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Technical Director



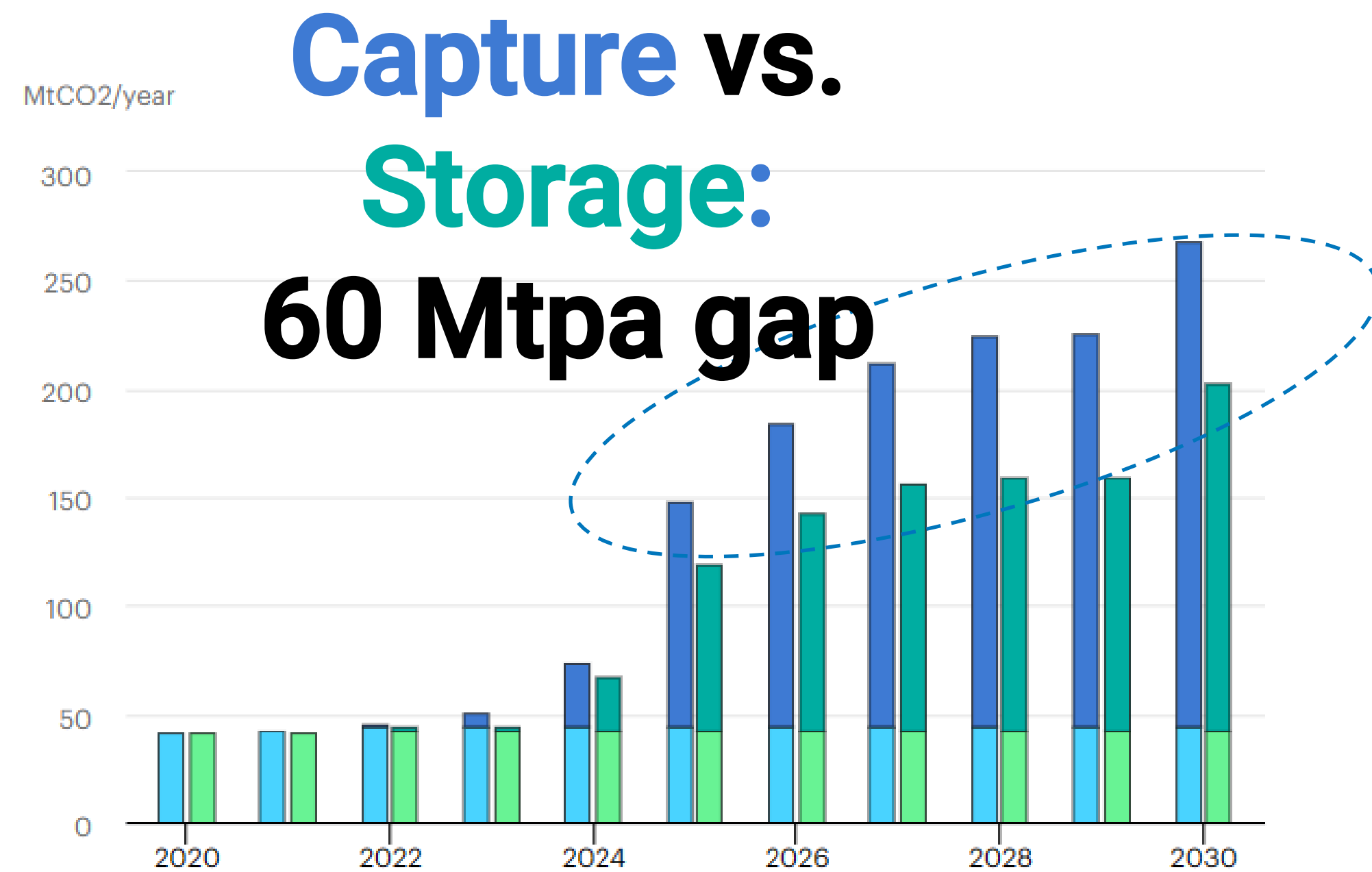
CARBON COLLECTORS

we cut your plant's emissions

7th International Workshop on Offshore Geological CO₂ Storage
University of Texas, September 17th 2024

