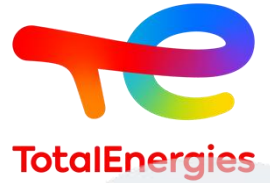
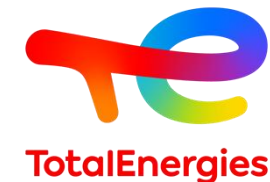


Sådan bliver Danmark europæisk centrum for lagring af CO₂



CCUS Alliance | 11. dec. 2023
Morten Gjetting Stage
Head of New Business
& Chairman for INNO-CCUS

TotalEnergies er en global multienergivirksomhed



Vores virksomhed



TotalEnergies producerer og markedsfører følgende energiformer:

- Olie og biobrændstoffer
- Naturgas og grønne gasser
- Vedvarende energi og elektricitet



Vores ambitioner og mål

- At udvikle energi, der er stadig billigere, renere samt mere pålidelig og tilgængelig for så mange mennesker som muligt
- Net zero by 2050 – sammen med samfundet

Nøgletal

- Flere end 100.000 ansatte, 1.200 af dem i Danmark
- Aktiv i mere end 130 lande med en omsætning på 263,3 mia. USD i 2022
- Ejes af 1.300.000 aktionærer, hvoraf medarbejdere ejer 7 % af aktierne

TotalEnergies er fast forankret i Danmark



R&D Learning Centre

- Danish Offshore Technology Center (DTU Lyngby)
- DTEC / Center for Clean Energy (DTU Risø Campus)
- Mærsk McKinney Møller Center for Zero Carbon Shipping

Renewables

CCS

Technical Centre
Conventional Offshore



1.200
ansatte i
Danmark



85%
af Danmarks
olieproduktion*

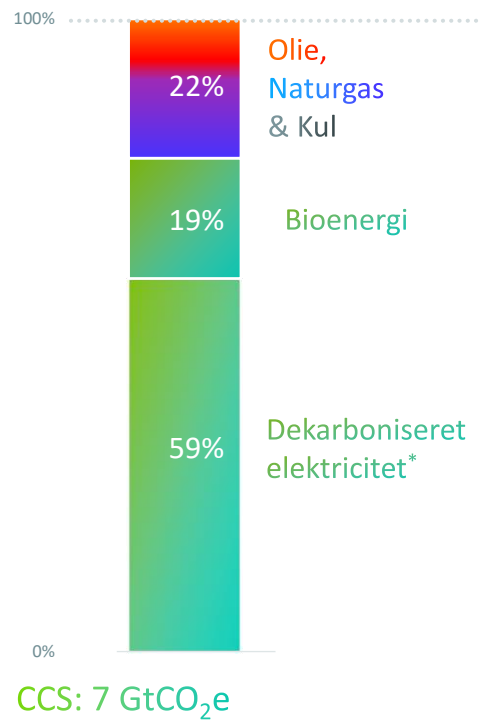


97%
af Danmarks
gasproduktion*

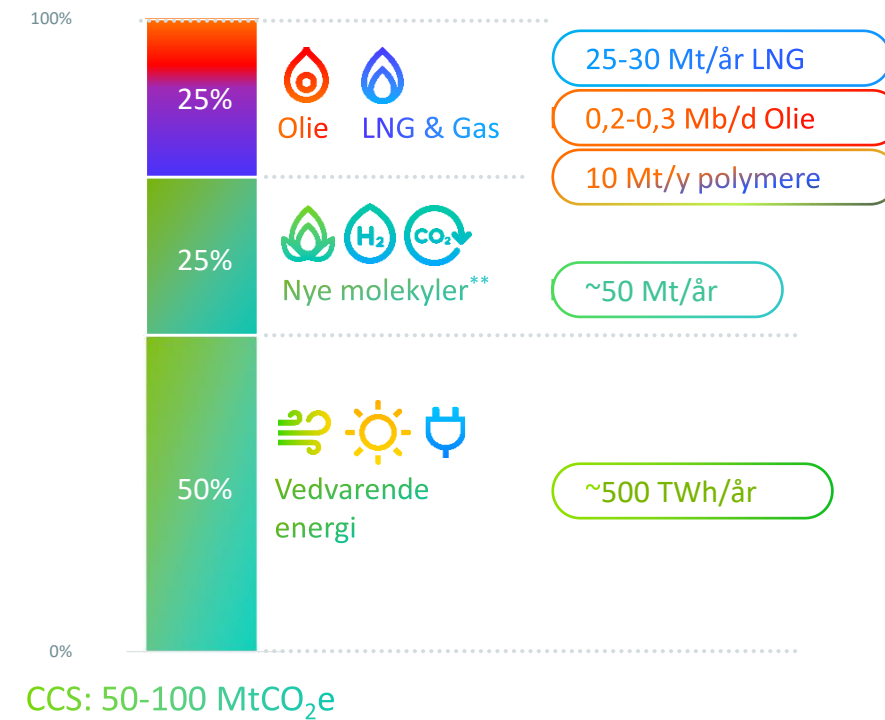
Net-zero energimix i 2050



IEA NZE Energimix i 2050



TotalEnergies' 2050 Energimix
(Produktion og salg)



* Hydro, sol, vind and kernekraft

** Biofuels, biogas, brint og e-fuels/e-gas

En investeringspolitik, der understøtter omstillingen frem mod 2030

2023 CAPEX



Vedvarende energi

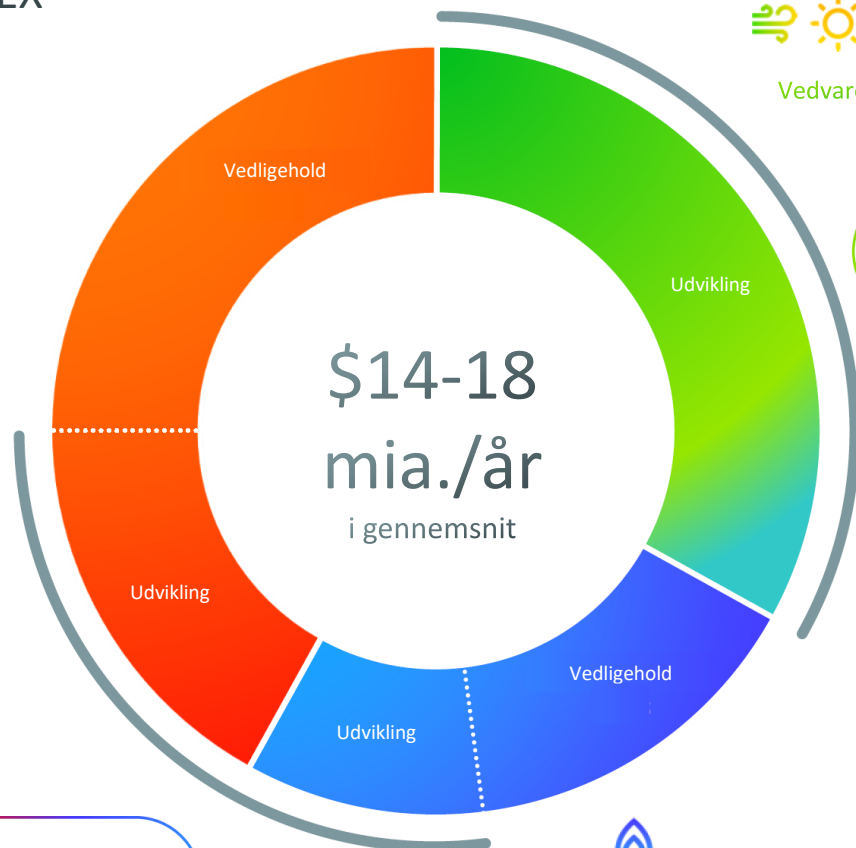
\$5 mia.

Lav-emissionsenergi



Lav-emissionsmolekyler

 LNG & Gas

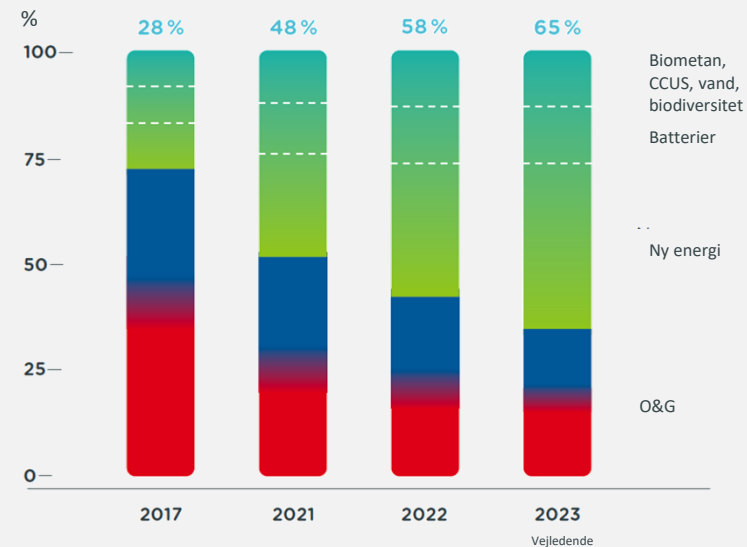


\$14-18 mia./år
i gennemsnit

\$4,5 mia.

Nye projekter

Fordeling i R&D-budget



DTEC - Clean Energy Facilities 2023

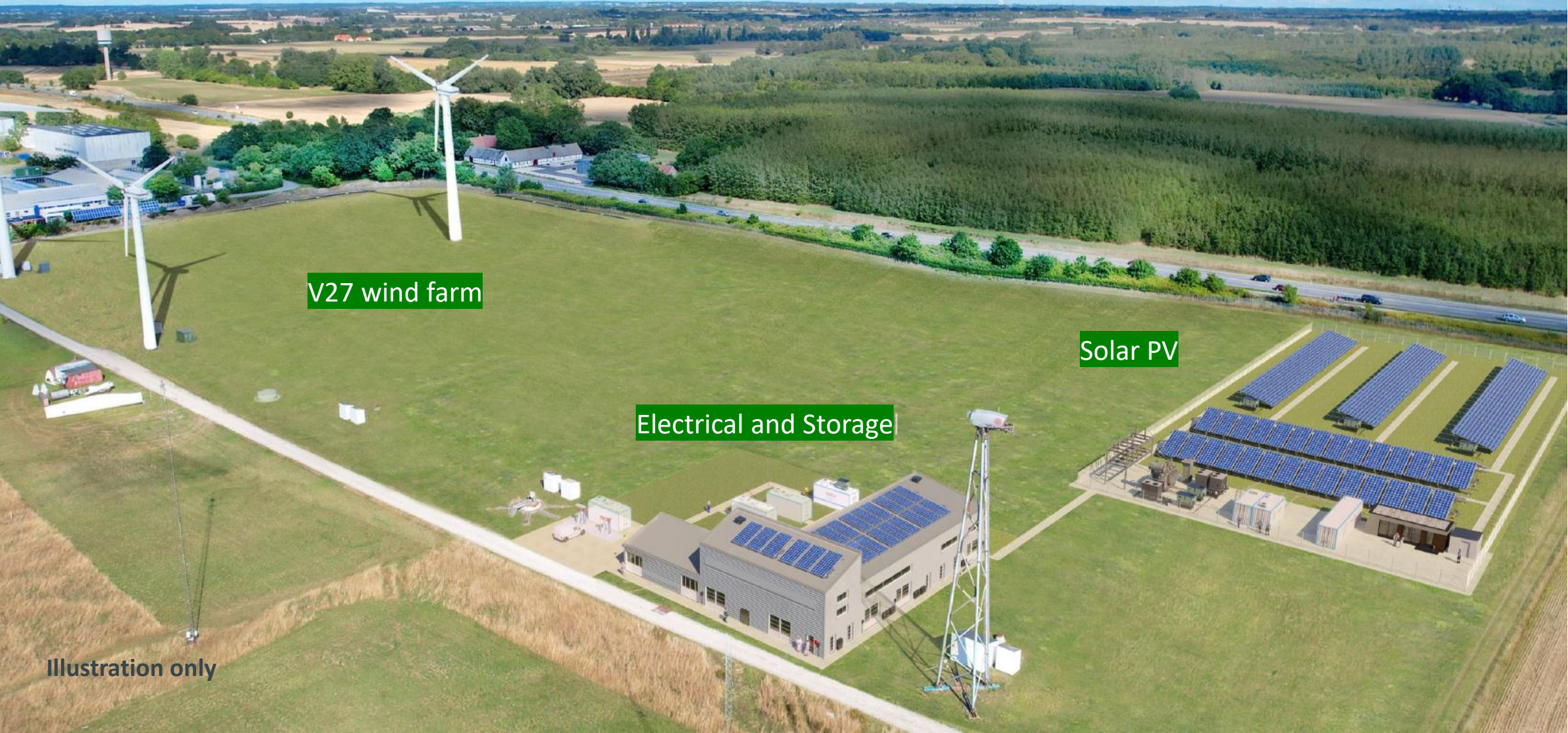


V27 wind farm

Solar PV

Electrical and Storage

Illustration only



Projekt Bifrost's første video er live



CCS-skalering kræver erfaring

- det har TotalEnergies

Snøhvit, NO

Northern Lights, NO

Luna, NO

Sleipner, NO

Bifrost, DK

Northern Endurance Partnership, UK

Aramis, NL

Lacq, FR

Snøhvit

Northern
Lights

Luna

Sleipner

Bifrost

Northern
Endurance

Aramis

Lacq
(Onshore)

Første
injektion

2008

2024

TBC

1996

2030

2027

2028

2007

CO₂ (ton)

≈1 mio./år

5 mio./år
(fase 2)

TBC

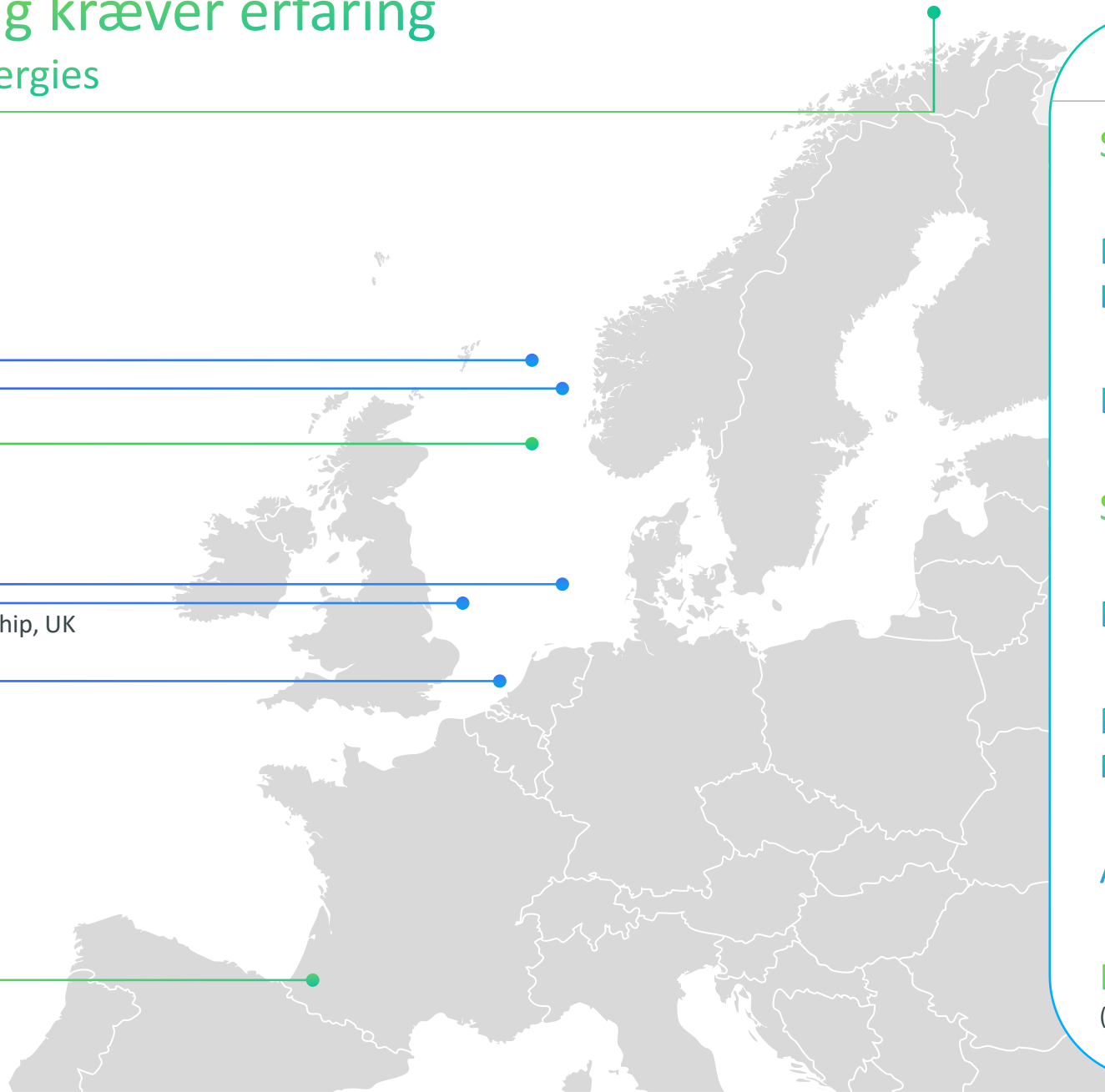
≈800k/år
(1996-2016)

5 mio./år
(2030)

10 mio./år
(fase 2)

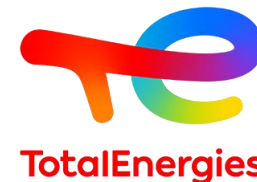
>5 mio./år
(fase 1)

51.000
(2010-2013)



	Første injektion	CO ₂ (ton)
Snøhvit	2008	≈1 mio./år
Northern Lights	2024	5 mio./år (fase 2)
Luna	TBC	TBC
Sleipner	1996	≈800k/år (1996-2016)
Bifrost	2030	5 mio./år (2030)
Northern Endurance	2027	10 mio./år (fase 2)
Aramis	2028	>5 mio./år (fase 1)
Lacq (Onshore)	2007	51.000 (2010-2013)

Projekt Bifrost giver nyt liv til gamle gasrørledninger



Genanvendelse af eksisterende rørinfrastruktur er et centralt element i at optimere omkostninger og reducere klimaaftrykket.



