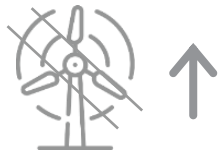
02

Green Hydrogen Hub Denmark and Danish energy challenges

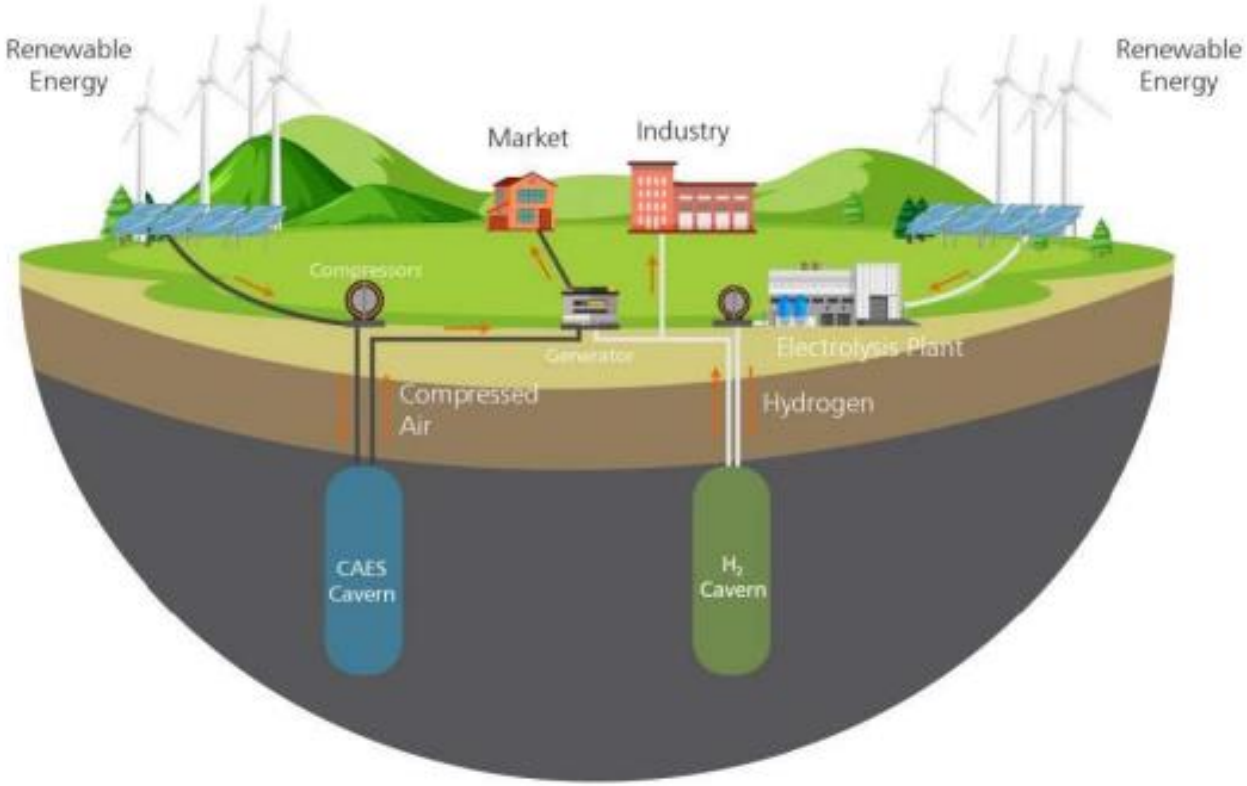
The challenge: how do we move to a future powered by renewables?