Global CCS is growing ... but not fast enough

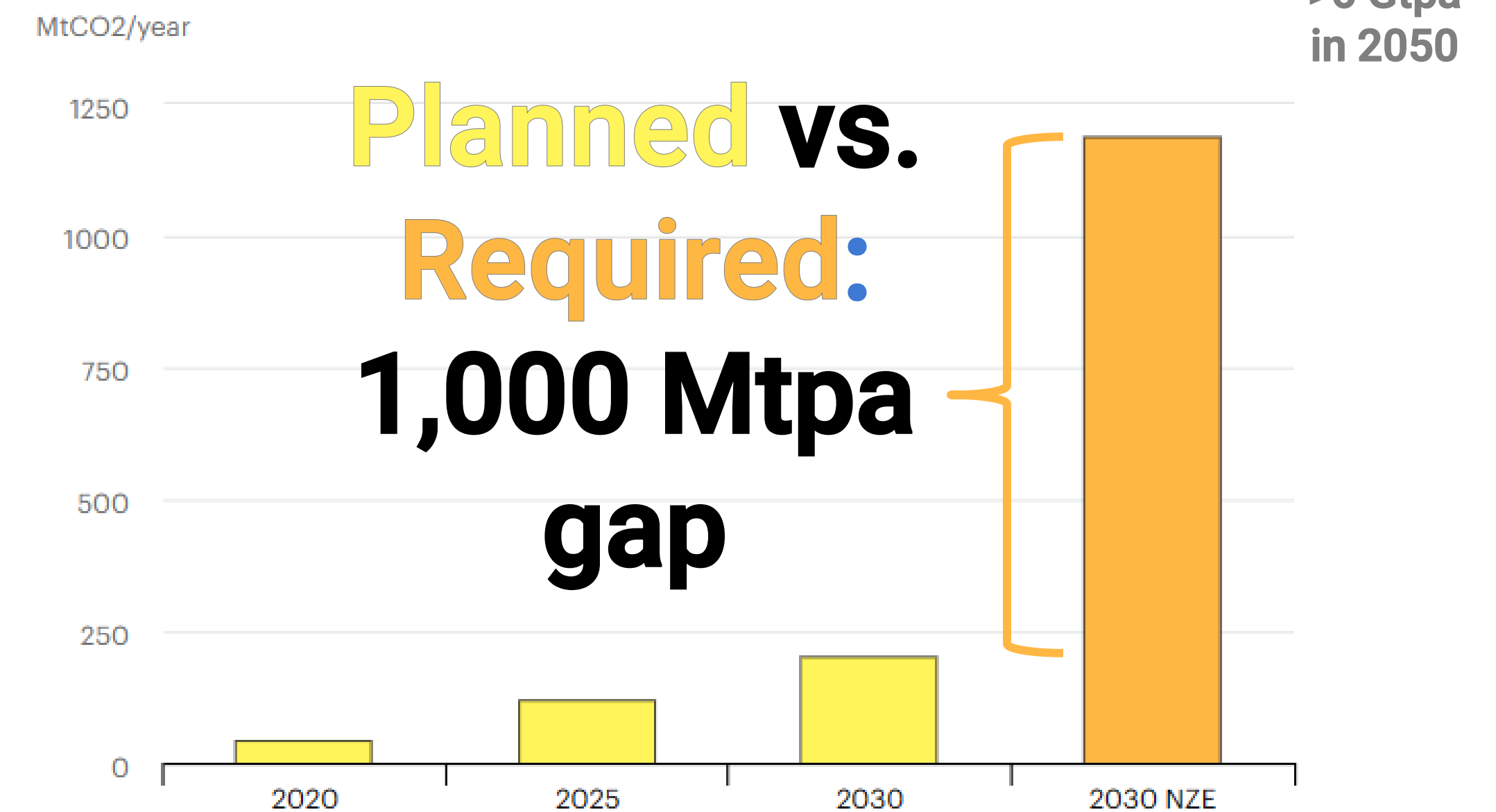
Annual CO2 capture capacity vs. storage capacity



