



Northern Lights JV DA

Elise ROC, Business Development

→ **Animation**

→ **Introduction film**

CO₂ transport & storage at scale



NORTHERN LIGHTS SCOPE

CO₂ capture

Capture from industrial plants.
Liquefaction and temporary storage.



Transport

Liquid CO₂
transported by ship.



Receiving terminal

Intermediate onshore storage.
Pipeline transport to offshore
storage location.



Permanent storage

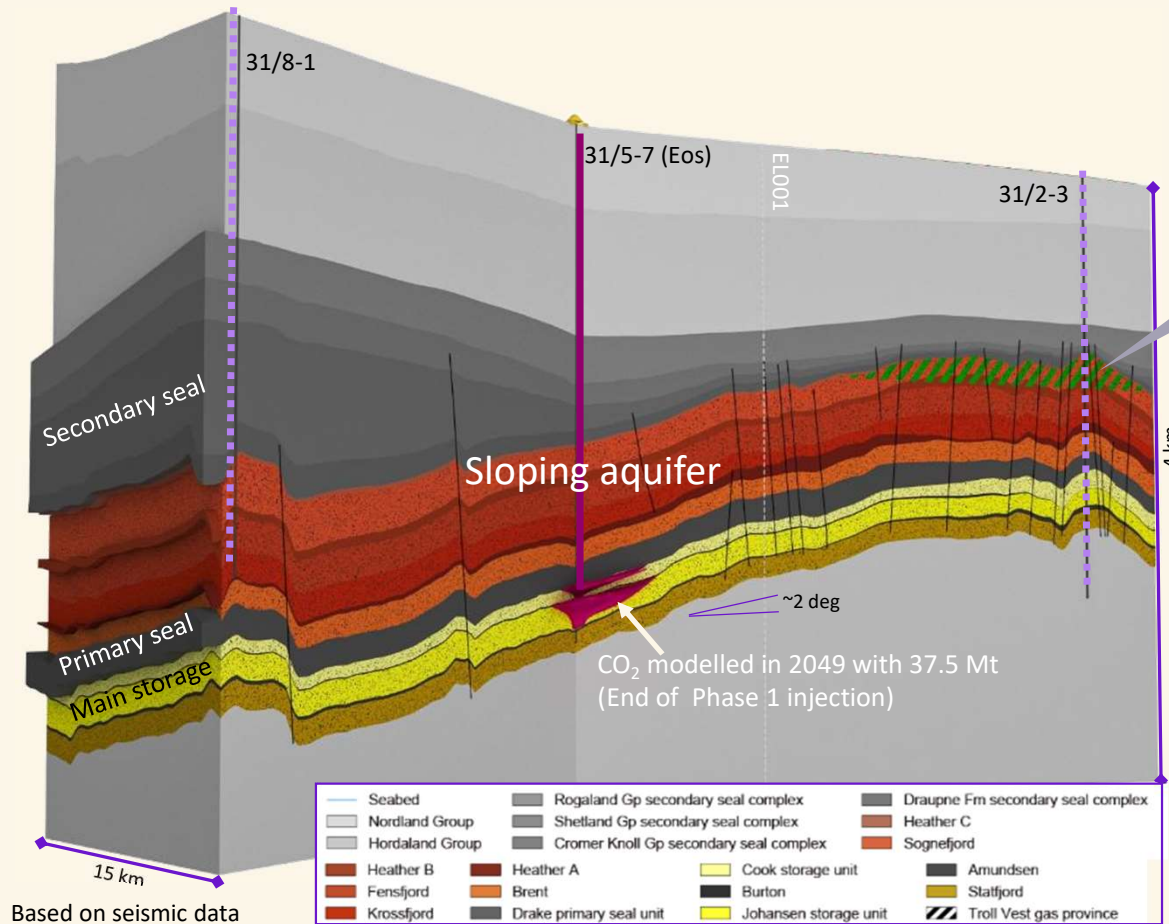
CO₂ is injected into a saline aquifer.

