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Interpretation of transverse gravity lineaments in the Rockall Basin

Authors: K. McGrane, P. W. Readman, and B. M. O'Reilly | AUTHORS INFO & AFFILIATIONS

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Abstract

A number of regional transverse gravity lineaments crosscutting the Rockall Basin are interpreted from satellite gravity data. Euler deconvolution carried out on gravity data along a wide-angle seismic profile indicates that a major NW-SE-trending lineament within the basin reflects pronounced variations in crustal structure and sedimentary thickness. These thickness variations are interpreted as the result of cross-basin faulting along a zone defined by this lineament. Transverse gravity lineaments to the north of this feature are similarly interpreted as major cross-basin fault zones.

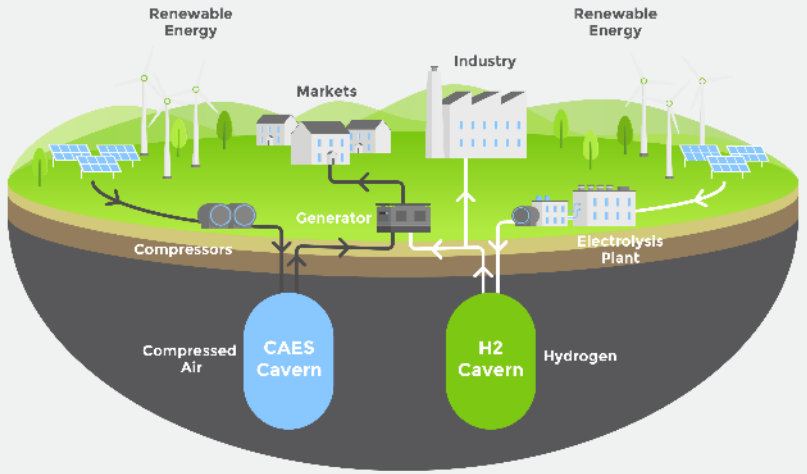
About us and Long Duration Energy Storage

Corre Energy is a European company at the forefront of developing, commercialising and future operation of Long Duration Energy Storage projects and products (**LDES)**

These **projects** and **products** will accelerate **decarbonisation** and enhance the **security** and **flexibility** of energy systems

Corre Energy's design can yield up to **84hrs (3.5 days) of storage based on output capacity of 320MW** to enable integration of gigawatt renewables and green hydrogen use

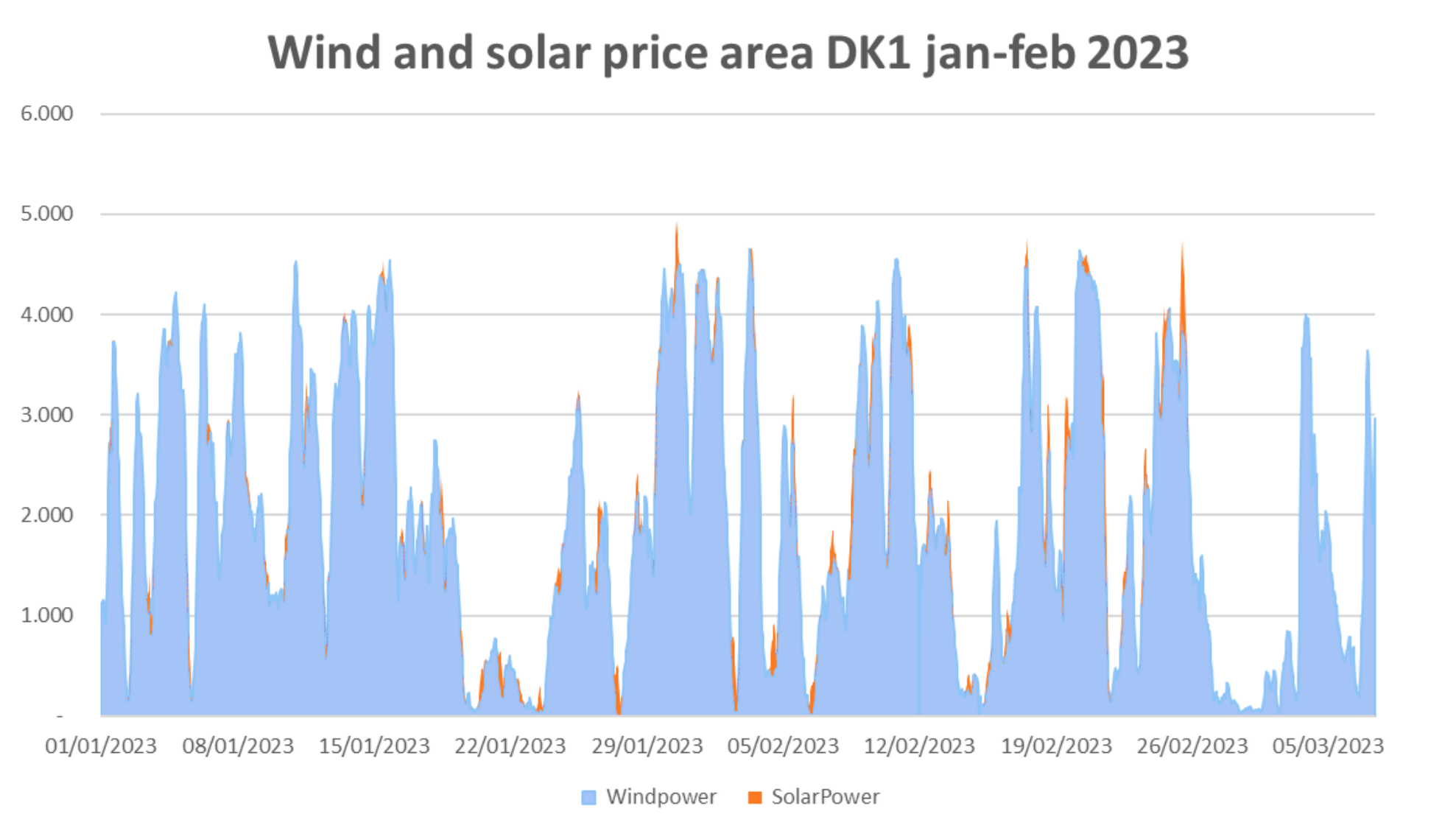
Our team has extensive experience and success in the energy sector, including market-leading expertise in modelling the capability of LDES to **integrate** large **grid scale renewables**