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● Operational capture ● Capture in development ● Operational storage
● Storage in development

Annual CO2 storage capacity vs Net Zero Scenario

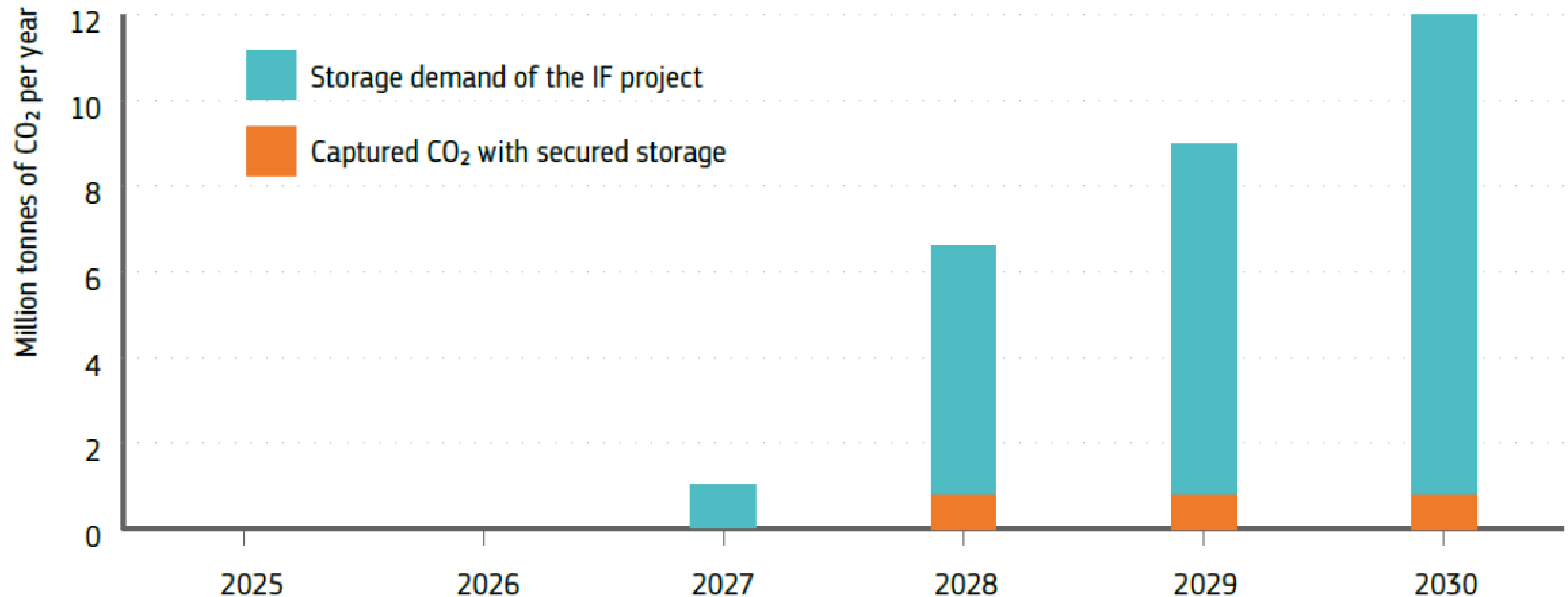


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● Current and planned ● NZE

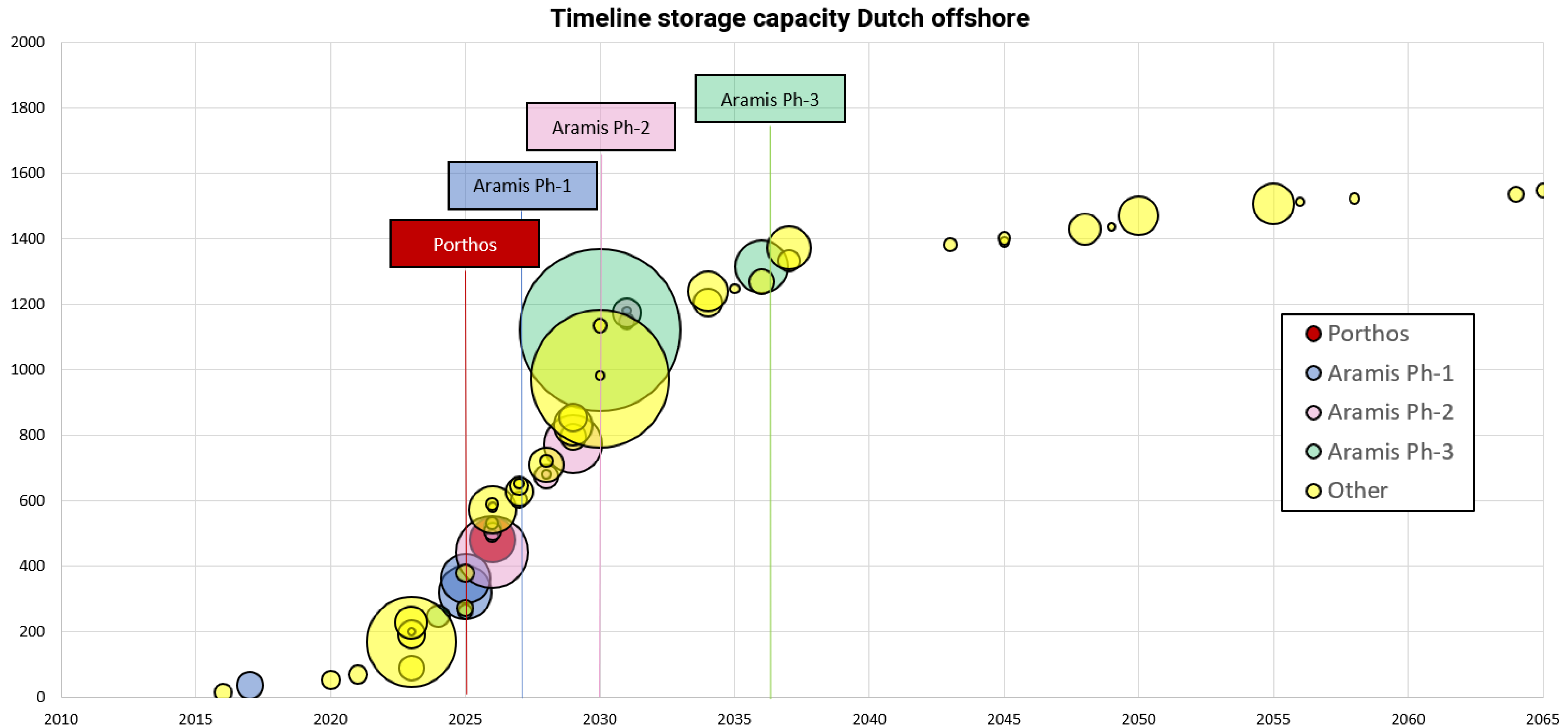


The annual carbon capture rate and storage needs of IF projects



12 projects capturing CO₂ have a total storage demand of 11.2 million tonnes of CO₂ equivalent per year by 2030

75% of NL offshore storage capacity available by 2030



Challenges & Opportunities:

- Capacity / Availability
- Demand versus Supply
- Timing
- Closing the Supply Chain

