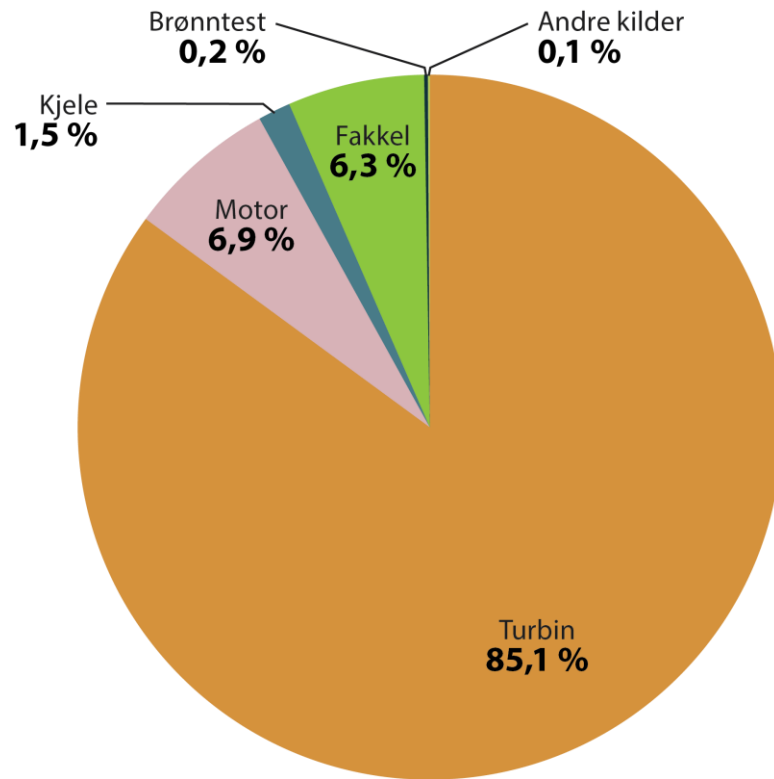# The Longship Project: Whole Value Chain CCUS Demonstration Project on the Norwegian Continental Shelf

Erik Nilsen Rundell, Norwegian Petroleum Directorate

Norwegian emissions

	Million tonnes CO2 equivalents[2]
	2021
Emissions	48.9
Oil and gas extraction	12.1
Manufacturing industries and mining	11.7
Energy supply	1.7
Heating in other industries and households	0.5
Road traffic	8.7
Aviation, navigation, motor equip. etc.	7.5
Agriculture	4.6
Other	2.1

Meld. St. 33 (2019–2020) Report to the Storting (white paper)

