

**Carbon Capture Utilization and Storage (CCUS) –
it's happening now!**

However, are there still any challenges?

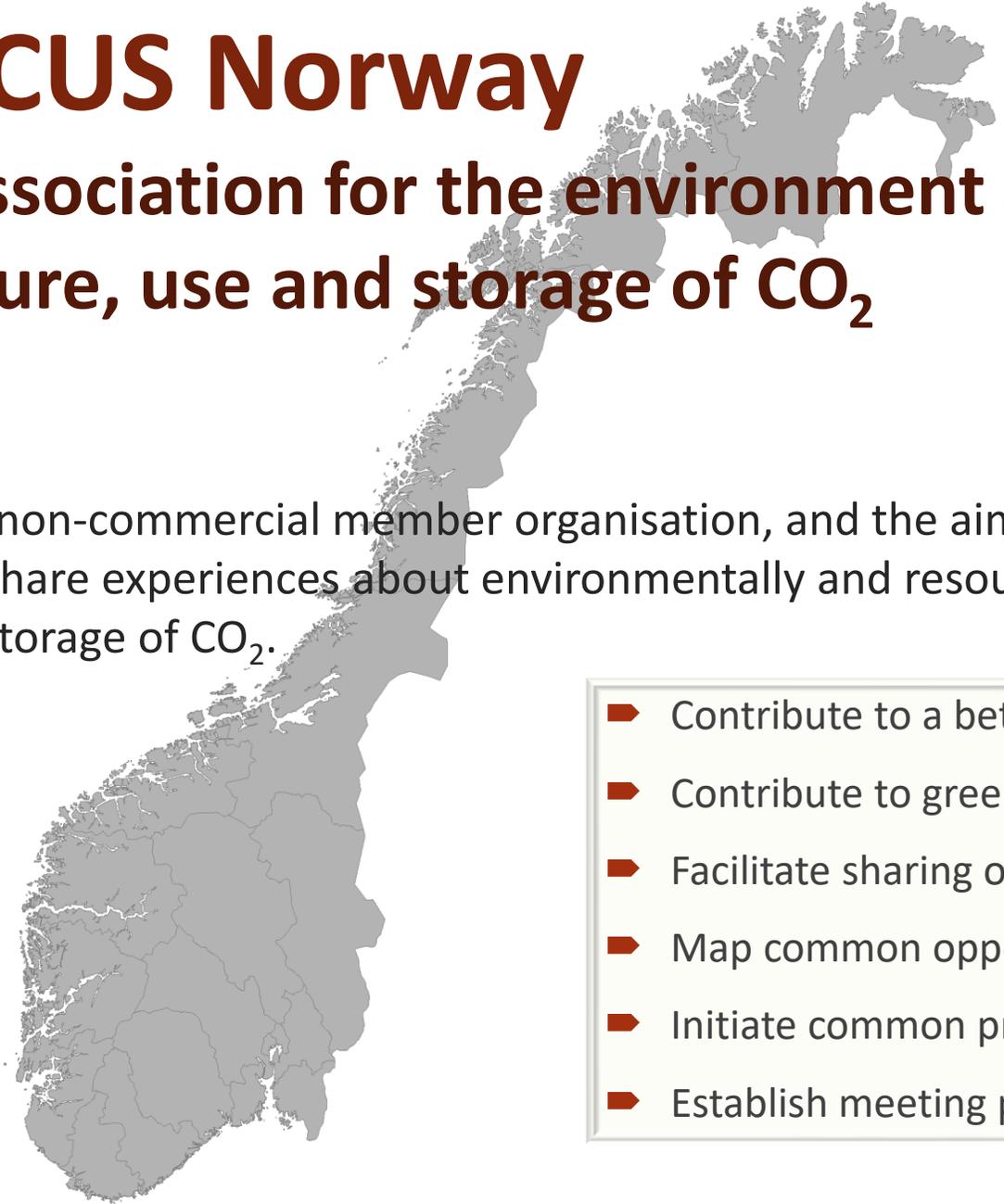
Eva Halland, CCUS Norway/ CarbonGeo

Baltic Carbon Forum 13-14 October 2022

CCUS Norway

Norwegian association for the environment and resource efficient capture, use and storage of CO₂

CCUS Norway is a non-commercial member organisation, and the aim is to build competence and share experiences about environmentally and resource-efficient capture, use and storage of CO₂.



