



Norwegian Ministry
of Petroleum and Energy

Carbon Capture and Storage in Norway

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Norwegian CCS strategy – a broad approach

R&D



CLIMIT
FORSKNINGSRÅDET OG GASSNOVA

FmE
CENTRE FOR
ENVIRONMENTAL
FRIENDLY ENERGY
RESEARCH

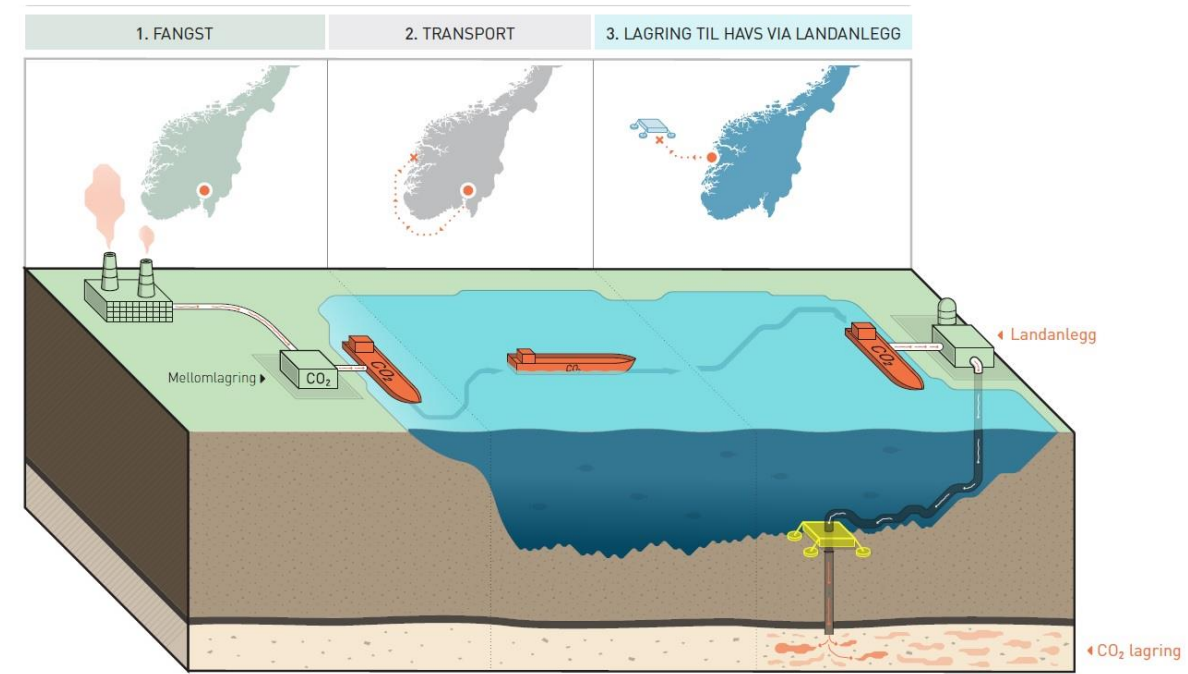


