Development of Danish onshore CO_2 infrastructure to facilitate development of large-scale CCUS projects

CO_2 Capture, Storage & Reuse 2023
16-17 May 2023, Copenhagen

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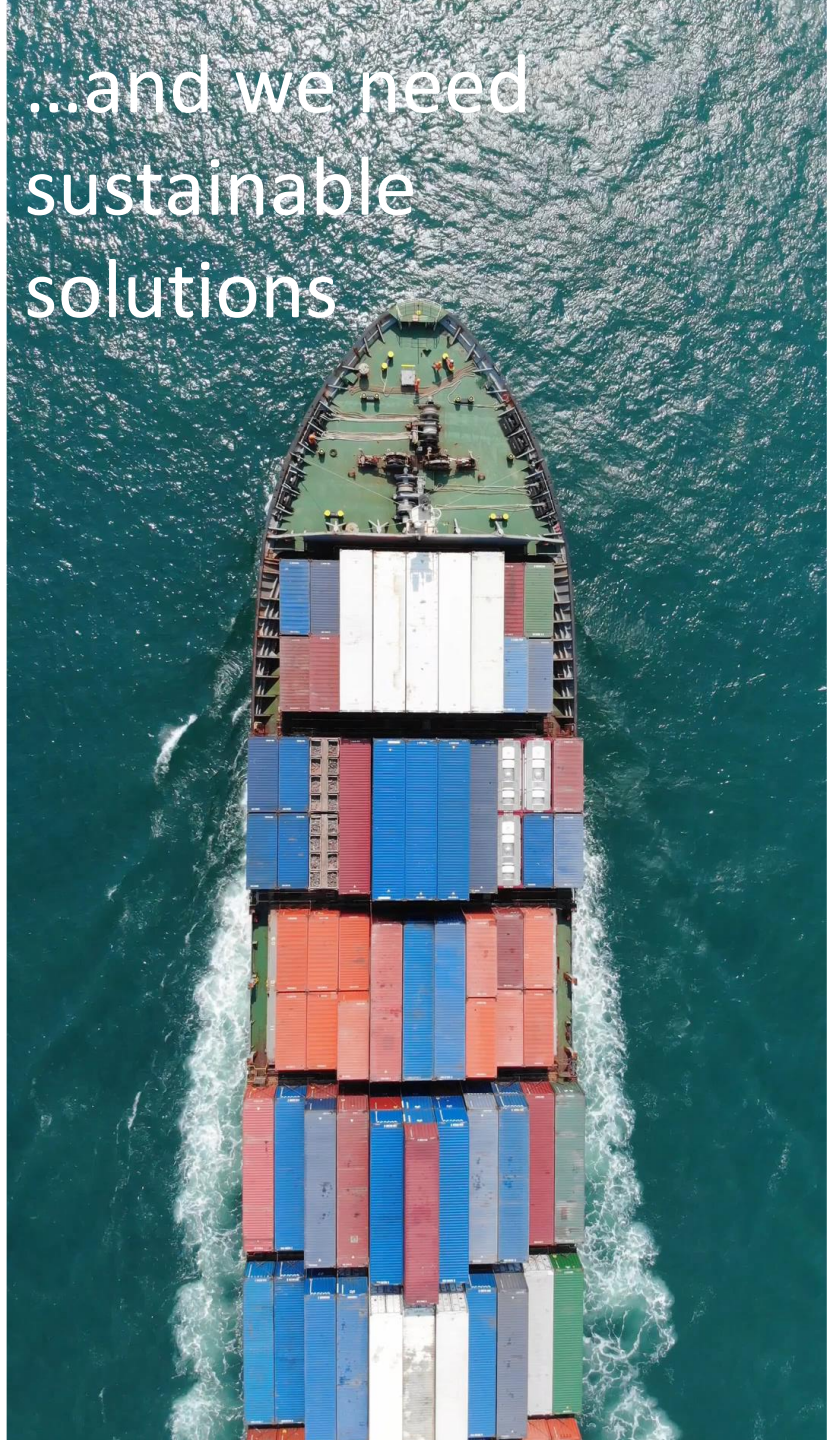
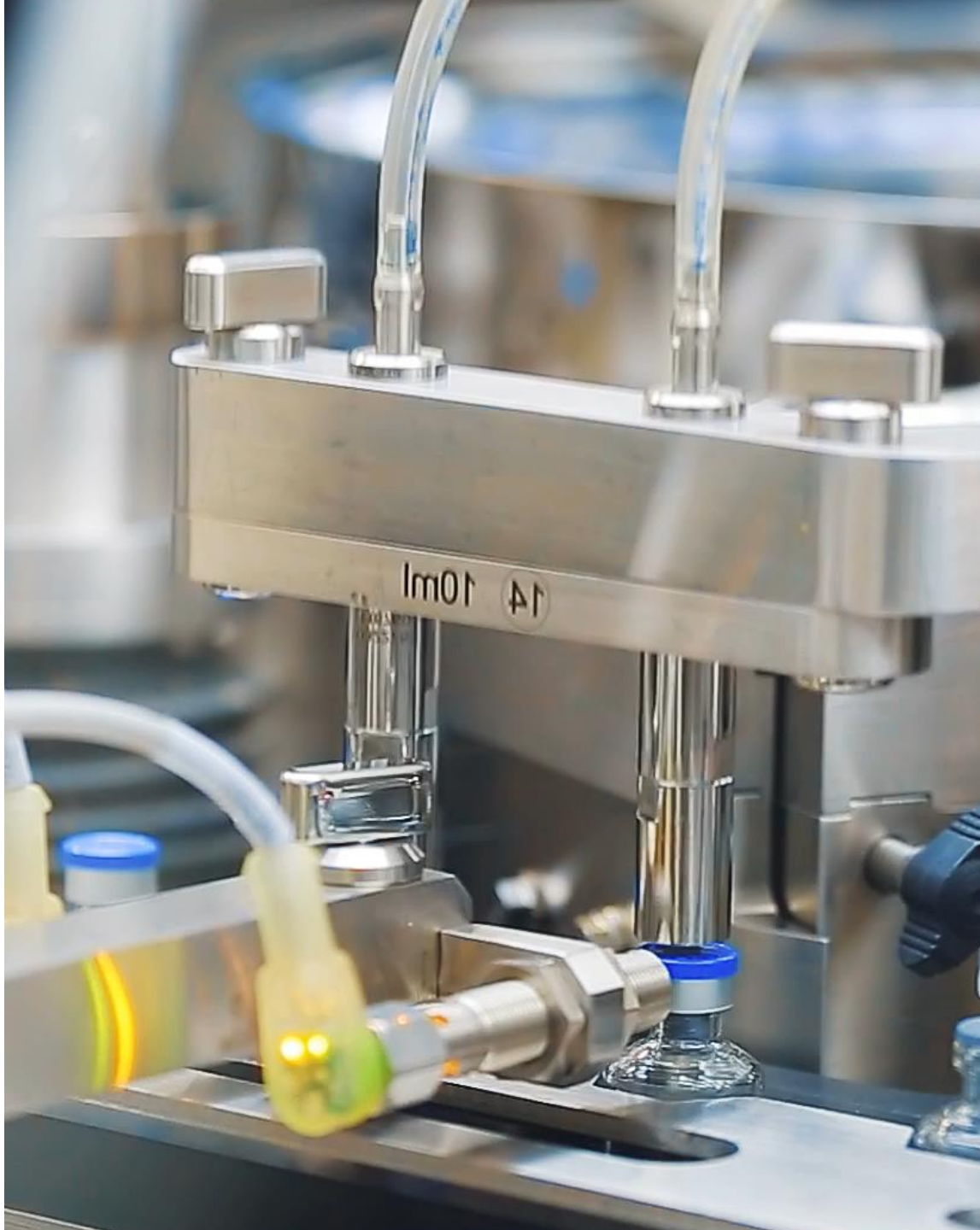
We got a problem…