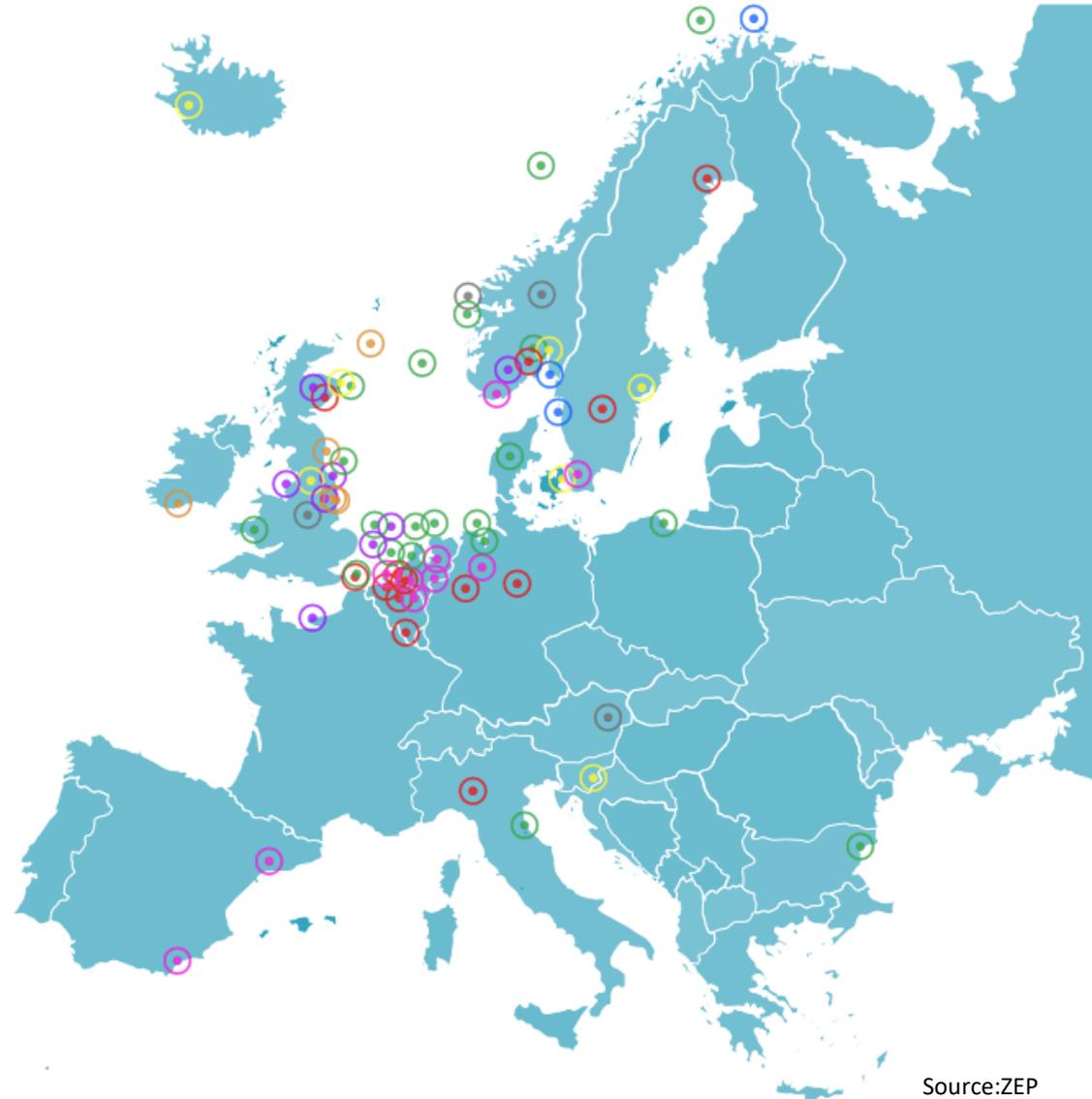
- Contribute to a better climate
- Contribute to green jobs
- Facilitate sharing of knowledge and experiences
- Map common opportunities
- Initiate common projects
- Establish meeting places

Are we on track for 2030 and 2050?

Maturing CO₂ storage capacity fast enough?

