







# Northern Lights CCS

A European CO<sub>2</sub> transport and storage network

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14 January 2021

*Kjetil Wilhelmsen*  
 New Business Development Director  
 Northern Lights CCS (Equinor, Shell, Total)

<https://northernlightscs.com>

Open 24 April 2019

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## The energy transition – the role of CCS



- Aggregate level: How do we de-carbonize the economy while at the same time maintaining industrial activities, value creation, jobs?
- Company level: What's our role? What will our shareholders want us to do? What can we afford?



- What will the ETS price do in the future?
- Availability of subsidies?
- Is there a market for decarbonized end products?
- Covid-19 economic impact?



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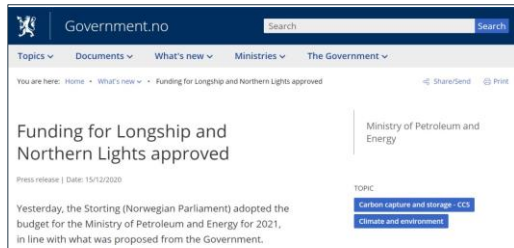
# Northern Lights CCS – FID Process concluded



15 May 2020 NL CCS confirm our conditional FID



21 September 2020 The Norw. Gov't confirm their support



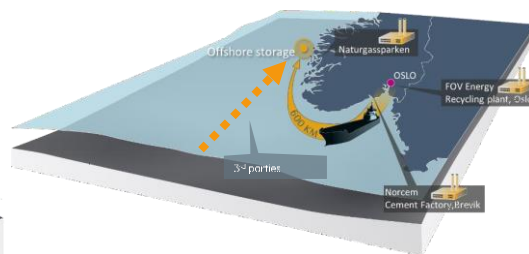
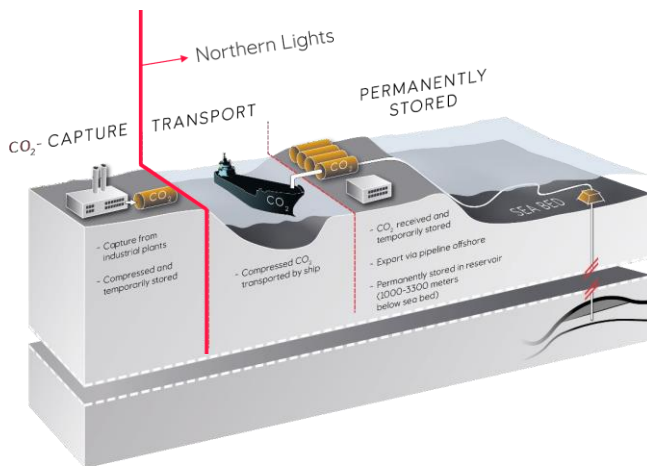
14 December 2020 The Norw. Parliament confirm their support



15 December 2020 Press Conference with the three CEOs and the Minister

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# The Norwegian full scale CCS demonstration project



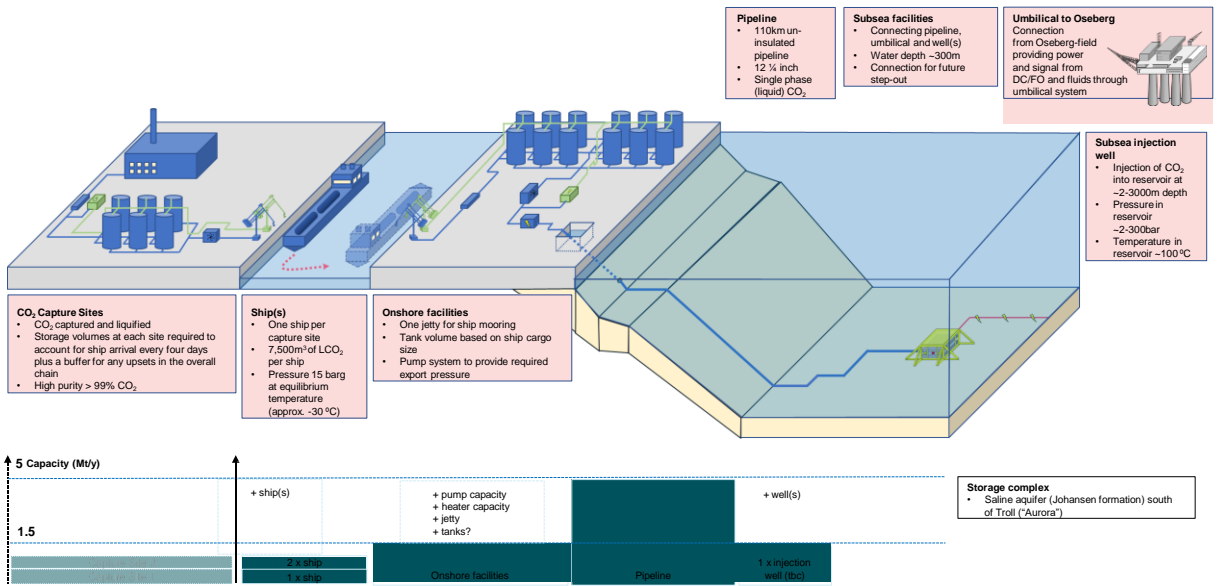
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23 October 2018