As countries pledge to achieve **net zero emissions** the **integration of renewables** presents a range of **challenges** to the existing infrastructure. Compressed Air Energy Storage offers a solution to **fully decarbonise** electricity systems

Integrating renewables presents challenges	 Increases curtailment	 Increases system instability	 Fossil fuelled plants remain online	 GHG emissions plateau
Energy storage offers solutions	 Reduces curtailment	 Stabilises the electricity system	 Reduces demand for fossil fueled plants	 Substantially reduces GHG

Overview of the integrated Green Hydrogen Hub system

We convert electricity generated from renewable energy sources into hydrogen and atmospheric air [P-t-X], compress and store it in existing deep underground salt caverns and reconvert it into electricity [X-t-P] when needed



ELECTROLYSER

- 180 MW electrolyser capacity
- energised by neighbouring wind/solar power plants

COMPRESSED HYDROGEN CAVERN

- 140 GWh hydrogen storage

COMPRESSED AIR CAVERN

- 12-16 GWh capacity

GENERATOR

- 320 MW power output capacity
- Non-stop operation for 84 hours / 3.5 days

Green Hydrogen Hub DK in a nutshell

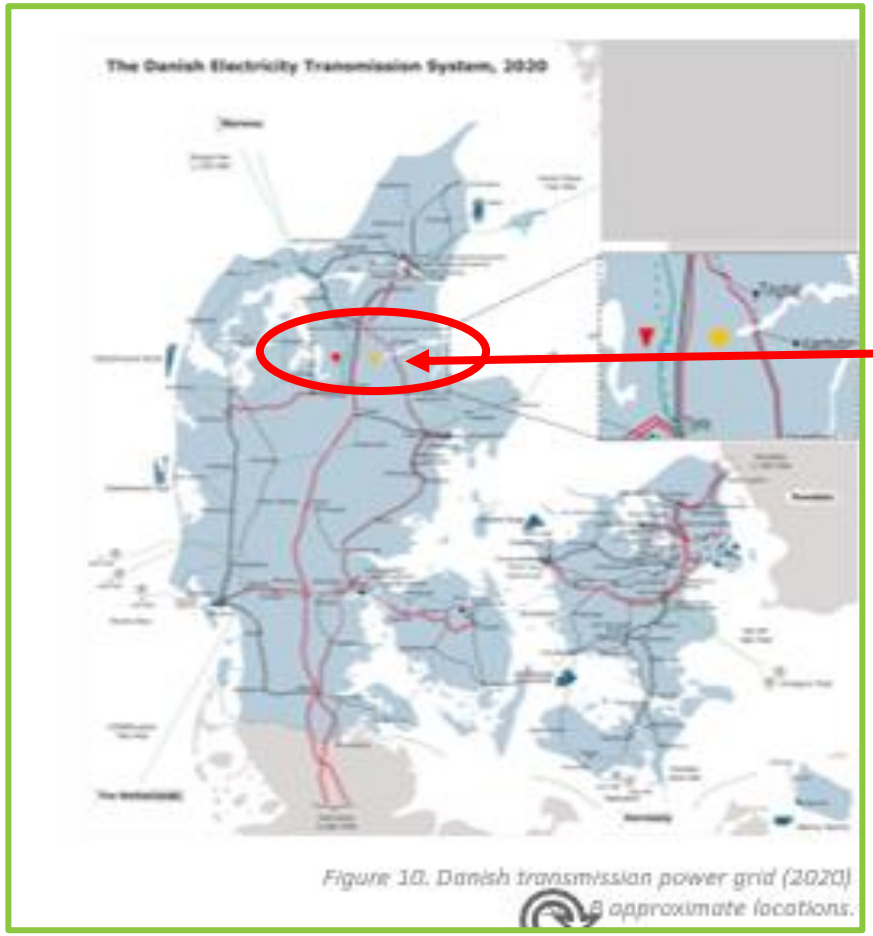
Project Type	Green Hydrogen Hub
Location	Denmark
CAES Capacity	3 – 4 GWh
CAES Generator	320 MW
H_2 Capacity	250 GWh
Electrolyser Capacity	350 MW
Financial Close	2023
Operational From	2028

Key project stakeholders & partners

Sources: pictures taken from Google Earth

Excellent location within the European Hydrogen Backbone

The use of underground salt caverns for hydrogen storage, which the electrolyser and CAES facility are connected to, are of strategic interest to the Danish state and managed by GHH-participant Gas Storage Denmark, a subsidiary of Energinet [TSO]