DEMO



CO₂ TECHNOLOGY CENTRE MONGSTAD

FULL SCALE



GASSNOVA



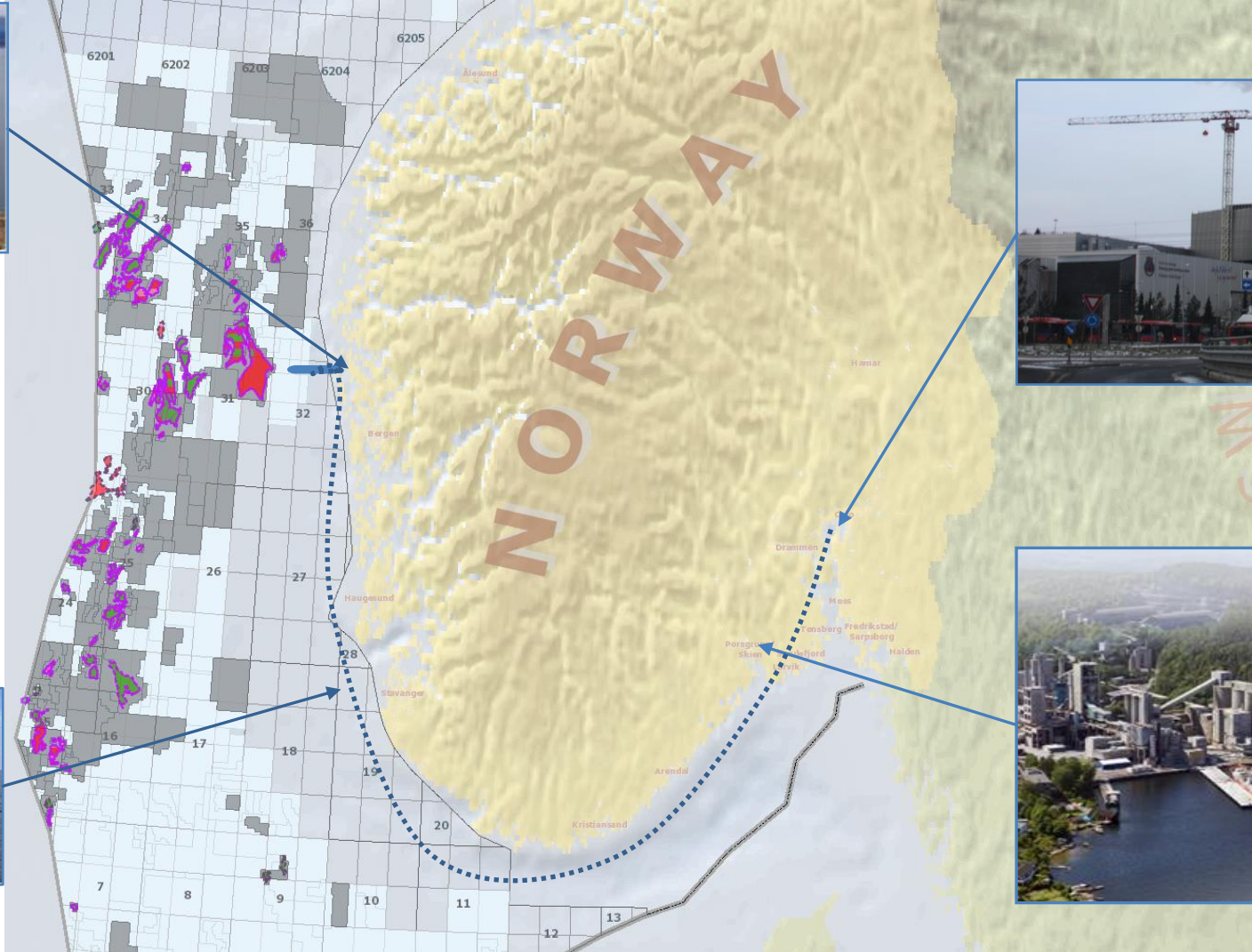
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The Norwegian CCS demonstration project



equinor TOTAL

Ship transport from capture site to storage location – pipeline to offshore storage complex