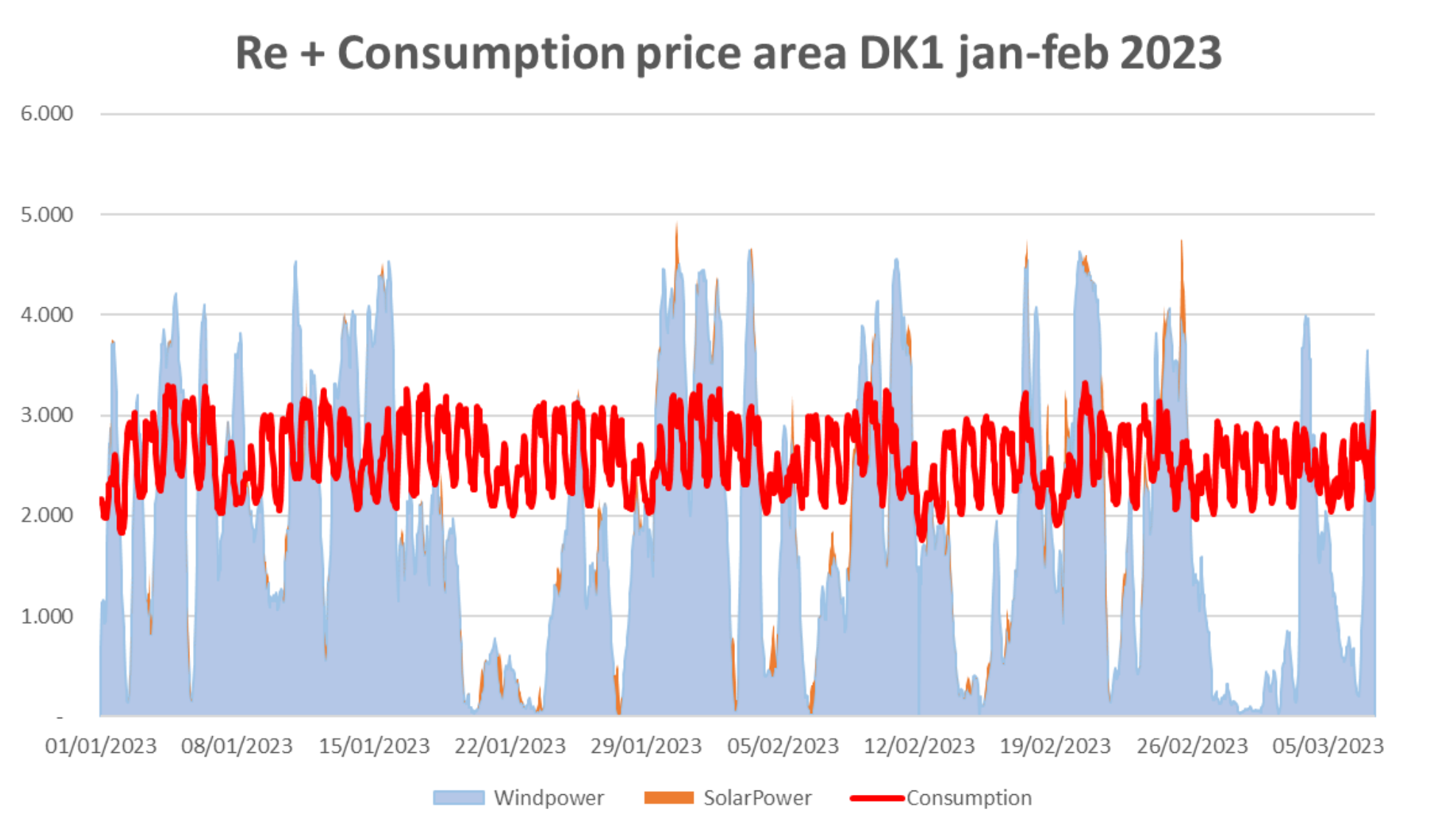
- Compression of air into storage when electricity prices are low
- Electricity generation from storage when prices are high
- Sale of electricity market balancing services
- Traded electricity contracts hedged by CAES capacity across multiple markets
- Sale of CAES capacity for balancing services to the TSO

The Challenge

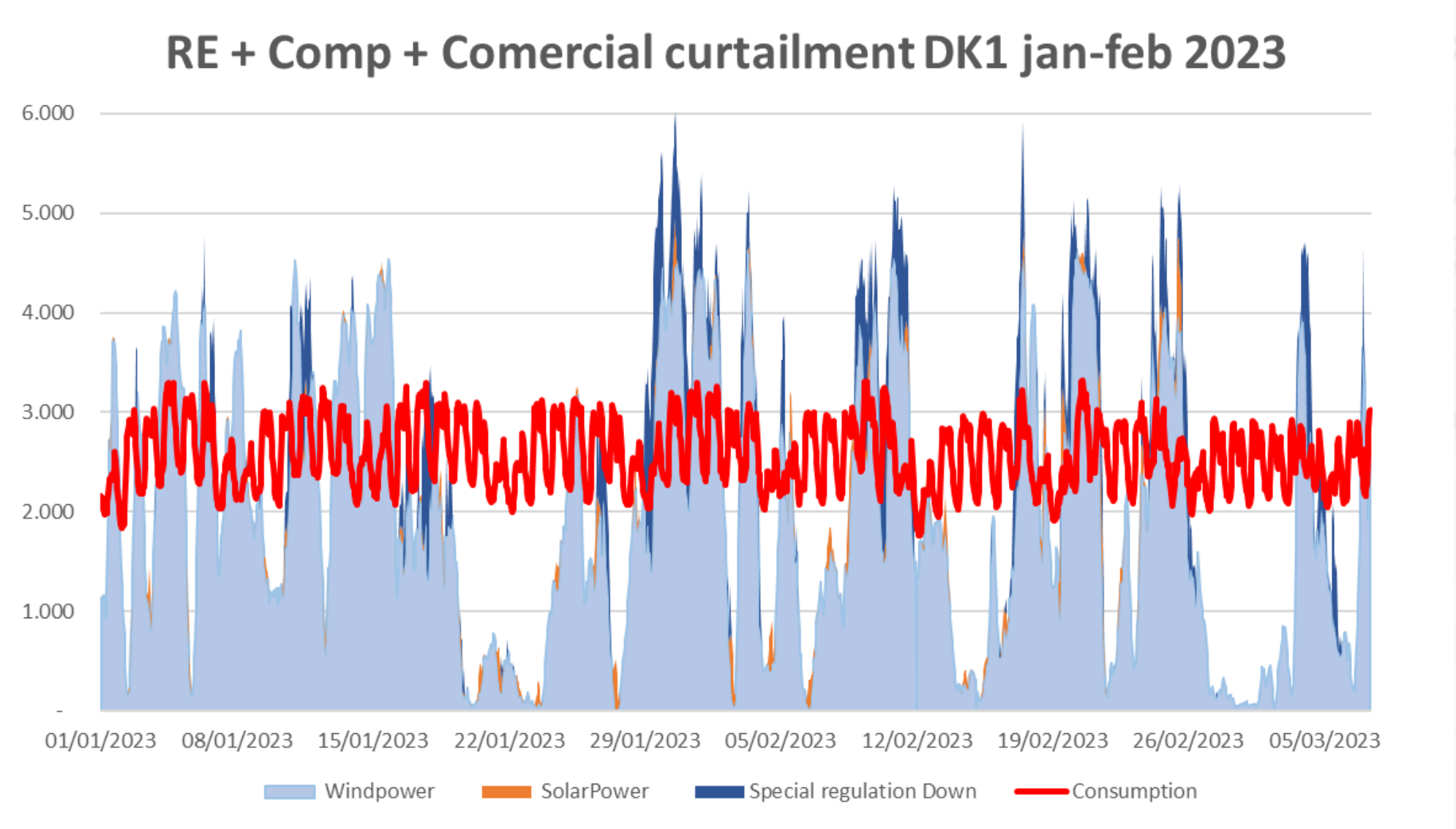
Renewable energy production & consumption