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# Northern Lights CCS concept overview



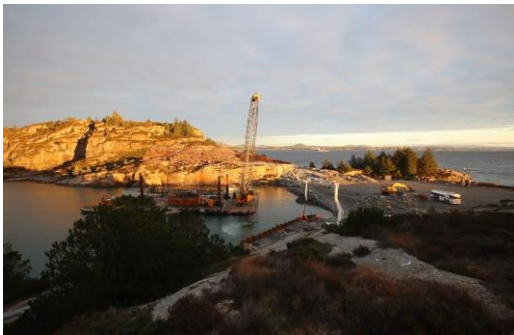
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# Visualisation of onshore facilities, West Coast Norway



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# Construction Activities have Commenced

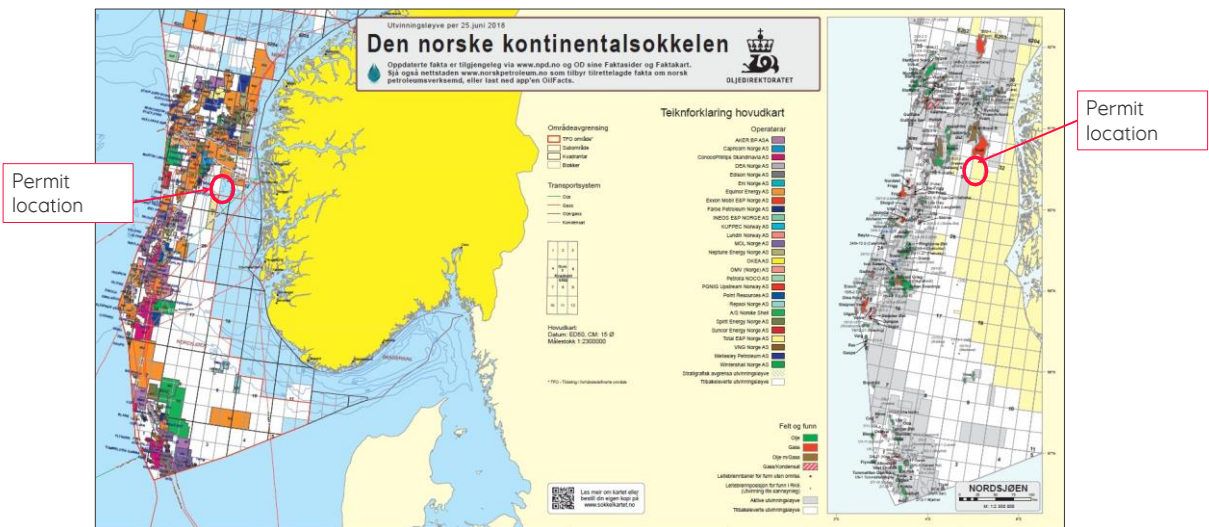


- Time-lapse camera installed on site

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# Exploitation Permit EL 001 for CO2 storage awarded by Norwegian authorities