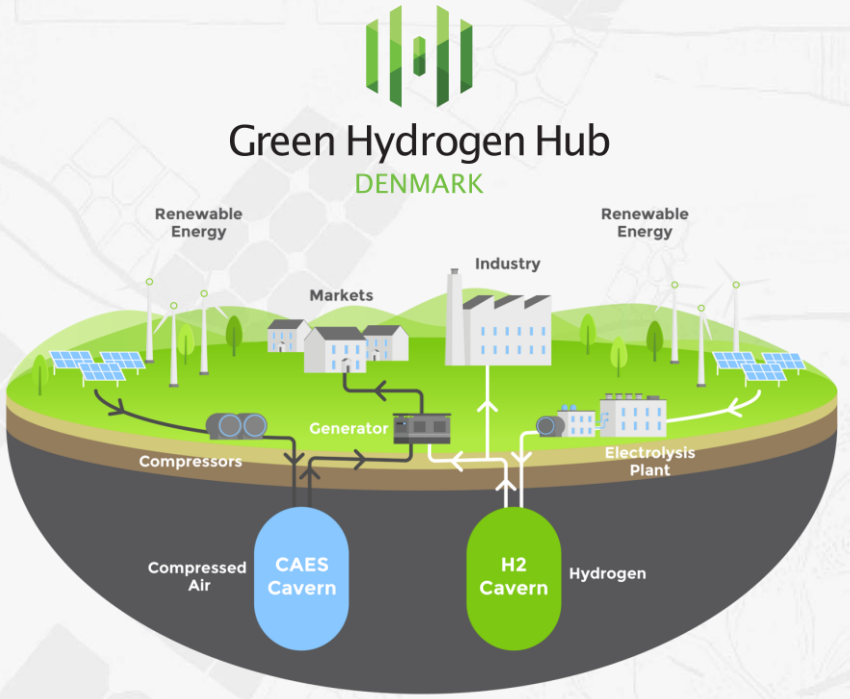
https://www.ehb.eu/maps/202209/index.html