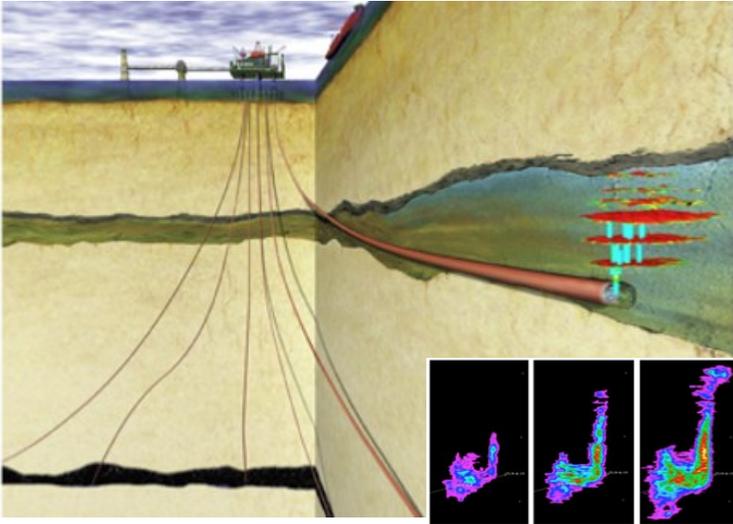
- In the IEA Net Zero Emissions by 2050 7.2 Gt of captured emissions are stored.
 - where around 350 Mt/year is in Europe
- Timely development of storage sites is a critical element in the deployment of CCS in Europe
 - Expect to have around 30-40 Mt/year of storage capacity by 2030, need around 350Mt/year
- EU commission: The development of geological storage sites is falling far behind demand!

- Full-chain CCS – 4 (Orange)
- CO₂ transport and storage – 19 (Green)
- CCS in industry – 12 (Red)
- CCS in energy production – 7 (Yellow)
- Low-carbon hydrogen production – 8 (Purple)
- Carbon Capture and Utilisation – 9 (Pink)
- Test centre – 4 (Grey)
- Limited information available (3) (Blue)

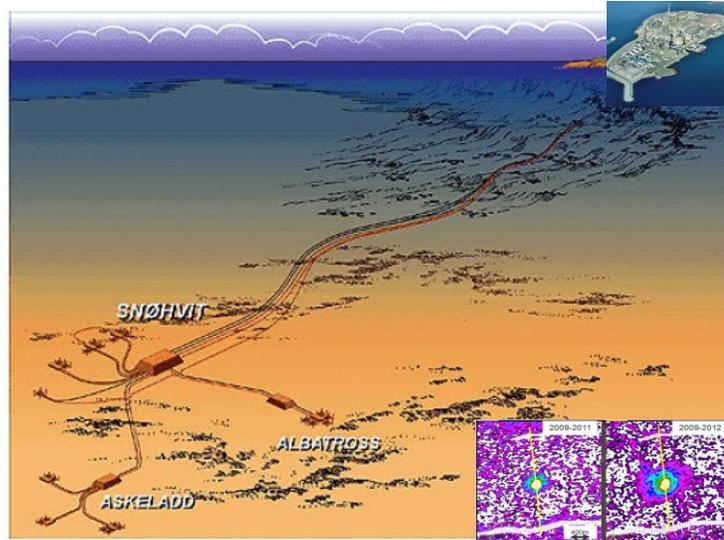


26 years experience with CO₂-storage offshore Norway

26 Million tonnes of CO₂ permanently stored deep under the seabed



The Sleipner Vest gas field in the North Sea. This is the world first offshore CCS project. Today, three hydrocarbon fields capture CO₂ through the SleipnerT facility and inject through the same well in the Utsira formation.



The Snøhvit gas field in the Barents Sea. The well stream, with natural gas, CO₂, NGL and condensate, is transported in a 160-kilometre pipeline to the facility onshore. The gas is processed and cooled down to liquid natural gas (LNG). The CO₂ is separated and returned to the field by pipeline for reinjection into a geological formation.