Longship – Carbon capture
and storage

The Longship Project

NPD

- Paris agreement (2015)
- EU to be climate neutral by 2050
- 50 % reduction by 2030
- No 1,5 degrees without CCS
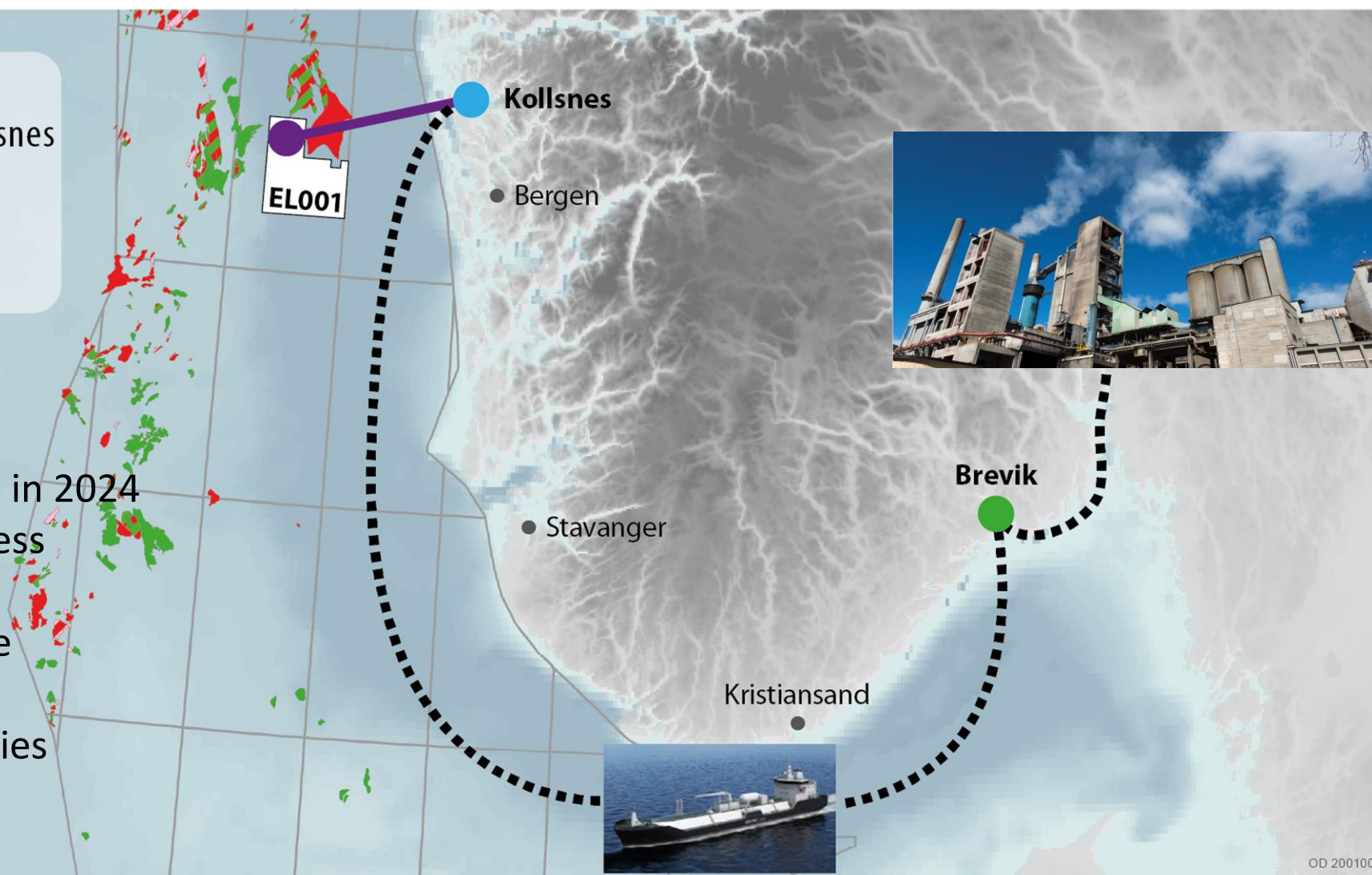- Norway can play a part

The *Longship* CCS Project

Legend:
- 🟢 Capture plants in Oslo and Brevik
- 🔵 Onshore CO$_2$ receiving terminal, Kollsnes
- 🟣 Permanent CO$_2$ storage site
- ⚫ ⚫ ⚫ Transport by tanker ship
- — Pipeline

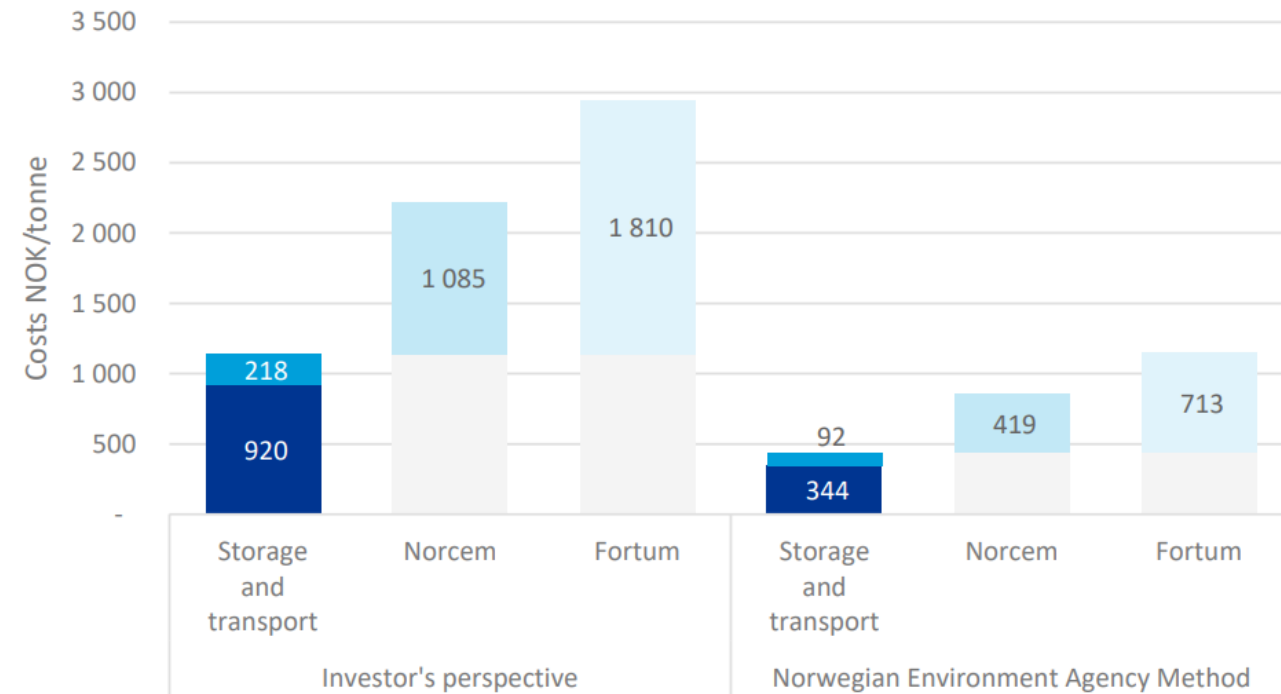Map labels: EL001, Kollsnes, Bergen, Stavanger, Brevik, Kristiansand