…and we need sustainable solutions



The Danish climate targets

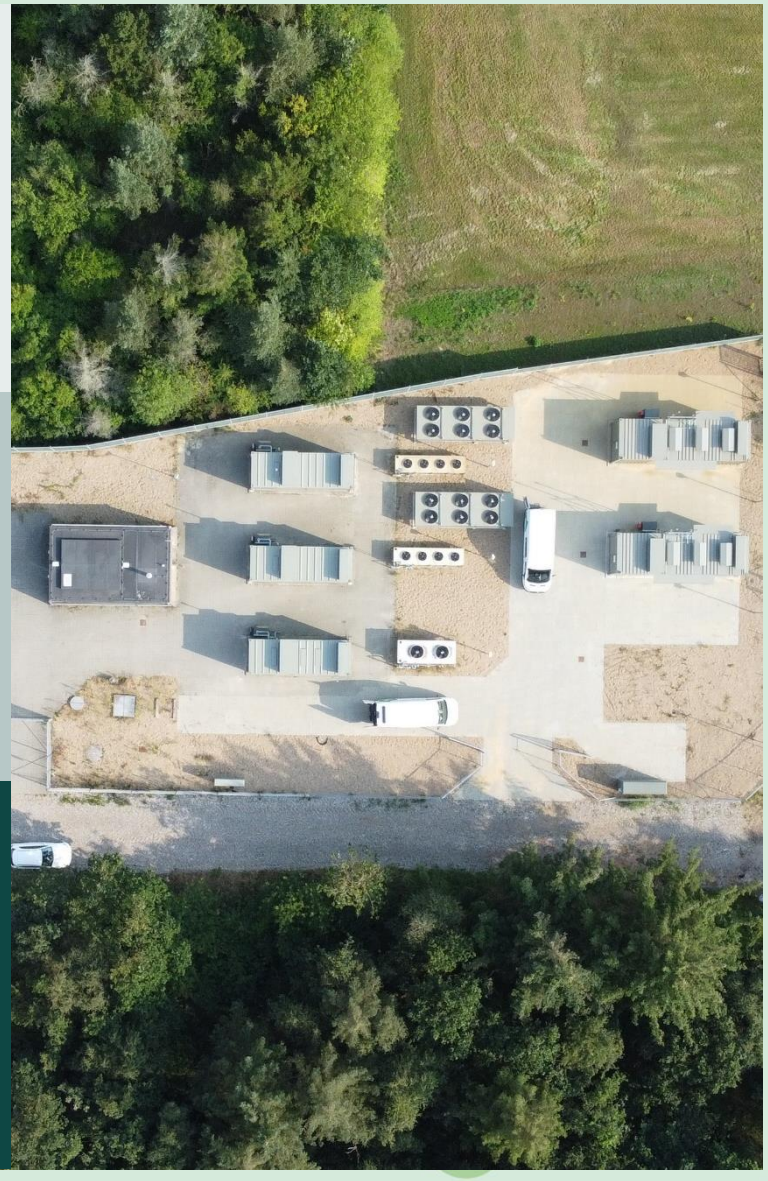
- reduce carbon emissions by 70 per cent by 2030
- to achieve carbon neutrality by 2050

Infrastructure is the key to the Danish green transition

Access to CO_2 for CCU og CCS

Cost-efficient transportation

Can position Denmark as a European CO_2 hub



The future Danish demand for CO_2 infrastructure – marked dialogue 2023

28

PARTICIPANTS

5,6
mio. tons of CO_2 p.a.