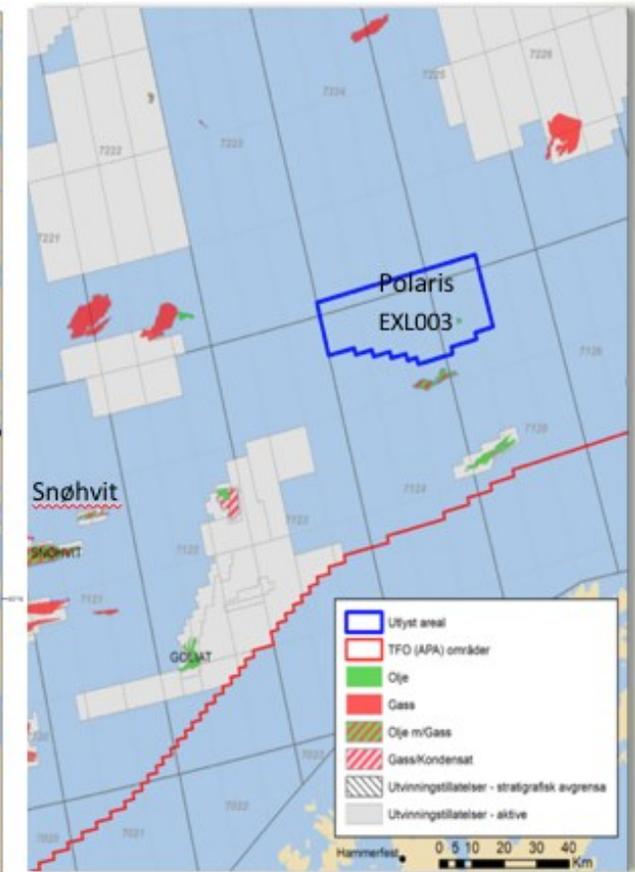
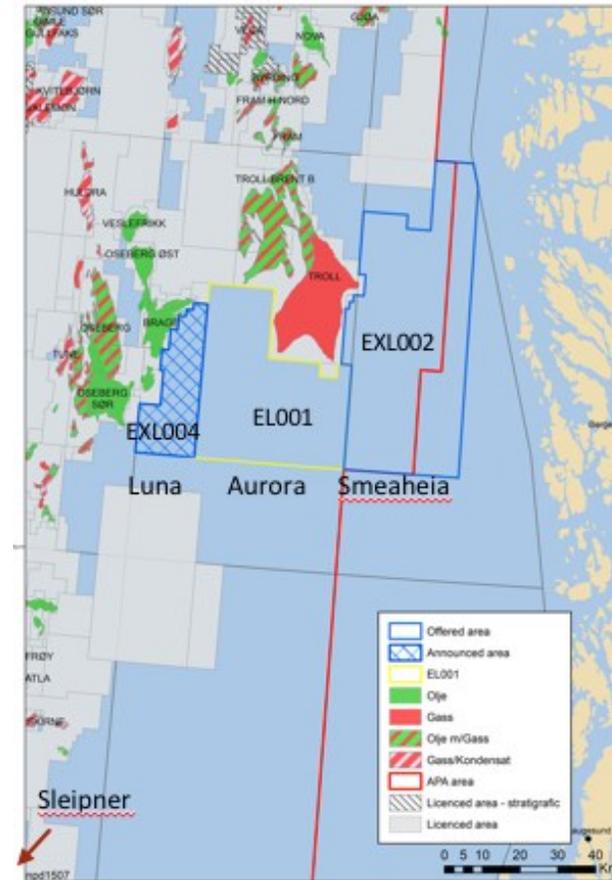
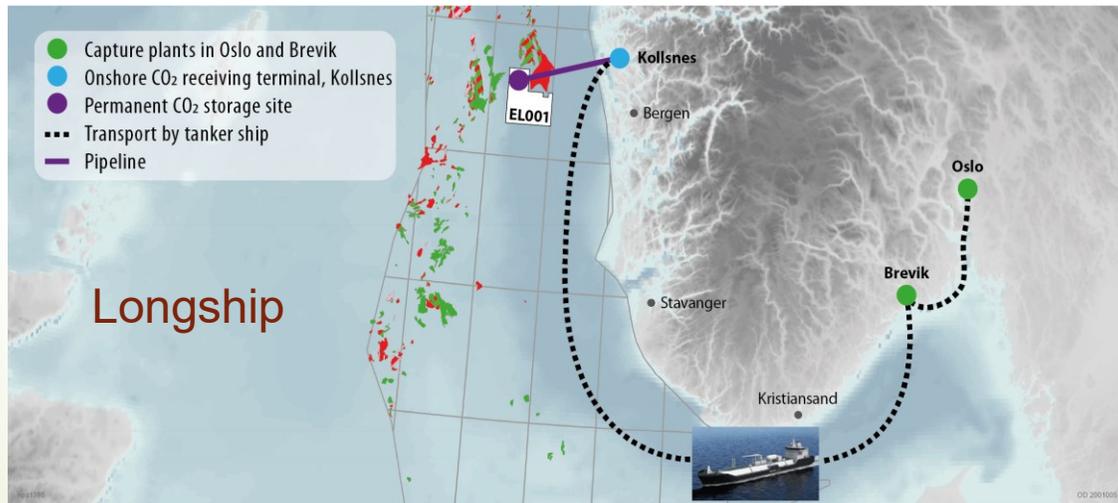
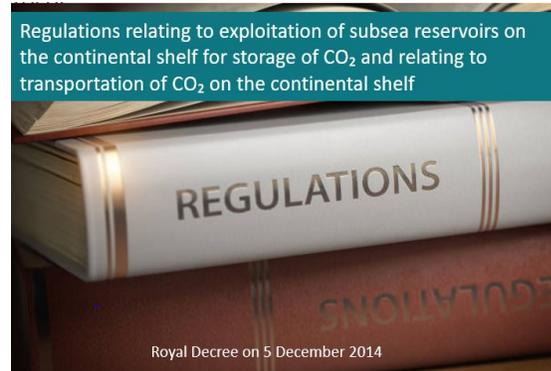
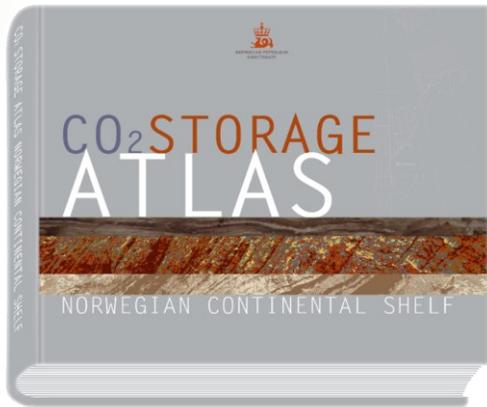