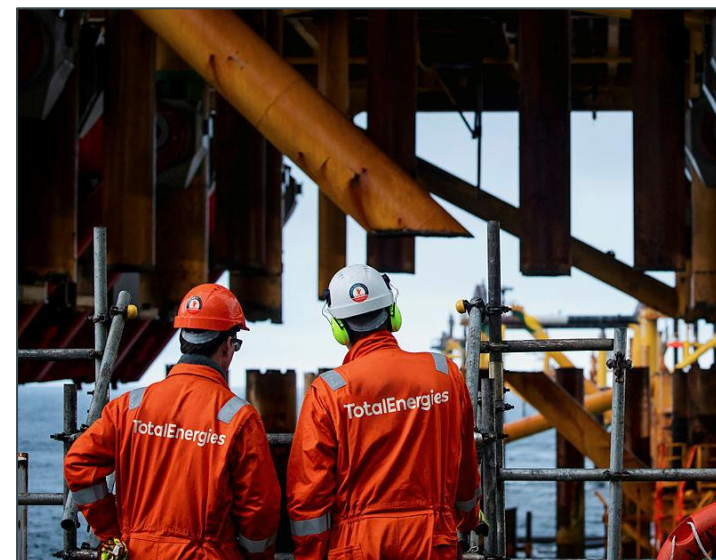
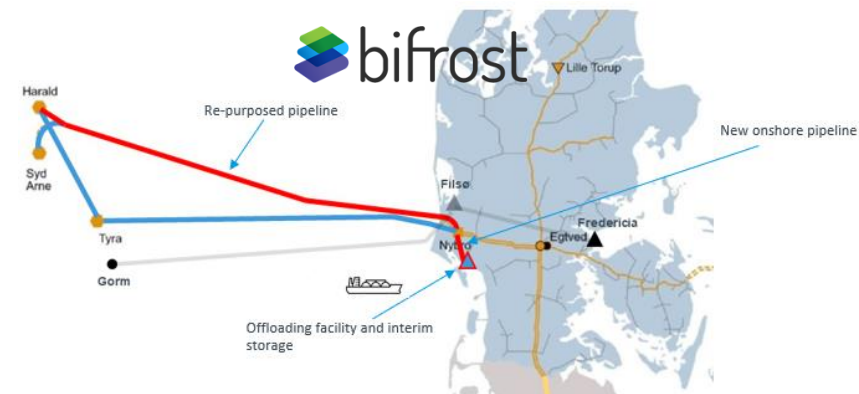
Forundersøgelser indikerer, at eksisterende gasrørledninger egner sig til CO₂ transport



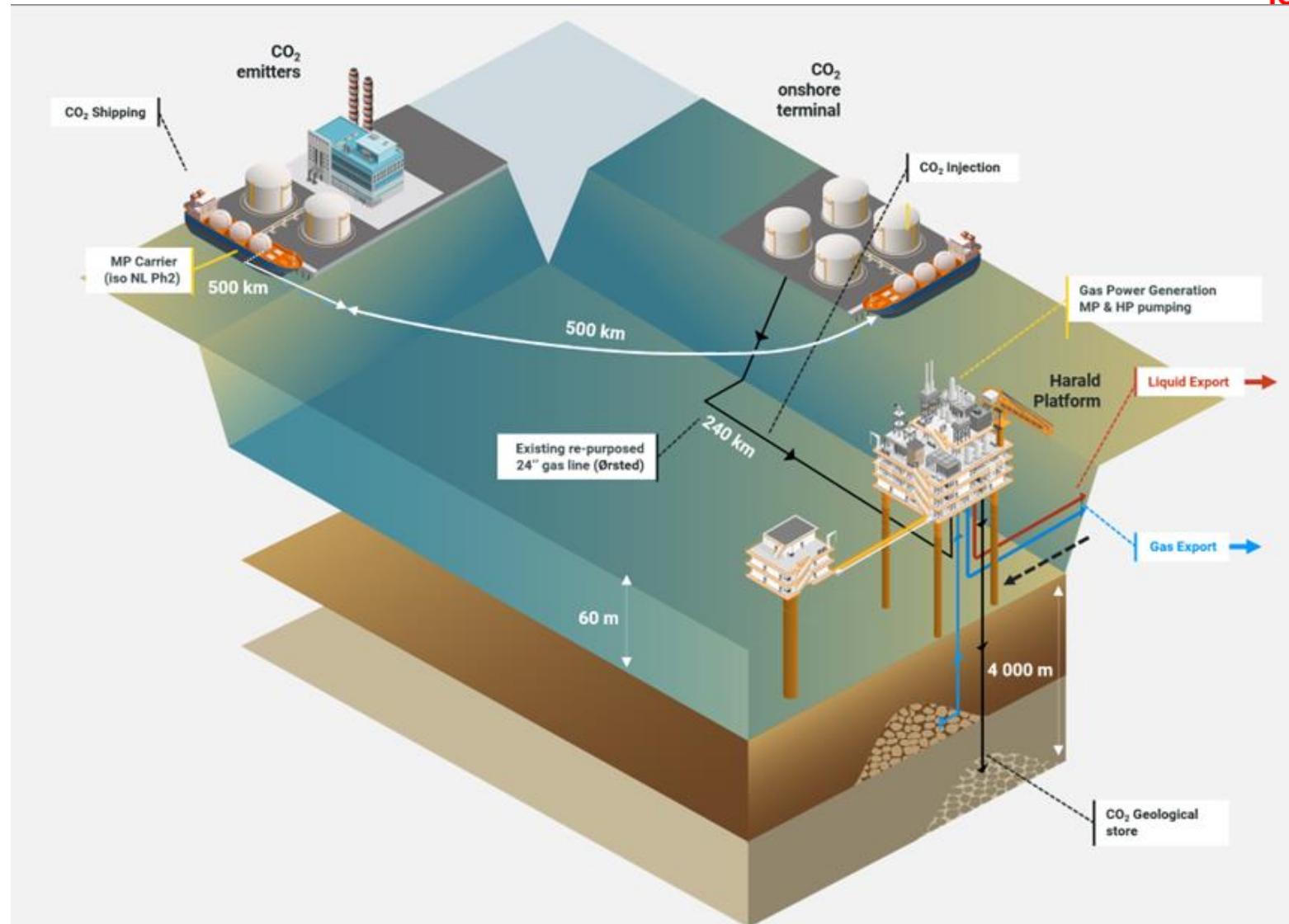
CO₂'en arter sig som væske, da den transporteres under højt tryk (dense phase)



Eksempel på kapacitet:
(from the operating envelope of the 24" Harald to Nybro pipeline);
~12 Mtpa at 80 bar



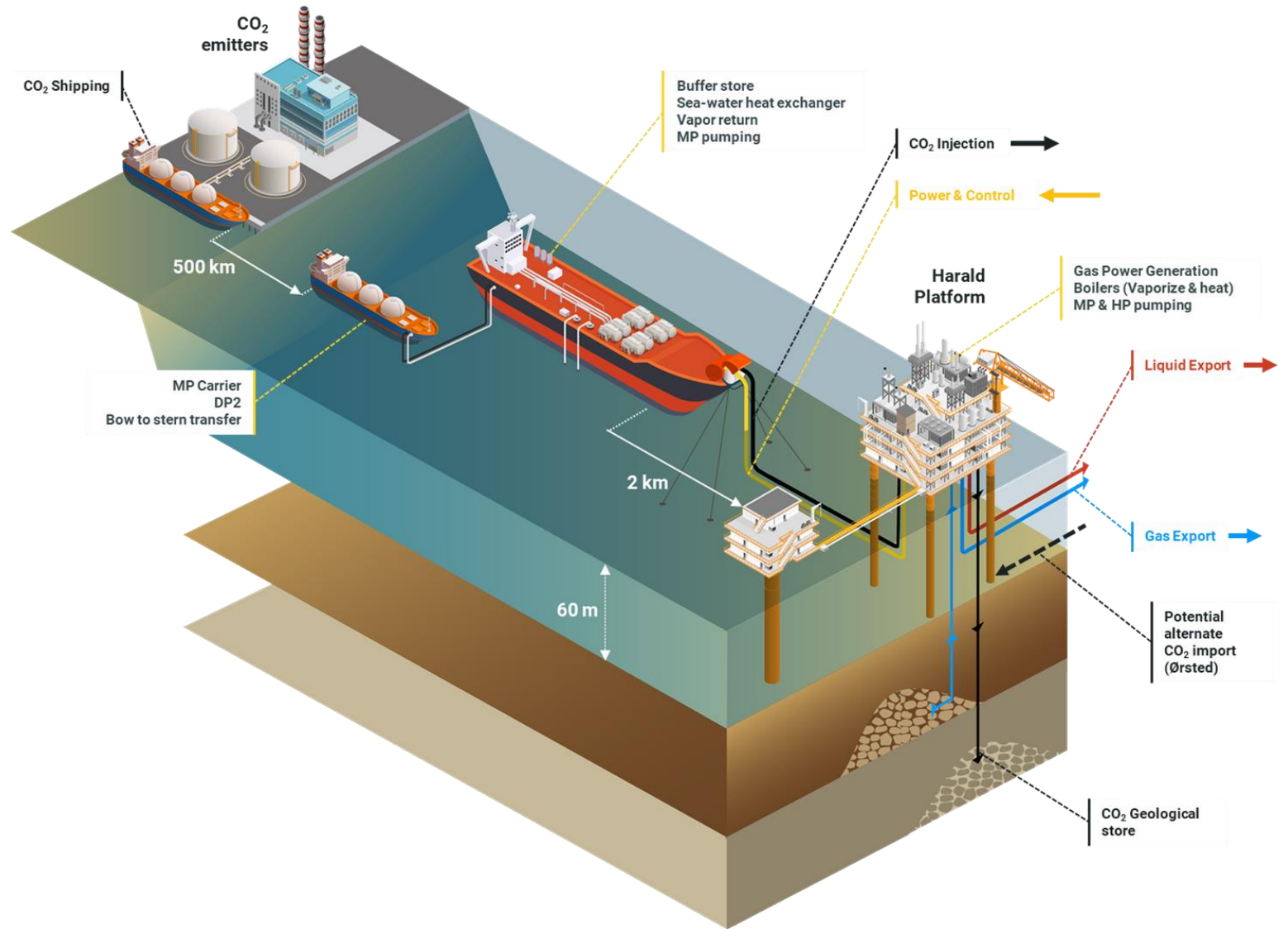
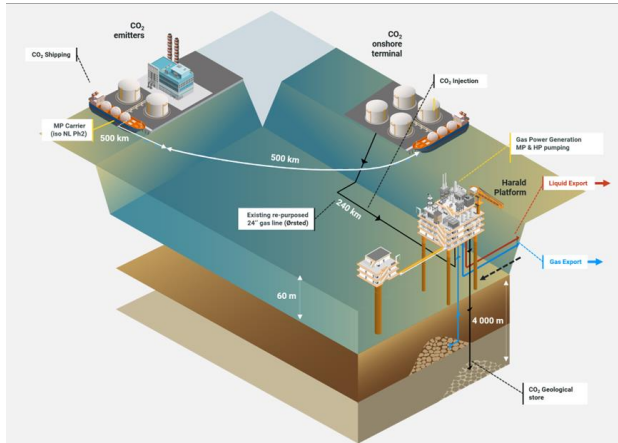
Projekt Bifrost – første skridt mod storskala CO₂-lagring



EUDP: 2022-2024



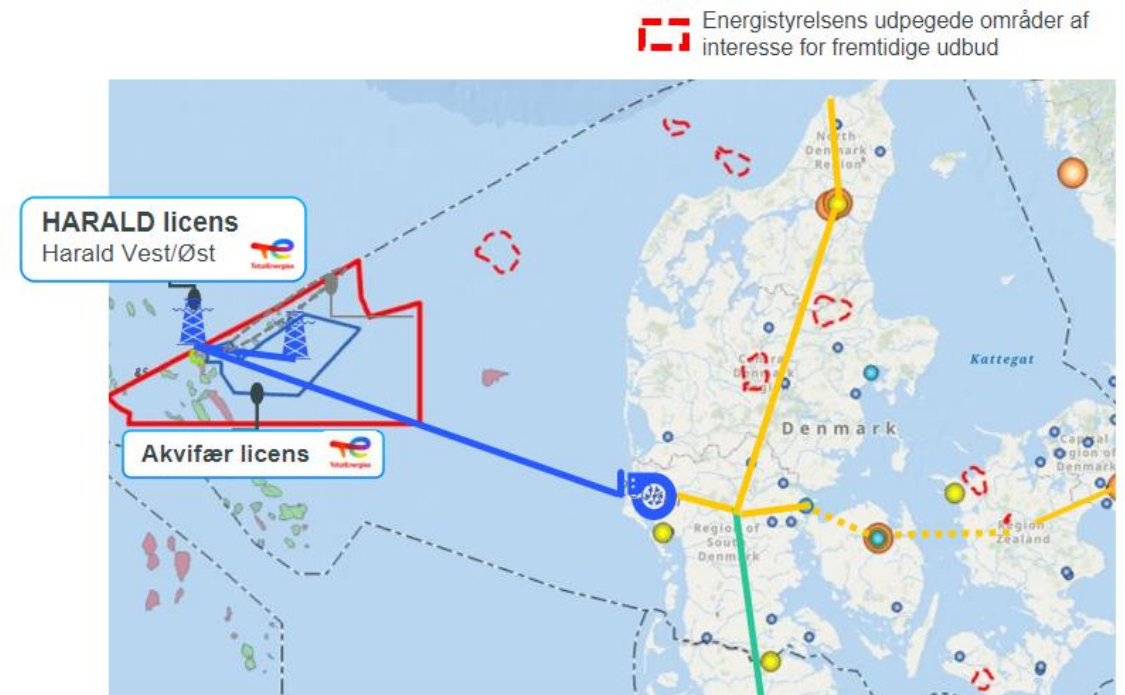
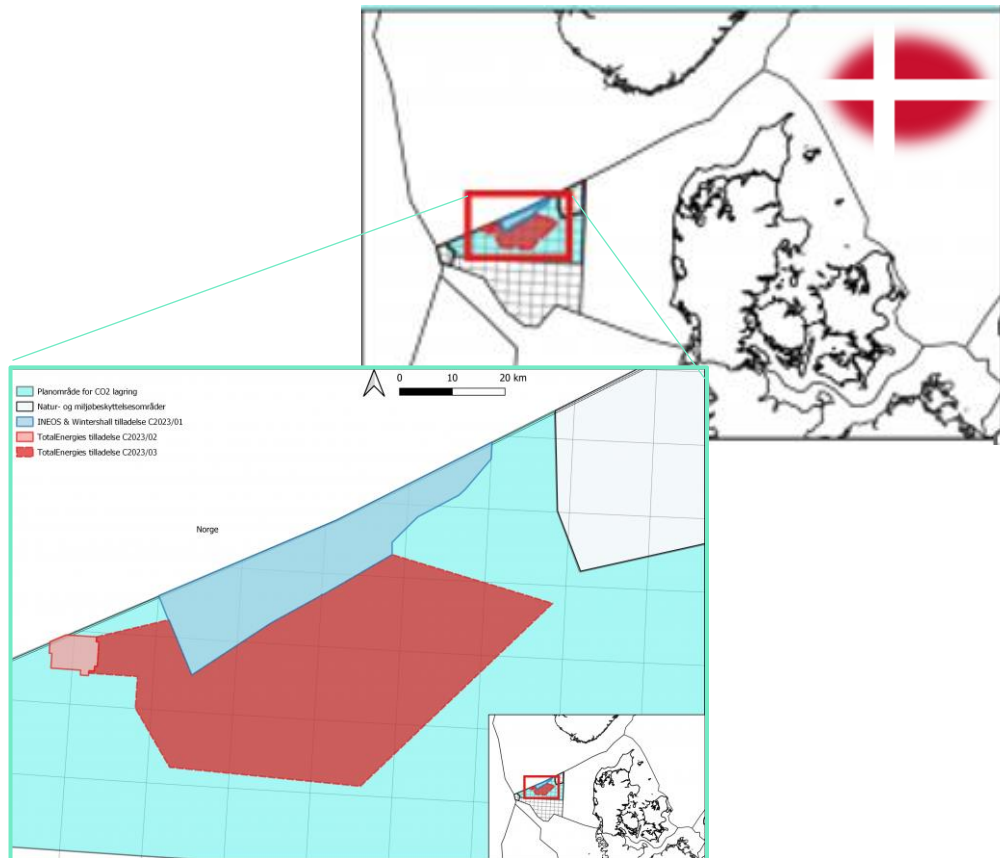
Projekt Bifrost – første skridt mod storskala CO2-lagring (offshore offloading)