CAPTURE POTENTIAL

46 %

PROJECTS STRENGTHENED FROM PIPELINE INFRASTRUCTURE

GEOGRAPHICAL DIFFERENTIATION ON BETWEEN CAPTURE AND UTILISATION

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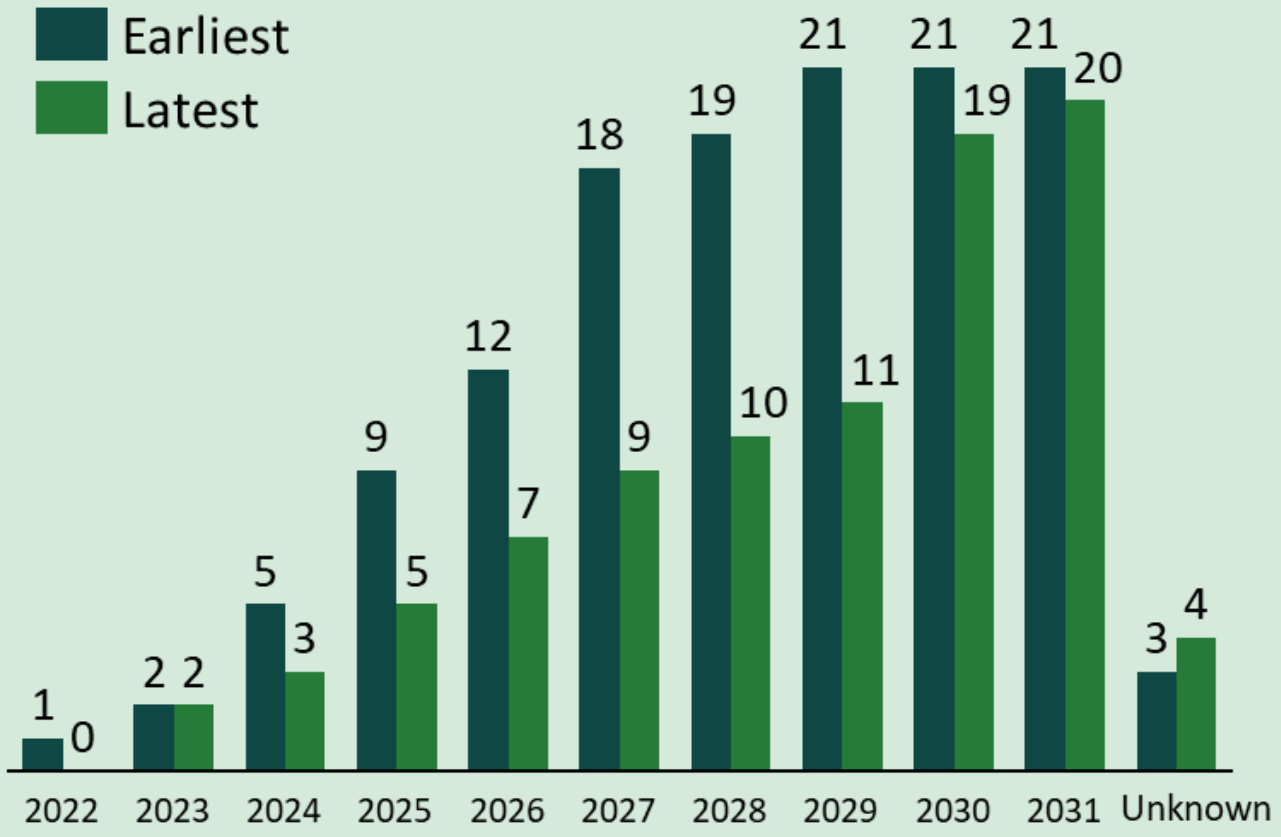
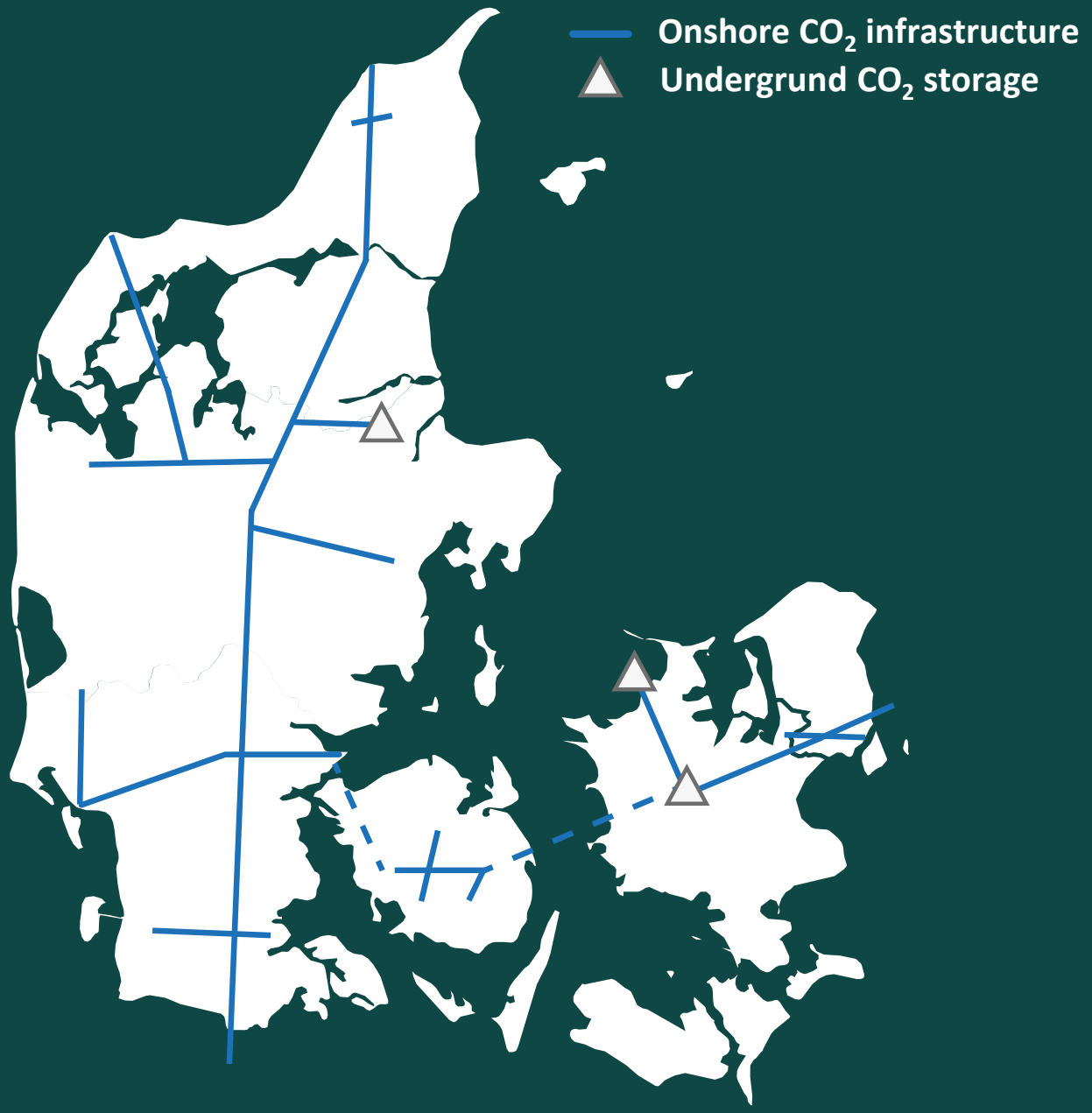
Projected commissioning of Danish projects