PLANT



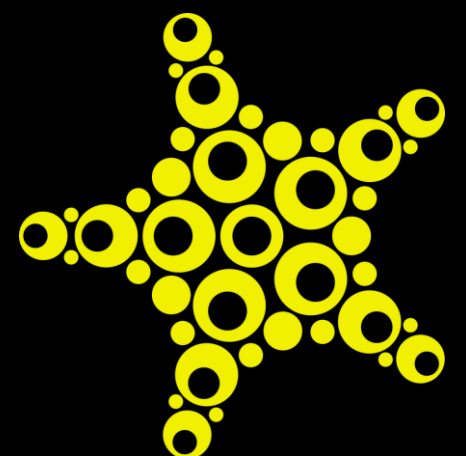
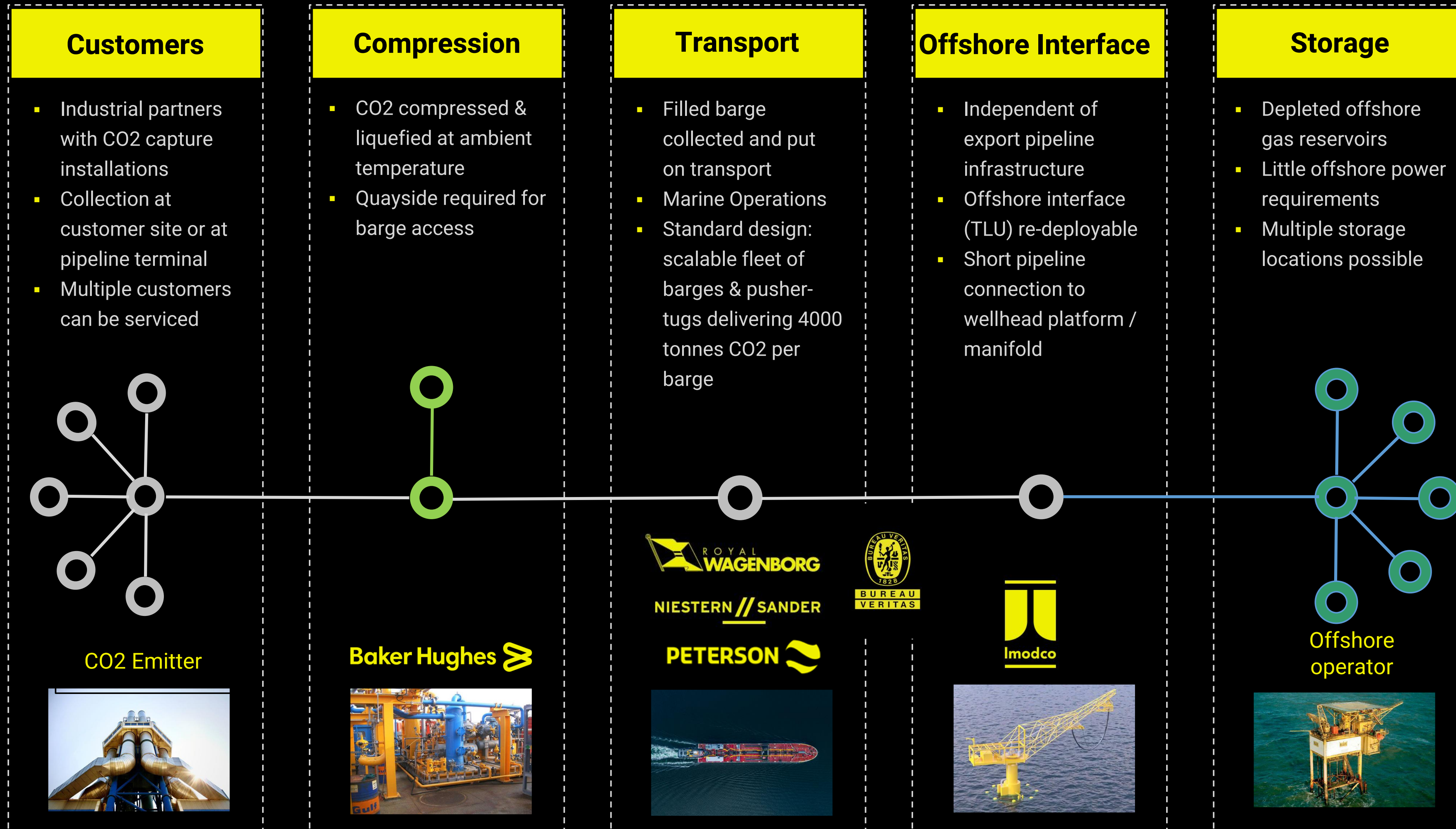
SHIP