100 km

2 600m

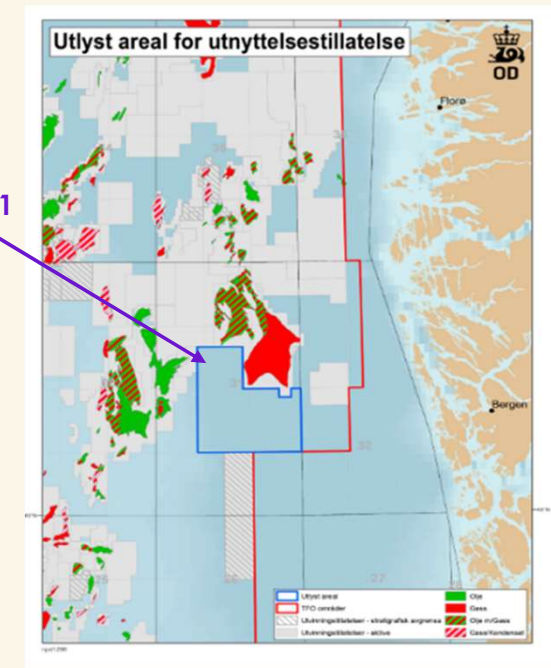


Northern Lights storage concept

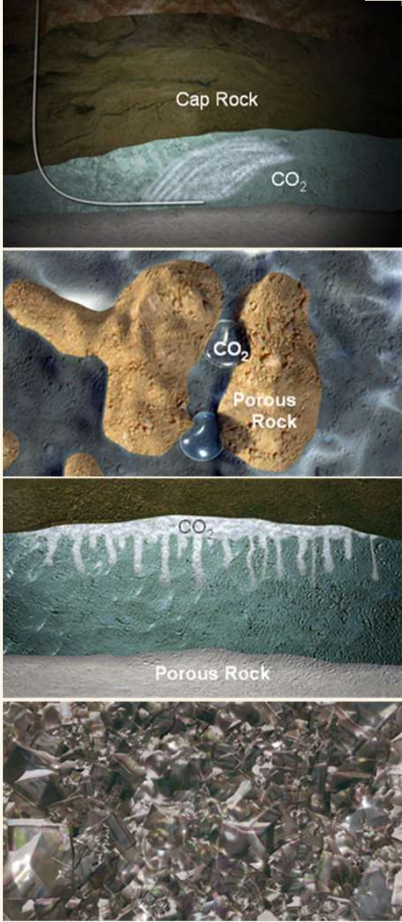
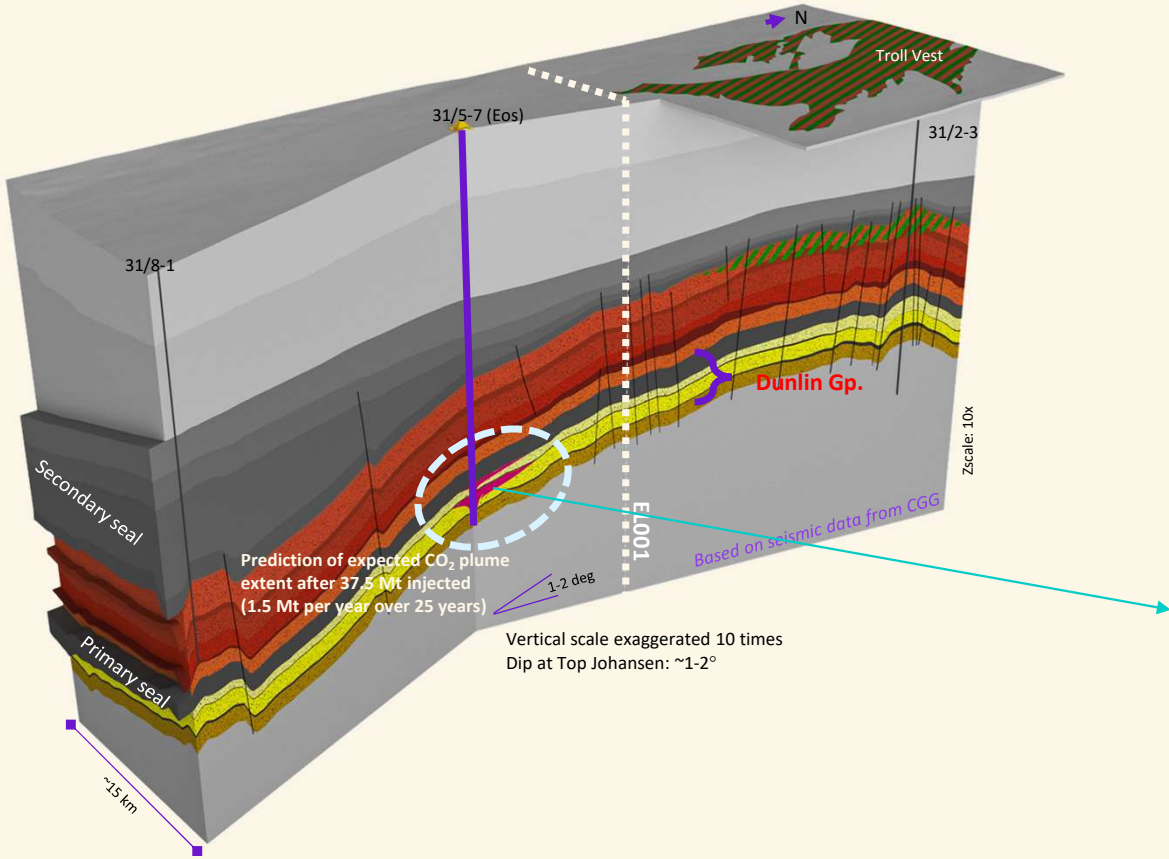


