NORWAY’S CLIMIT PROGRAM AND CO$_2$ TECHNOLOGY CENTRE MONGSTAD
NORWAY HAS AN EXCEPTIONAL POSITION

A world-class oil and gas nation

- Our oil and gas position
- Our technical expertise
- Our financial resources
- Cooperation government, research and industry
ACCELERATE COMMERCIALISATION OF CO$_2$ CAPTURE AND STORAGE (CCS) THROUGH FINANCIAL STIMULATION OF RESEARCH, DEVELOPMENT AND DEMONSTRATION.
More than 200 projects have received support

Approx. NOK 1.4 billion awarded

- In addition, the CLIMIT Demo projects have triggered 50% industry financing on average

Support for research, development, pilot and demo projects

Budget grants: 200 MNOK (2014)
CLIMIT: UNIQUE INSTRUMENT FOR PROMOTING AND SUPPORTING TECHNOLOGY DEVELOPMENT

- We are proactive and we build networks
- International cooperation
- New measures to encourage more applications
- Exchange of knowledge and experience
1st in Europe with CCS for cement
4 capture technologies to be tested
10.5 mill US$ from CLIMIT 2013-2017
CLIMIT PROJECT: ALSTOM
CARBONATE LOOPING
CO$_2$ CAPTURE BASED ON LIMESTONE

- Next generation capture technology
- Improved energy efficiency
- Project cost: 4 mill US$
- Power production, coal-based with CCS
- Industry, particularly cement production
CLIMIT PROJECT: SOLVit
DEVELOPMENT OF AKER SOLUTIONS
AMINE TECHNOLOGY

• New environmentally-friendly amine based solvents for CO₂ capture
• Improved energy efficiency
• Project cost 50 mill US$
• Application: Power production and industrial emissions, both retro-fitting and new facilities
CLIMIT PROJECT: MEMBRANE TECHNOLOGY

- Fixed Site Carrier Membranes
- Norwegian patented technology
- Cooperation with US membrane producer
- Project cost: 2.3 mill US$
- Tested with coal and cement flue gas
CO₂ Technology Centre Mongstad (TCM)
Demonstrated two solvents developed by Aker (“S21” and “S26”)
• MEA-campaign: Baseline established
• Stable operations of approximately 7000h on CHP flue gas
• CO₂ capture rate: approx. 90%
TCM: Alstom’s Chilled Ammonia Process

- Demonstrated the Alstom CAP technology
- Stable operations of approximately 7000h (RFCC and CHP flue gas)
- Extensive process development
- CO₂ capture rate: 85 to 90%
TCM: HAS MADE CO$_2$ CAPTURE TECHNOLOGY CHEAPER, SAFER AND READY FOR FULL-SCALE

- Matured technologies
- Operational experience at industrial scale
- Reduced cost risk
- Reduced environmental risk
TCM: THE WAY FORWARD

- The existing facilities
  - Further develop amine and ammonia technologies
- Development of the available site
  - Smaller scale testing and demonstration for:
    - Qualification of less mature technologies
    - Identification of next generation capture technologies
THANK YOU!

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CLIMIT program
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