GAS FIELD



CO2 FROM SOURCE TO SINK IN 5 STEPS



System complexity – Carbon Collectors vs Northern Lights



Customer site

- Compression
- Direct continuous ship loading

Ships

- 4000 ton net load
- Tug-barge
- Liquid @ 40bar/ 5°C
- 100–250 km distance

Onshore facilities

- Jetty
- Pump system

Offshore pipeline

- 500m, 10" (TLU-to-platform)

Offshore facilities

- Tower Loading Unit
- Existing platform & wells (worked over)

Northern Lights Project

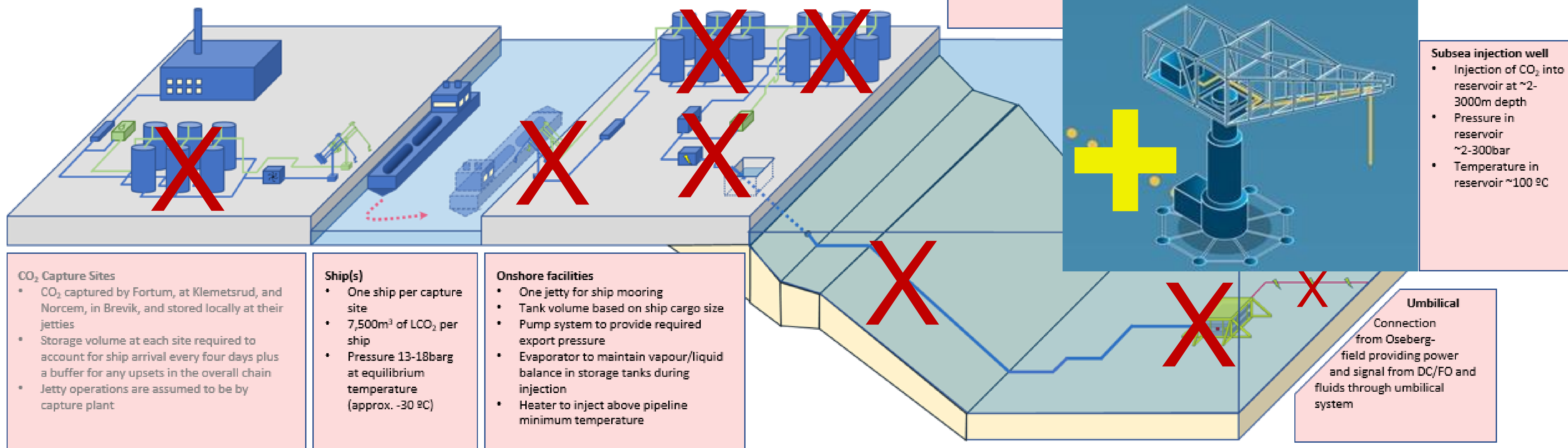
- Cryogenic LCO₂ intermediate storage,
- Intermittent ship loading

- 7500 ton load
- Integrated ship
- Liquid @ 15bar/ -30C
- 600-1000 km distance

- Jetty,
- Intermediate storage,
- Temperature control systems
- Pump system

- 110 km, 12 ¼"