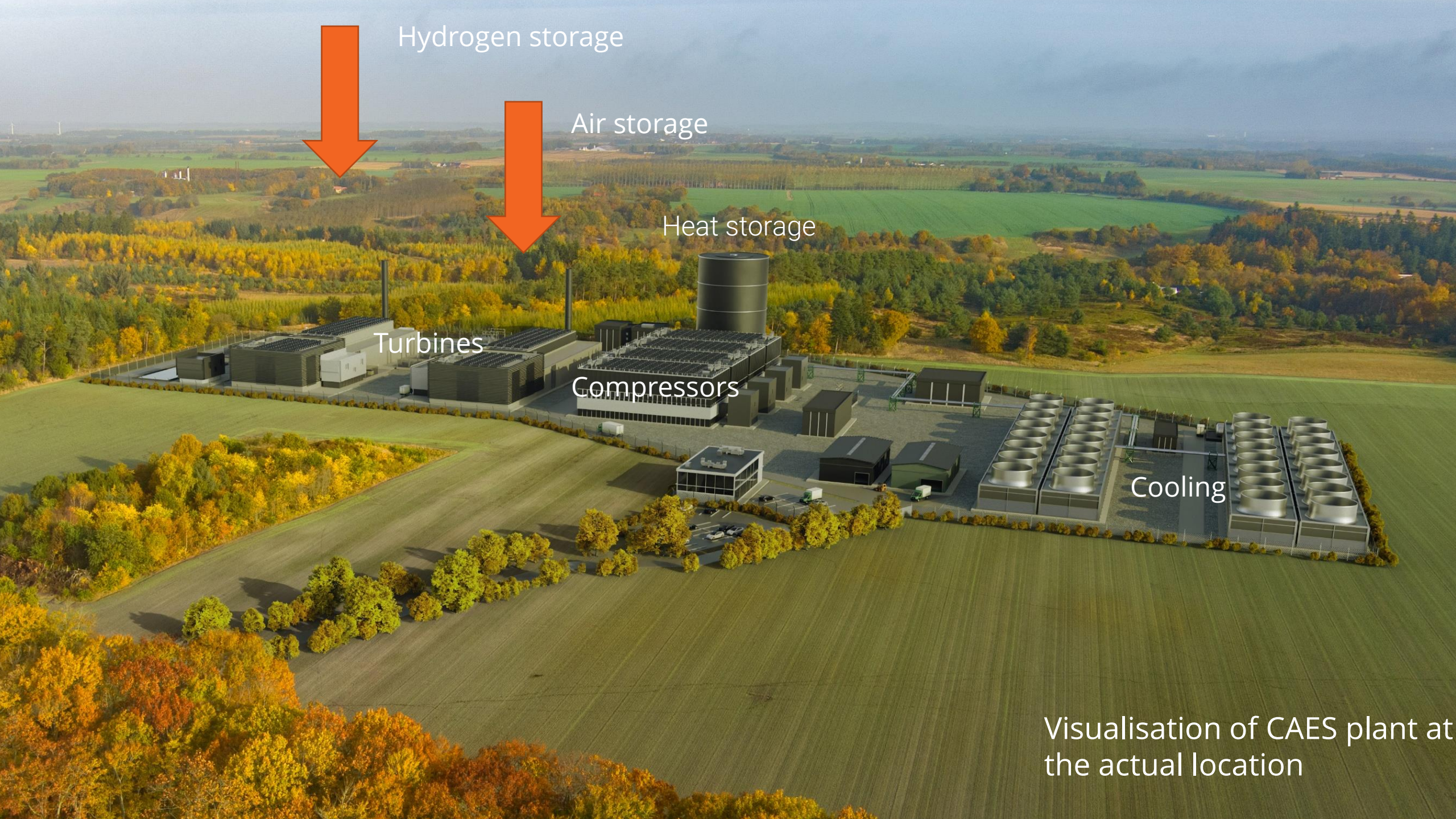
A highly experienced project team

CORRE ENERGY ApS
is a wholly-owned subsidiary of Corre Energy B.V., which is a Euronext Dublin listed Long Duration Energy Storage developer. Corre Energy is responsible for development and implementation of the CAES project

GAS STORAGE DENMARK A/S
is a wholly-owned subsidiary of the state-owned power Transmission System Operator, Energinet A/S. GSD will make underground salt caverns available for compressed atmospheric air and hydrogen storage

EUROWIND ENERGY A/S
is owned in part by its founders and Norlys a.m.b.a., which is the largest integrated utility in Denmark. Eurowind Energy is responsible for developing and implementing the electrolyser projects