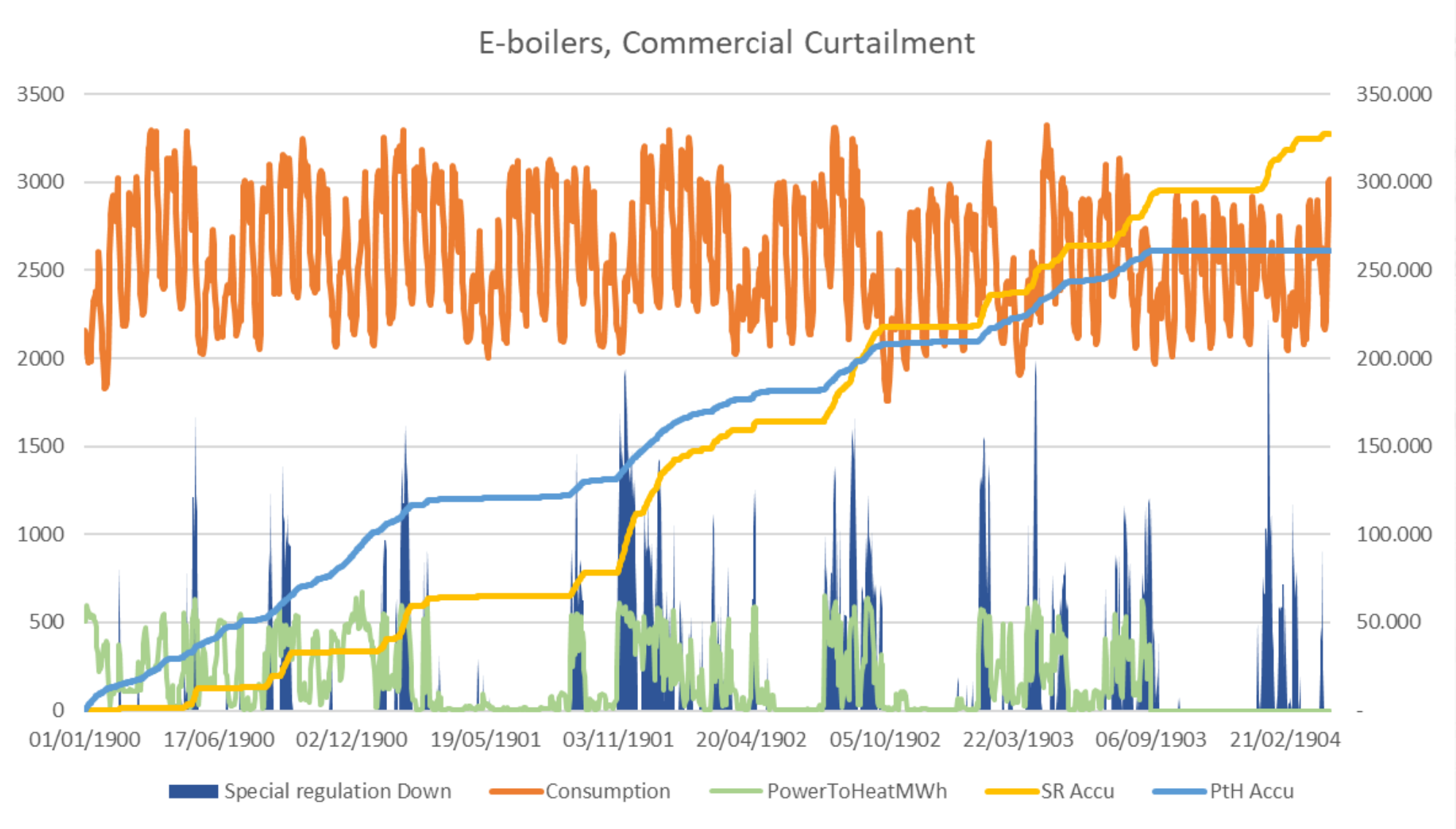
Renewable energy production & consumption