Based on seismic data from CGG

Troll oil and gas field



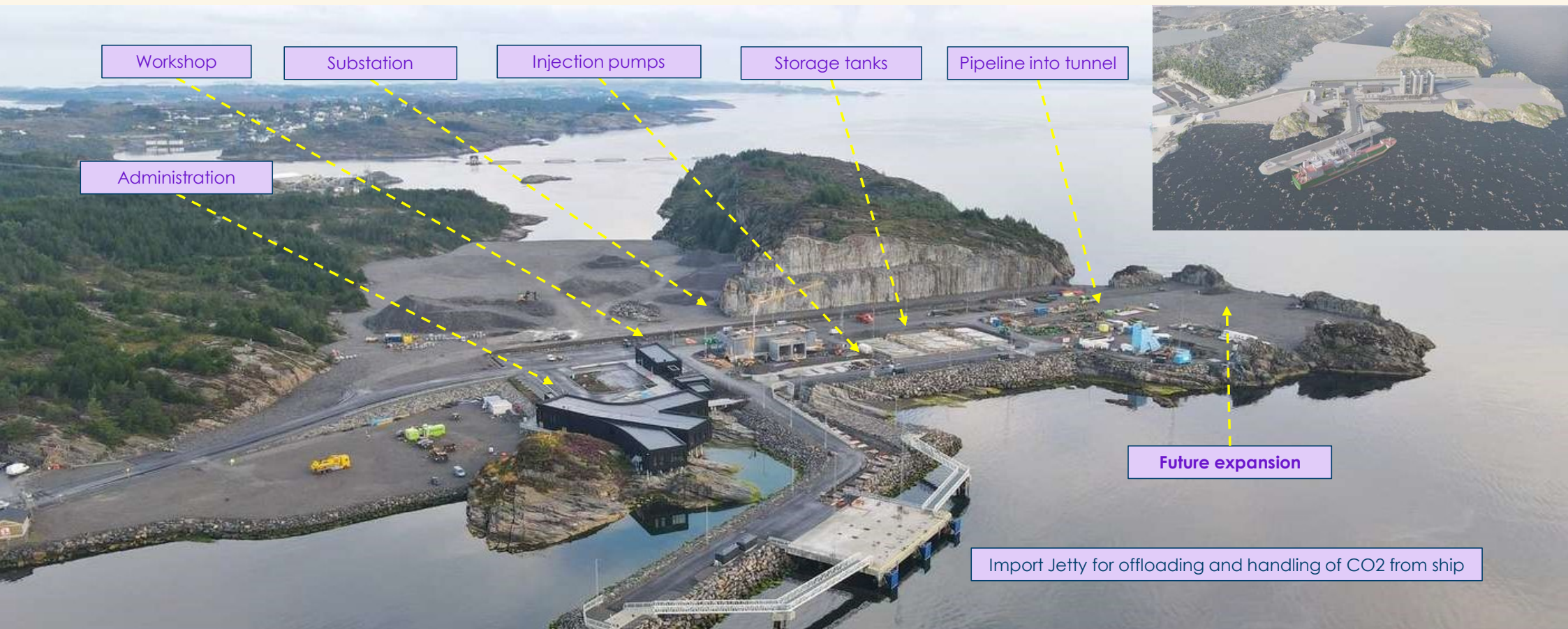
CO2 storage concept



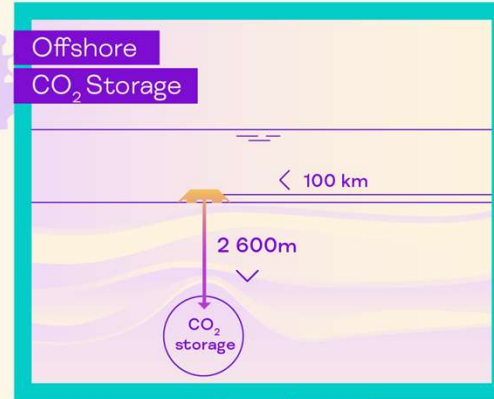
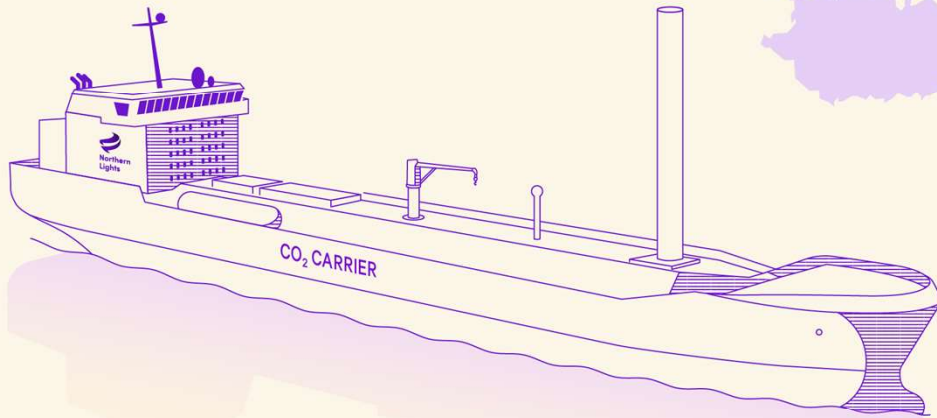