EUDP: 2022-2024



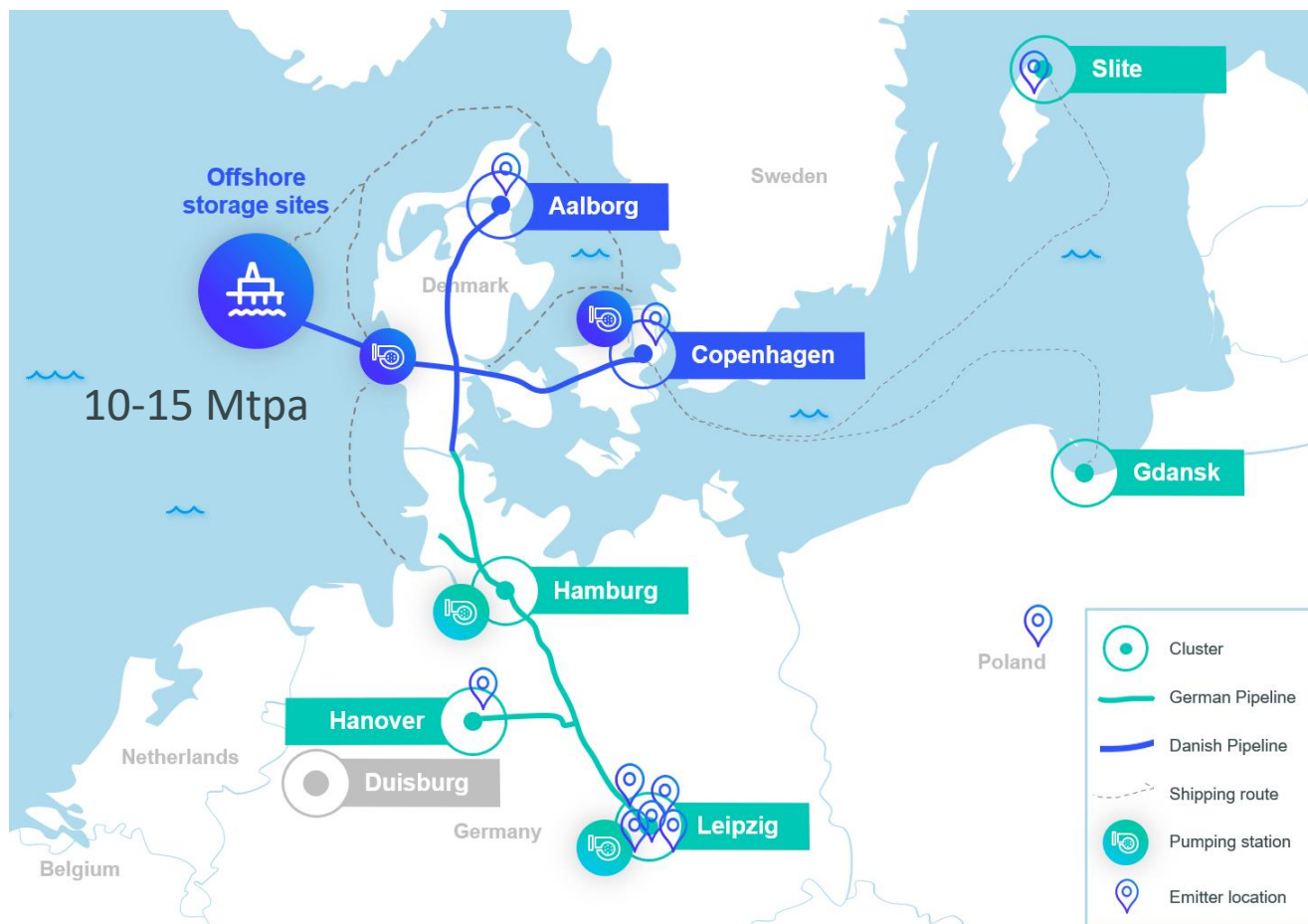
Projekt Bifrost – første skridt mod storskala CO₂-lagring



PCI - Vision for CO2-infrastruktur

27. November 2023:

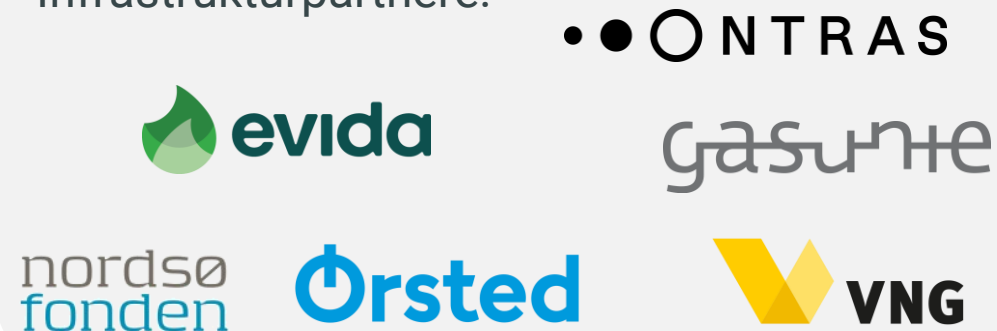
Ved CCS-Forum i Aalborg blev Bifrost tildelt PCI-status



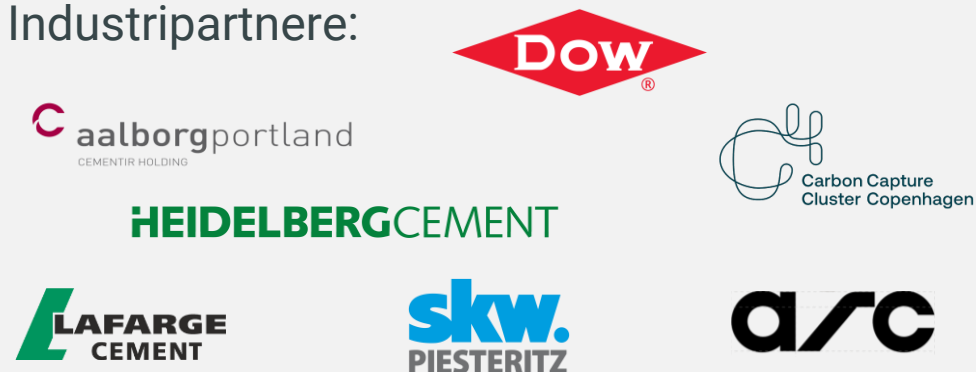
Coordinator:



Infrastrukturpartnere:



Industripartnere:



Centrale prioriteter på vej mod Danmark som europæisk CO₂-hub



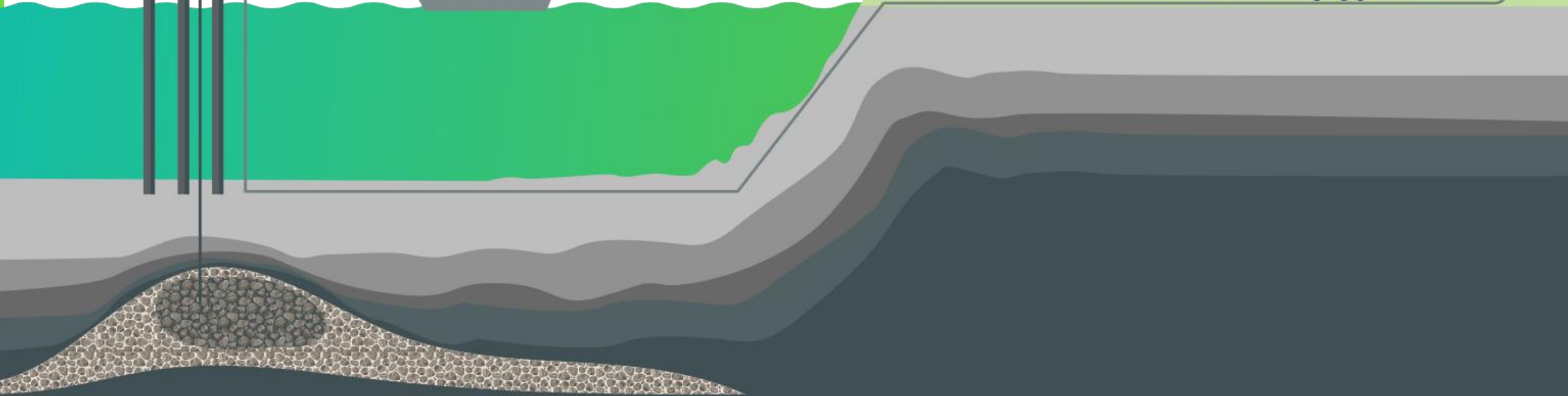
> Ligestille værdien af negative og fossile emissioner
- helst på EU-niveau

> Staten tager en aktiv rolle i etablering i tilblivelsen af backbone infra-struktur

> Udbyde flere licenser til lagring

> Sikre fri handel af CO₂ over grænser til offshore-lagring

Q&A



Energy Pioneers

Across the offshore industry



Safety Briefing

Safety is a part of our DNA



Escape Route



Defibrillator



Muster Point



Firefighting
Equipment



Use handrail

Agenda

- 13:00 Welcome and lunch
- 13:15 Semco Maritime strategy
Steen Brødbæk
CEO Semco Maritime
- 13:30 Seismic research and next steps
for CO2 storage in Denmark
Nina Skaarup
Head of Department of Geophysics
- 13:45 Esbjerg's green ambitions
Karsten Rieder
Head of Business Esbjerg
- 14:00 Debate about CCUS opportunities
and job creation
Finn Lauritzen
Axcelfuture
- 14:30 End of meeting

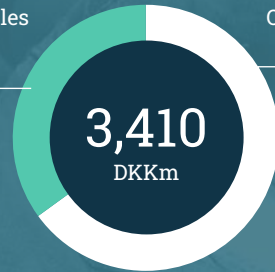
About Semco Maritime



More than 40 years
in the energy sector

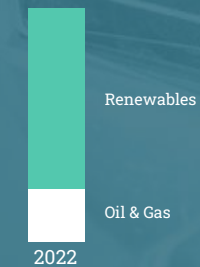
35%
Renewables

65%
Oil & Gas



Revenue

4,430
DKKm



Order book

Health and
safety is our first
priority when
handling projects
and other activities!



Your specialist in engineering,
design, fabrication, installation, service
and maintenance.

2.300+
dedicated people



Energy Pioneers

Across the offshore industry

1980

Our Oil & Gas foundation

In the early 1980s we became an important supplier to the oil majors and rig operators in the North Sea. Everything we have done since then is based on this foundation.



2002

First movers in offshore wind

Our offshore wind adventure starts with our role in the world's first large-scale commercial wind farm.



2018

Let's innovate and co-create!

A dedicated innovation team make, harvest and develop ideas, co-create with our customers and implement new technologies.



2019

First substation order in the US

We celebrate our first substation order in the US: Vineyard Wind. Quickly followed by Mayflower, Virginia and Ocean Wind.



2020

Culzean and Tyra Future

Our innovative approach, experienced staff and world-class project management skills enable us to succeed with two complex hook-up & commissioning projects.



2021

Taiwanese offshore wind

The order for 2 substations for Hai Long 2 and 3 marks our entry into Taiwanese offshore wind.



2021

Carbon capture and storage

Drawing on our oil & gas competencies and experience we provide innovative solutions for storage and transportation of CO₂ to depleted oil reservoirs in the North Sea.



2023

A greener future in sight

We are aiming for carbon neutrality for scope 1 and 2. Revenue split 50/50 between Oil & Gas and Renewables.





Sustainable growth

A new Sustainable Growth strategy lays the foundation for Semco Maritime to more than double revenue and earnings by 2027 by seizing opportunities in the energy markets and further shifting the balance toward the Renewables business.



Project Greensand

“First-ever” design and installation of the pumping system that enabled transportation of liquid CO₂ from containers via the Nini West platform and 1,800 metres below the sea, where the CO₂ will be permanently stored in a sandstone reservoir.



Project MOSS

Contract with HYME Energy for long-duration storage of excess energy from e.g. solar- and wind farms.
Test facility with thermal energy storage. In the future, it may be used to manufacture process steam generated by green power
Exp. commissioning feb. 2024.
6 months’ test period



Solid Oxide Electrolyzer Cell (SOEC) Factory

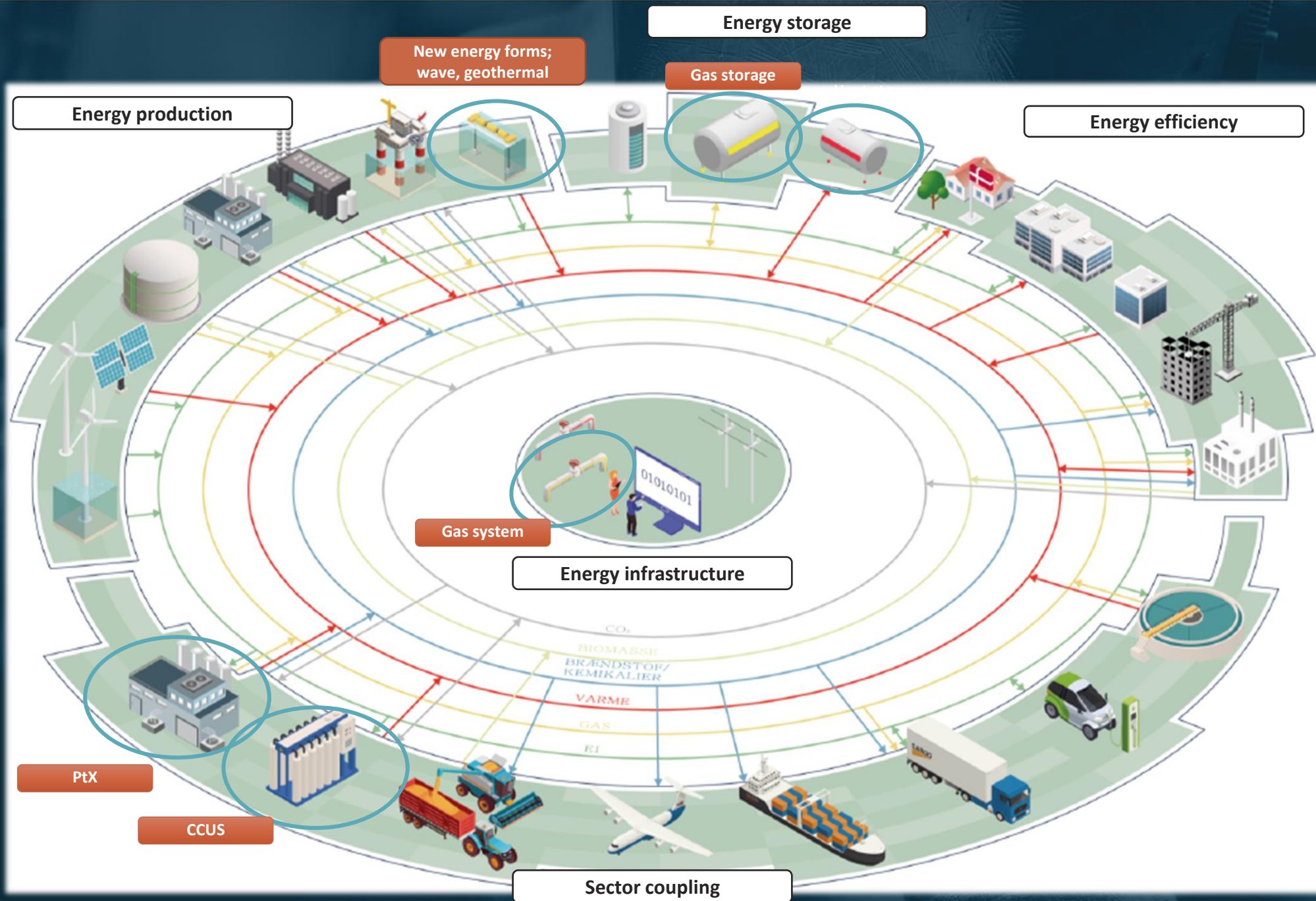
With a unique offshore and onshore experience, we are equipped to also support the need for energy storage and power-to-X technologies.