Renewable energy production & consumption



Renewable energy production & consumption



Hydrogen fueled Compressed Air Energy Storage



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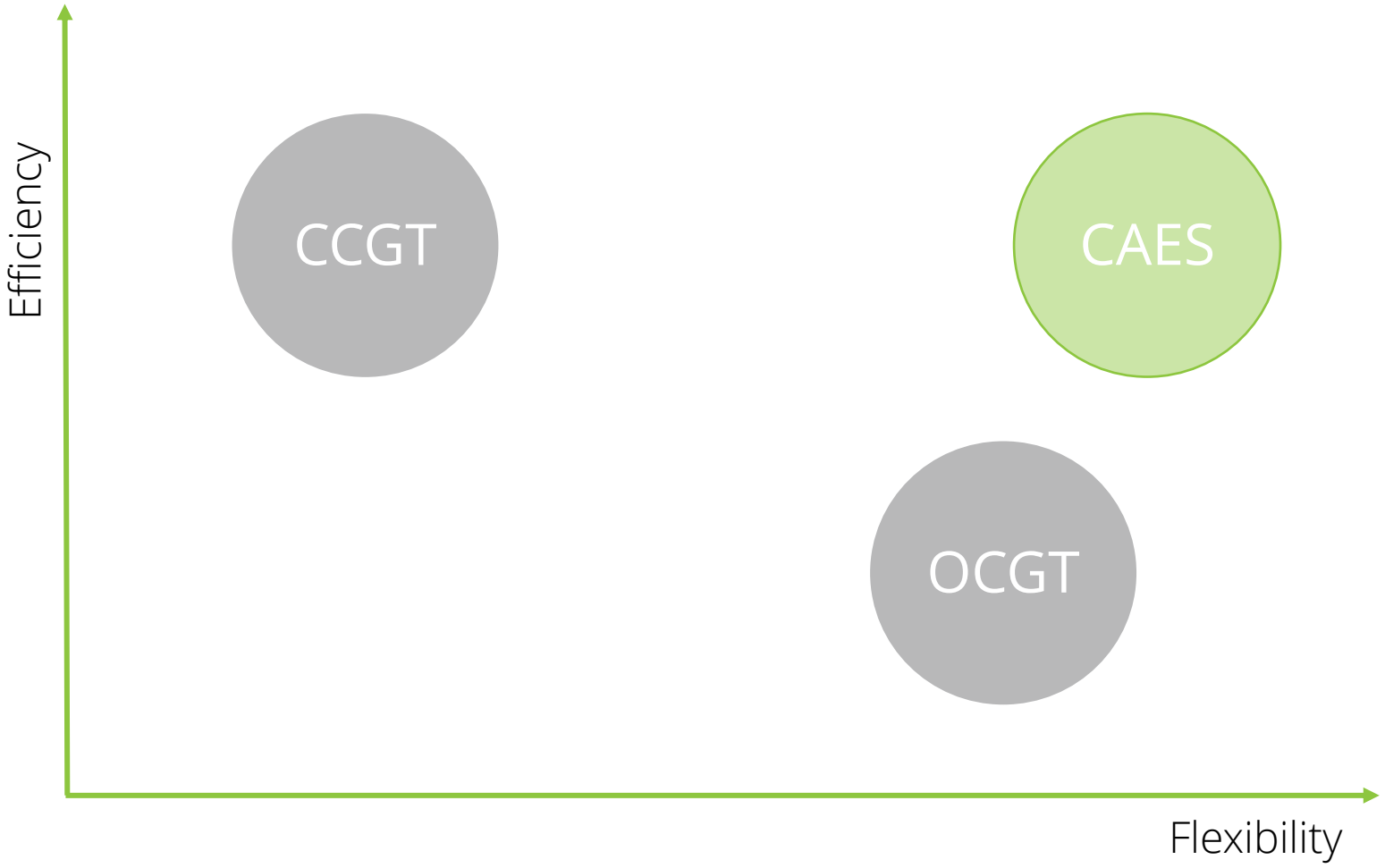
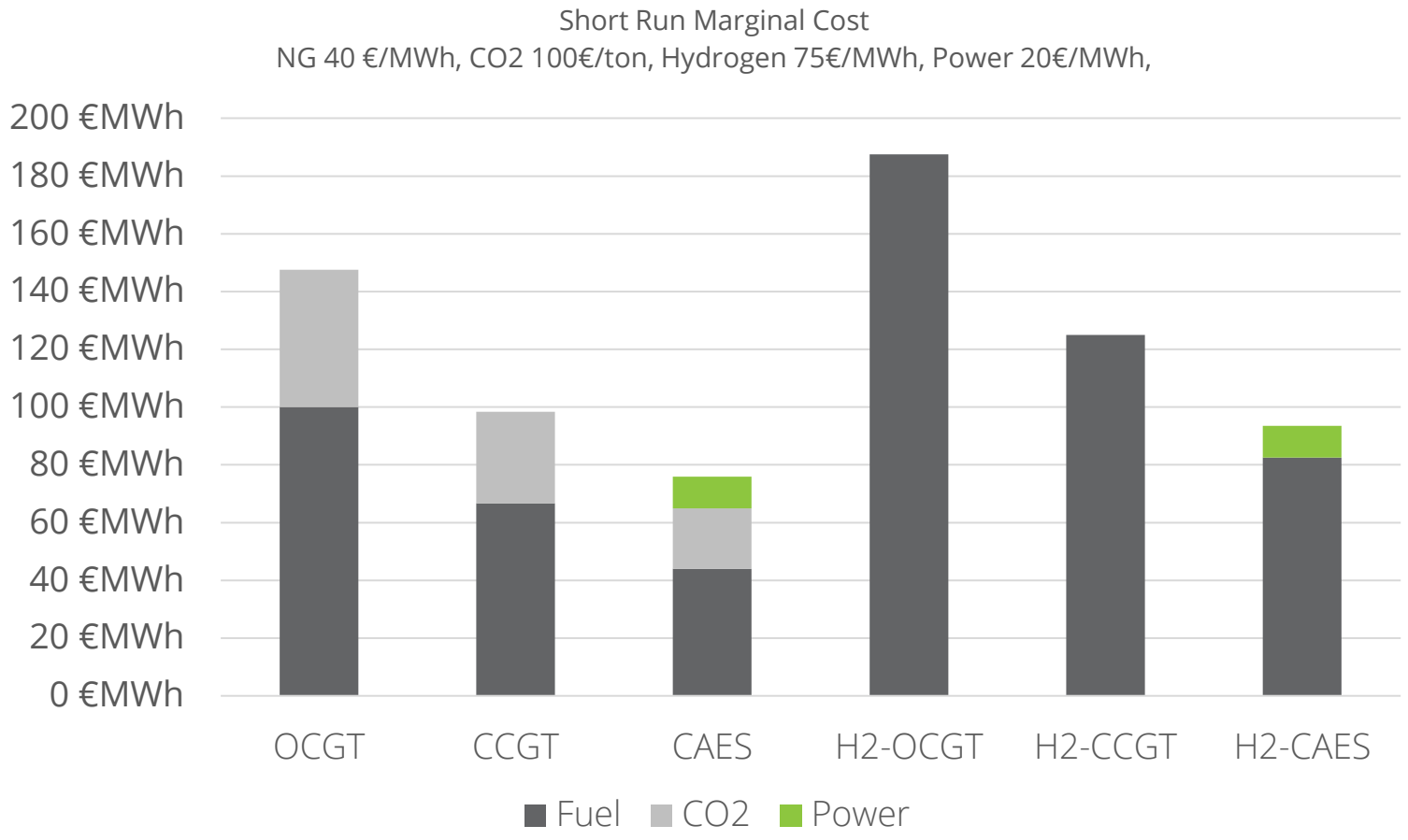
Why CAES is better than a normal gas turbine



