

Underground Hydrogen Storage Industry

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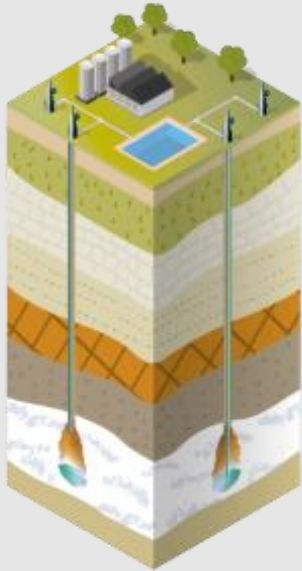
Acknowledgment







Salt Caverns



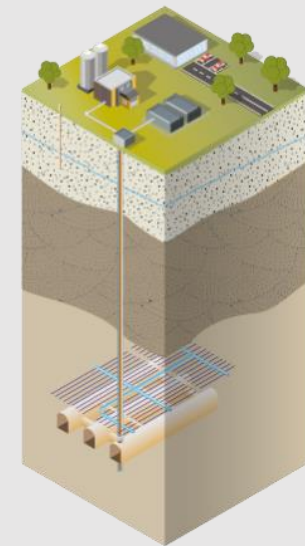
- 1 900 Salt Caverns worldwide
- No “Show Stopper” for H2
- 6 existing H2 Salt Caverns in operation

Aquifers / Depleted Fields



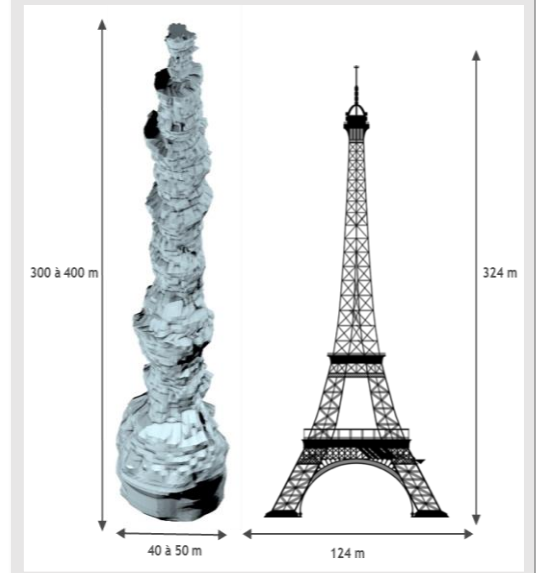
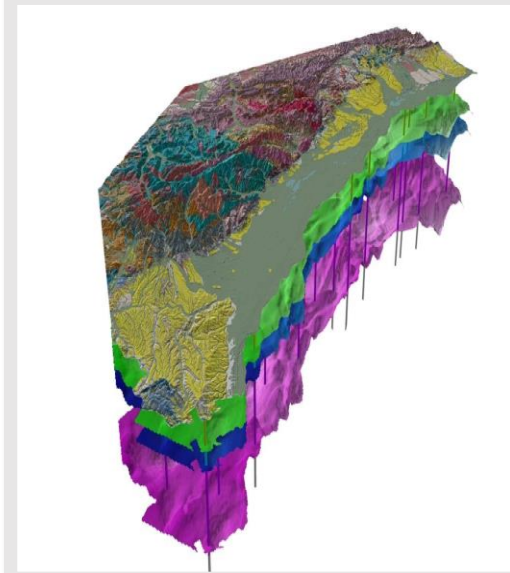
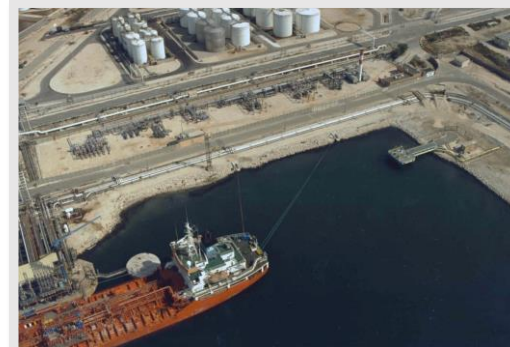
- 650 existing sites (Natural Gas)
- **No obvious “Show Stopper”** for H2

Mined Caverns (lined)