Targets
- Demonstrate value chain, start-up in 2024
- Establish a hub for third party access
- Transborder transport of CO$_2$
- First project under the CO$_2$ storage framework
- CO$_2$ storage from different industries
- Industry and state collaboration
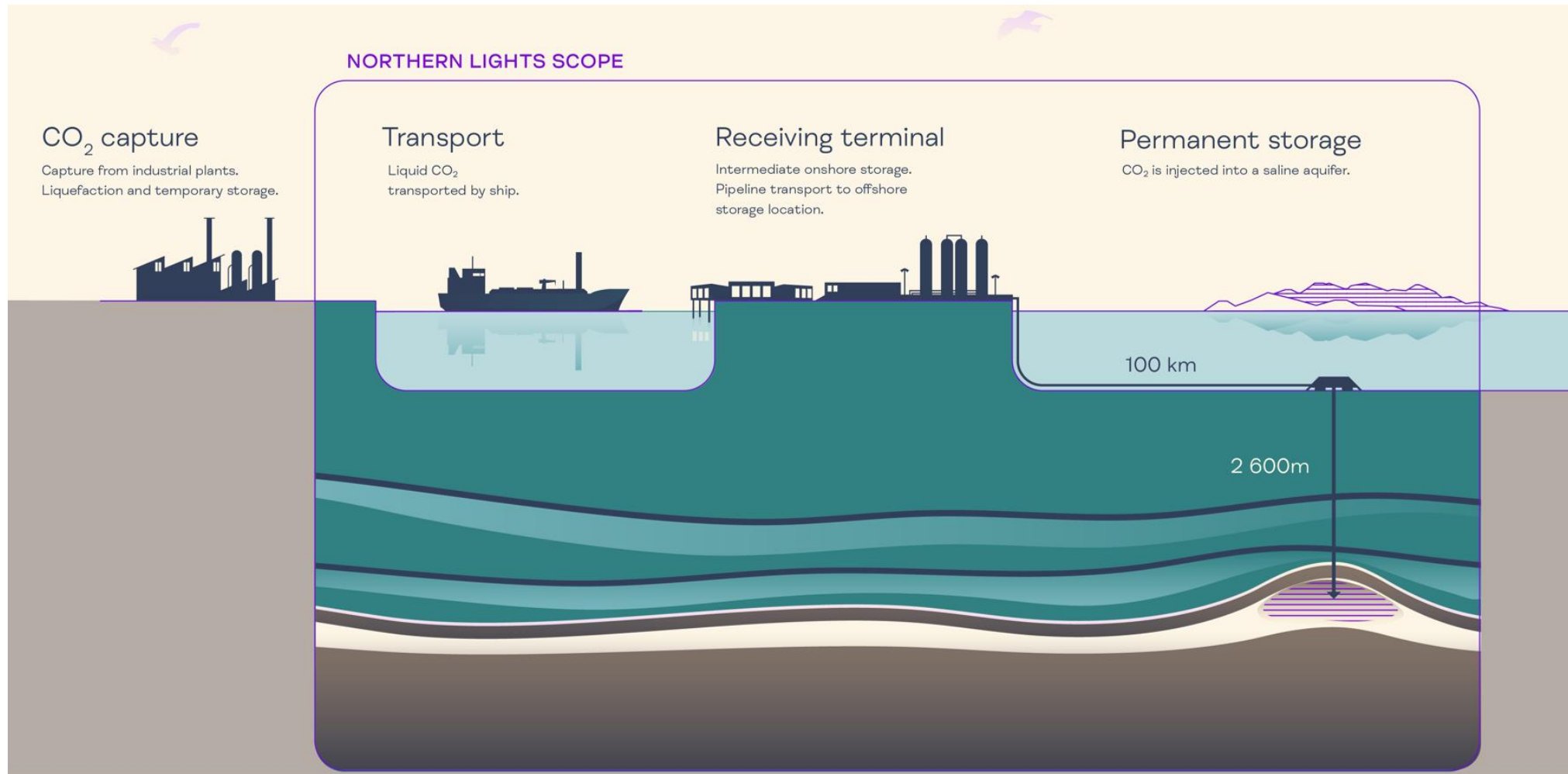- Supported by NGO's

