GREENING THE DANISH GAS INFRASTRUCTURE

i-SUSTAIN visit to Energinet 12-09-2023

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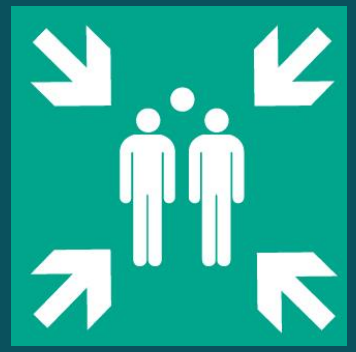
Agenda

1. Who are we?
2. Danish Biomethane Experiences
3. Future Danish Hydrogen Backbone
4. EU Developments and Regulation
5. Creating value through Hydrogen storage
6. Plans for onshore CO_2 storage in Stenlille

EMERGENCY EXITS

DEFIBRILLATORS



RALLYING GROUND

GAS STORAGE DENMARK

CREATING VALUE THROUGH

HYDROGEN STORAGE

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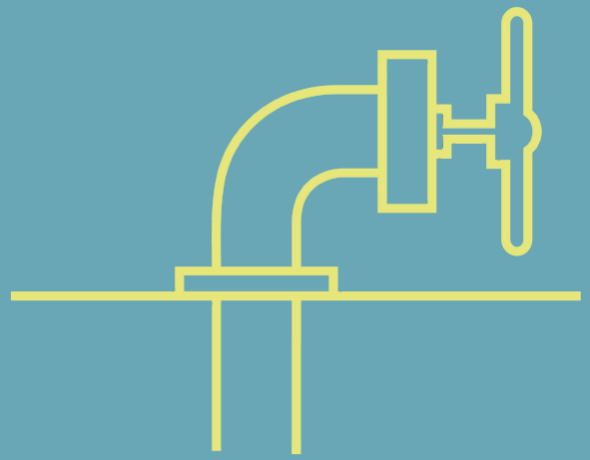
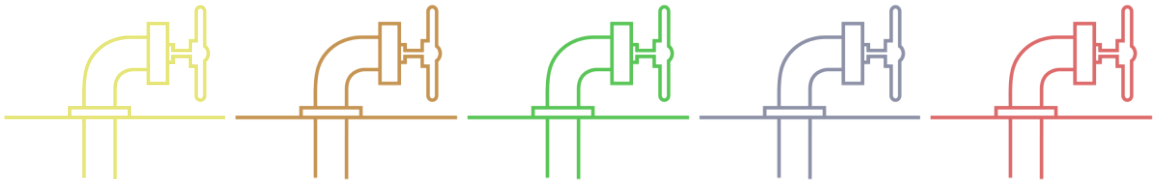
d.2. marts. 2023