Contract with Topsoe for the supply of mechanical and electrical installation on new electrolysis factory.


**Sustainable growth, strategic partnerships
and the development of new technologies ...**

EPC integrator for emerging technology within the new energy infrastructure

The connected energy system of the future is characterized by energy production, energy storage, energy infrastructure and energy efficiency as well as sector coupling with focus on PtX and CCUS



- Electricity
- Gas
- Heat
- Fuels/Chemicals
- Biomass
- CO2





Semco Maritime is part
of the consortium behind
Project Greensand

We are committed to ensuring a greener future while making a positive difference for people and planet

Safe and responsible business

With a main focus on health and safety!



Decarbonisation

Aiming at carbon neutrality for scope 1 and 2 in 2023, neutrality for own operations in 2030 and for scope 1-3 in 2050

Environmental protection

Focusing on water, waste, pollution and the use of natural resources



ESBJERG - THE DATA AND ENERGY HUB OF NORTHERN EUROPE

CCUS Alliancen

Status på arbejdet med de seismiske undersøgelser og næste skridt for CO2 lagring i Danmark

Nina Skaarup, Statsgeolog



GEUS' deltagelse i CCS-projekter, 1996 - 2023

30+ Forskningsprojekter, stor spændvidde i partnere/konsortier

- Undergrundskortlægning
- Lagrings kapacitets estimering
- Reservoir karakterisering og påvirkninger fra operationer
- Monitoring og afværgeprocedurer, risikoklassificering
- Borgerorientering og folkelig opbakning
- Post injektion og monitorering

INNO-CCUS projects (2022-2026)

CCUS/ZEN (2022-2025)

SHARP (2021-2024)

ConcenCUS (2021-2025)

SECURE (2018-2021)

CONvert (2017-2019)

ENOS (2016-2020)

Danish Hydrocarbon Research and

Technology Centre (2014-2024)

Tops (2013-2017)

NORDICCS (2011-2015)

CO₂ Storage Screening – South Denmark (2013)

BIGCCS (2010-2016)

CO₂StoP (2012-2013)

CGS Europe (2010-2013)

SiteChar (2011-2013)

CO₂Care (2011-2013)

OD North Sea (2009-2012)

Skagerrak (2010-2011)

ECCO (2009-2011)

Vedsted Structure (2007-2011)

EOR-HTF (2007-2010)

CO₂SINK (2006-2010)

CO₂ReMoVe (2006-2011)

EU GeoCapacity (2006-2009)

DYNAMIS (2006-2009)

COACH (2006-2009)

ULCOS (2005-2006)

CO₂Store (2003-2006)

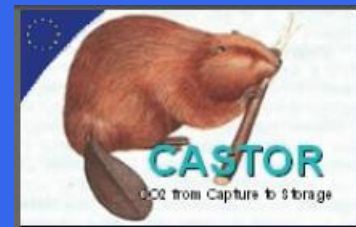
CASTOR (2003-2006)

Weyburn (2000-2004)

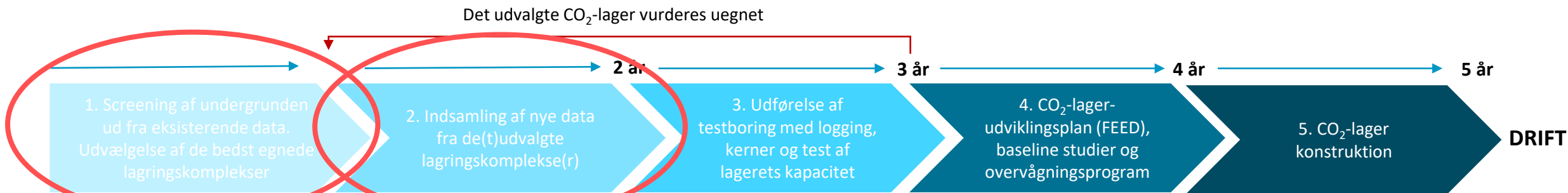
CCP (2000-2004)

GESTCO (1999-2003)

SACS (1996-2002)



Faser for udviklingen af et geologisk undergrunds CO₂-lager udarbejdet af GEUS under CCUS2020-22 projektet



Tolkning af seismik data
Kortlægning af lager og segl
Lagrings kapacitetsberegninger
Borekernebeskrivelser
Borehulslog tolkning
Geologisk model (vs.0)
Simulering af CO₂ injektion (vs.0)
Analogstudier

Indsamling af nye seismiske data
Tolkning af nye seismik
Sejlkapacitetsvurderinger
Geologisk model (vs.1)
3D-model af lagringskomplekset (vs.1)
Simulering af CO₂ injektion (vs.1)
Risikofaktorer

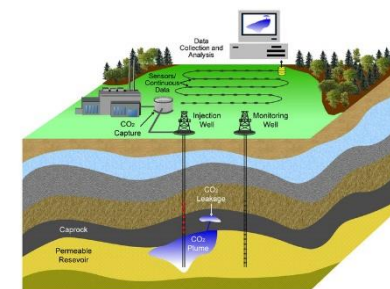
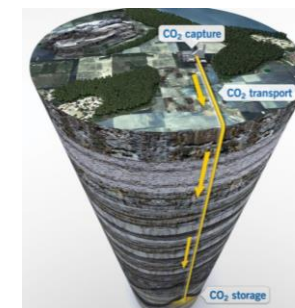
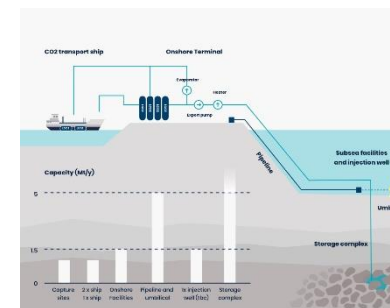
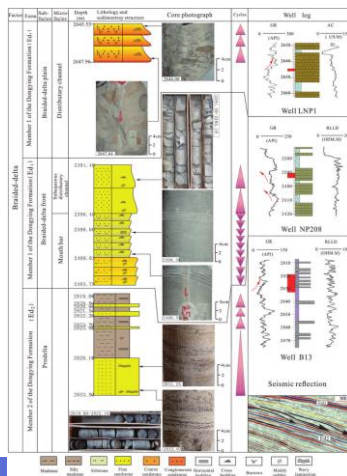
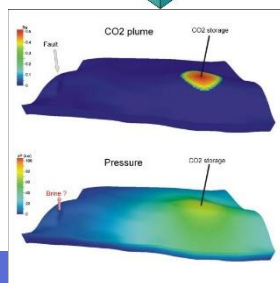
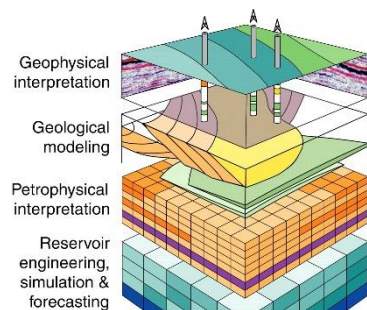
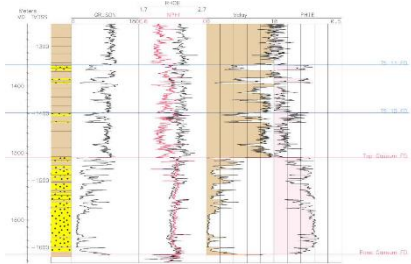
Nye borekernebeskrivelser
Nye logtolkninger
Seglkapacitetsanalyser
Analyser af reservoirgenskaber
Injektionstest
Risikofaktorer
3D-model af lagringskomplekset (vs.2)
Simulering af CO₂ injektion (vs.2)

Fastlæggelse af koncept
3D-model af lagringskomplekset (vs.3)
Simulering af CO₂ injektion (vs.3)
Usikkerheds-analyse
Baselinemålinger
Fastlæggelse af overvågningsprogram

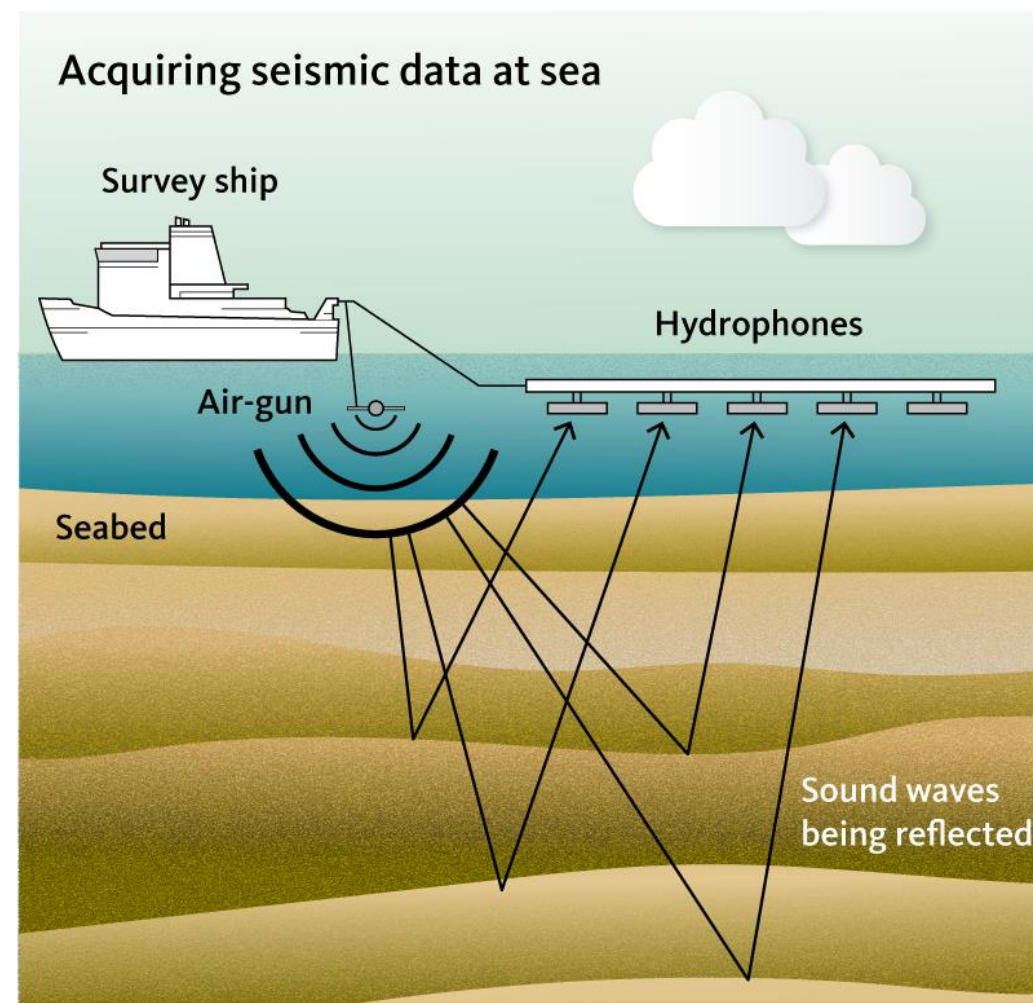
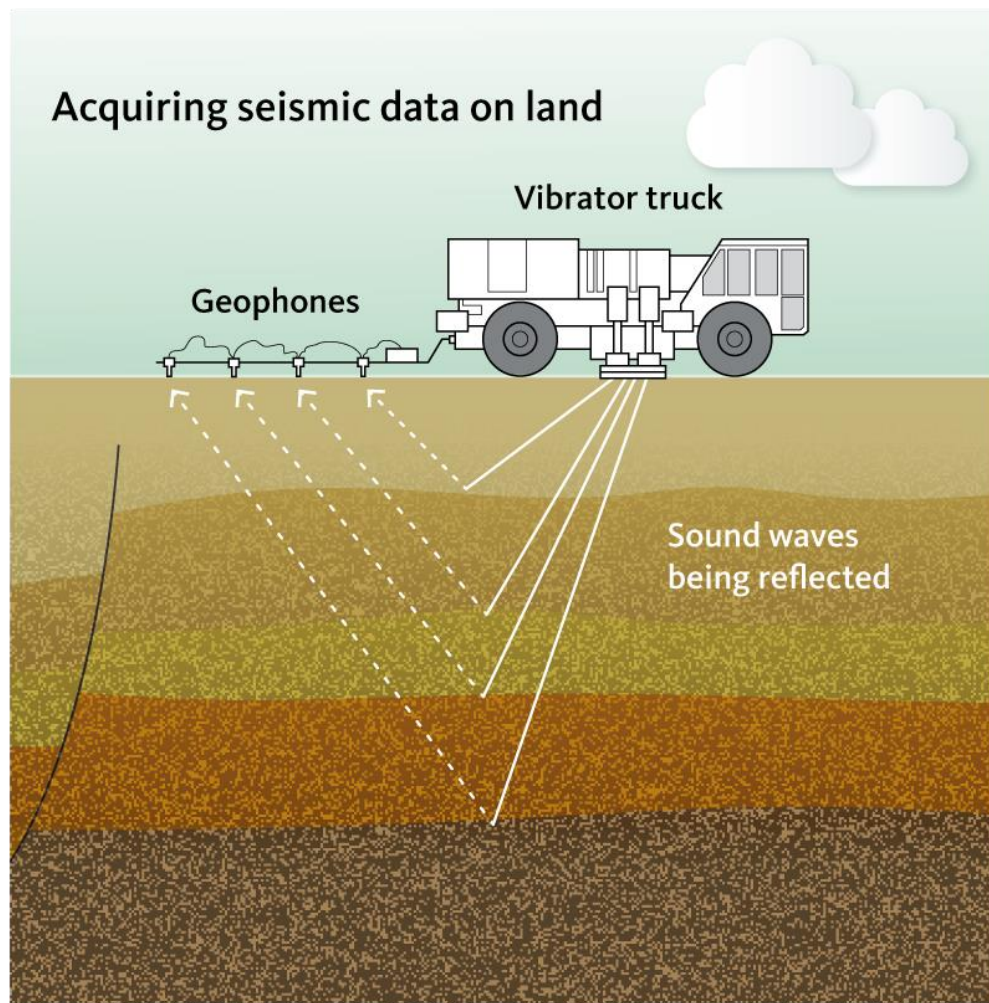
Etablering af injektionsboring
Etablering af aflastningsboringer
Overflade anlæg
Etablering af overvågning/monitoring



Stenlille-1



Seismisk indsamling



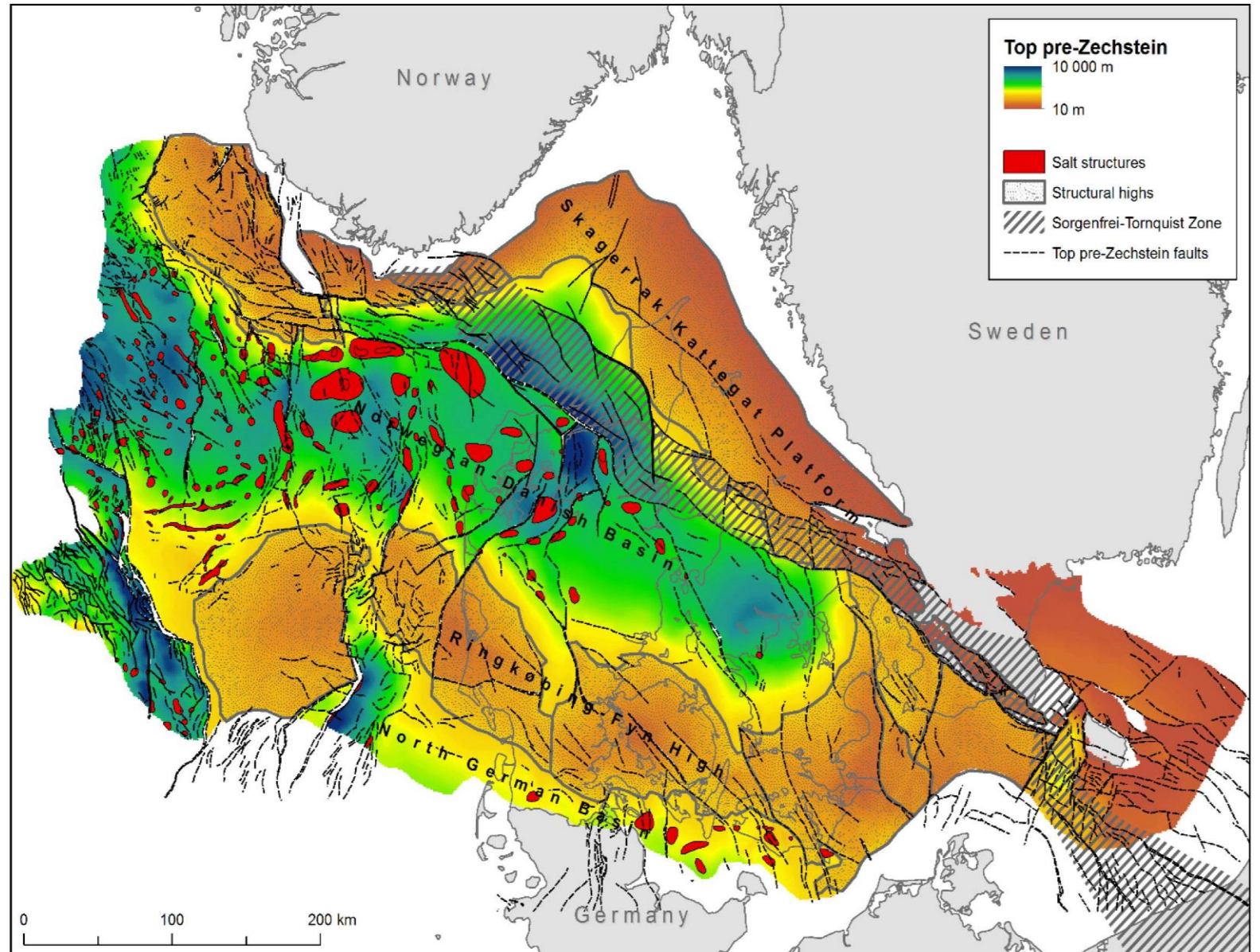
1 CO₂ indfanges ved at filtrere røggassen fra CO₂-kilder som industri eller energiproduktion