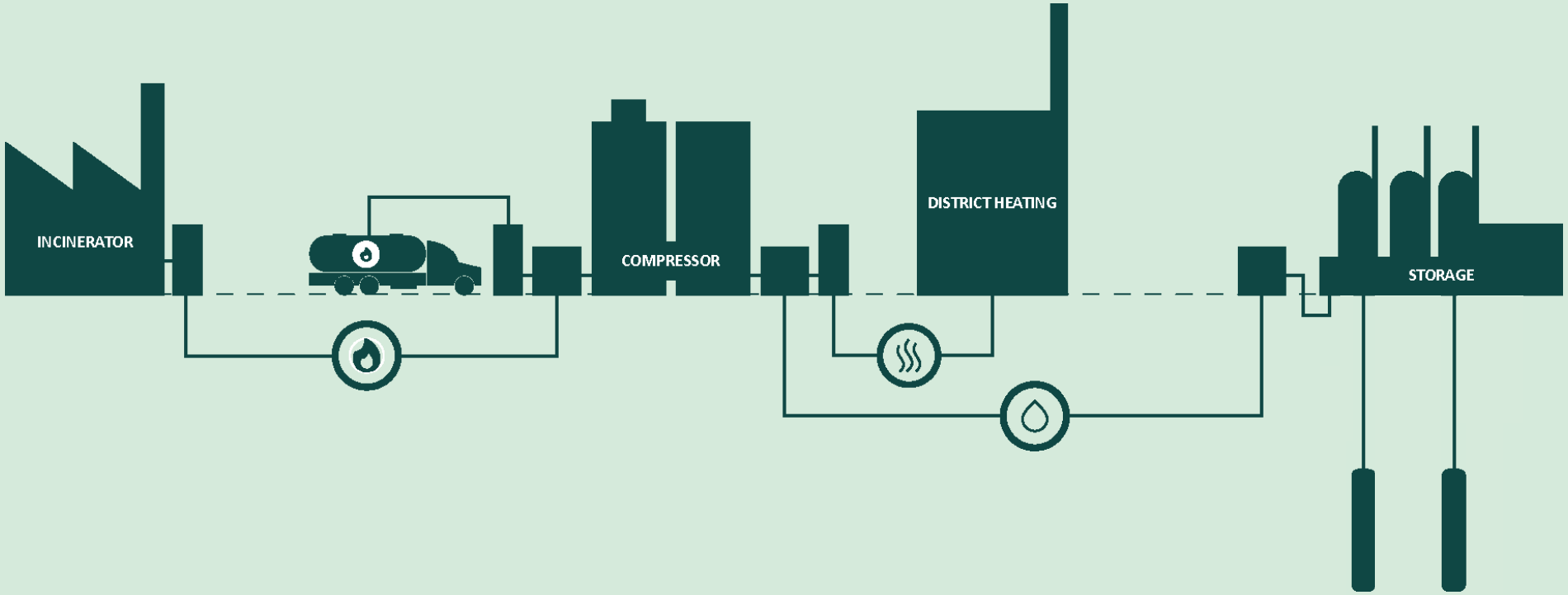


A vision for a Danish future CO_2 infrastructure

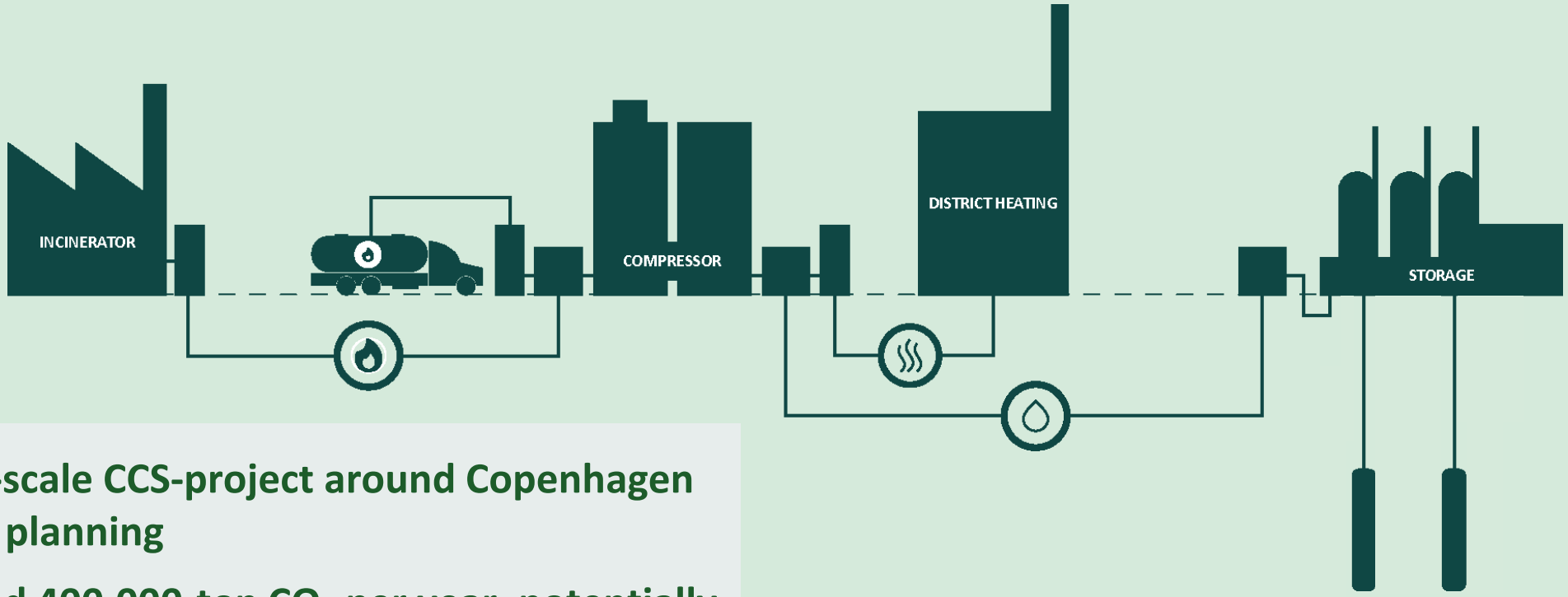
- based on the market's reported needs



Conceptual model for CO_2 transportation



Conceptual model for CO_2 transportation



Large-scale CCS-project around Copenhagen in the planning

Around 400.000-ton CO_2 per year, potentially expanded to >2 mio. ton CO_2 per year