SINGLE-COMMODITY NATURAL GAS STORAGE

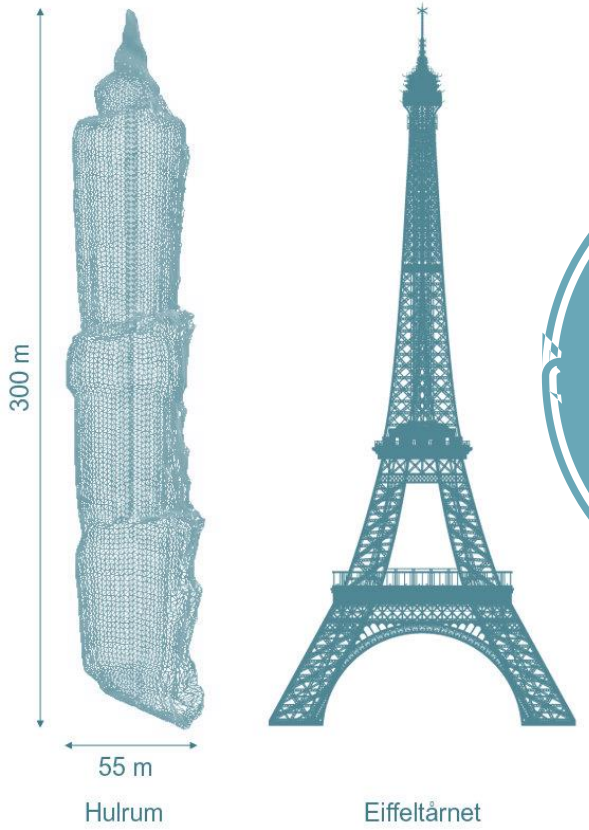


Economy-of-scale

MULTI-COMMODITY ENERGY STORAGE



Economy-of-scope



LILLE TORUP UNDERGRUND

Storage Enables the value chain

Production of green hydrogen driven by renewable energy

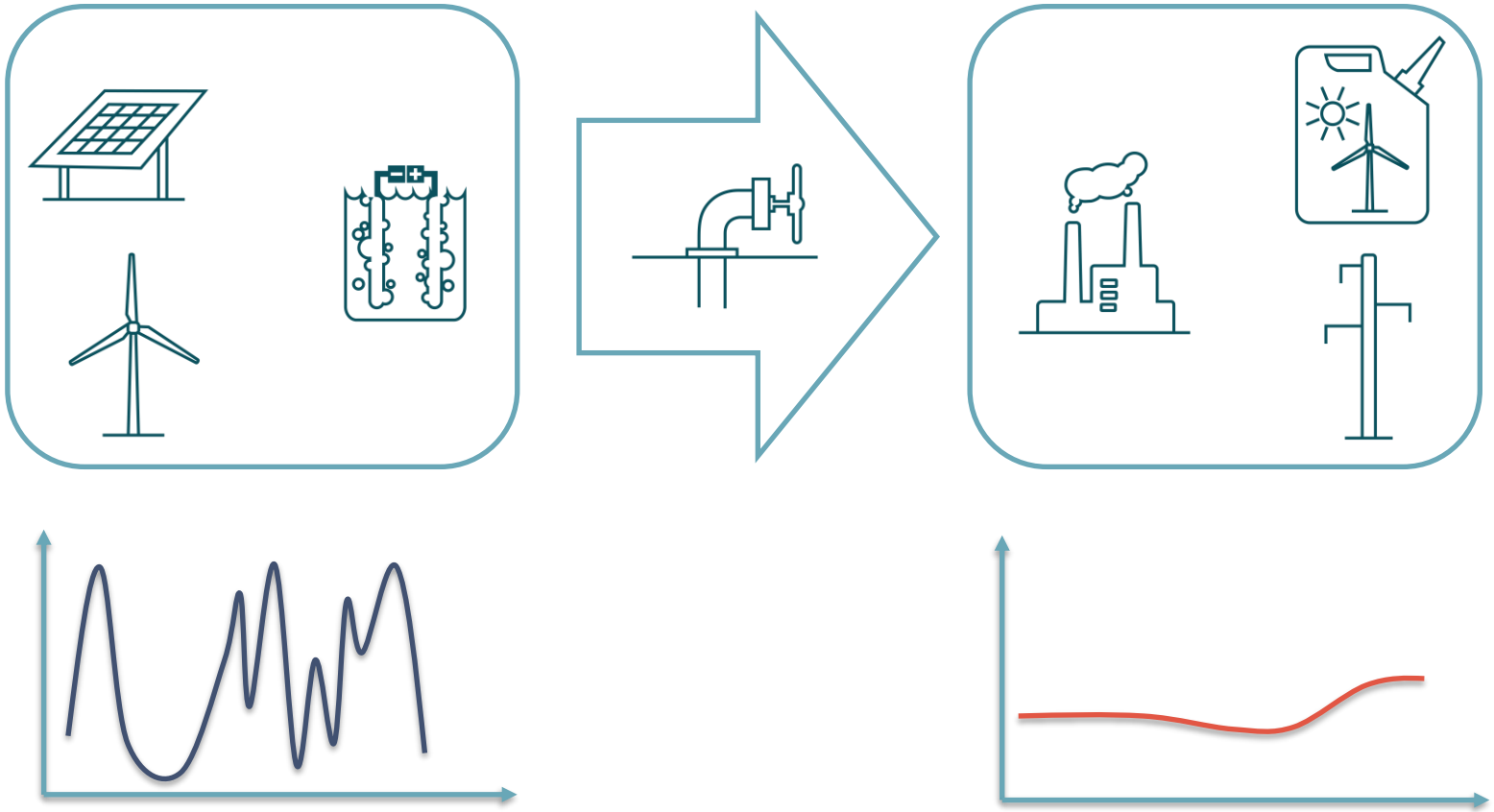
➢Volatile and unpredictable

Profile of hydrogen demand depends on setup and customers

➢Continuous and predictable

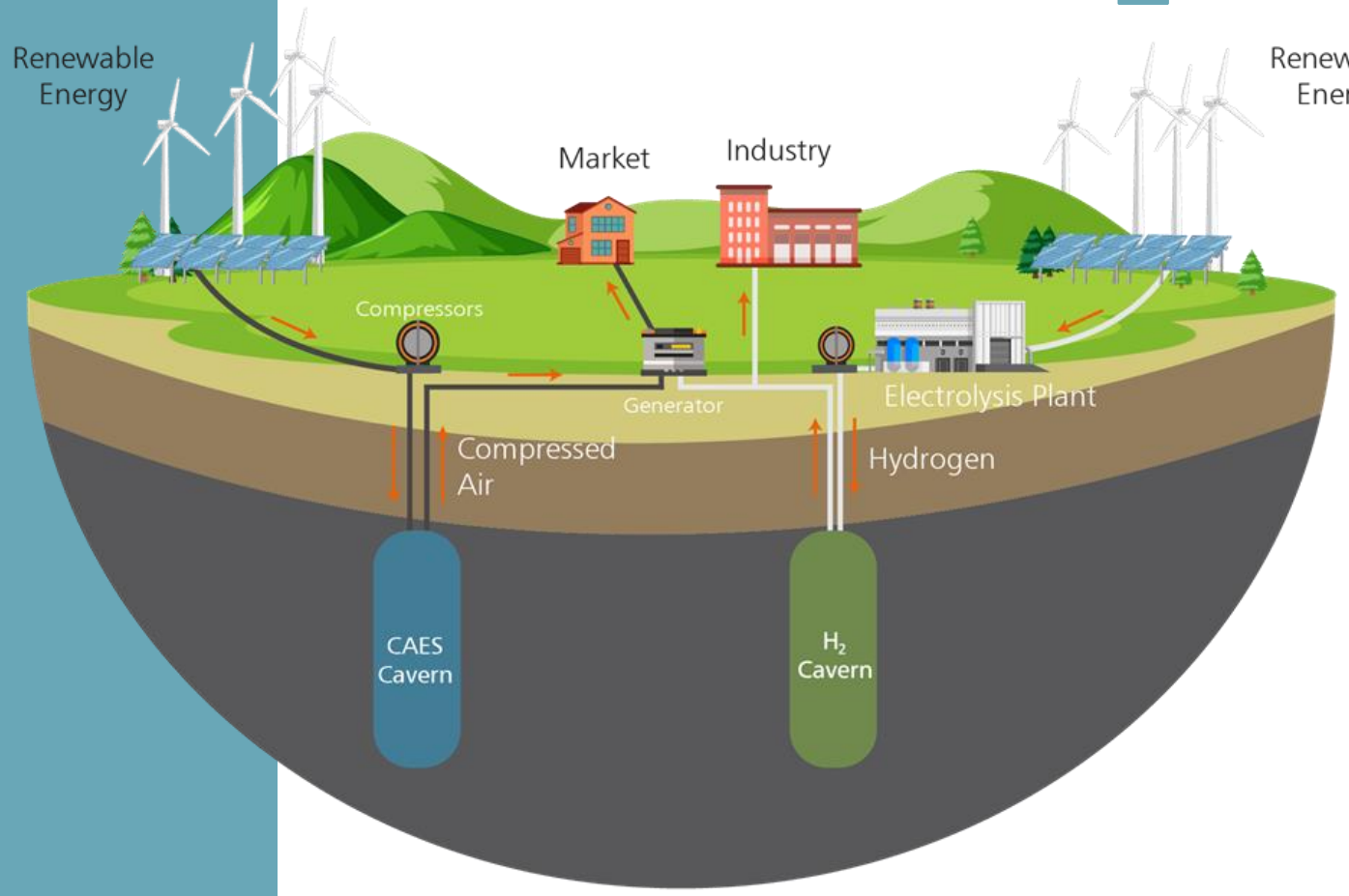
Storage balances the value chain

➢high utilisation and security of supply



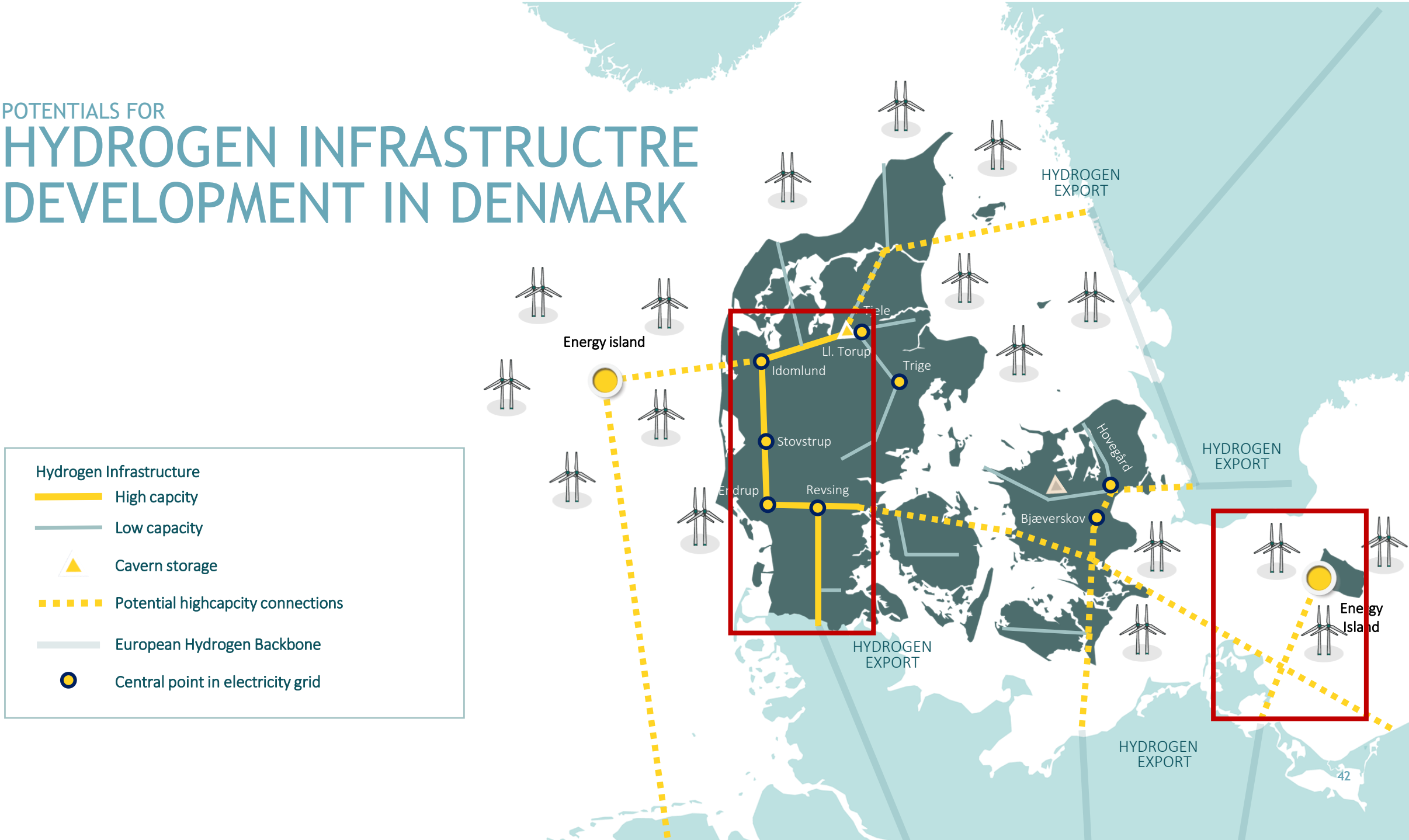
GREEN HYDROGEN HUB DENMARK

- First of its kind
- Power-2-X - Power-2-Power
- Public-Private innovation partnership
- Large-scale, long-duration renewable energy storage



POTENTIALS FOR

HYDROGEN INFRASTRUCTRE DEVELOPMENT IN DENMARK



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PLANS FOR ONSHORE

CO_2 STORAGE IN STENLILLE

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STENLILLE UNDERGRUND

PHASE 1: ULTIMO 2025

Technical solution
- Conversion of an existing observation well into a CO2-injection well
- Top site designed for truck delivery of CO2 in liquid form

Purpose:
- Fast-track project with the aim to establish a knowledge-base through early experience and provide the basis for development of new CCS value chains
- Knowledge-sharing with the market
- Stepping stone for phase 2

Project details:
- Total volume capacity: +10 MT
- Yearly injection capacity: 0,2-0,3 MT

- 10-year capacity contracts expected

PHASE 2: 2027/2028

Technical solution:
- Establishment of two new CO2-injection wells
- Top site designed for receival of CO2 through a combination of pipeline and truck