http://www.co2captureproject.org/co2_trapping.html

Becoming a reality

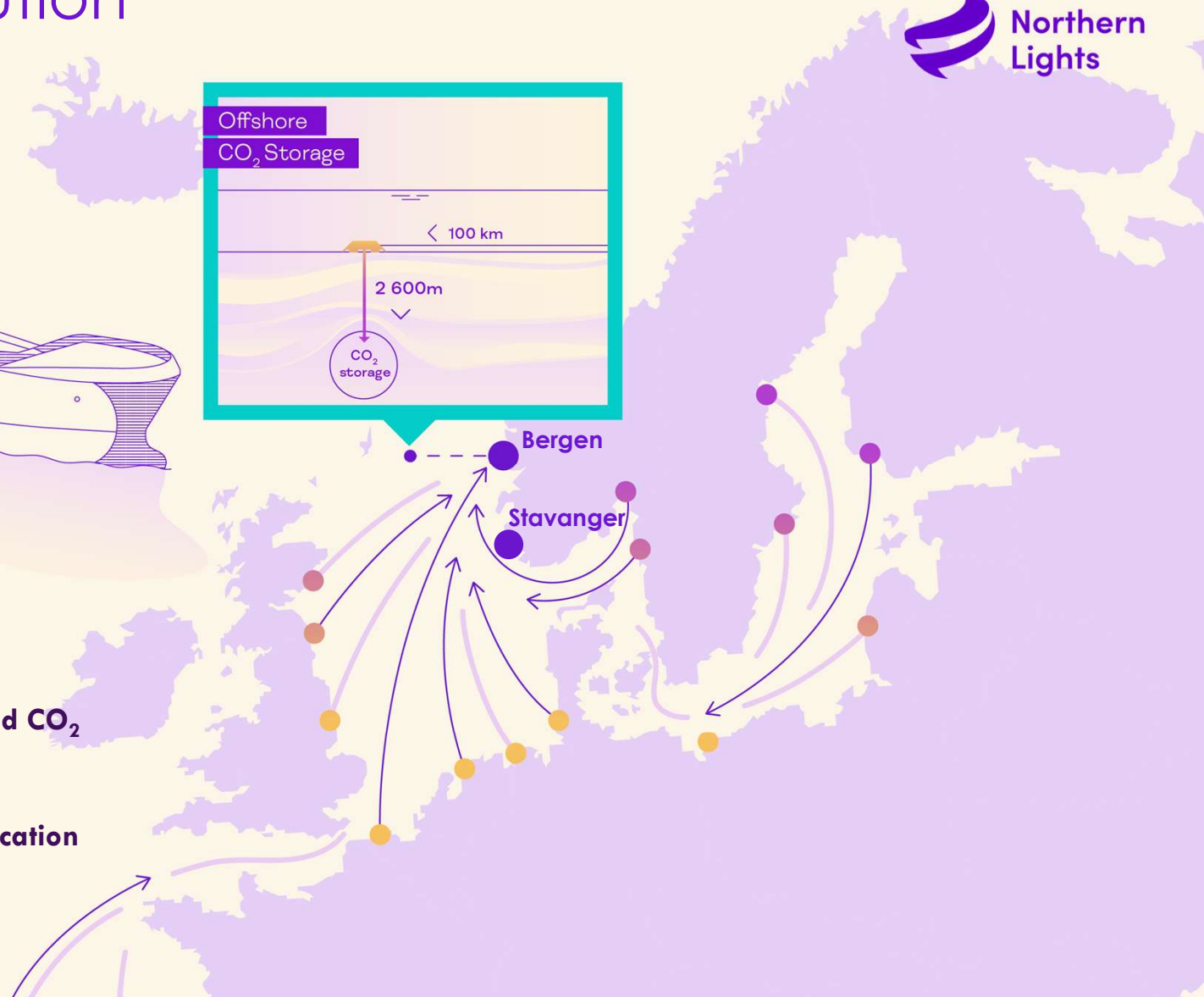
Receiving terminal at Øygarden – operational mid 2024 – 1,5 Mtpa capacity