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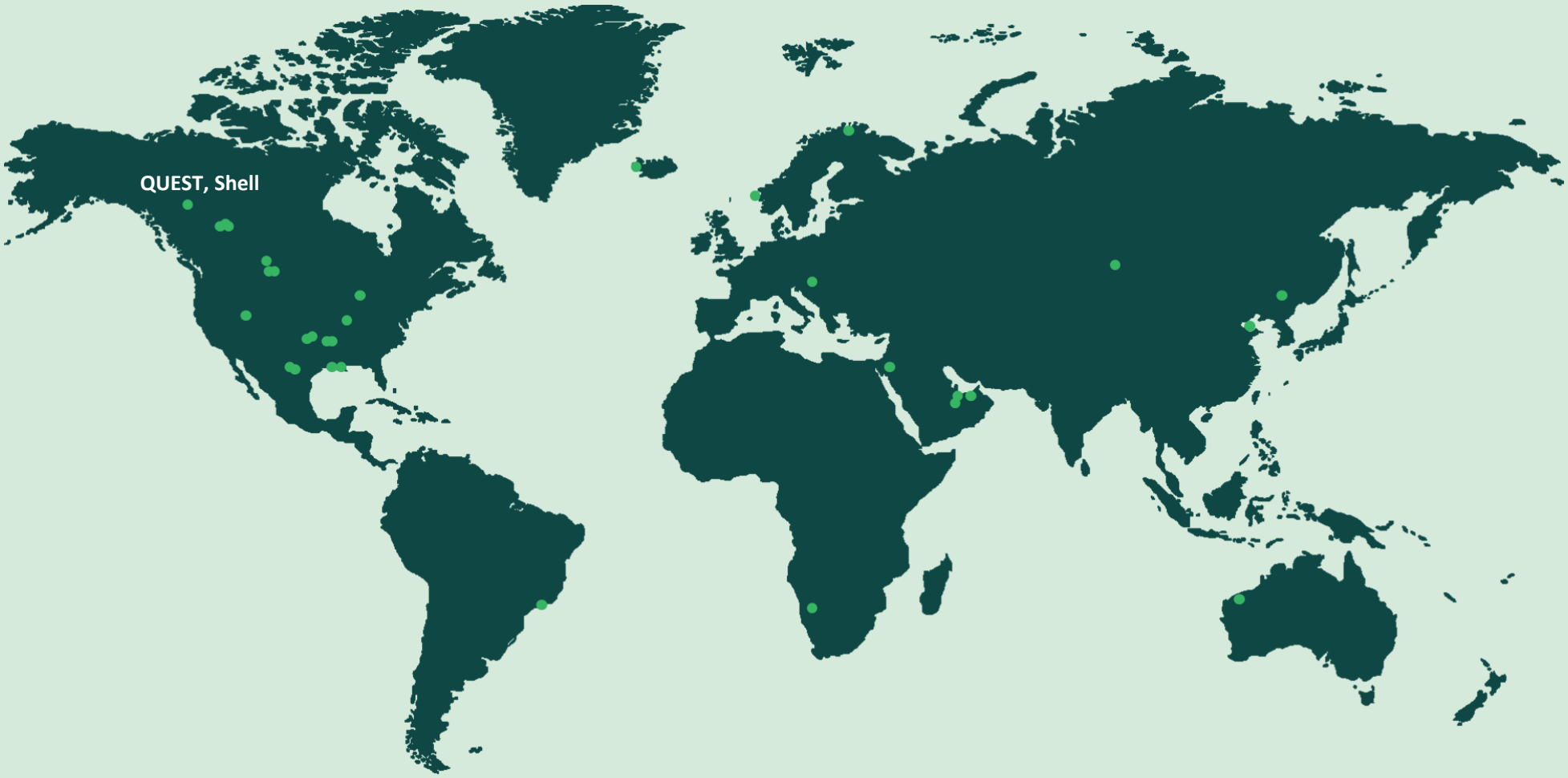
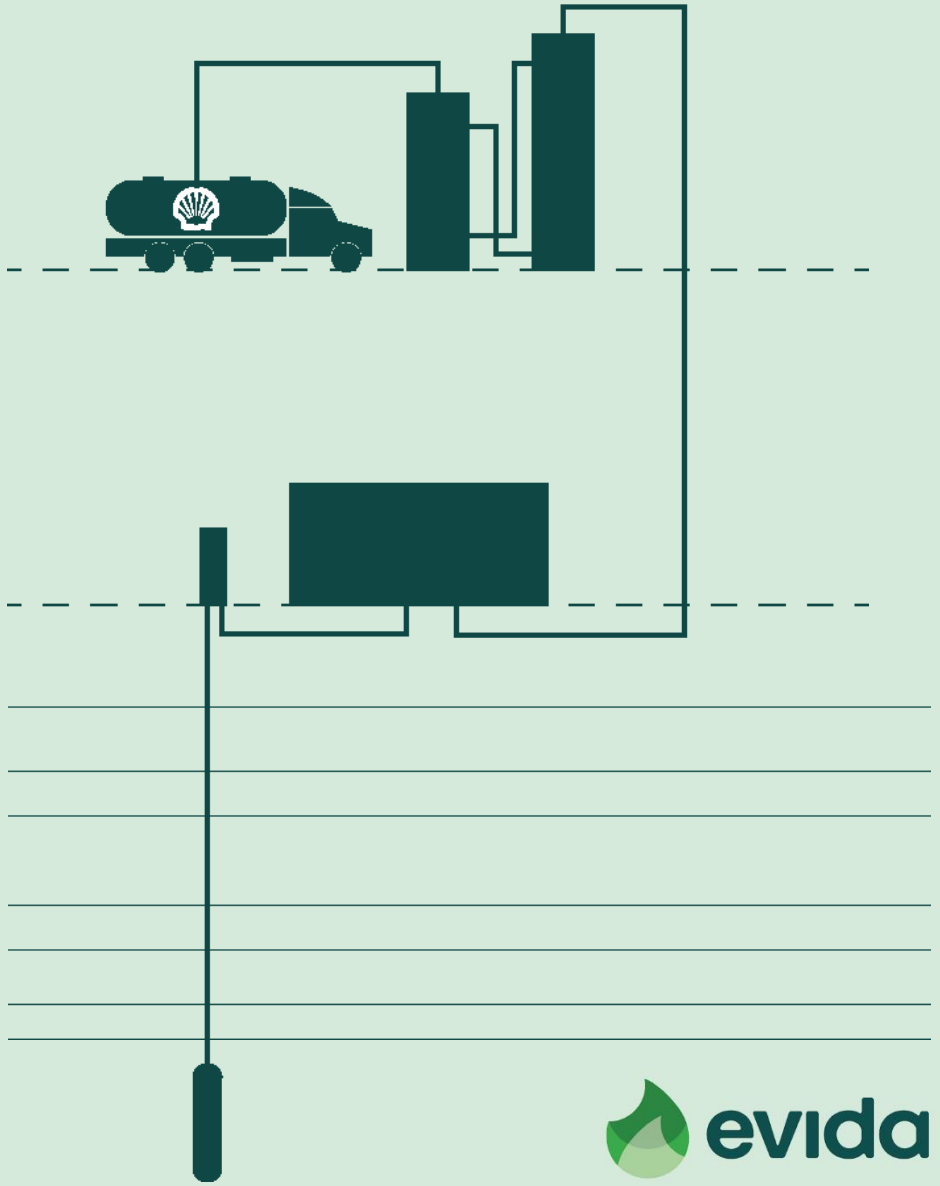
Building upon experience from international projects