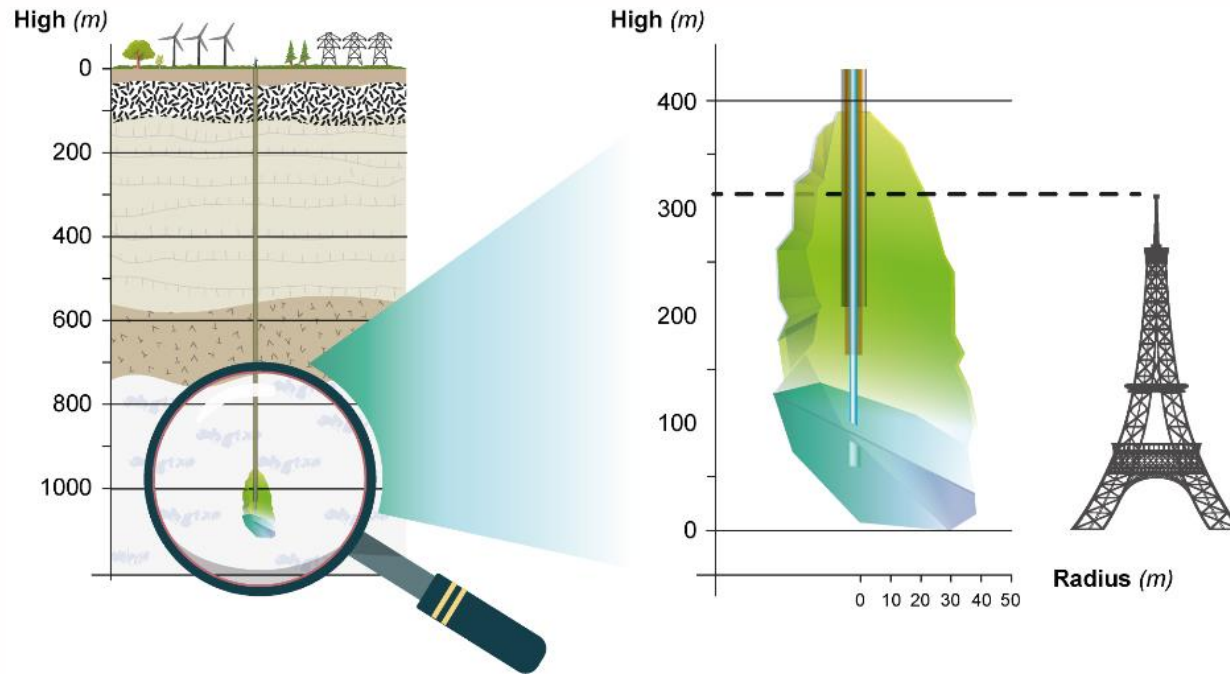


- 450 existing sites, **unlined caverns** (Crude Oil / Refined products & LPG)
- Under development for H2 → **lined caverns**

Underground Storage Technics



Underground Storage Advantages

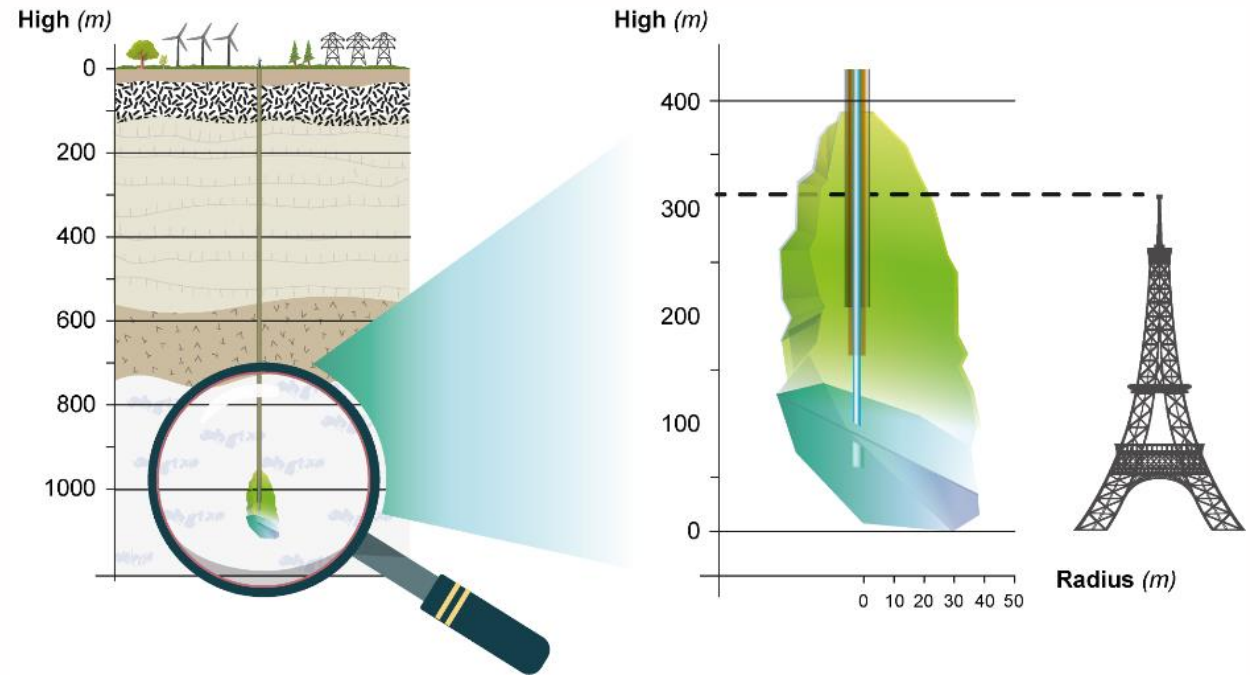


- Safety
- Environment
- Footprint
- Security

Underground Storage Advantages

■ Capacity (tons)