Flexible Shipping solution

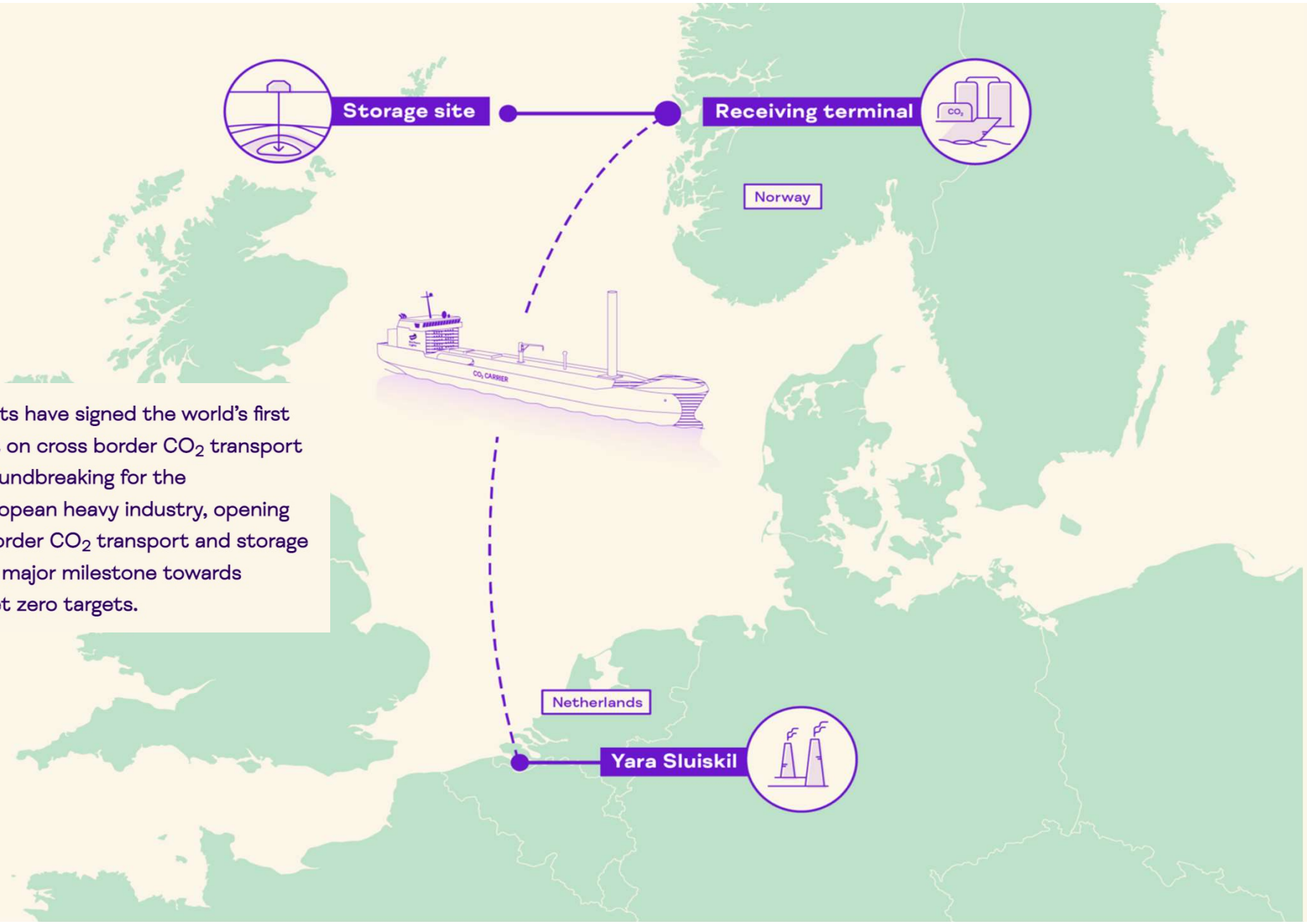


- Cargo size: 7,500 m³ (8000 tonnes CO₂)
- Length: 130m
- Ready for delivery by mid 2024
- Purpose-built pressurised cargo tanks for liquid CO₂
- Primary fuel: LNG
- Wind assisted propulsion system and air lubrication installed



August 2022

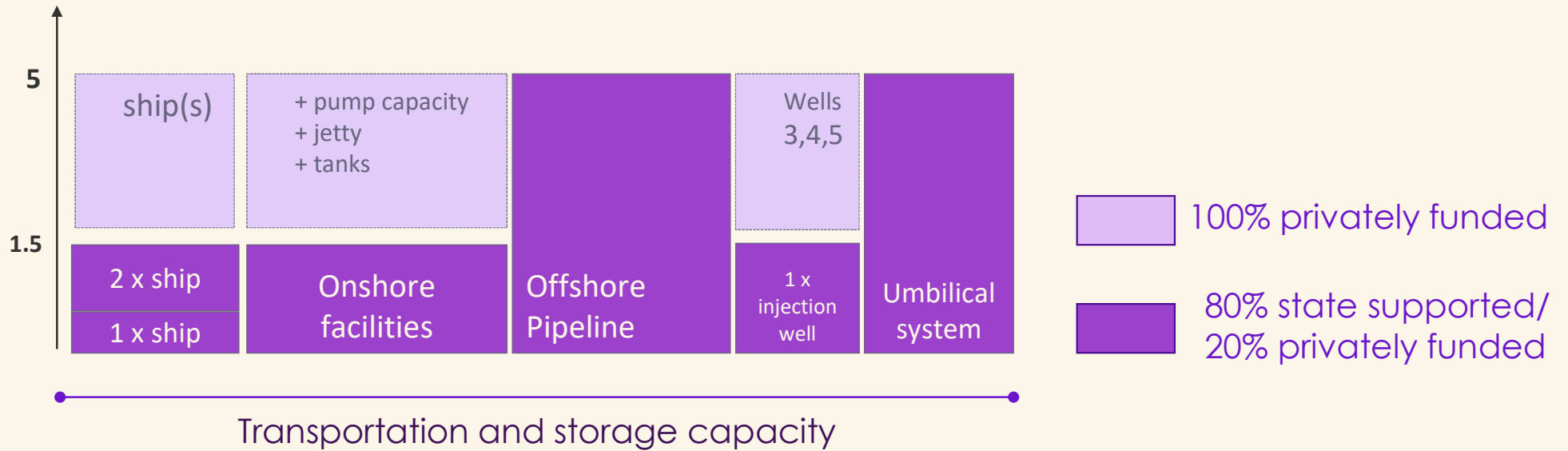
Yara and Northern Lights have signed the world's first commercial agreement on cross border CO₂ transport and storage. This is groundbreaking for the decarbonisation of European heavy industry, opening the market for cross border CO₂ transport and storage as a service. It is also a major milestone towards achieving Yara's own net zero targets.