npd1395

OD 2001005

Financing

- Total cost: 25,1 billion NOK

- Governments share: 16,8 billion NOK

- Transport and storage:
  - CAPEX 80%
  - Third ship 50%
  - OPEX sliding support 95-80% over 10 years
  - 80% of extra costs
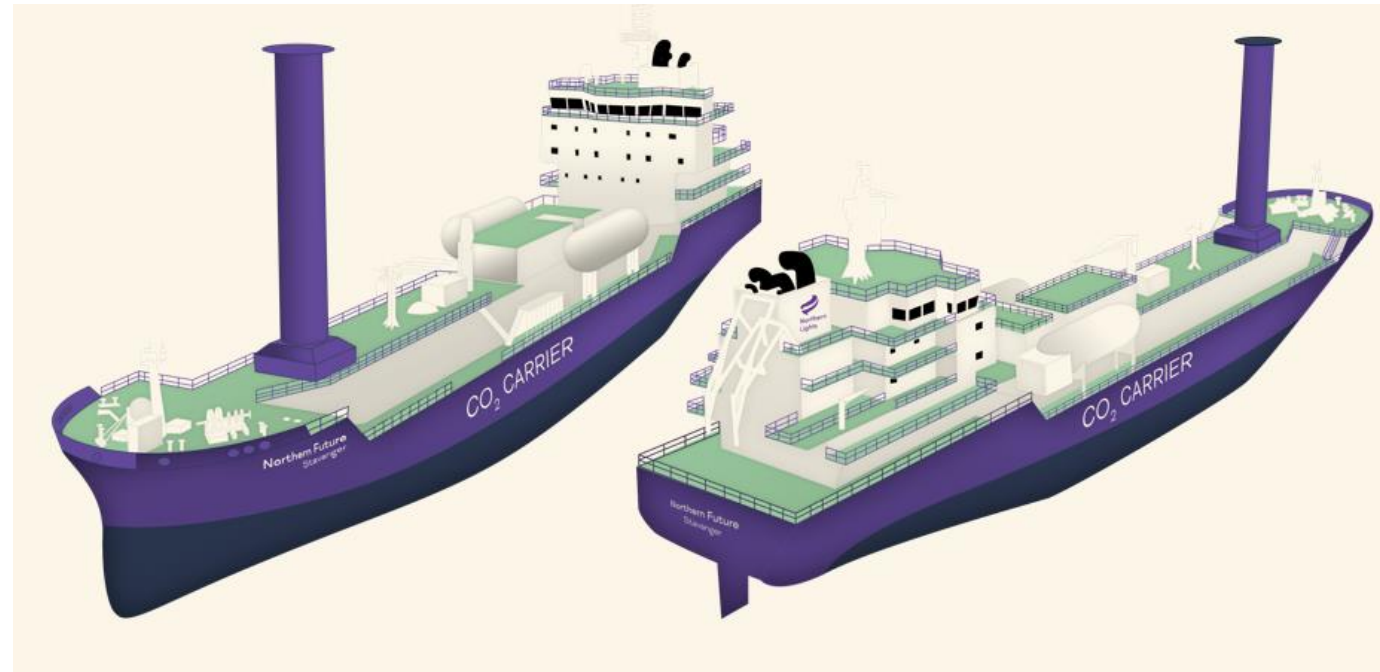 - 80% of decommissioning and monitoring

Northern Lights

NORTHERN LIGHTS SCOPE

CO_2 capture
Capture from industrial plants. Liquefaction and temporary storage.

Transport
Liquid CO_2 transported by ship.

Receiving terminal
Intermediate onshore storage. Pipeline transport to offshore storage location.