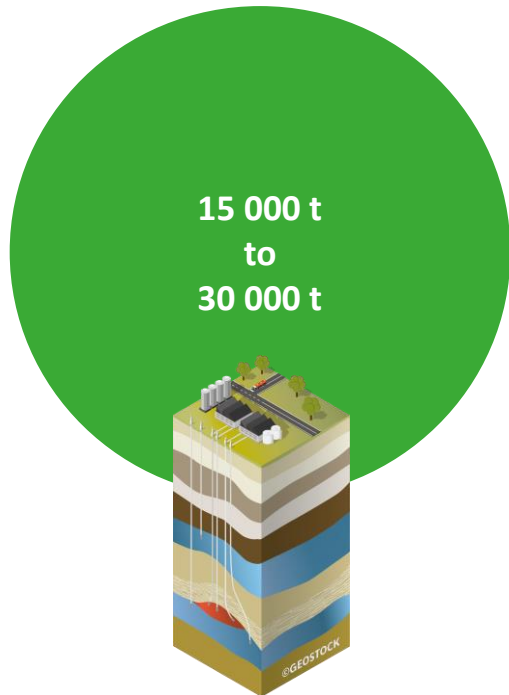
■ Cost / m³



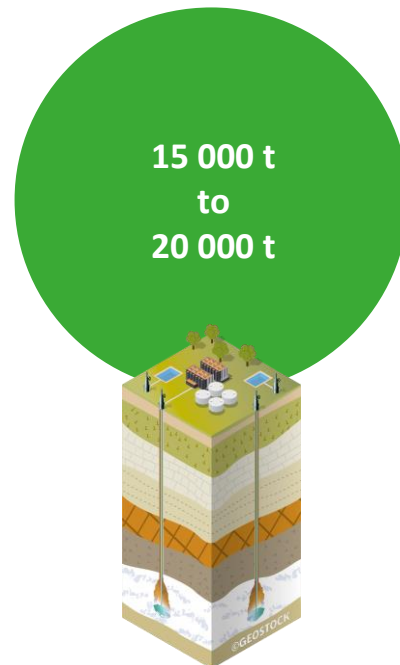
COSTS

Assuming a CAPEX of 500 million €

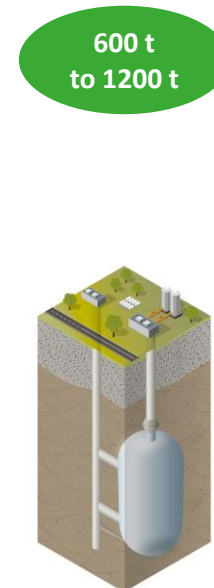
Porous Rock



Salt Cavern



Lined Rock Cavern



Above ground storage



What Storage Capacity by 2030?

Oil products : 25% - Natural Gas : 11% → Hydrogen : 5% ?

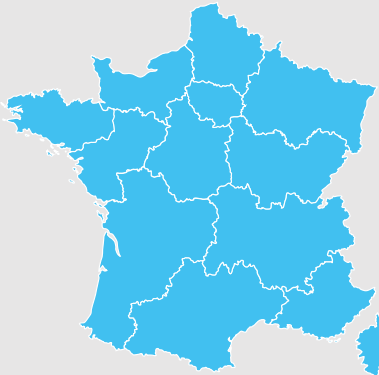
PRODUCTION CAPACITY

6,5 GW of Electrolysers

(French Government, 2020)

STORAGE CAPACITY

20 to 40 Caverns



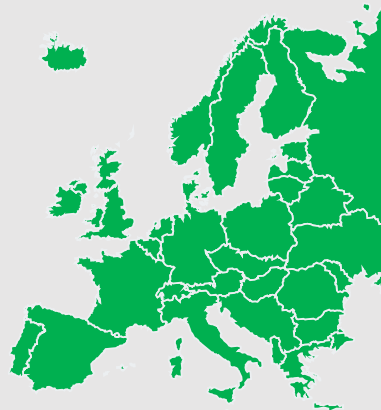
PRODUCTION CAPACITY

40 GW of Electrolysers

(European Commission, 2020)

STORAGE CAPACITY

125 to 250 Caverns



PRODUCTION CAPACITY

90 GW of Electrolysers

(Hydrogen Council, 2021)

STORAGE CAPACITY

200 to 400 Caverns



Hystories project consortium



Mineral and Energy
Economy Research
Institute
Polish Academy of Sciences

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Thank you !