2 Gassen komprimeres og transporteres via en rørledning, lastbil eller skib til en egnet geologisk lagringsstruktur

3 CO₂ pumpes via dybe boreriger ned i reservoiret i lagringsstrukturen, som gradvist fyldes op



Geologi



(modified from Vejbæk & Britze (1984))

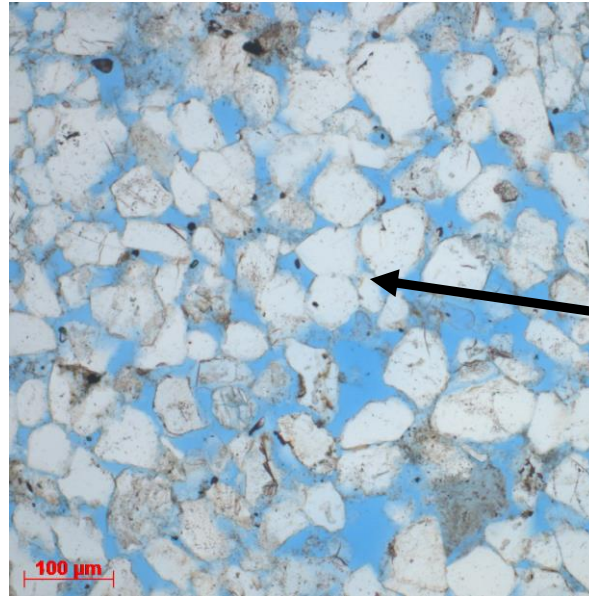
Hvilke geologiske forhold leder vi efter?

Sandsten med gode hulrum mellem sandkornene og et overliggende tæt segl

Løst sand

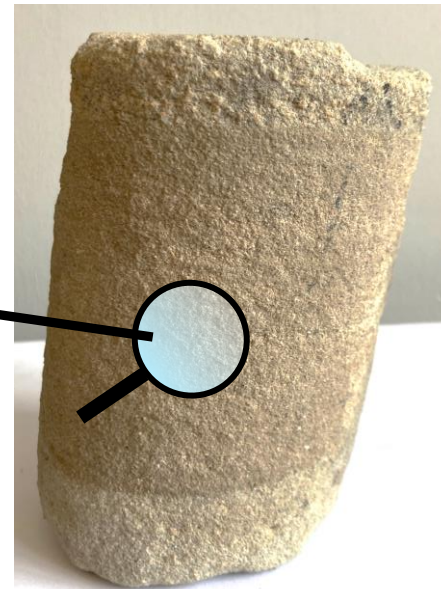


Sandsten (grå/hvid) og porerum (blå)



20%–25% porerum mellem sandkorn

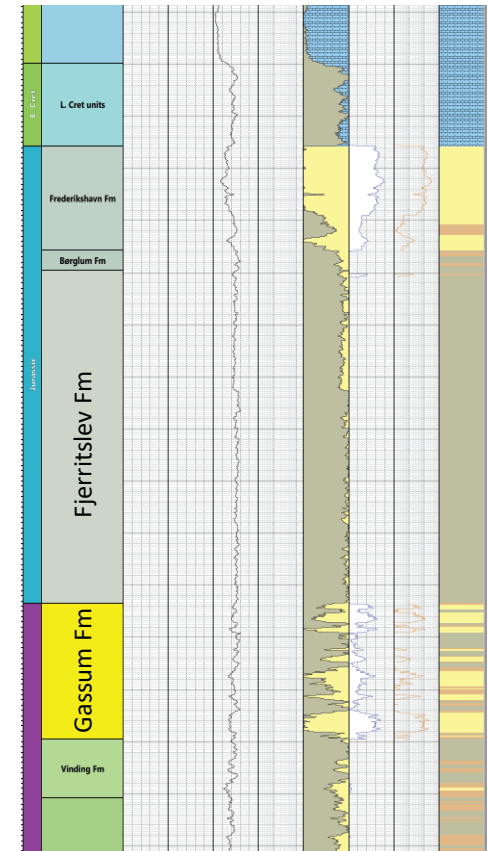
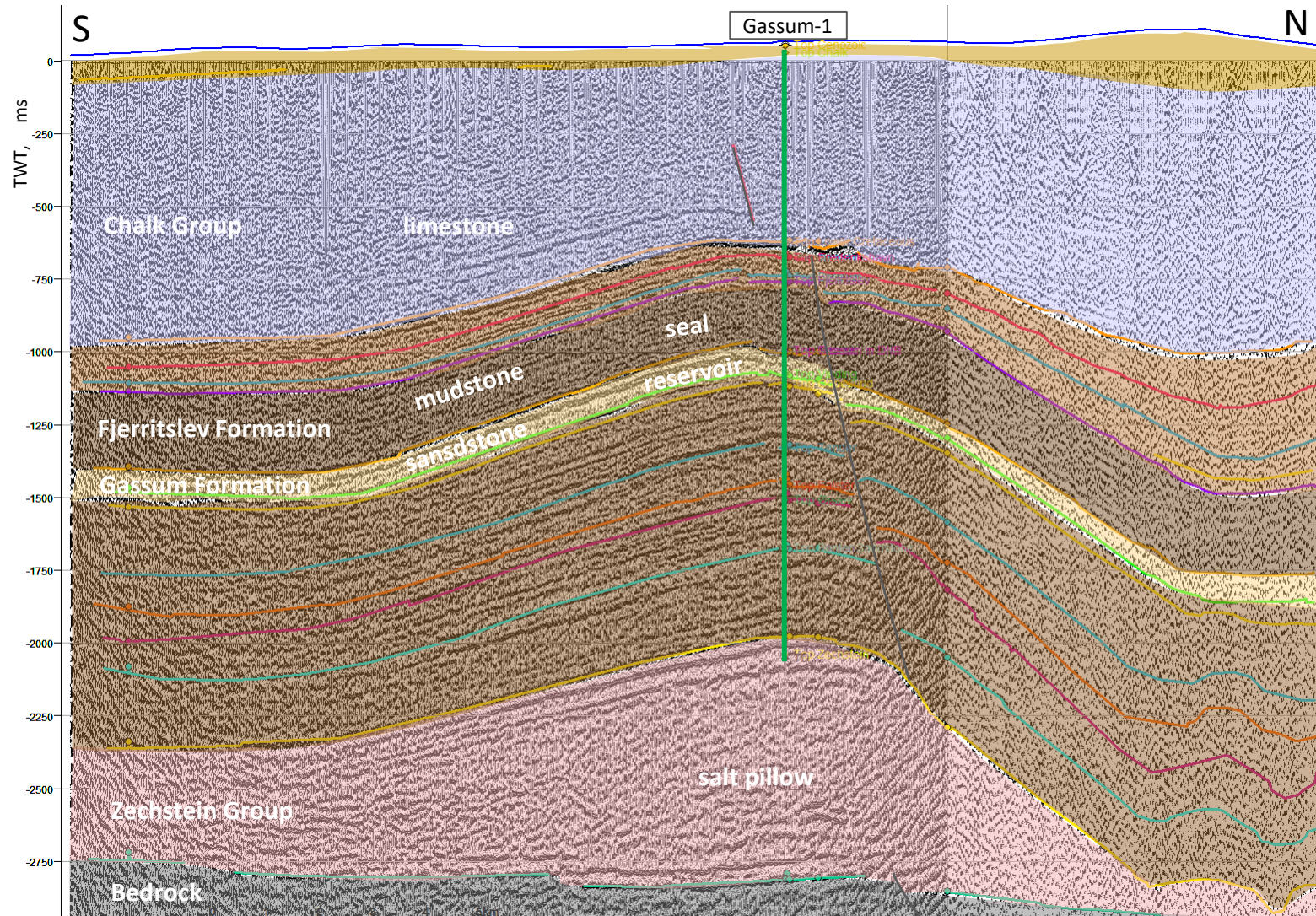
Sandsten med porerum