Technology Centre Mongstad (TCM) is the world's largest facility for testing and development of carbon capture technologies.

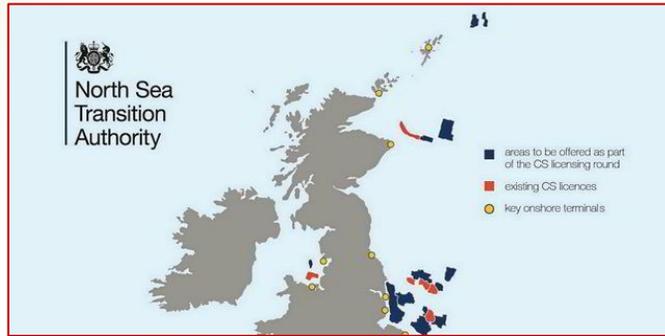
Getting started with a CCS industry

Norway's perspective

4 new CO₂ storage licenses awarded offshore Norway to 7 companies

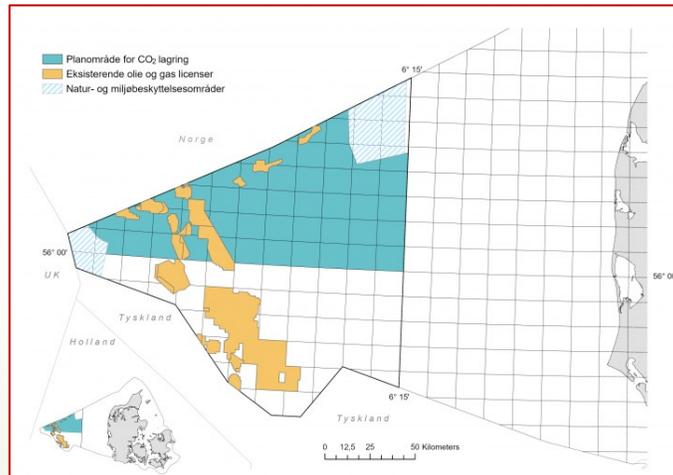


Permanent storage of CO₂ in the North Sea Basin



UK

- The NSTA offered 13 areas, consisting of a mix of depleted oil and gas fields and porous rock formations containing seawater. These come on top of six licences granted under a pilot scheme
- A total of 19 companies applied to develop carbon dioxide (CO₂) storages off Britain in the country's first such licensing round (NSTA)