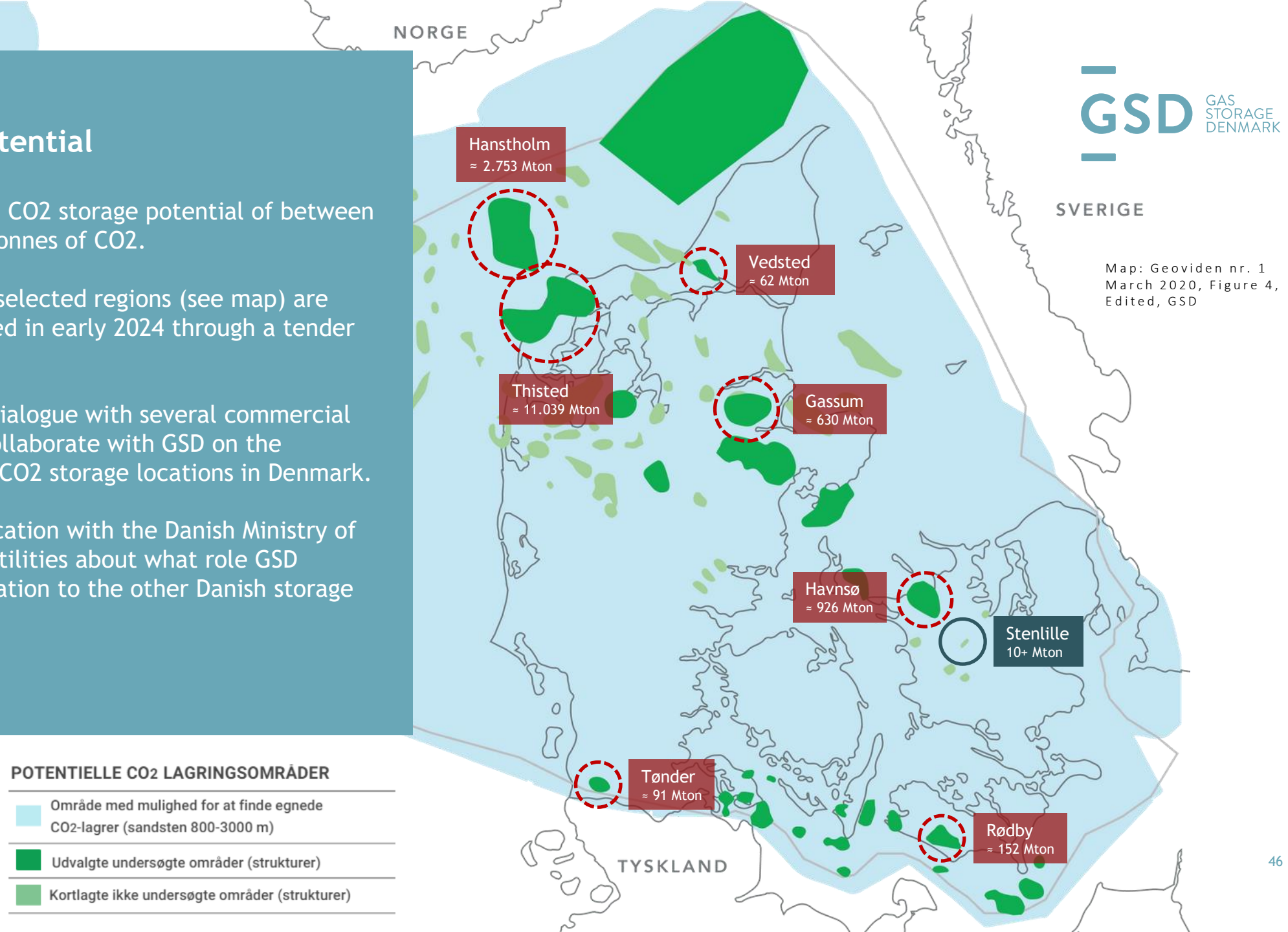
Purpose:
- Optimization of the usage of the Stenlille storage capacity
- Accumulation of knowledge to support development of large-scale CO2 storage sites in Denmark on land

Project details:
- Total volume capacity: +10 MT (same as in phase 1)
- Yearly injection capacity: 0,5-1 MT

- Length of capacity contracts expected to vary

Onshore storage potential

- Estimated total Danish CO2 storage potential of between 12.3 and 24.6 billion tonnes of CO2.
- Storage licenses for 8 selected regions (see map) are expected to be assigned in early 2024 through a tender process.
- GSD has had ongoing dialogue with several commercial players who wish to collaborate with GSD on the development of other CO2 storage locations in Denmark.
- GSD is pursuing clarification with the Danish Ministry of Climate, Energy and Utilities about what role GSD can/should take in relation to the other Danish storage locations.



Map: Geoviden nr. 1 March 2020, Figure 4, Edited, GSD

GSD GAS STORAGE DENMARK


Thanks for your attention