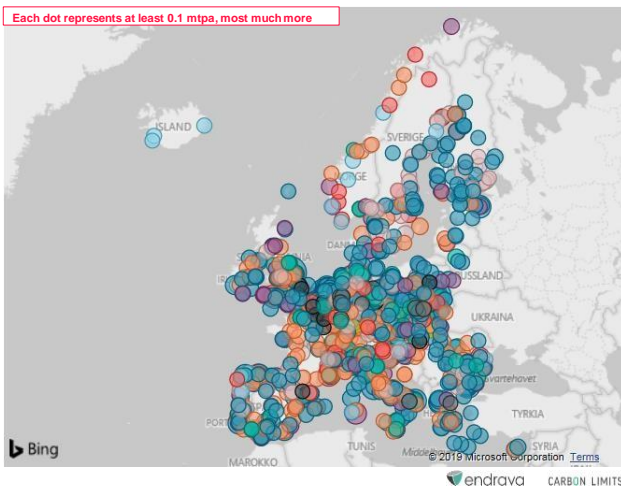
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### Is there a business opportunity?

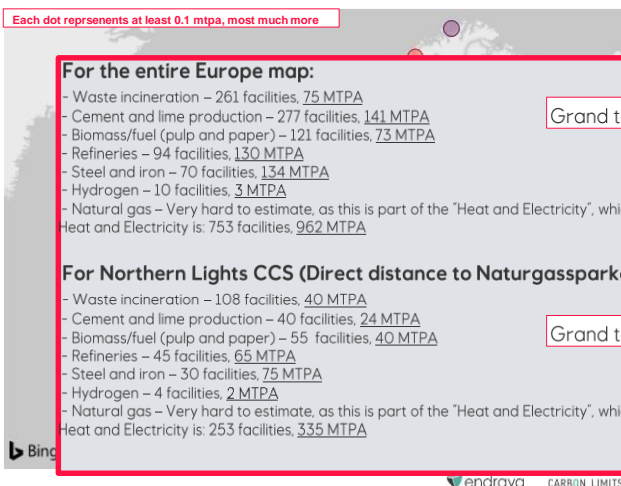
- There is no lack of CO<sub>2</sub> in Europe
- The ship-based solution means access for CO<sub>2</sub> emitters across Europe



- #### Sectors with the largest potential
- Waste incineration / WtE
  - Cement
  - Biomass and biofuel
  - Refineries
  - Fertilizers
  - Steel
  - Natural gas
    - Hydrogen
    - Electricity
  - DAC

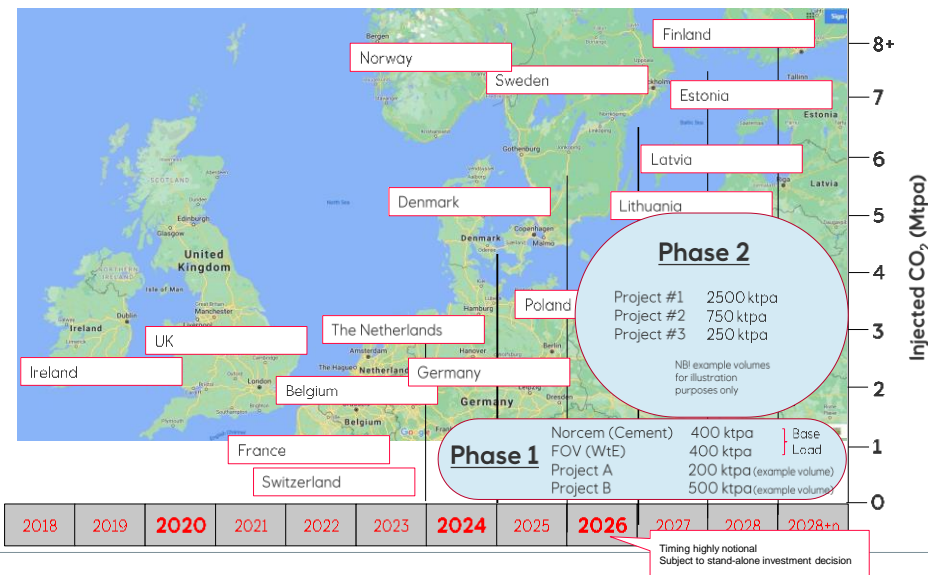
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- #### Sectors with the largest potential
- For the entire Europe map:**
- Waste incineration – 261 facilities, 75 MTPA
  - Cement and lime production – 277 facilities, 141 MTPA
  - Biomass/fuel (pulp and paper) – 121 facilities, 73 MTPA
  - Refineries – 94 facilities, 130 MTPA
  - Steel and iron – 70 facilities, 134 MTPA
  - Hydrogen – 10 facilities, 3 MTPA
  - Natural gas – Very hard to estimate, as this is part of the "Heat and Electricity", which is a combination of several fuel sources (coal, gas etc). Total for Heat and Electricity is: 753 facilities, 962 MTPA
- Grand total: Approx. 1 500 MTPA**
- For Northern Lights CCS (Direct distance to Naturgassparken less than 1500 km, closest port within 25 km):**
- Waste incineration – 108 facilities, 40 MTPA
  - Cement and lime production – 40 facilities, 24 MTPA
  - Biomass/fuel (pulp and paper) – 55 facilities, 40 MTPA
  - Refineries – 45 facilities, 65 MTPA
  - Steel and iron – 30 facilities, 75 MTPA
  - Hydrogen – 4 facilities, 2 MTPA
  - Natural gas – Very hard to estimate, as this is part of the "Heat and Electricity", which is a combination of several fuel sources (coal, gas etc). Total for Heat and Electricity is: 253 facilities, 335 MTPA
- Grand total: Approx. 580 MTPA**