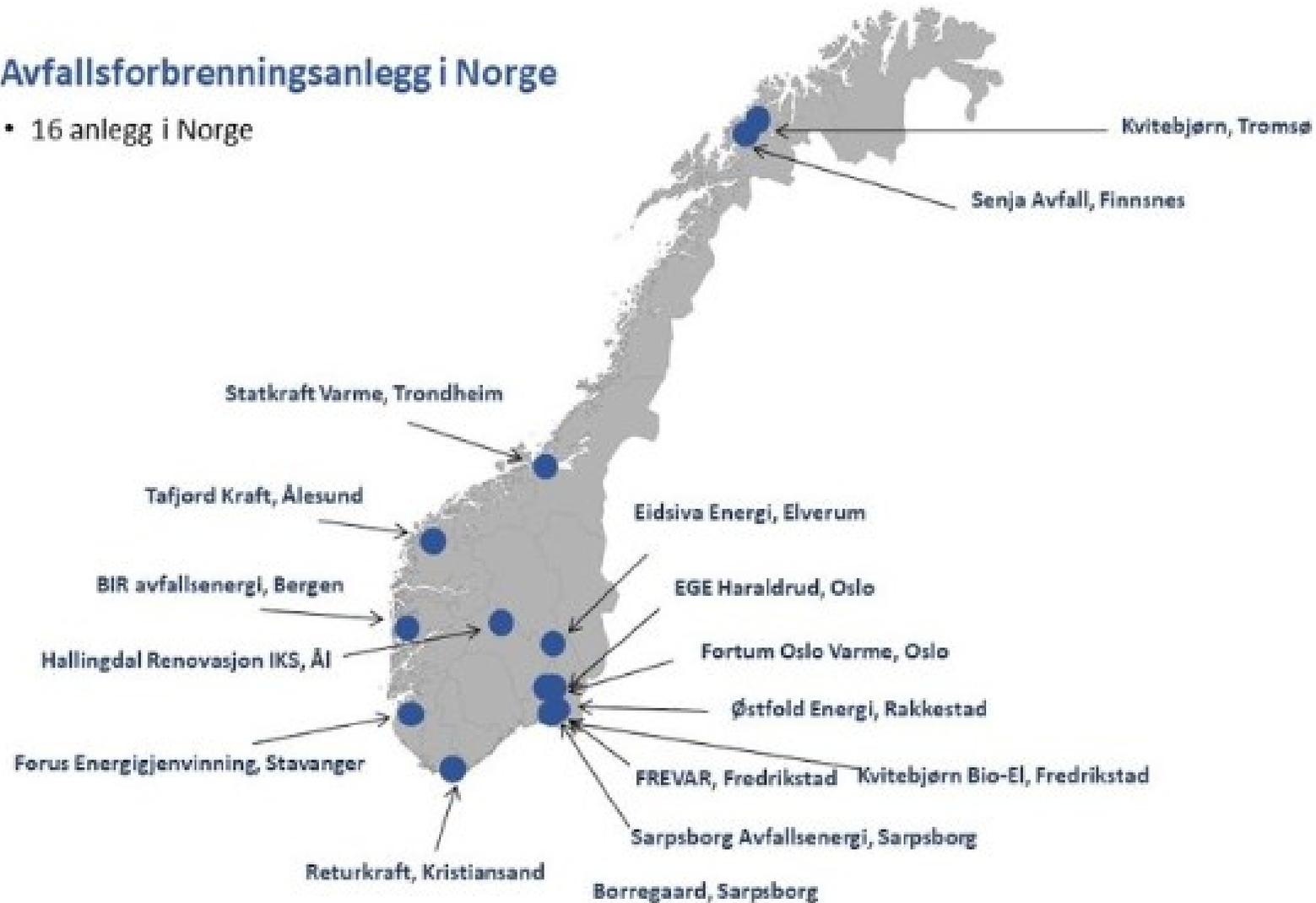
Denmark

- The Danish Energy Agency received two applications to the first Danish tender of licenses for CO₂ storage
- Three companies are involved in the applications