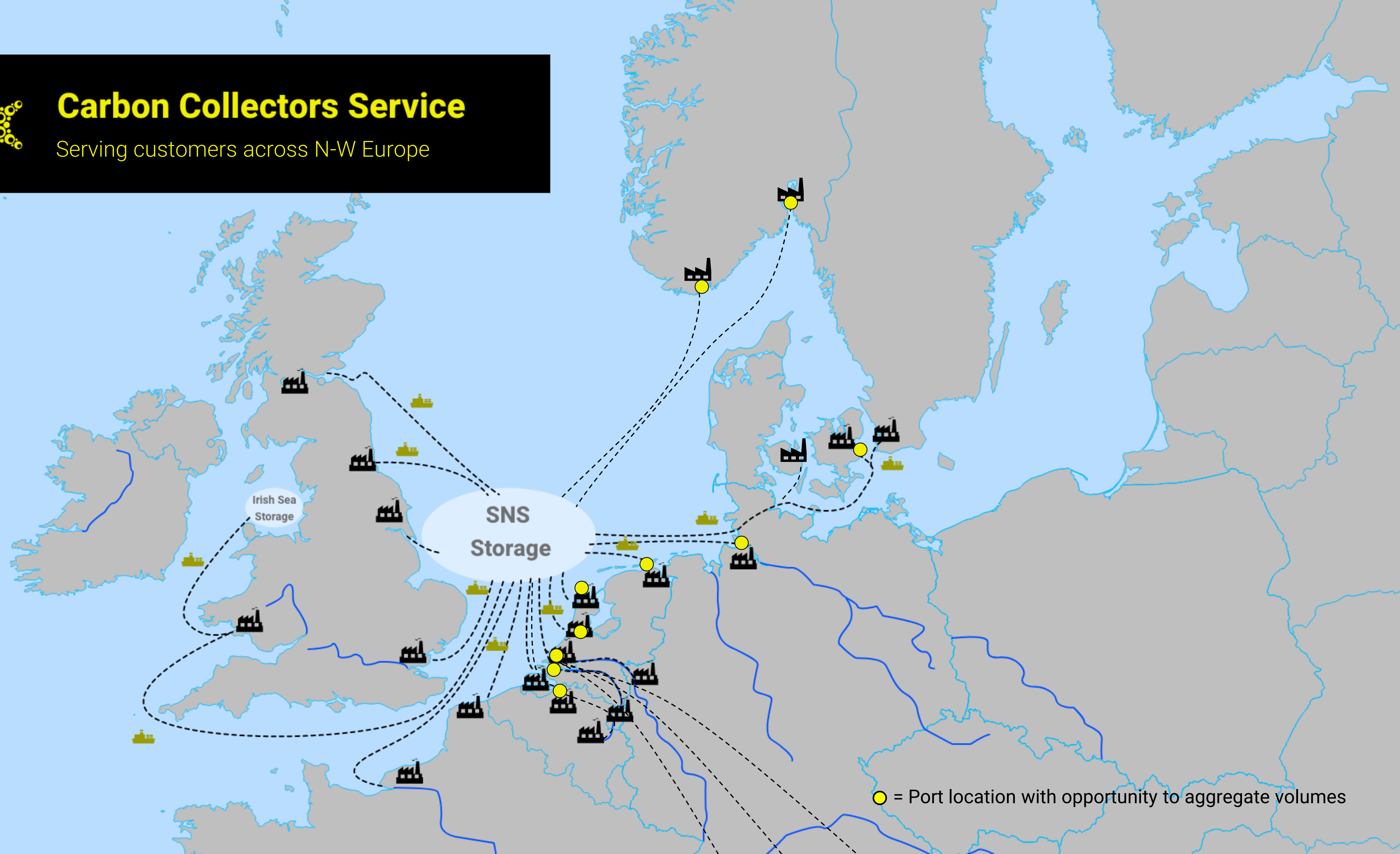
- Subsea pipeline connection
- New wells
- Umbilical to Oseberg field