We are active in virtually all Northern European countries, and a few more...



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## Growing number of MoUs signed



### SIGNATORIES

1. Fortum Group, Finland
2. Ervia, Ireland
3. Air Liquide, Belgium/France
4. Stockholm Exergi, Sweden
5. ArcelorMittal, Luxembourg/Belgium
6. Preem, Sweden
7. Heidelberg Group, Germany
8. ETH Zurich, Switzerland
9. Microsoft, USA
10. ... imminent...

### TYPICAL CONTENT

- Logistics studies
- CO<sub>2</sub> specifications optimized across value chain
- Commercial maturation
- Joint advocacy for CCS and its importance for the successful decarbonization of European industry



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## Collaboration with Microsoft on Northern Lights value chain

By Anne Cavendish - 14 okt. 2020 17:40



Irene Rummeihoff, Equinor's executive vice president for Marketing, Midstream and Processing (MMP), and Brad Smith, president of Microsoft.

Equinor has signed a Memorandum of Understanding (MoU) with Microsoft to explore ways to support the Northern Lights carbon capture and storage (CCS) project as a technology partner. Microsoft will explore using the project to enable the transportation and storage of captured CO<sub>2</sub>. Equinor is developing the project together with Shell and Total as equal partners.



<https://news.microsoft.com/transform/northern-lights-is-innovating-for-the-future-of-carbon-transport-and-storage/>

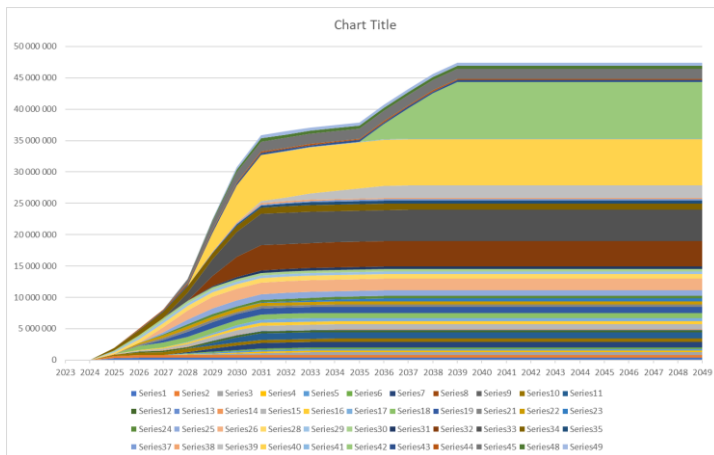
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## NW Europe based companies NL CCS have a positive dialogue with, MoU-partners ++



- This is a dynamic picture, subject to change
- Will not be realized, but provides an impression of the scope/size of the prize



Approx. 48 mtpa

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## CCS in Norway – 24 years of successful industrial experience