Climate cure for waste incineration

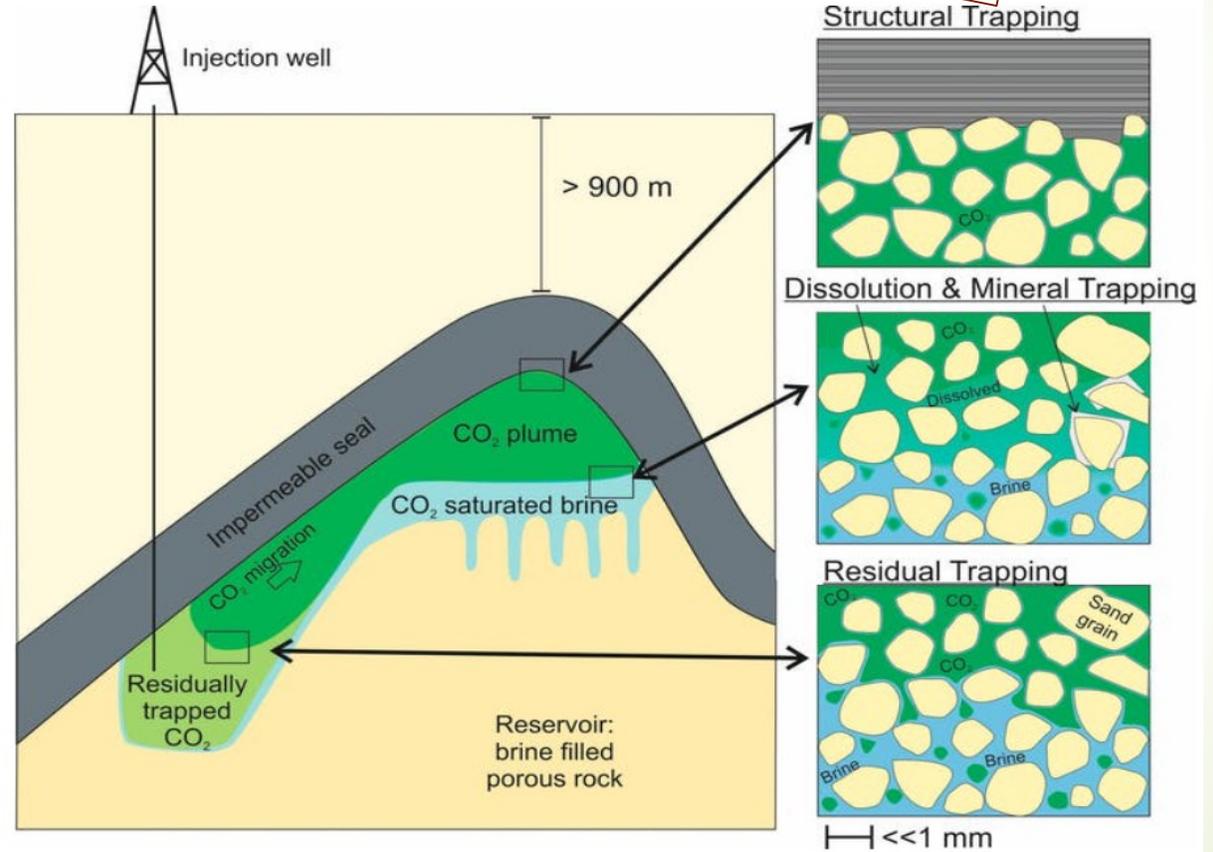
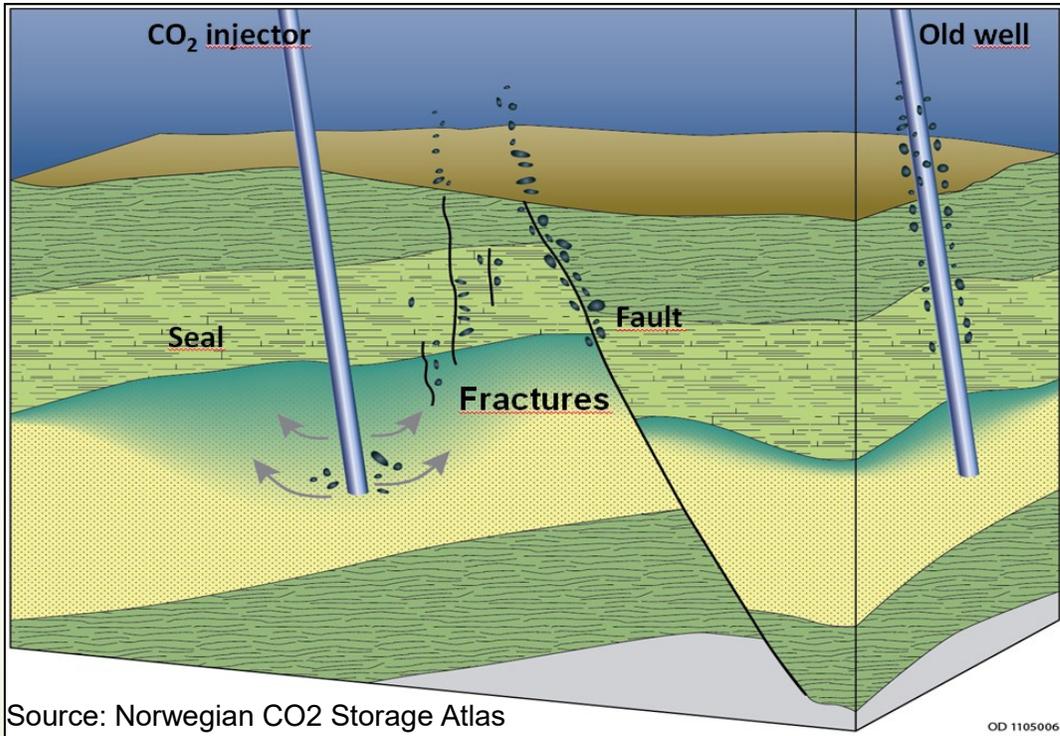
Avfallsforbrenningsanlegg i Norge