Carbon Collectors Service

Serving customers across N-W Europe



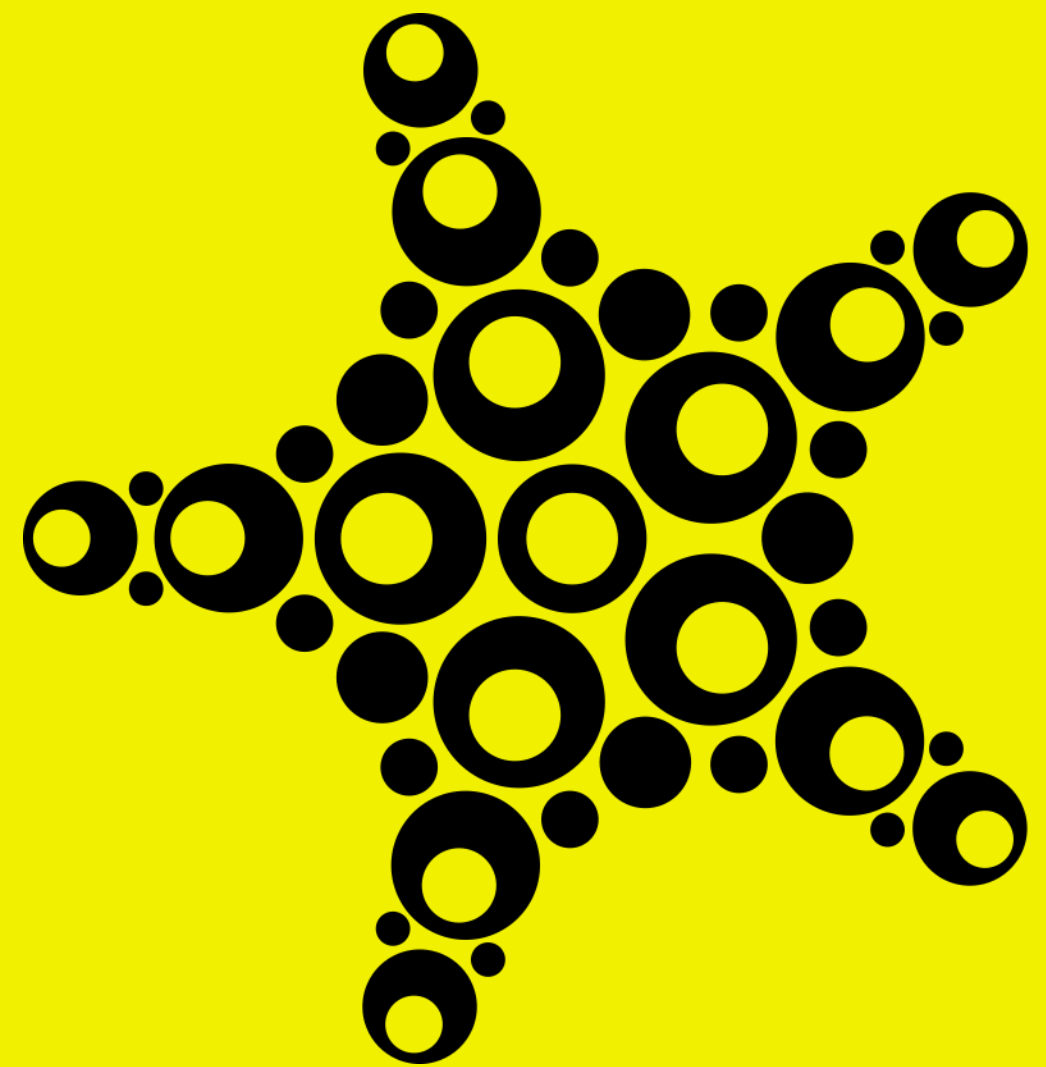
● = Port location with opportunity to aggregate volumes

Carbon Collectors Tug-Barge & TLU



- Temperature and pressure conditions: **5°C / 40bar**
- Ships' dimension (length, width, draught) and cargo capacity (t):
149m x 16m x 6.5m / 4070 tonne net CO2 capacity





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www.carboncollectors.nl