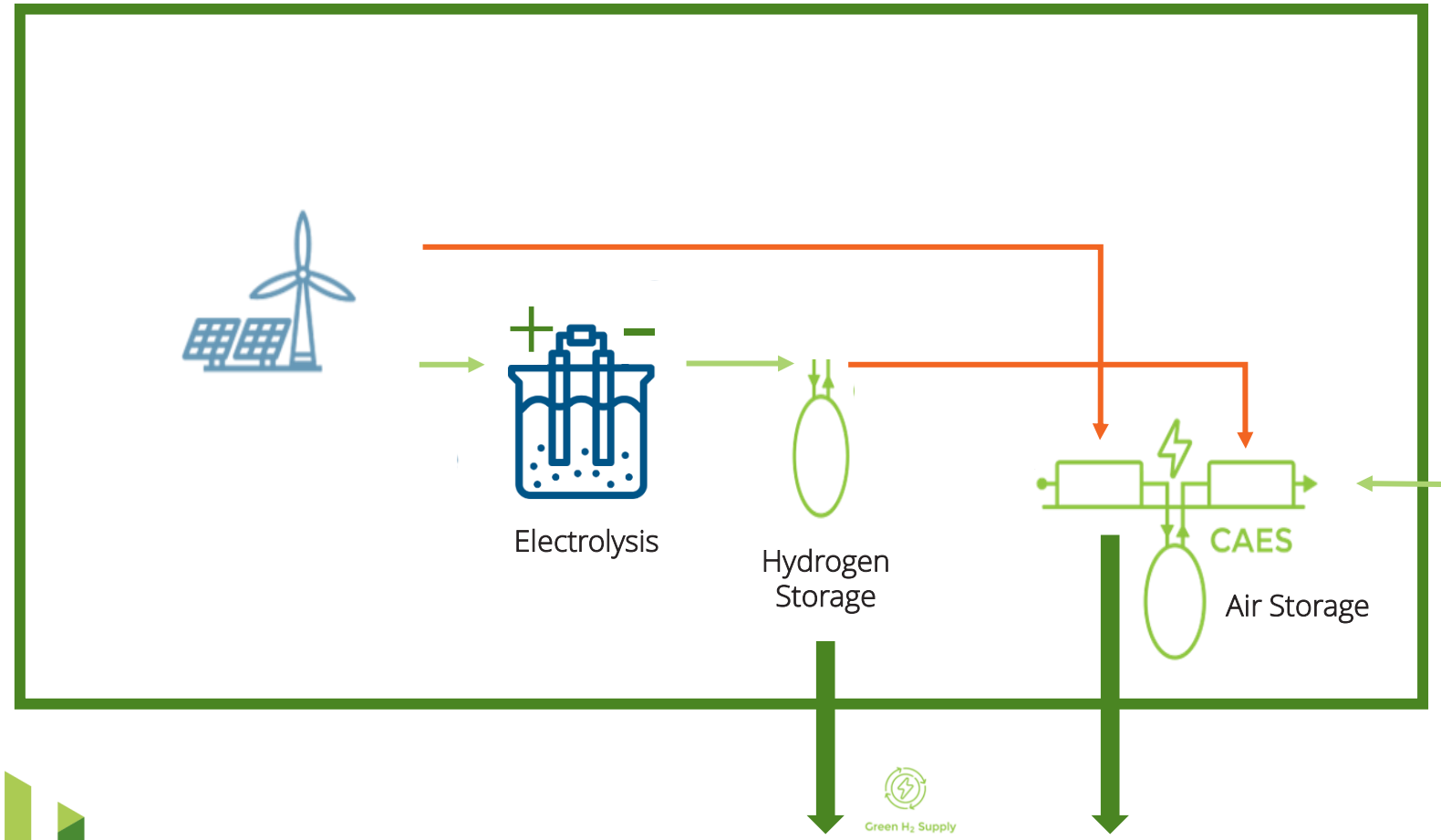


Visualisation of CAES plant at the actual location

GHH provides services which enhance Denmark's green transition

Green Hydrogen Hub DENMARK

Ørsted energy



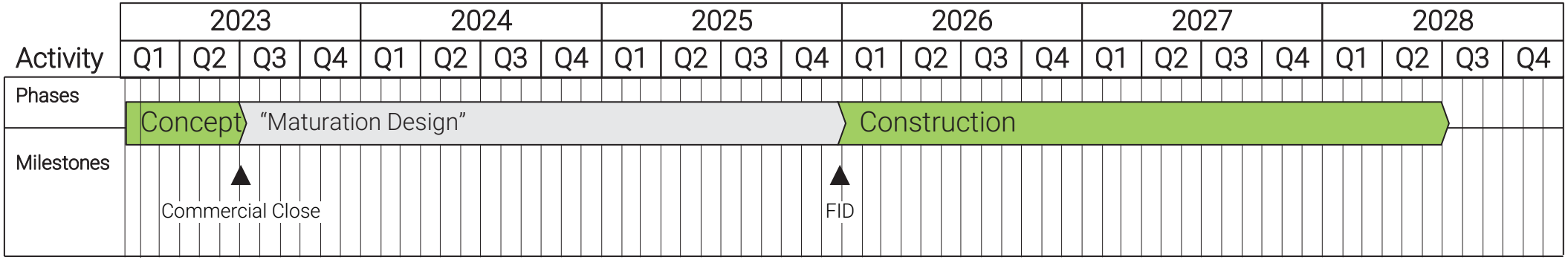
Enhances utilisation of renewables

Provides power, when it is needed most

Balances the electricity system and provides system services

Provides affordable green energy at scale

Green Hydrogen Hub Denmark: where are we now?