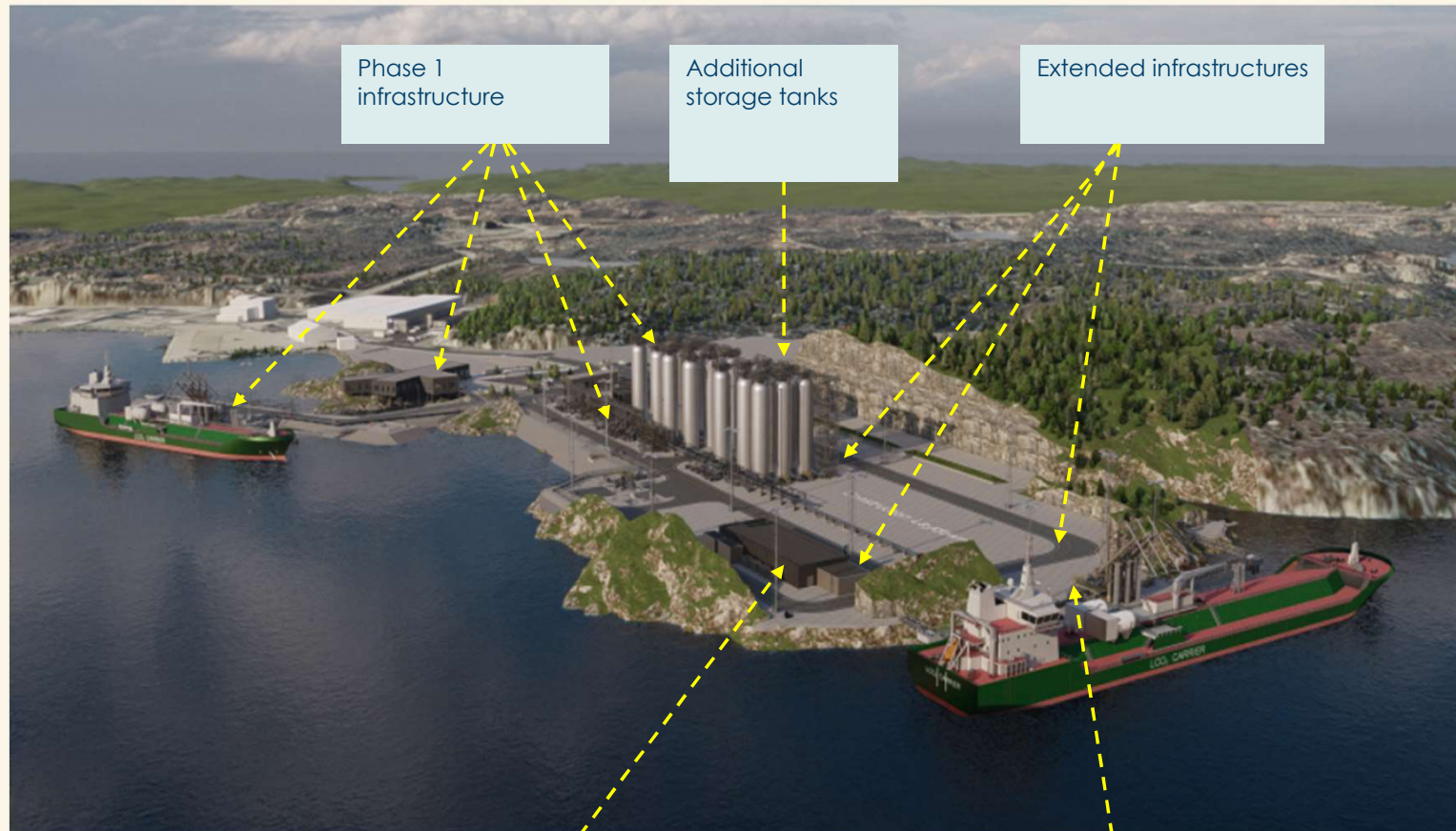
Expansion plans

- FEED Phase 2 scheduled ready Oct/Nov 2022
- FID planned Q1 2023 and subject to customer commitments
- Expected operational early 2026

Capacity (Mt/y)



Phase 2 – Onshore facilities



Overcoming challenges of building a commercial business

→ Currently no market for CO₂ handling and storage

- Technology is known
- Increasing cost of emission

→ Establishing long term contracts

→ Risk/reward allocation

→ Significant need for infrastructure

→ Adaption of regulatory frameworks

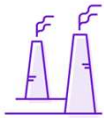


Accelerating CCS

Doing what the O&G industry has perfected over 50+ years on NCS in ~10 years?



Temporary government support can overcome the chicken-and-egg challenge



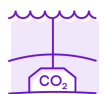
Large-scale development paves way for others