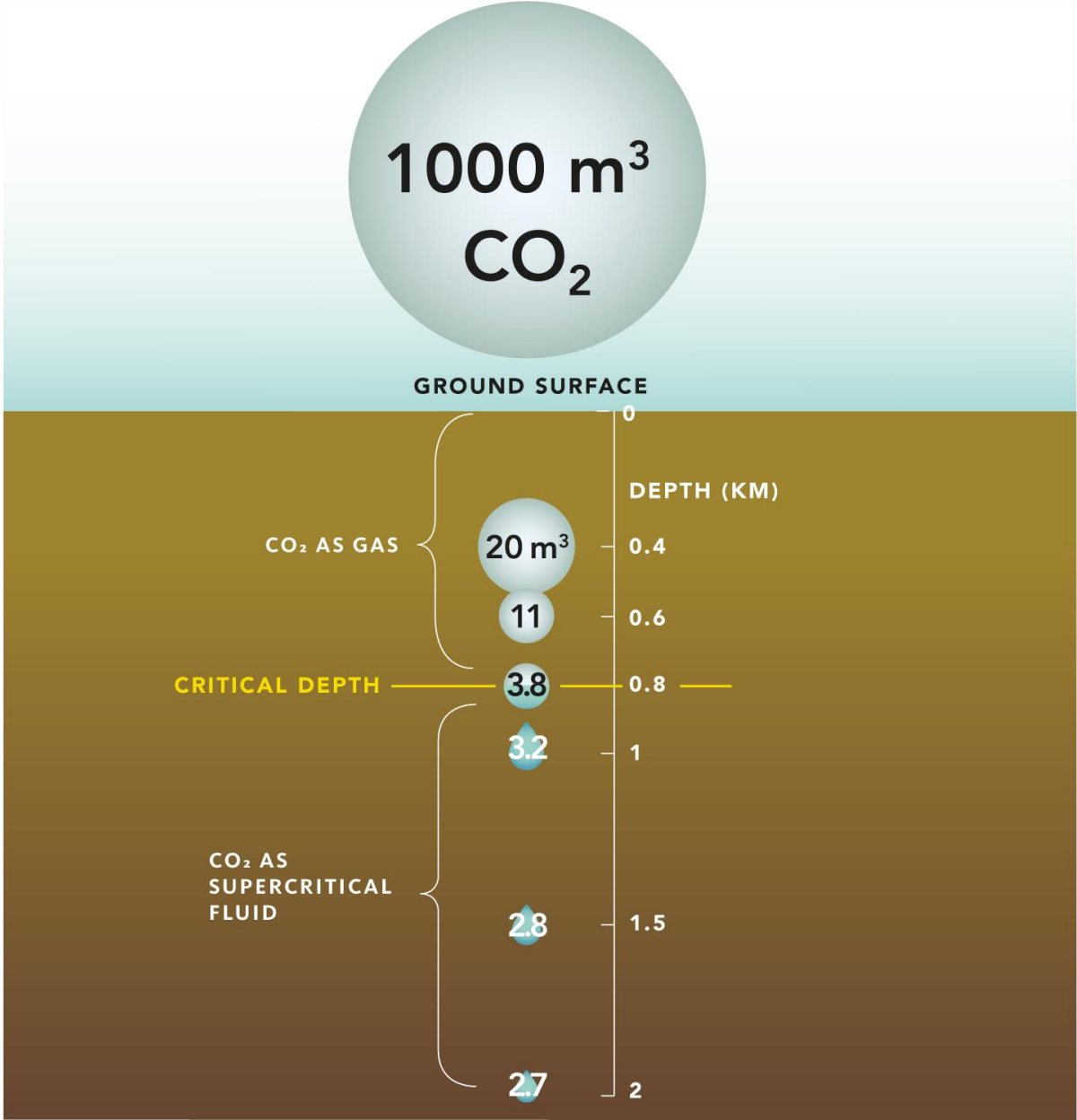
Lersten – tæt segl



Geologi



Dybdekriterie



Dataindsamling

Stenlille – februar 2022

Havnsø – august-oktober 2022

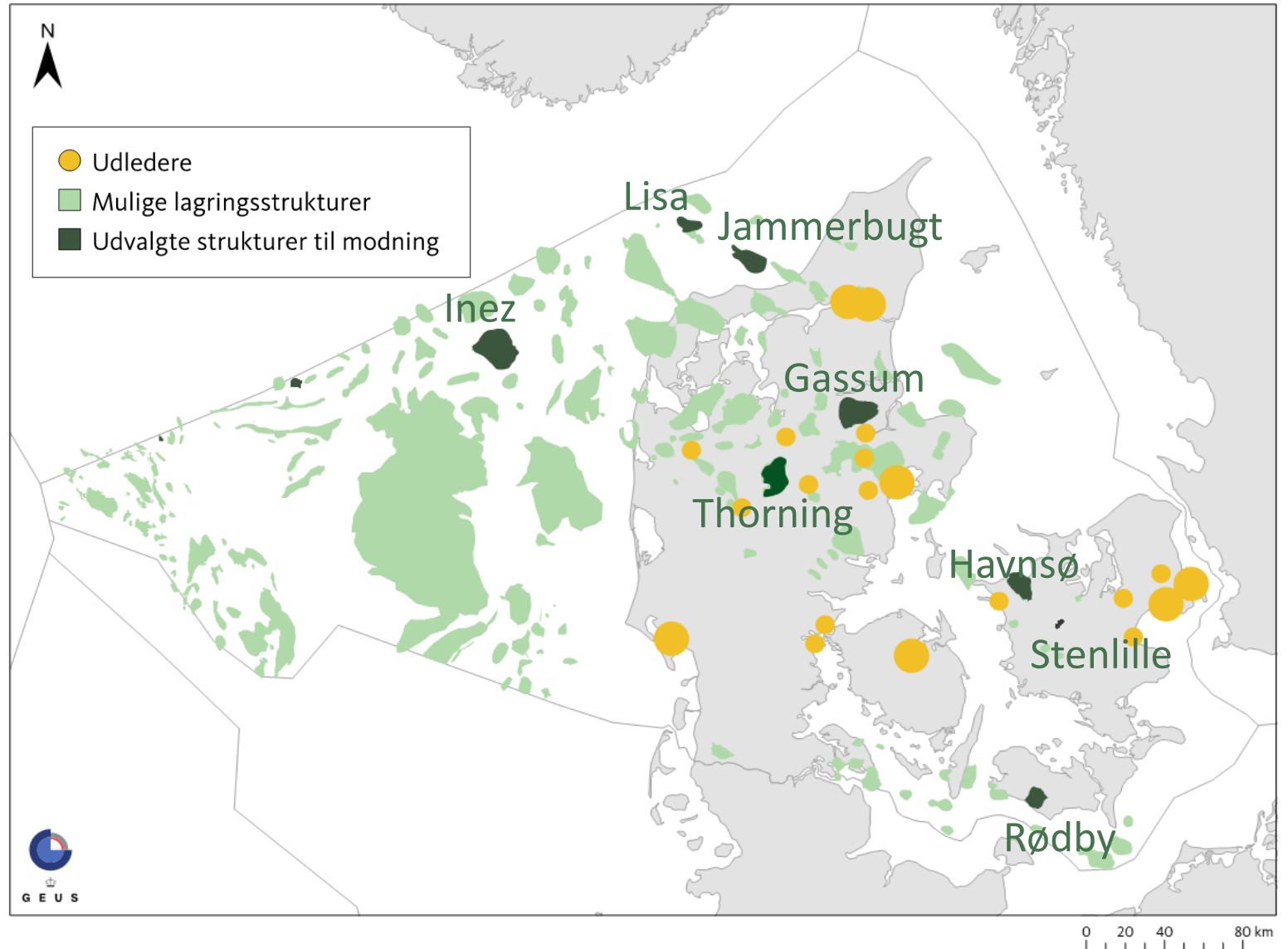
Gassum – februar-maj 2023

Jammerbugt – april 2023

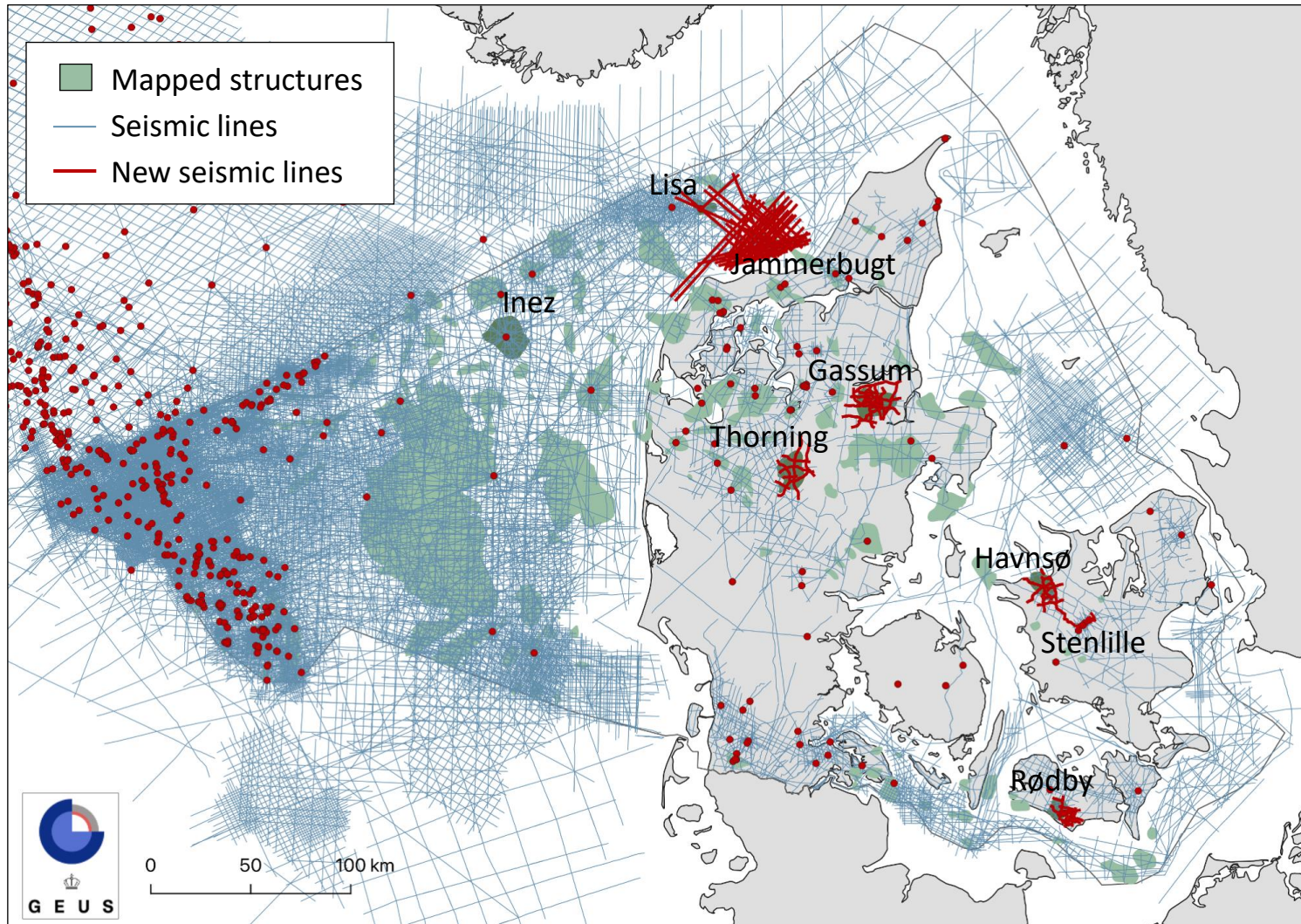
Rødby – june-july 2023

Thorning – august-oktober 2023

(Ingen nye data for Lisa and Inez)



Dataindsamling



Stenlille – February 2022

Havnsø – August-October 2022

Gassum – February-May 2023

Jammerbugt – April 2023

Rødby – June-July 2023

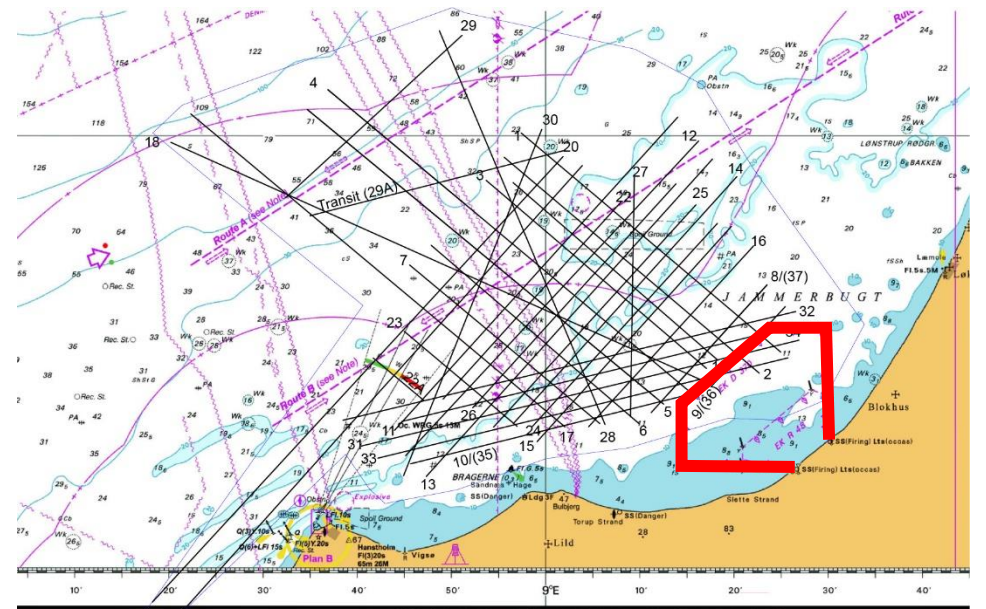
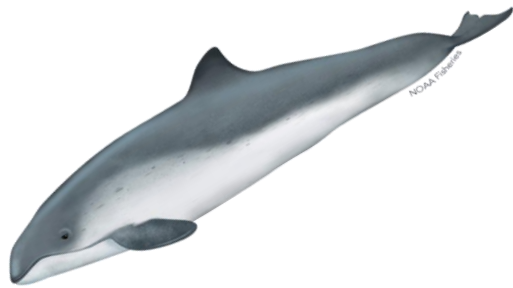
Thorning – August-October 2023

(No new data for Lisa and Inez)

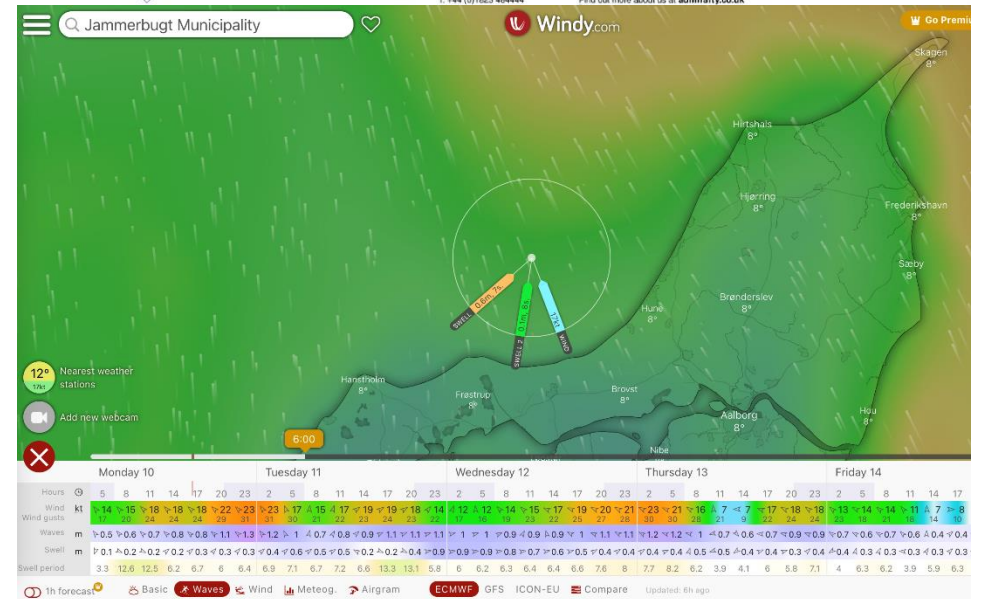
Seismisk data indsamling



Udfordringer i forbindelse med offshore dataindsamling



Published by the UK Hydrographic Office, Admiralty Way, Taunton, United Kingdom 9th November 2000.
 Mounted reproduction of INT Chart 1300 published April 2000 by Denmark.
 This chart includes copyright material published with the permission of the hydrographic offices of Denmark, Norway and Sweden.
 T: +44 (0)1623 484444 Find out more about us at admiralty.co.uk



Afrapportering

Stenlille:

- Afrapportering færdig
- Ældre og nye data klar til download

Havnsø:

- Afrapportering næsten færdig
- Ældre og nye data klar til download

Gassum:

- Ældre og nye data klar til download uge 50
- Afrapportering færdig i maj 24

Rødby:

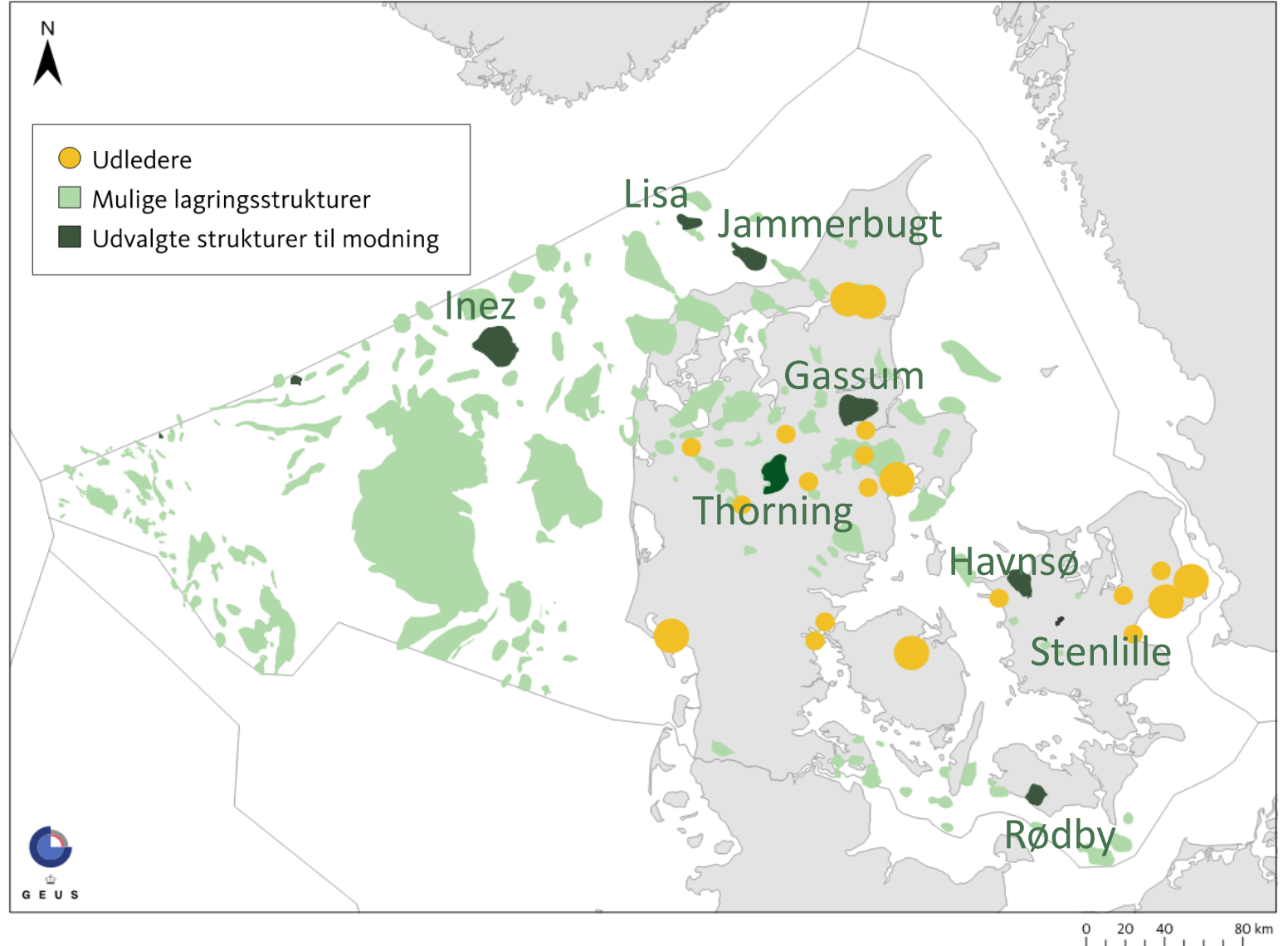
- Ældre og nye data klar til download
- Afrapportering færdig april 24

Thorning:

- Ældre data klar til download
- Nye data klar til download forår 24
- Afrapportering sept 24

Jammerbugt:

- Ældre og første processerede nye data klar til download
- Nye data klar til download, start 24
- Afrapportering januar 24



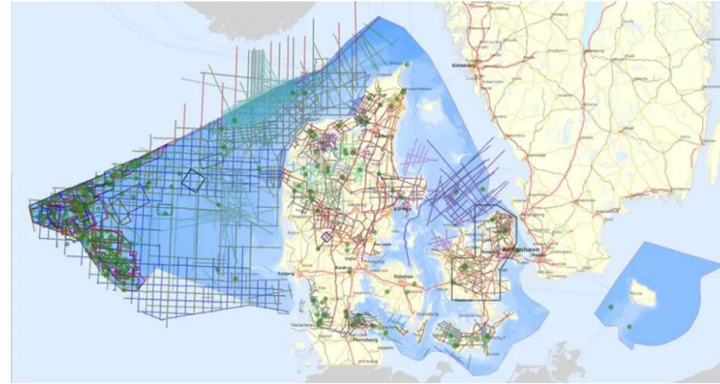
Data

- Alle nye seismiske data er til frit download
- 2D og 3D seismiske data og dybe efterforskningsbrønde for hele det danske område er i proces med at blive frigivet

Data from 2D and 3D seismic surveys and deep wells are now freely accessible on new subsurface portal

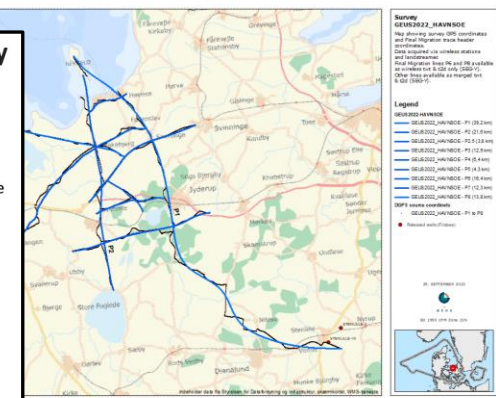
Published 06-10-2023
[News Subsurface data](#)

The Geological Survey for Denmark and Greenland (GEUS) has just launched a new online portal where data from 2D and 3D seismic surveys, as well as data from deep exploration and appraisal wells in Denmark, are now freely available.