- CAES is more flexible than Open Cycle Gas Turbine
- CAES is as energy efficient as a Combined Cycle Gas Turbine
- CAES has lower marginal cost that a CCGT, due to 1/3 of the input energy is low price power (otherwise curtailed)

Why CAES is better than a normal gas turbine

Let's look at the numbers



Marginal Cost

- Natural Gas € 40,-/MWh
- CO2 € 100,-/ton
- Hydrogen € 75,-/MWh
- Power € 20,-/MWh

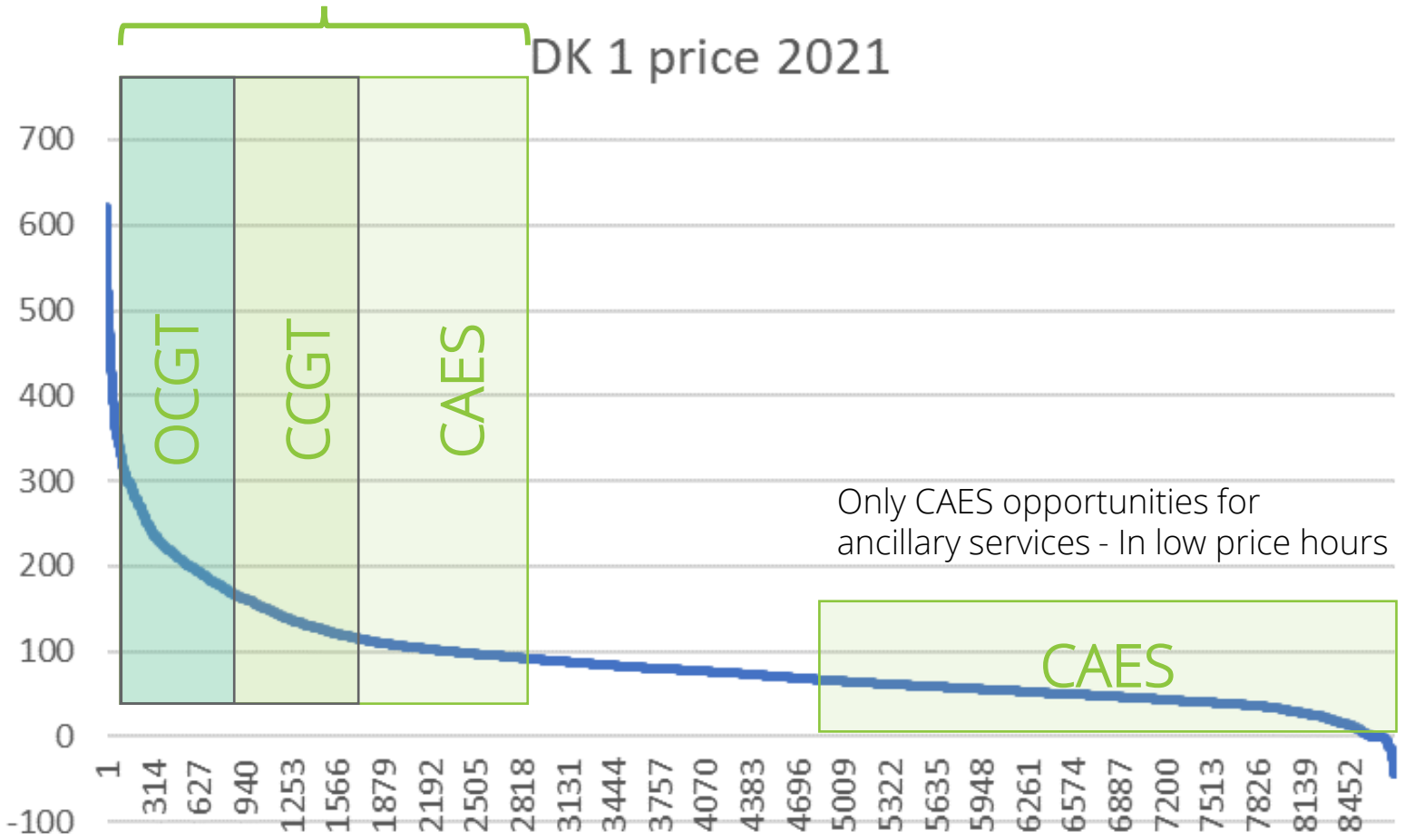
CAES project in Groningen, NL

Will start using Natural Gas, but **moving to H2** - even before other powerplants will be out of operation.