Shipping provides the necessary deployment flexibility



CO₂ storage enabler for a net zero ecosystem



CCS value chain is cost-effective decarbonisation solution

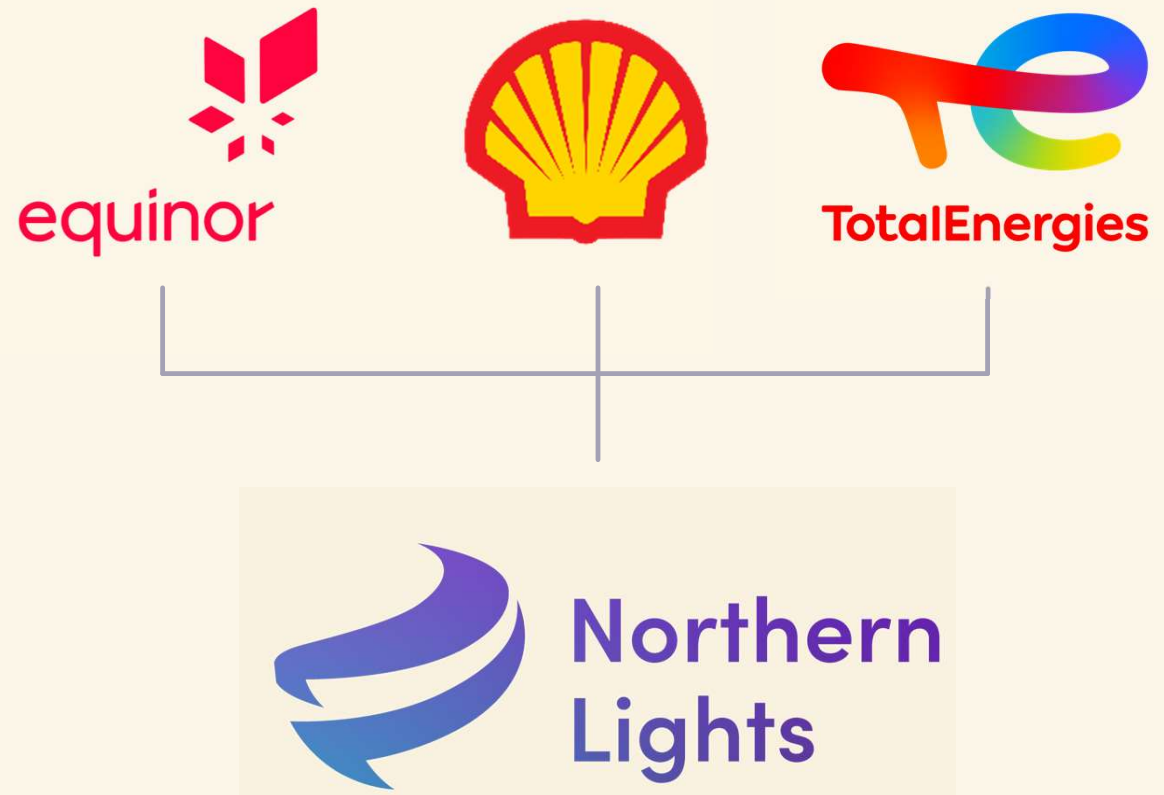


Northern Lights

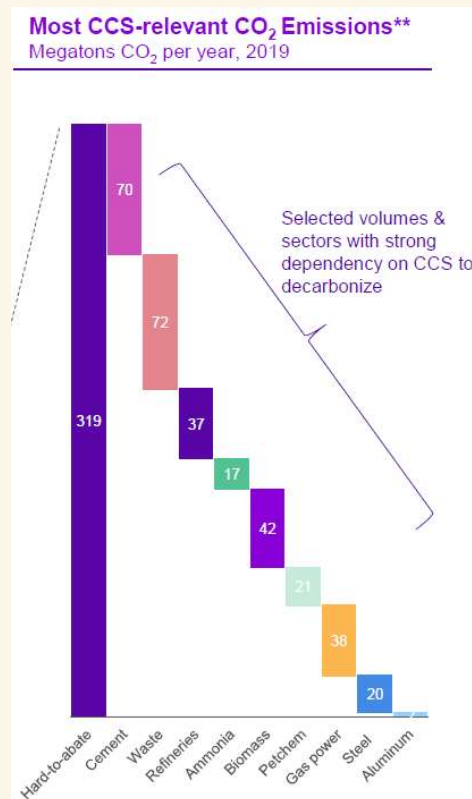
norlights.com

Northern Lights Joint Venture

- June 7th 2021 the Northern Lights JV was formally established
- The JV is owned by Equinor, Shell and TotalEnergies
- JV employees are seconded from the owner companies, aiming to employ dedicated staff in the future
- Service agreements are in place with the owner companies for parts of the scope



Building a market for CO₂ storage



→ **Significant interest and demand for our services**

→ **Focus:**

- deliver Phase 1, operational in 2024
- building a commercial business

→ **Secure commercial contracts**

→ **Investment decision for capacity expansion**

→ **Hard to abate emissions from industry in Northern Europe**

- Process industry
- Cement
- Steel
- Waste incineration
- Negative emissions

→ **Market potential: 319 MTPA**

European CO₂ value chain

Commercial maturation process:

