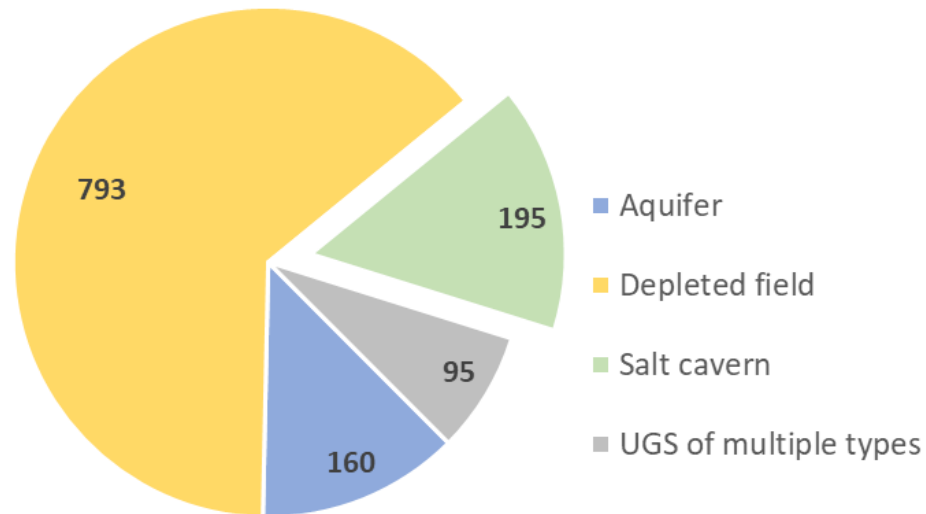
Multi-month flexibility

Strong contribution to both gas and electricity systems

Storing hydrogen underground – not exactly the same

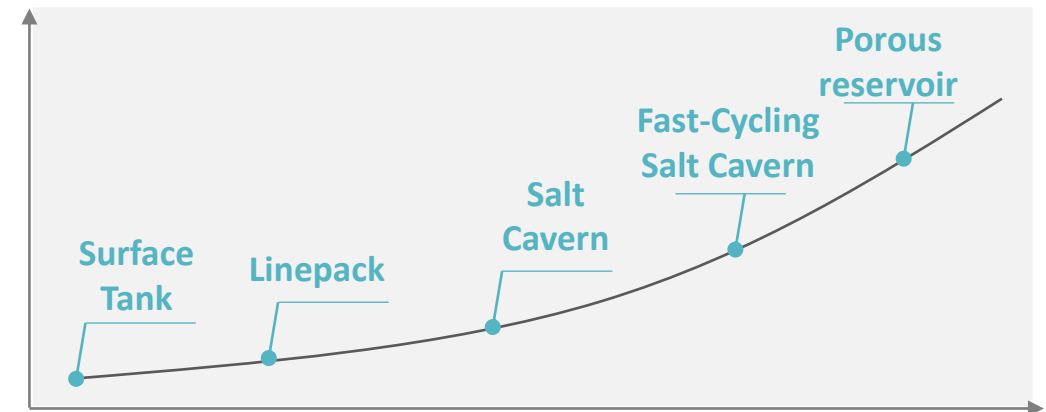
2/3 of natural gas storage volumes are in **depleted fields**

Hydrogen has a **lower energy content**



Natural gas storage by type, in TWh, EU27+UK

- **Salt caverns** are the best option today to store hydrogen
- Few countries have salt cavern potential in Europe
- It is essential to **unlock potential on porous reservoirs**



What we know

- We will need large-scale hydrogen storage
- The need will **exceed the conversion potential**
- We will need to manage in a coordinated manner hydrogen and natural gas storage needs
- Developments will have to take place early

Thank you!



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