Permanent storage
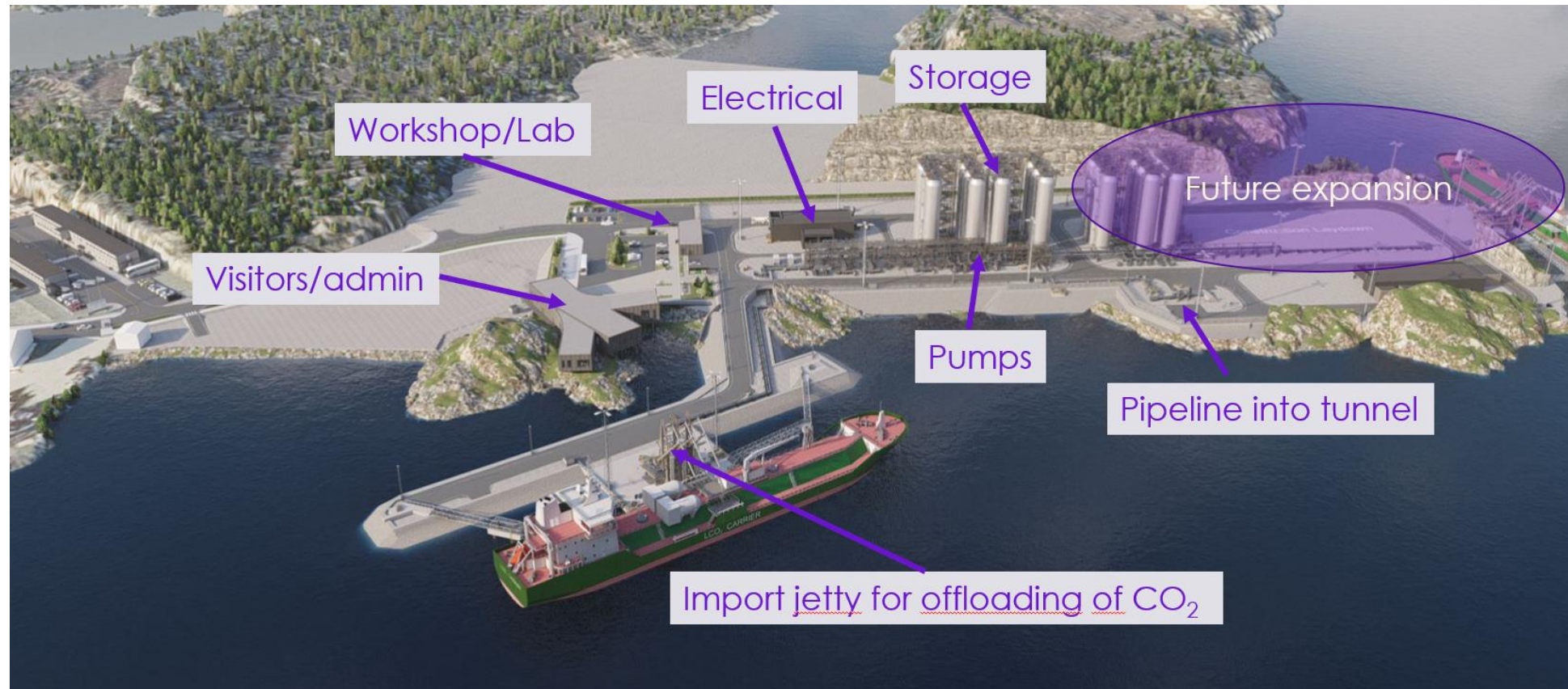CO_2 is injected into a saline aquifer.

100 km

2 600m

Transportation

→ **Ship building contracts awarded October 2021 (two vessels)**

→ **Cargo size: 7,500 m3 (8000 tones CO_2)**

→ **Length: 130m**

→ **Medium Pressure cargo containment**
  - C. 15 barg and -26°C

→ **Purpose-built pressurised cargo tanks**

→ **Primary fuel: LNG**

→ **Wind assisted propulsion system and air lubrication installed**
  - Will reduce carbon intensity by around 34% compared to conventional systems