New acquired 2D seismic data: GEUS2022_HAVNSOE - central and northwest Zealand

Information and download: [Processing summary sheet \(geus.dk\)](#)



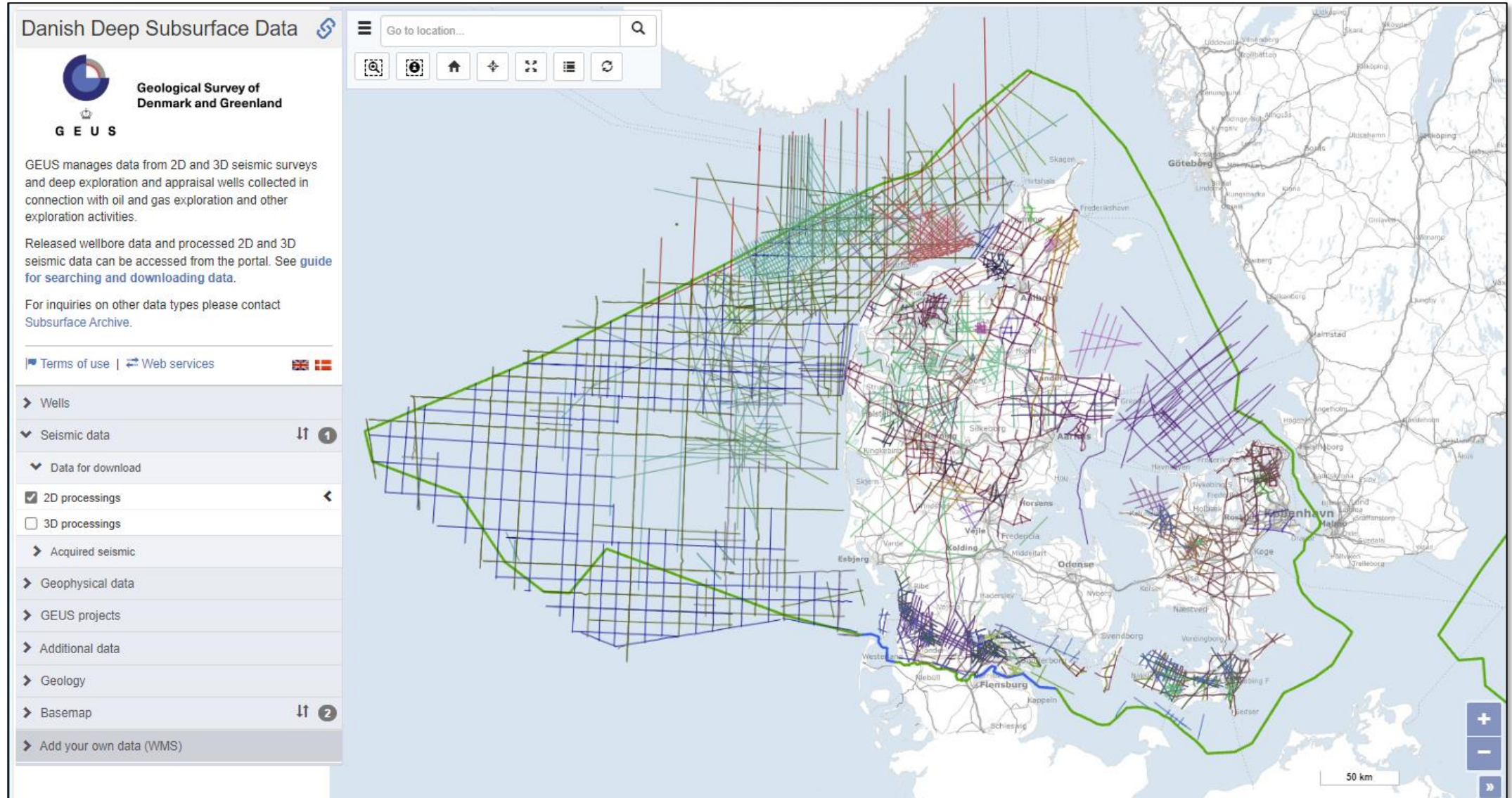
As part of the global effort to reduce CO2 atmospheric levels, the interest towards Geological Carbon Capture and Storage (CCS) has increased significantly. Seismic investigations are important to identify areas where the geological conditions are suitable for safe and sustainable storage.

Geological Carbon Storage (GCS) technologies are considered a solution and feasible action plan to reduce the atmospheric CO2 levels. As part of a series of land-seismic acquisitions that have been planned in Denmark to identify locations where the geological conditions are suitable for GCS, followed a pilot work (GEUS2022-STENLILLE), an up-scaling seismic survey GEUS2022-HAVNSOE was carried out in 2022 in the northwestern part of the island of Zealand, in the area between the towns of Stenlille and Havnsø.

The purpose of the survey was to delineate reservoir structures, potentially useful for CCS. The seismic data under the Danish National Research Funding Act, were acquired using two vibrating sources recorded simultaneously with nodal units connected to geophones at a spacing of 10 m and with more closely (2 m) spaced microelectromechanical systems (MEMS) units connected to a land streamer system. This dual element recording setup showed successful in the pilot study, hence this up-scaling survey in the Havnsø region using identical survey parameters was justified. To cover the northern part of the area, covered by the sea, the seismic shots generated by the land seismic vibrators were also recorded by 18 ocean bottom seismometers (OBS) and by a 600-m-long marine streamer in cooperation with Aarhus University.



Released 2D processings:



Borgerorientering og kommunikation

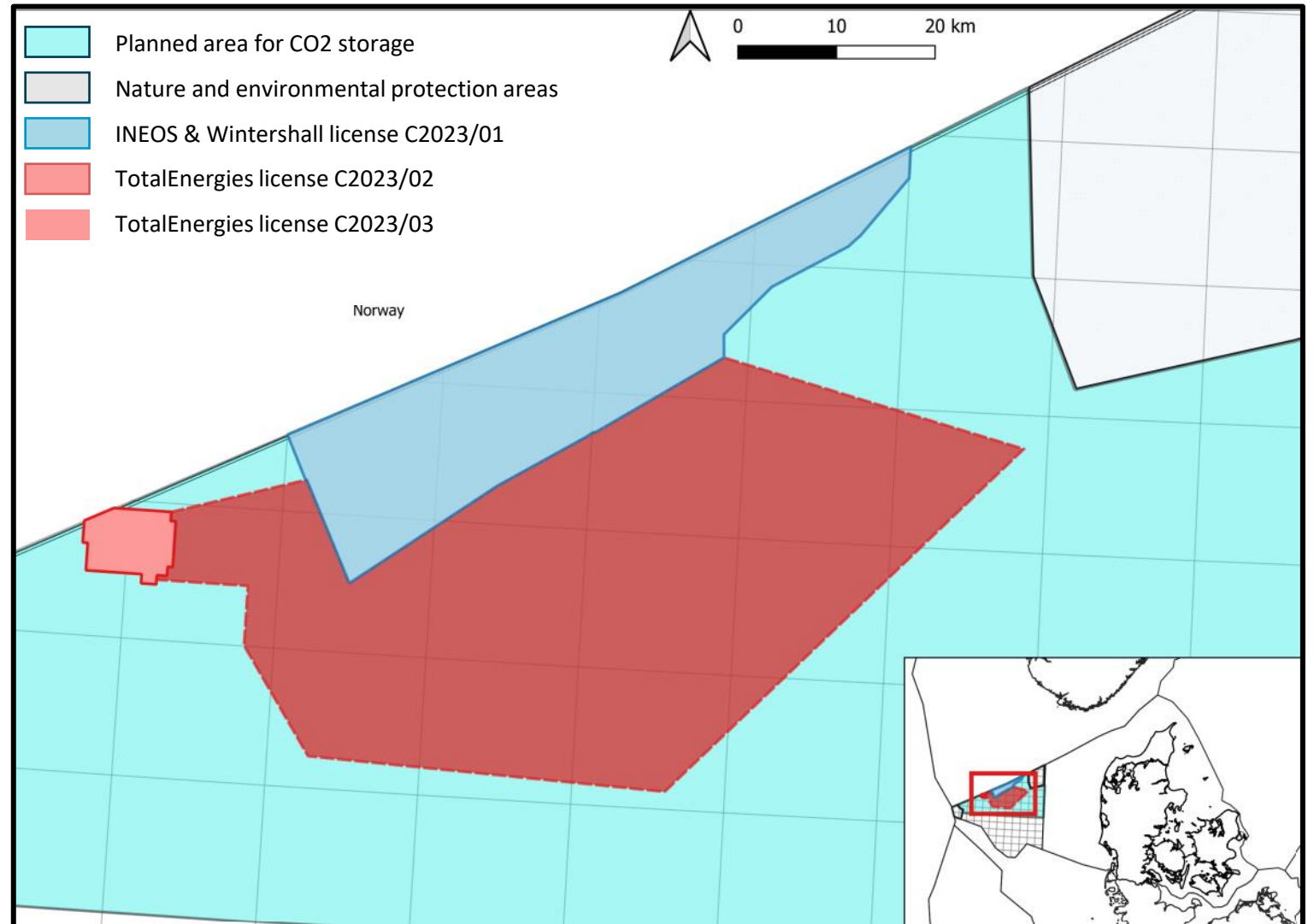
- Borgermøder
- Besøgsdage
- Medier



Næste skridt

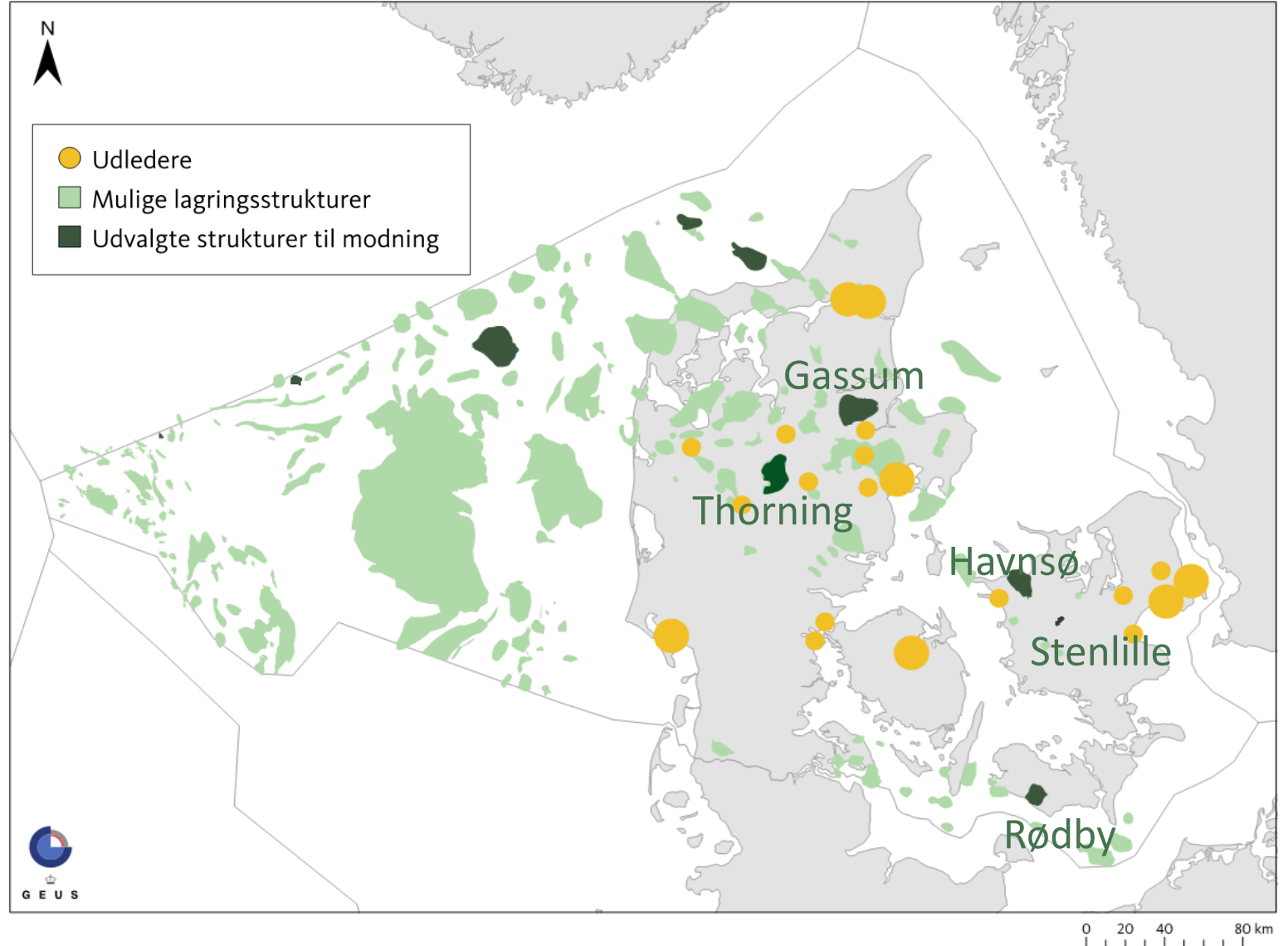
Offshore

- Første licensrunde for fuld-scala offshore CO₂ lagring august 2022
- Licenser tildelt forår 2023 til Ineos og Total
- Planlagt anden licens runde
- (i august 2023) udsat



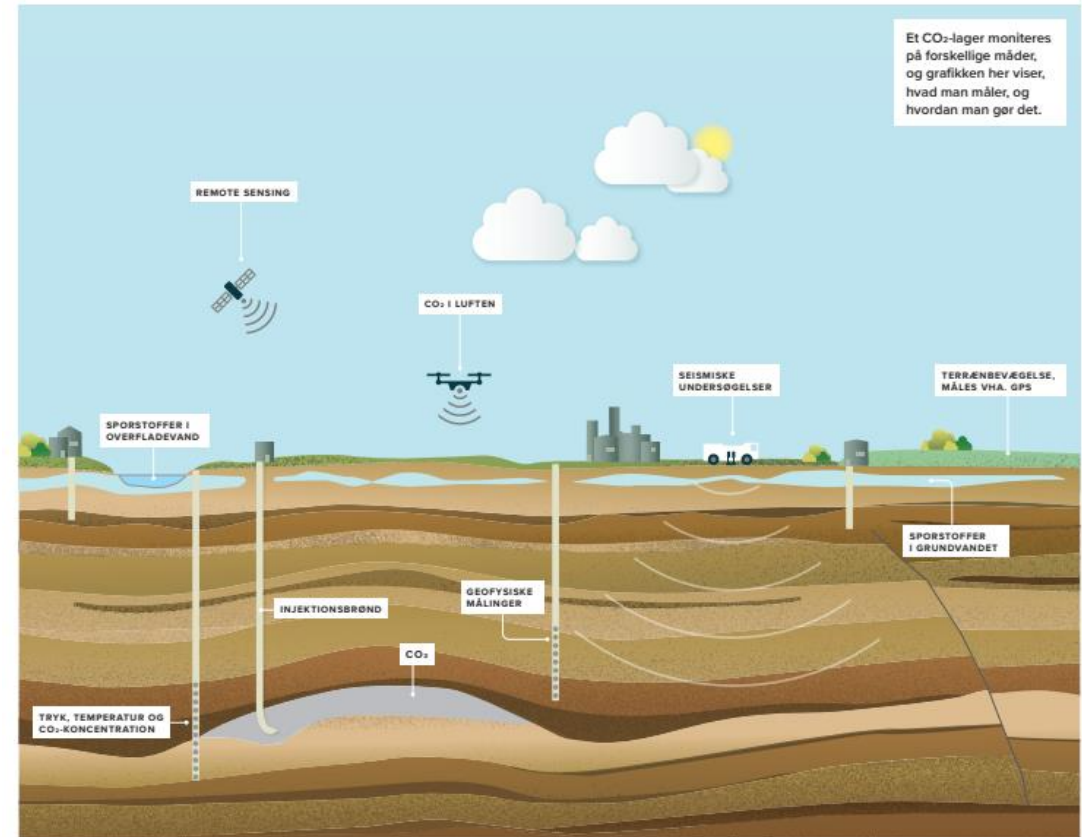
På land

- Første licensrunde for CO₂ lagring på land – udbydes december 2023
- Licenser tildeles forår 2024
- Kystnære områder - udsat



Monitering af CO₂ lagre

- Seismicitet
- Landhævning
- Grundvand
- Overfladevand





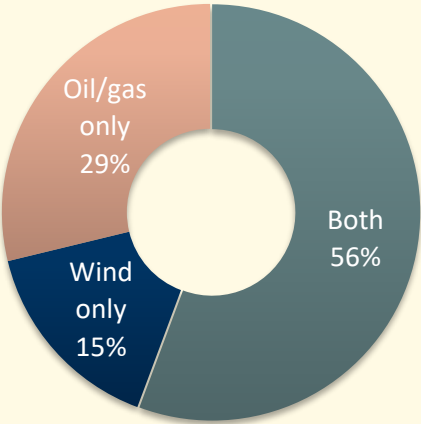
Tak
- nogen spørsmål?



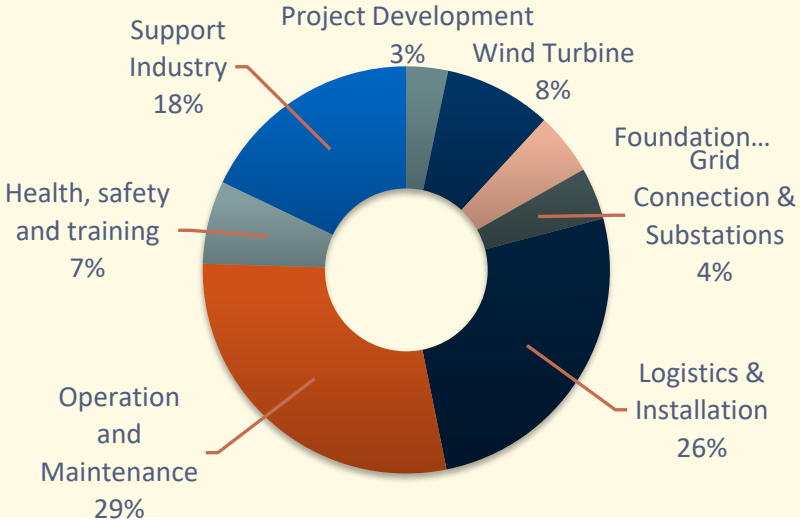
Hvor mange er der plads til i CCUS værdikæden?