Waste incineration
400 000 tonnes CO₂ per year

NORCEM
HEIDELBERGCEMENT Group



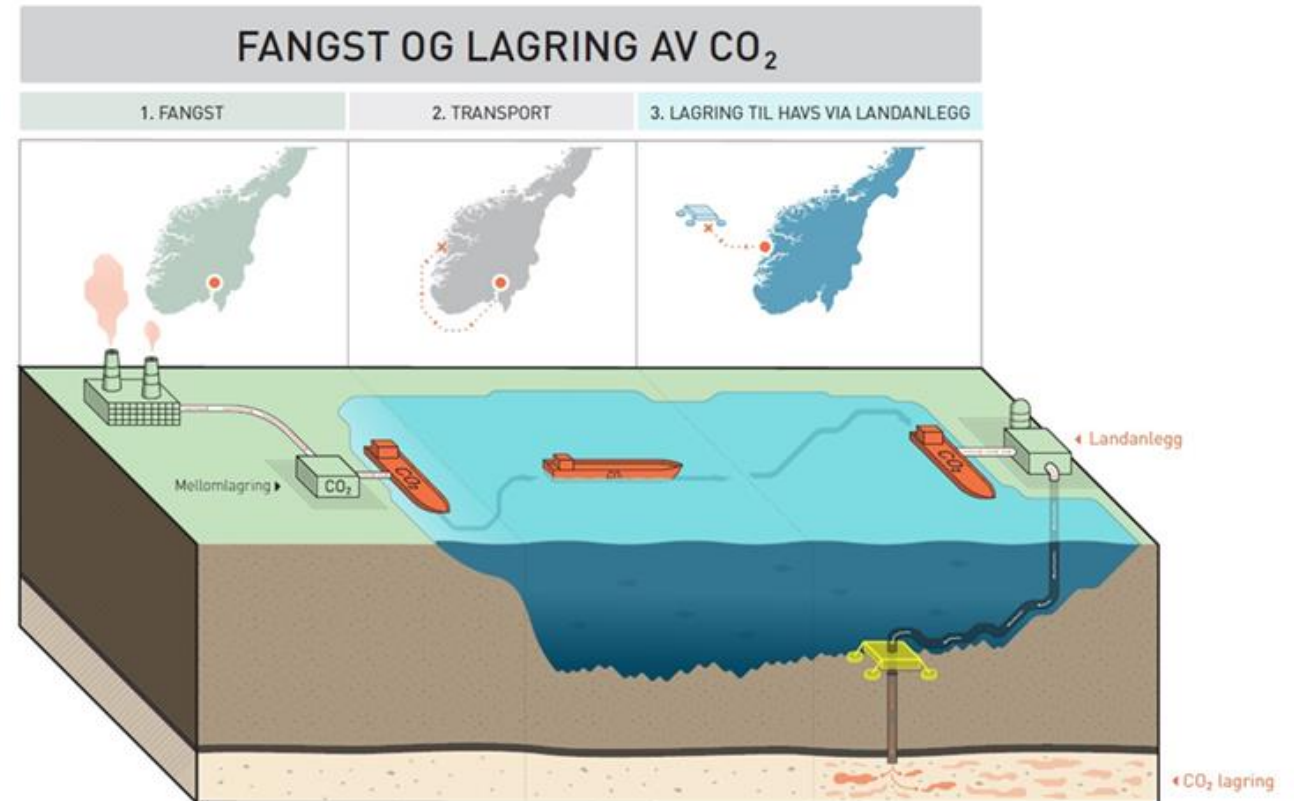
Cement production
400 000 tonnes CO₂ per year



Olje- og energidepartementet

Project's aims

- Demonstrate a full chain of capture, transport and storage of CO₂ – with acceptable costs
- Establish infrastructure for transport and storage of CO₂
- Demonstrate safe and efficient operation
- Provide cost and risk reductions for subsequent CCS projects
- Technology dissemination
- Industrial development



The way Forward



Start FEED -
summer2018

Investment decision
2020/2021

Operation -
2023/2024



QA - prepare
investment decision –
2019/2020

Development
2020/2021 →



Challenges

Final Investment Decision - Crucial Aspects:

- 1) Results from FEED, including quality, costs, risks,
- 2) Expected learning effect vs. resources spent:
Will the Norwegian CCS project make a significant contribution to international use of CCS?
- 3) Political acceptance and support
- 4) Sharing of costs and risks
- 5) The London Protocol

The London Protocol and cross border transport of CO₂ for the purpose of storage

- London Protocol: International treaty with 51 parties under the IMO
- Prohibits dumping of wastes in marine environments
- CO₂ was defined as "wastes" within the meaning of the London Protocol, but included on the "exemption"-list in Annex 1 in 2006
- However, still a ban on "export" of wastes
- An amendment was passed in 2009 to allow for export of CO₂, will enter into force when 2/3 of the parties have ratified it nationally
- By May 2019: six parties have formally ratified/accepted the amendment: The United Kingdom, The Netherlands, Finland, Iran, Estonia and Norway



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Thank you for your attention!