If the NG price is "only" 40€/MWh

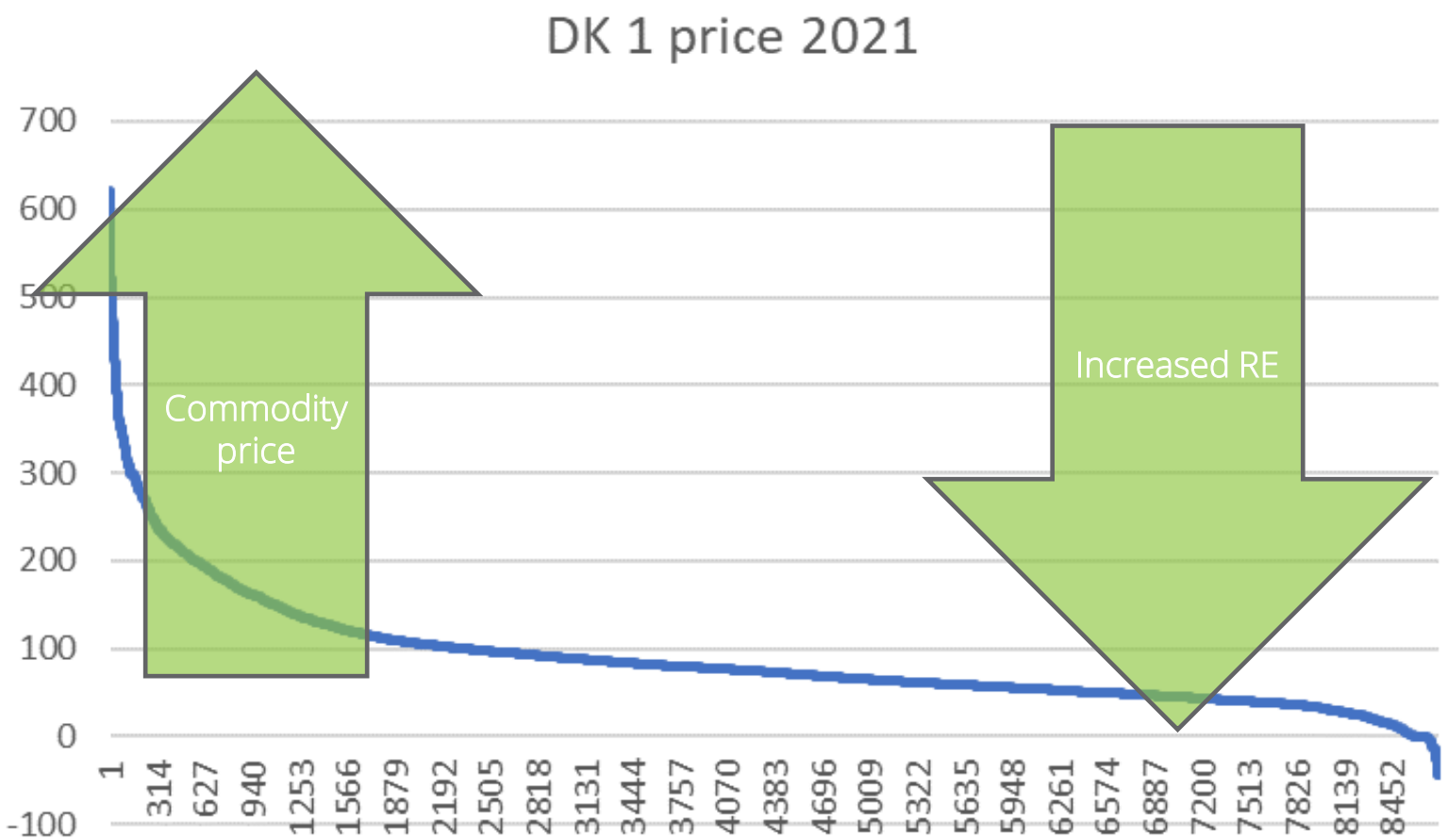
Comparing added value for balancing the electricity network

CAES can deliver ancillary services in more hours



- Low marginal cost
- more opportunities for ancillary services

Value drives for CAES



Strategic partnership

Eurowind Energy | corre.energy | GAS STORAGE DENMARK

Energy is life. Let's safe it.

Green Hydrogen Hub DENMARK

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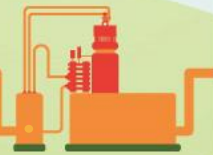
Green Hydrogen Hub
DENMARK

Renewable energie & Hydrogen production
Hydrogen is produced using energy from co-located wind and solar farms.

Storage

H_2

H_2



CAES

Transforms

Hydrogen Storage

H_2

Air

Compressed Air Storage

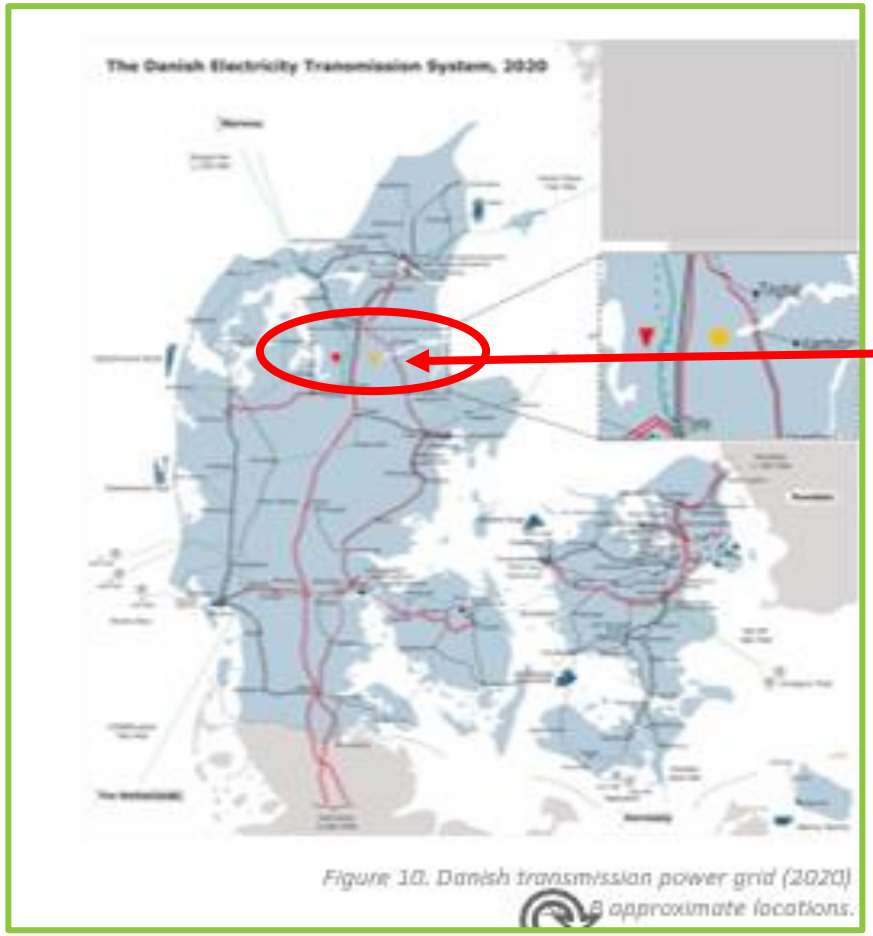
Heat

District heating

Energy is life. Let's safe it.