200 VIRKSOMHEDER I ENERGISEKTOREN

Sector distribution

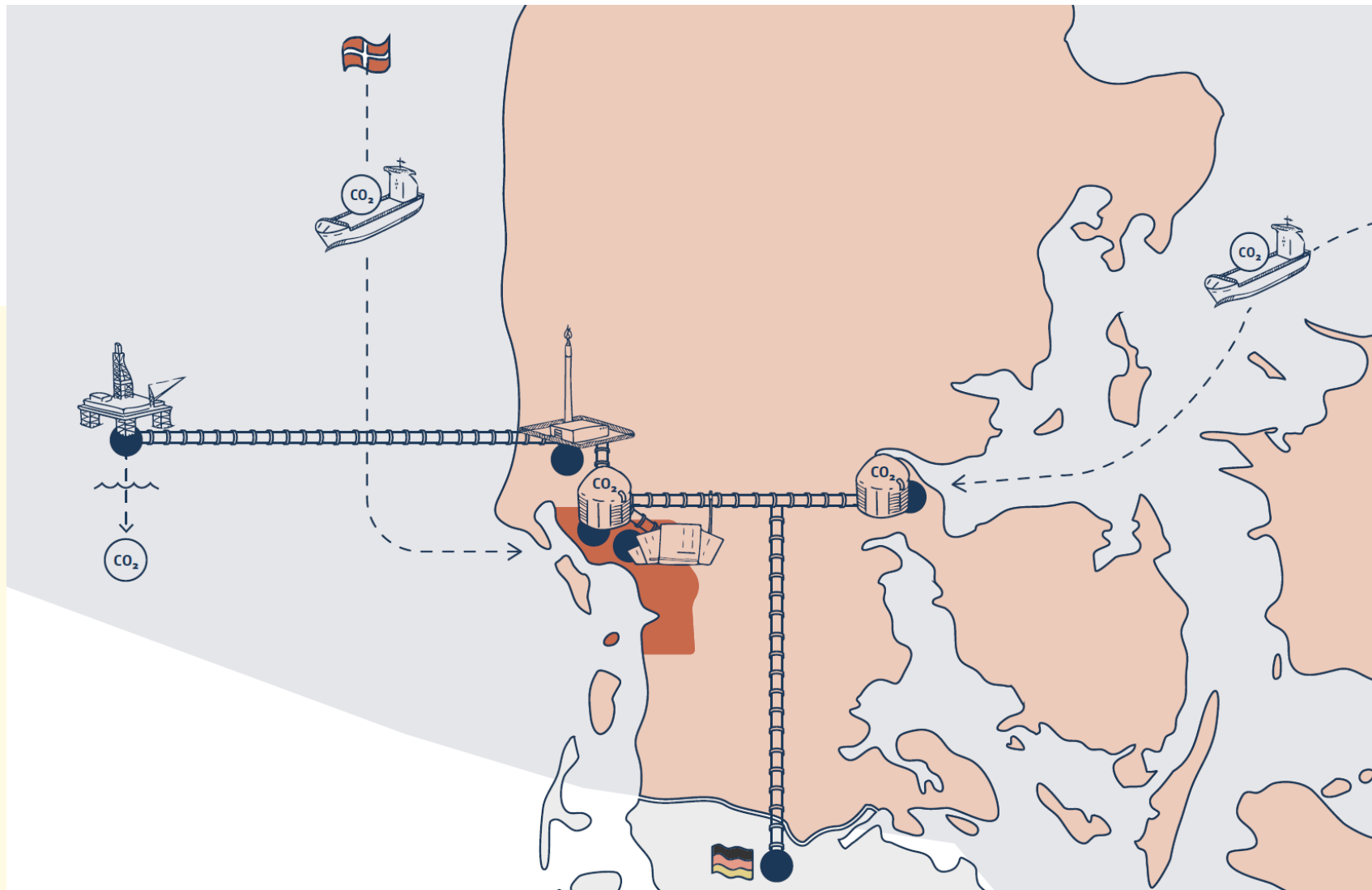


Supply Chain offshore Wind



Karsten Rieder

Syddjylland som en del af en europæisk løsning for CCUS



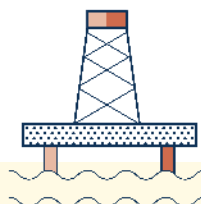
Karsten Rieder

Udfordringer og muligheder for CCUS (også i Esbjerg)



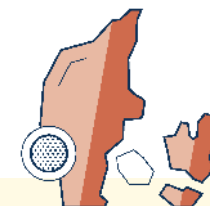
Europæisk samarbejde

- Et Europæisk samarbejde er nødvendigt for CCUS skal lykkes
- Tyskland er afgørende for dansk CCS
- Havnesamarbejde er en udfordring, men også en del af løsningen
- Hastighed af CCS ift. udlandet
- Nødvendigt med stort fokus på tiltrækning af den nødvendige faglige arbejdskraft – herunder finde smidige løsninger for godkendelser af arbejdskraft fra ikke EU-lande



Infrastruktur

- Storskala investeringer tager tid
- Esbjerg et vital punkt for hydrogen produktion med grøn havstrøm og hydrogen eksport til Tyskland igennem rørføring
- Fremtidig kobling med CCS i Sydjylland og Nordsøen rummer muligheder for PtX produktion.



SMV værdikæden

- Testhub muligheder
- Nødvendighed med Netværk
- Teknologiuudvikling
- Universitetssamarbejde



Karsten Rieder



DNV

Denmark as a European CO₂-hub

DANMARK SOM EUROPÆISK CO₂-HUB?

Præsentation for CCUS-alliancen mandag den 11. december 2023

BAGGRUND

- Peter Kristensen tog initiativ til projektet medio 2023
- DNV valgt som udførende
- Axcelfuture sekretariat
- Projektet er finansieret af HOFOR, Dansk Fjernvarme, Nordsøfonden, Total, Crossbridge, Ørsted, C4, Trena og Esbjerg Havn
- Projektet færdiggøres ultimo december / primo 2024 og præsenteres ved konference på Christiansborg den 18. januar

MULIGHEDER

- Danmark har afsat betydelige midler til CCUS-støtte (knap 40 mia kr)
- Betydelig interesse i hele værdikæden for at komme i gang – jf. de mange medlemmer af CCUS-alliancen
- Danmark har mulighed for et erhvervseventyr med mange tusinde jobs
- Danmark er frontrunner i Europa – sammen med Holland, UK og især Norge
- Vi er sent ude med at få gang i lagringsgodkendelser
- Der er heller ikke bygget infrastruktur (rør, mellemlagre, slutlagre mv.)
- CCS kan bidrage væsentligt til Danmarks klimamål (3,2 MTPA i 2030)
- Danmark har også mulighed for at kunne bidrage til EU's klimamål
- Men der er også risiko for, at det hele bliver tabt på gulvet.....

UDFORDRINGER

- CCUS er dyrt – de første udbud med omkostninger på 1600-1700 kr/tons
- Finansieringskilder:
 - sparet CO2-afgift og kvotekøb for fossil CO2 (750-1200 kr)
 - grønne kreditter (som den Microsoft købte) (1000-1500 kr)
 - tilskud (600-800 kr)
- Efter de første udbud i 2024-25 er forventningen, at CCUS kan køre uden tilskud
- Det kræver væsentlig omkostningsreduktion
- Og det kræver igen import
- Og det kræver en solid back-bone rørinfrastruktur
- Og det kræver igen en samlet plan for importmuligheder, havne, CO2-anvendere og lagringsfaciliteter
- Markedet kan ikke klare denne opgave, sådan som KEFM antager
- Men lagringsoperatørerne er næppe parat til lagring før i 2030
- KEFM's markedsstrategi medfører risiko for, at Danmark aldrig får en stærk CCUS-sektor

GODE IMPORTMULIGHEDER

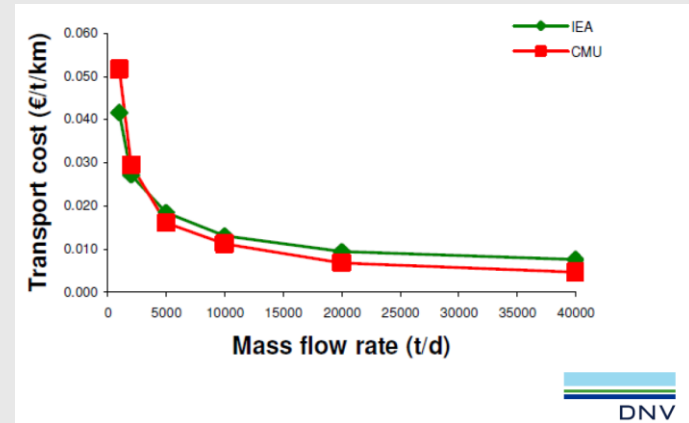
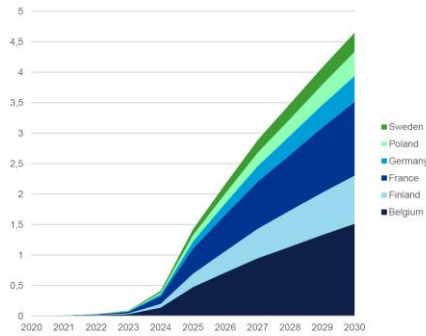
Potential import volumes 2030

- Following assumptions is applied
 - In 2030 the pipeline infrastructure is assumed very limited outside of Denmark.
 - It is foreseen that all import will be by vessel, with minor gathering networks in France, Finland, Sweden and Poland.
 - Focus on emitters located nearshore, maximum 1000 km away from DK.
 - UK, Netherlands, Norway is excluded due to their own national CCS projects
 - Only emissions from hard-to-abate sectors and sectors with unavoidable emissions, bioenergy and waste to energy have been included.
- Potential import:
 - Belgium + France: 2.7 MTPA
 - Baltic sea + Germany: 2 MTPA



The included volumes from the Baltic sea are lower than the volumes talked about from Skåne due to power production not being included. We focus on hard to abate sectors because of the 50 year lifetime of the study.

Capture Capacity estimates

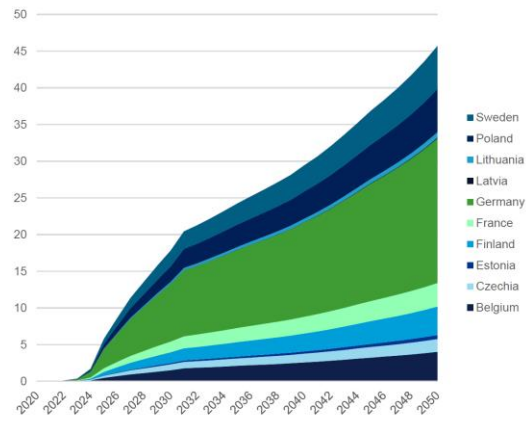


Potential import volumes 2050 High

- Following assumptions is applied
 - In 2050 the pipeline infrastructure is assumed to be developed in Germany, Poland and Czechia. Remaining import will be by vessel with gathering networks in France, Baltic, Finland, Sweden and Poland.
 - UK, Netherlands, Norway is excluded due to their own national CCS projects
 - Only emissions from hard-to-abate sectors and sectors with unavoidable emissions, bioenergy and waste to energy have been included.
- Potential import:
 - Vessel:
 - Belgium + France: 6 MTPA
 - Baltic sea: 9.5 MTPA
 - Pipeline:
 - Germany, South Poland, Czechia: 21 MTPA



Capture Capacity estimates



MANGE HAVNE – NOGLE DOG MERE VELEGNEDE END ANDRE

Evaluation of ports

- Important features of CO2 receiving terminals
 - Physical space required
 - Safety aspects
 - Where does the CO2 come from? Ports should be convenient from shipping routes
 - Proximity to storage and/or emission locations
- 1st generation Northern Light vessel:
 - Vessel size: 7500 m³ CO₂ (cargo density: 1100 kg/m³ = 8250 Ton CO₂)
 - 1 vessel/day, 345 days/year = 2.8 MTPA
- Ports considered:
 - **Esbjerg**
 - Aabenraa
 - Hirtshals
 - **Fredericia / Skærbæk (Ørsted)**
 - **Aalborg**
 - Aarhus / Studstrup (Ørsted)
 - **Kalundborg / Asnæs (Ørsted)**
 - **Copenhagen and Malmo port**
 - Hanstholm

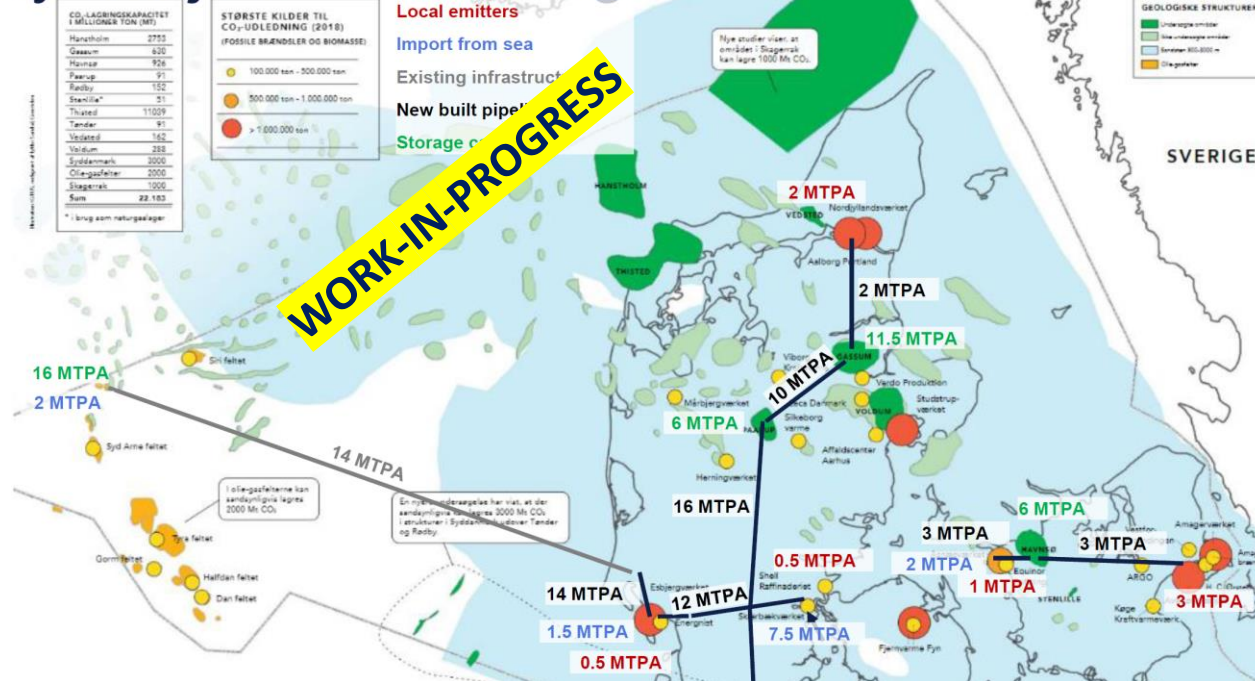


MASTERPLAN MED OFFENTLIG STØTTE TIL BACK-BONE INFRASTRUKTUR MULIGGØR DANMARK SOM EUROPÆISK CO2-HUB

Build and they will join – 2050 High

Scenario 2 “Build, and they will join”: A central backbone is established with a connection to a CO₂ storage/shipping facility, to which all national emitters and imports of CO₂ feed into. The backbone pipeline will be established in relevant sections based on a long-term plan so that it can meet both short-term needs as well as the future expected increase in demand.

- Bifrost project capacity increases to 16 MTPA.
- Connection between Esbjerg and Fredericia allows import from both Western Europe and Baltic sea.
- Pipeline import from Germany is ongoing with capacity of 21 MTPA
- Thorning gas storage active
- Excess storage capacity:
 - Jylland+Offshore: 0 MTPA
 - Zealand: 0 MTPA
- Import from Belgium and France reduced from potential 6 MTPA to 2 + 1.5 MTPA = 3.5 MTPA



KONKLUSIONER OG MULIGE ANBEFALINGER

- Regeringens strategi giver risiko for, at der aldrig opbygges infrastruktur i DK på land, at lagringsoperatører ikke tør binde sig ifm de kommende CCUS-udbud, at støtten går til Norge, og at DK aldrig får en CCUS-sektor af betydning
- Build-and-they-will-join indebærer store muligheder for klimagevinster i DK og i Europa og store erhvervsmuligheder
- anbefalinger: staten skal garantere for udbygningen af back-bone infrastruktur – inkl. rør til Tyskland - som bør ses som kritisk infrastruktur. Naturlig opgave for Energinet.
- CCUS-udbuddene bør skubbes et år, så lagringsoperatørerne er afklarede, have bedre force-majeure betingelser og mindre/ingen bøder
- Infrastrukturen kan være både offentlig og privat men bør have reguleret tredjepartsadgang
- Som tilslutning til backbone-infrastrukturen kan lokale klynger skabe egne distributionsnet