Key data:

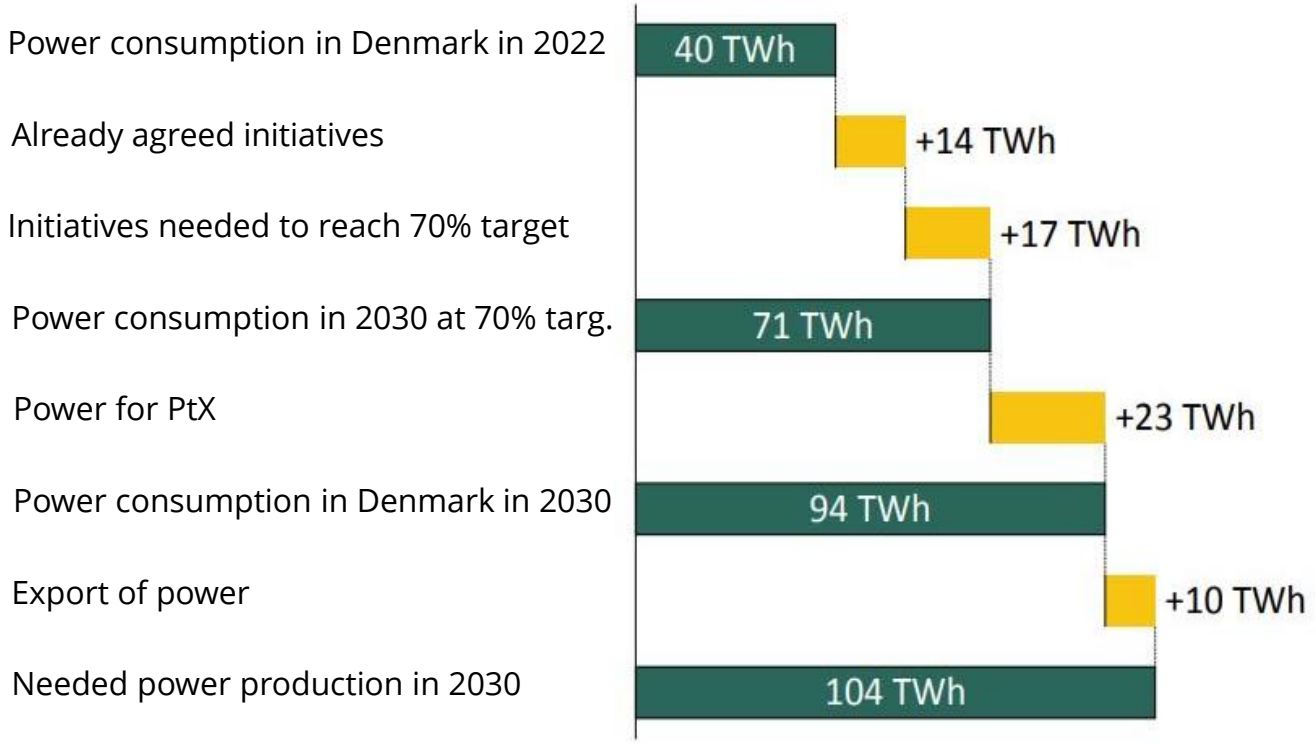
- Up to 320 MW expansion
- Up to 220 MW compression
- Heat export

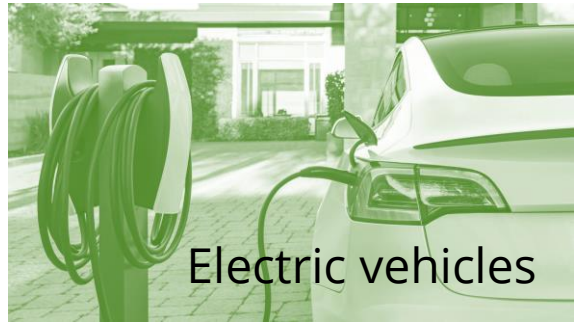
Milestones:

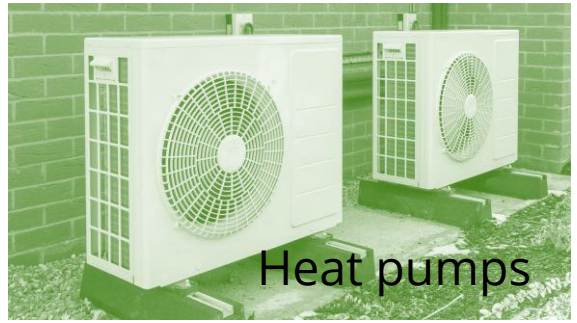
- ✓ Grid Screening completed
- ✓ Land option for CAES completed
- ✓ Planning and EIA process started February 2023
- ✓ Seeking land option for PoC
- ✓ 1st Public consultation (idea phase) concluded

Denmark's specific challenges: we require a 250% increase in power by 2030

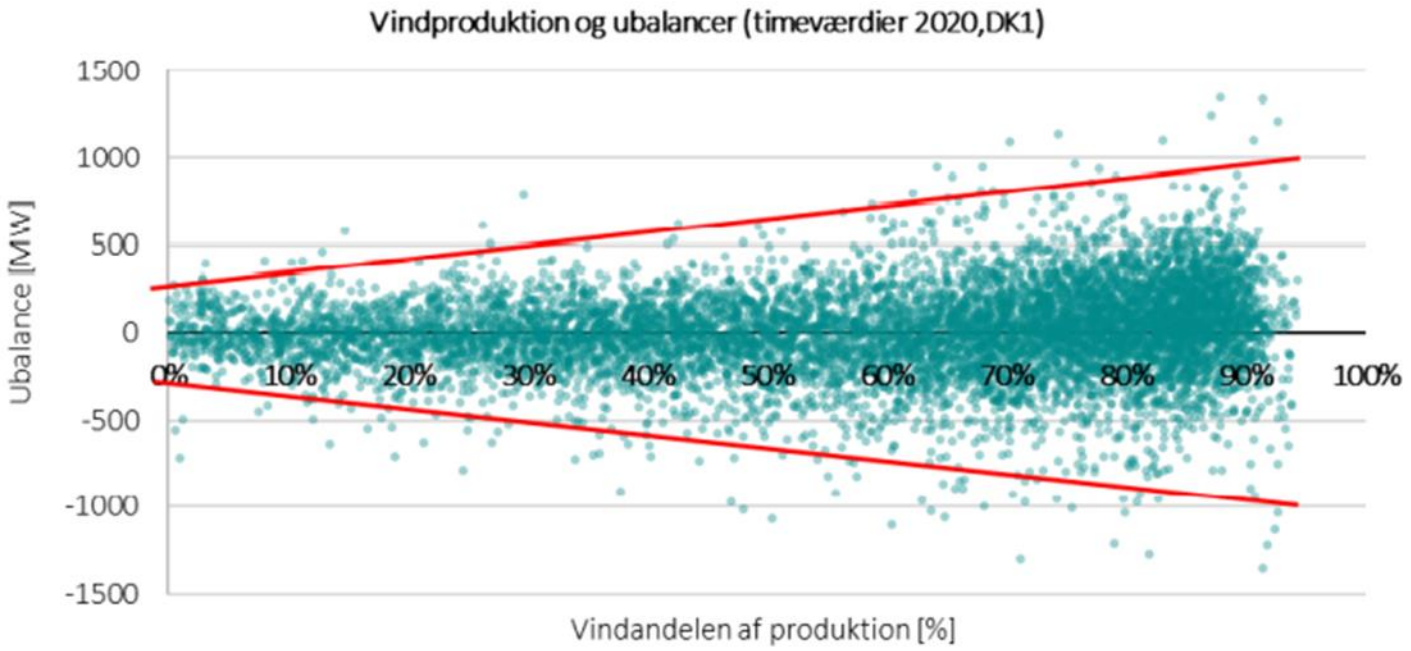
Need for power in 2030







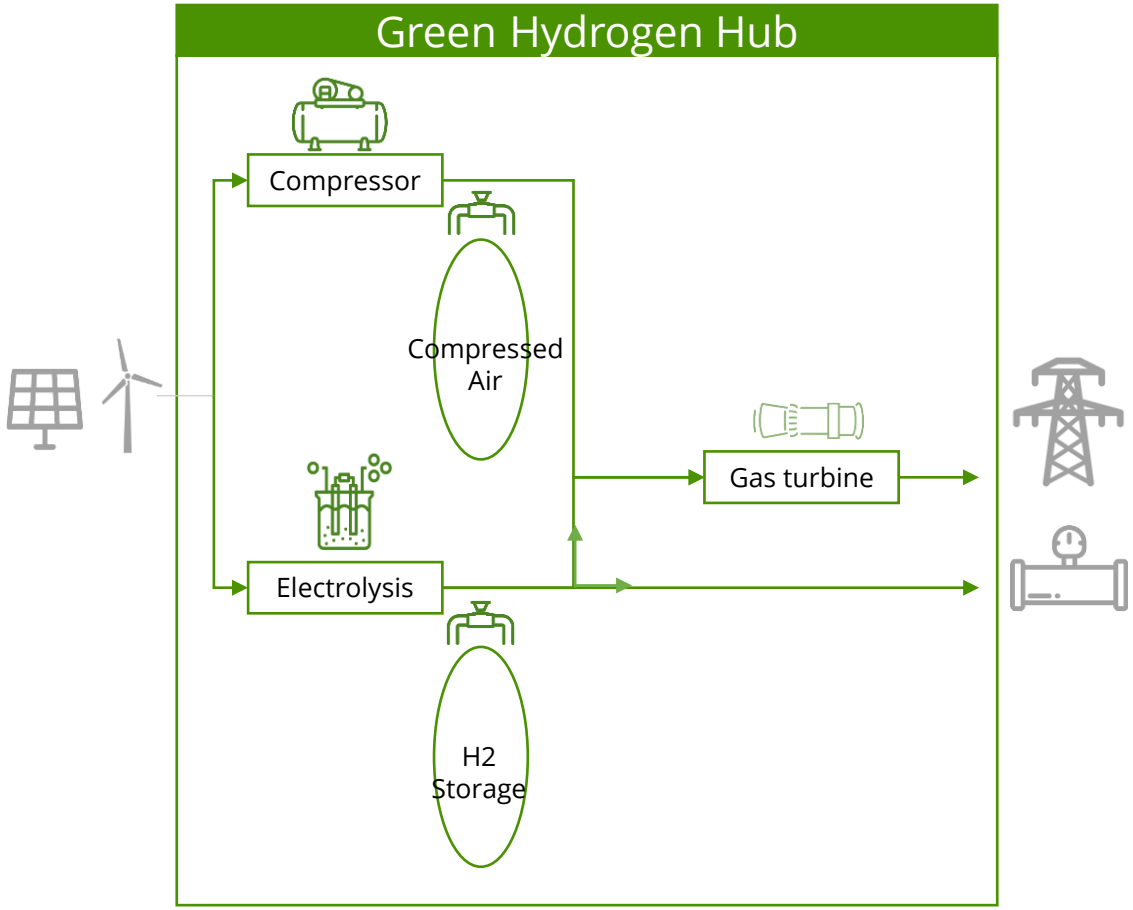
THE RELATIONSHIP BETWEEN INCREASING SHARES OF RENEWABLE ENERGY AND SYSTEM IMBALANCES



Figur 30: *Korrelation mellem vindproduktion og ubalancen for DK1 i 2020*

GHH can solve many of Denmark's energy headaches

- ✓ Provides affordable green power
- ✓ Provides all balancing services based on green power
- ✓ Provides security of supply services based on green power



GHH'S IMPACT

Creates egional employment

- 200 FTE jobs during the construction phase
- 38 FTE during operations
- Indirect employment

Will contribute to Denmark (and the EU's) decarbonisation goals and secure a flexible, affordable, and reliable green energy supply

Annual reduction in CO2 emissions of 200,000 tonnes

As the first fully commercially viable, 100% green, large-scale hydrogen production, storage, and CAES solution, GHH enables the development of the hydrogen economy

Q & A

Your questions please

www.corre.energy