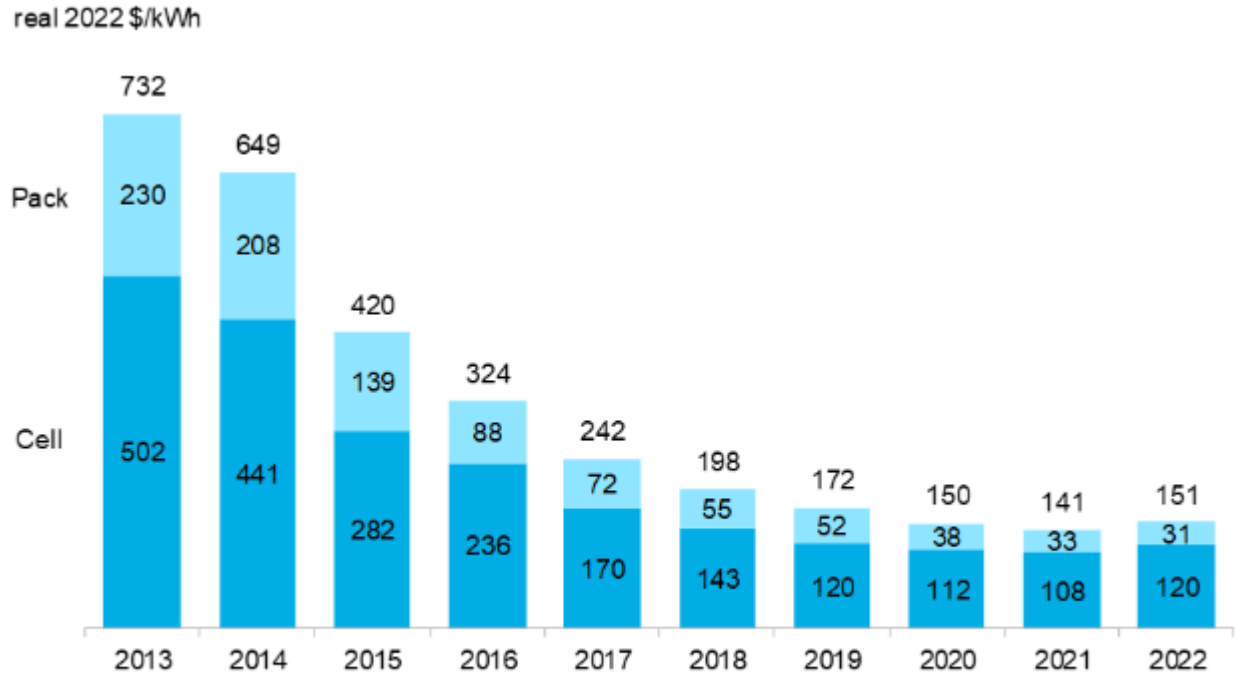
Excellent location within the European Hydrogen Backbone

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

Long duration require low unit cost



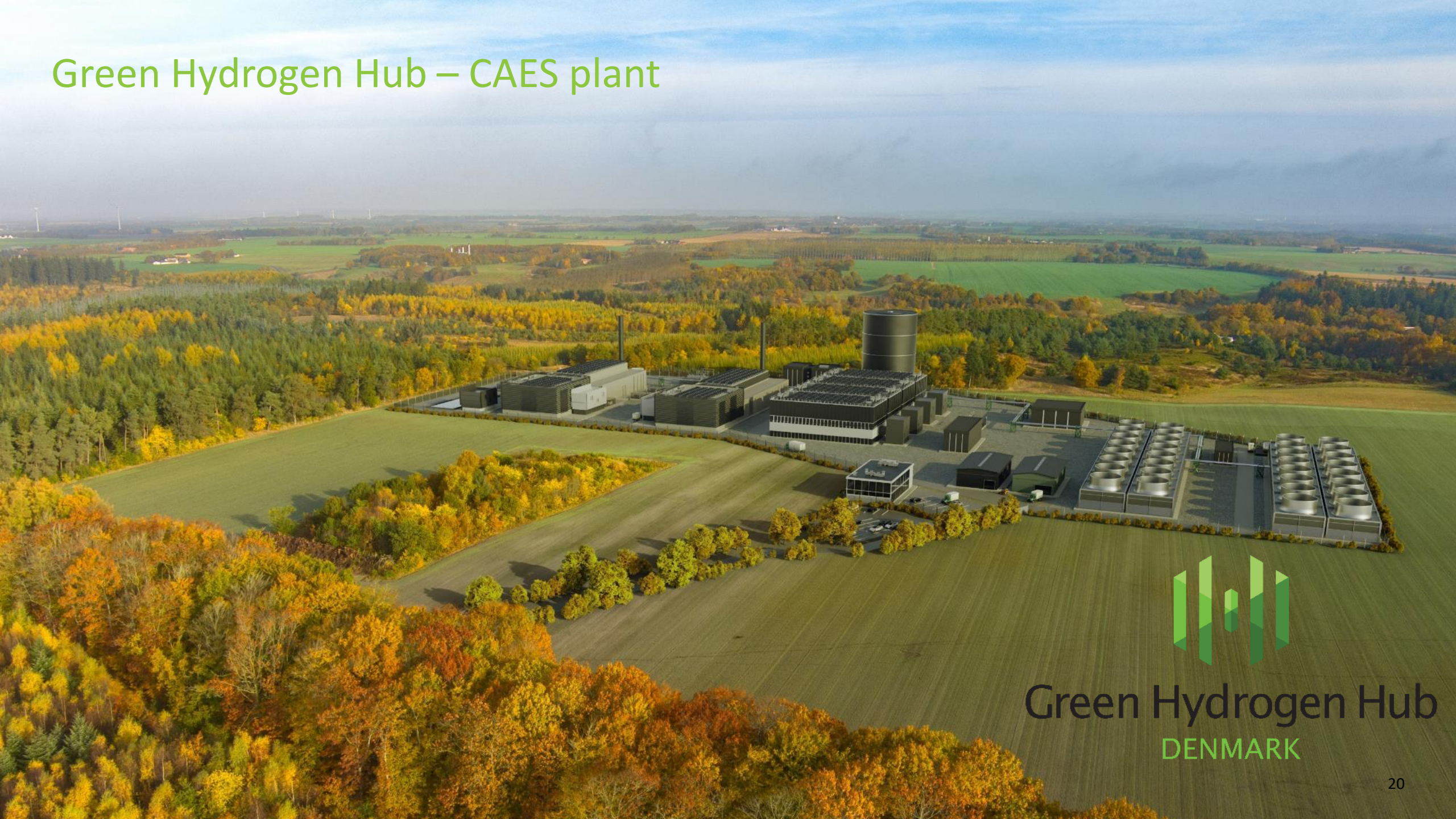
Source: BloombergNEF. All values in real 2022 dollars. Weighted average survey value includes 178 data points from passenger cars, buses, commercial vehicles and stationary storage.