- 16 anlegg i Norge



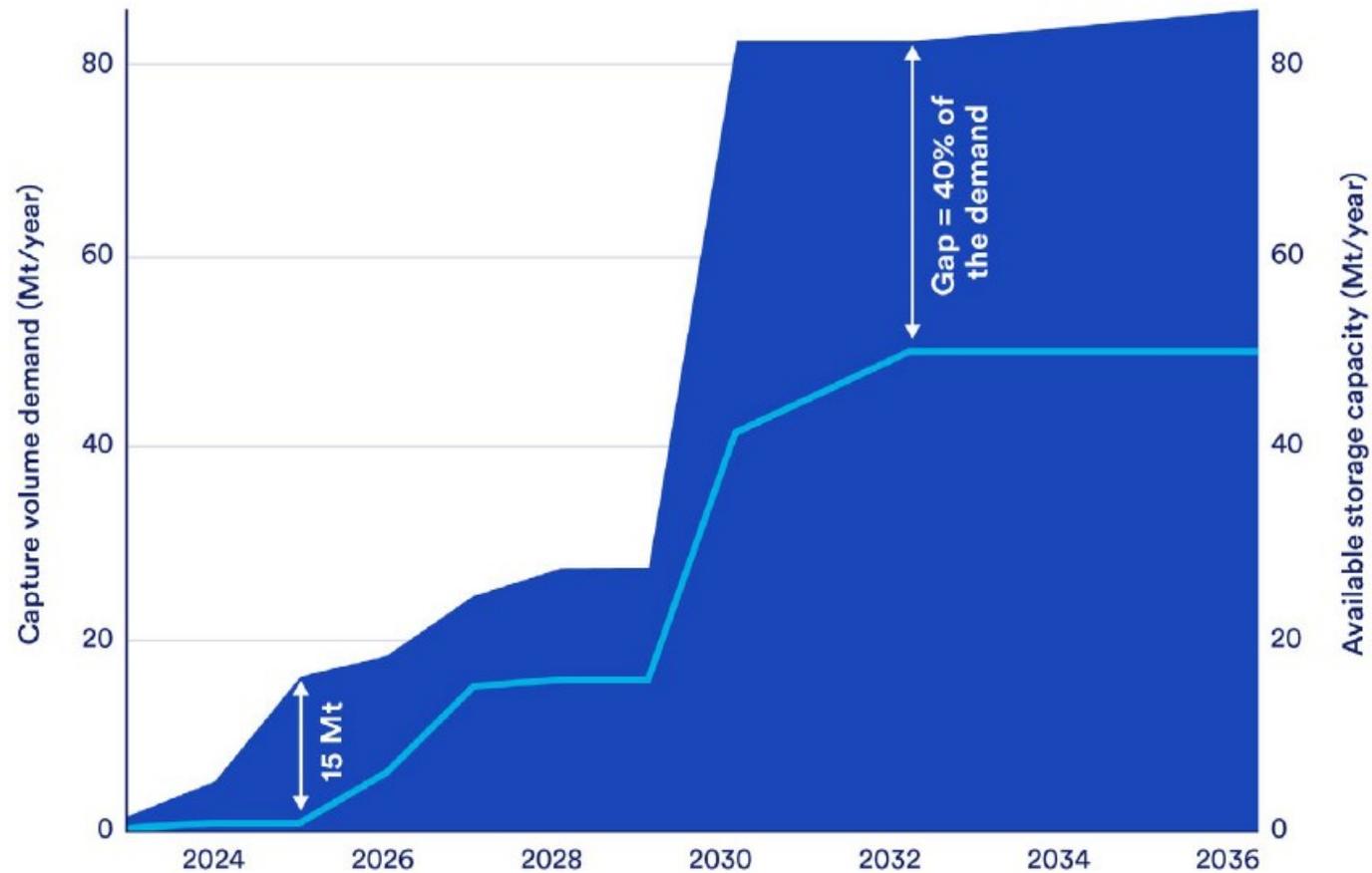
Safe and permanent storage of CO₂

We know what can be potential leakage paths in a reservoir, and we know what will happen to stored CO₂ over time



The different trapping mechanisms that immobilise CO₂ underground. Stephanie Flude, CC BY

The widening gap between volumes of CO₂ captured and available storage sites



Carbon Limits (2022) The gap between carbon storage development and capture demand.
Clean Air Task Force (Jan 2022)

Why isn't the CCUS flying?

- We have the experience
- We have the knowledge
- We have a huge storage potential
- We have the instruments
- The technology is ready

Can it be about:

- setting clear political goals
- transporting CO₂ across national borders
- removing potential regulatory barriers and
- developing new sustainable business models

Easy?

Let's talk about it and cooperate.

Thank you for your attention