→ **Ready for delivery in 2024**

→ **To be registered in Norway (NOR)**

→ **Aditional vessels needed**
  - Subject to Phase 2 FID

Northern Lights onshore fascilities

Workshop/Lab

Electrical

Storage

Future expansion

Visitors/admin

Pumps

Pipeline into tunnel

Import jetty for offloading of CO_2

Ongoing fabrication work

Fabrication of storage tanks by Idesa, Spain

Fabrication of subsea satellite by Aker Solutions, Egersund.
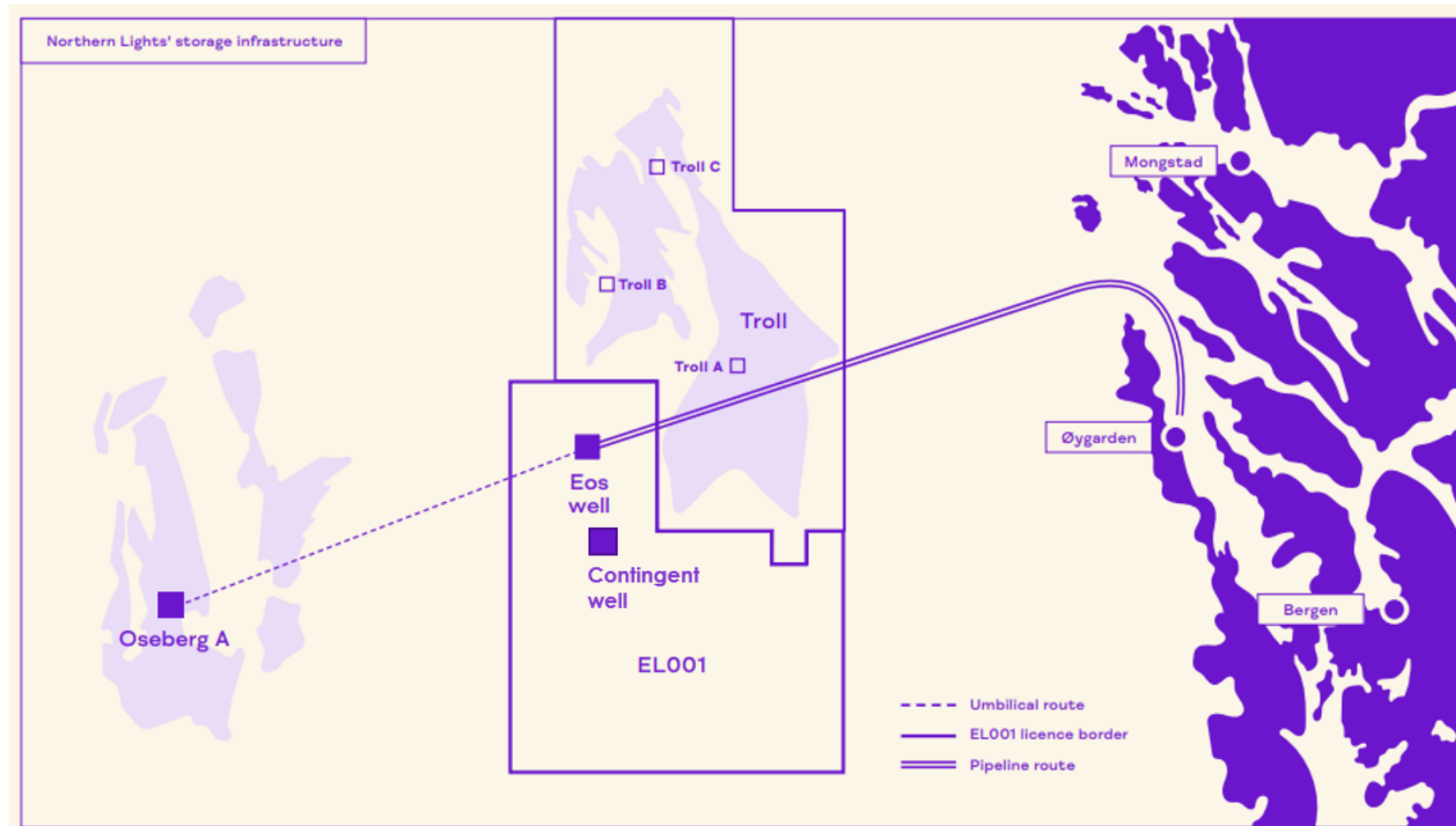
Fabrication of linepipe by Tenaris, Italy. Coating by Shawcor, Orkanger.

Detailed engineering ongoing (STASCO/Dalian, China).

Offshore Fascilities

Northern Lights' storage infrastructure

Troll C
Troll B
Troll
Troll A
Mongstad
Eos well
Øygarden
Contingent well
Bergen
EL001
Oseberg A

- - - Umbilical route
——— EL001 licence border
═══ Pipeline route

Progress

Thank you for your attention!

npd.no
factpages.npd.no/no
norskpetroleum.no