Green Hydrogen Hub economics

Storage capacity:

- 140,000,000 kWh Hydrogen
- 12,000,000 kWh Compressed air
- Total cost including electrolyser, hydrogen pipeline, hydrogen storage, and CAES facility:
- 1 Bn€
- Cost per energy unit: ~7 €/kWh.

Green Hydrogen Hub – CAES plant



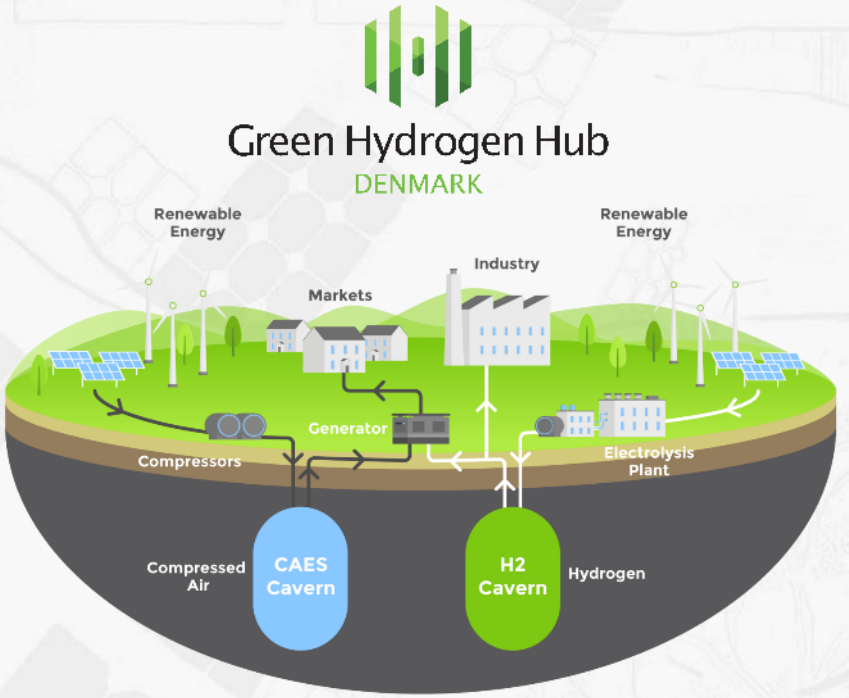
Green Hydrogen Hub
DENMARK

The sponsors are experts within their industry

CORRE ENERY 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



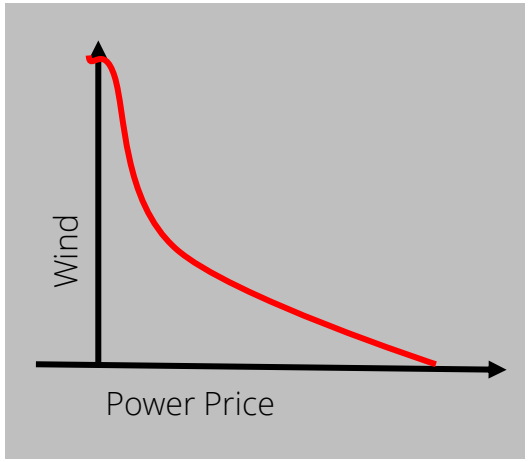
Value chain and value/risk drivers – Commercial eneabler

- Value and risk drives are different across the value chain
- There are significant interface risks between each link

But:

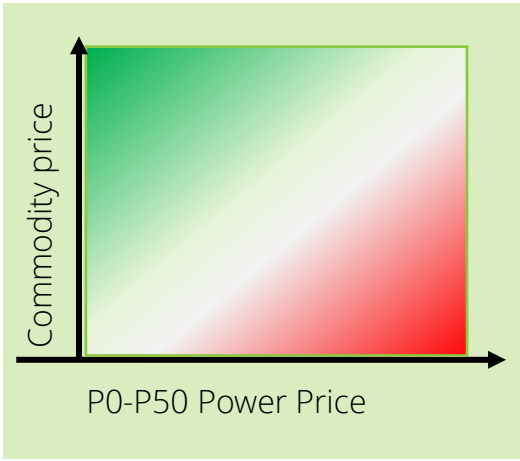
- Across the total value chain the risk is lower than the sum of individual risks.
- Solution:
- Long term contracts and profit-share across the value chain

Wind power



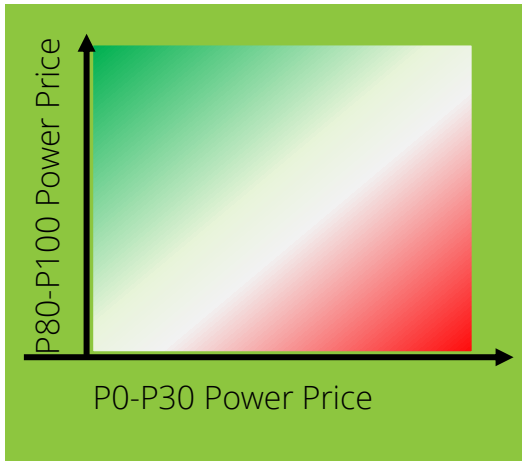
Co-variance
Wind-Power price

Electrolyser



Spread
Commodity-P50

CAES



Spread
P80-P30

Q & A

Your questions please

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05 Appendix

Hans-Åge Nielsen – Chief Commercial and Products

- Over **20 years' experience** in power, gas and storage
- Recognized in the field for his expertise
- Pioneering **valuation of storage** in energy systems
- **Innovator of new business models** to enable development of green field hydrogen-based storage solutions.
- Leader in the **development of large-scale underground hydrogen storage** in Denmark

Hans-Åge Nielsen, is trained in Engineering Business administration, Management and Strategy & Organisational Psychology.