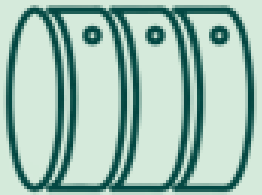


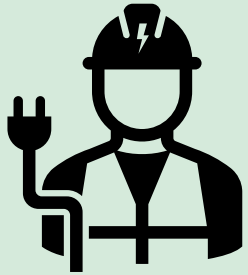
Quest, Shell Canada

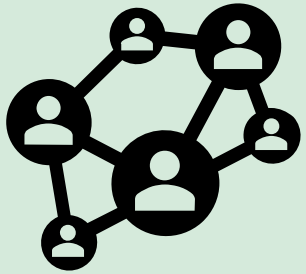
- Quest is the first commercial application of CCS and was initiated in 2015
- Capture, transport and storage of around 1-million-ton CO_2 per year
- By now more than 6 million tons has been captured and permanently stored
- Part of the Athabasca Oil Sands Project and considered to be a good reference for Danish CCS-projects



Scale is everything







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Denmark as a European CO_2 storage Hub

DENMARK

CAPTURE POTENTIAL OF
~10,8 MIO. TON PER YEAR BY 2040*

STORAGE POTENTIAL OF
22 BILLION TON**

	FINLAND	GERMANY	POLAND	SWEDEN
Industrial CO_2 emissions 2019 (2017 for Germany) ($MtCO_2$)	49,73	49,73	174,31	49,18
Political maturity	◐	◐	◔	◕
National CCS objectives	✗	✗	✗	✓
Total CO_2 capture potential ($MtCO_2$) 2022-2050	~286	~896	~596	~323
National storage potential	○	◔	◐	◔
Possibility for storage in Denmark	◕	◐	◐	◕

*Danish Energy Agency predictions, Feb. 2023
**Geological Survey of Denmark and Greenland, www.GEUS.dk

”Tekniske og økonomiske analyser til klyngesamarbejde om CO2 infrastruktur og transport, Rambøll 2022” available from www.c4cph.dk

Thank you very much for your attention

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