

2nd IEF High-Level roundtable on Carbon Management Technologies

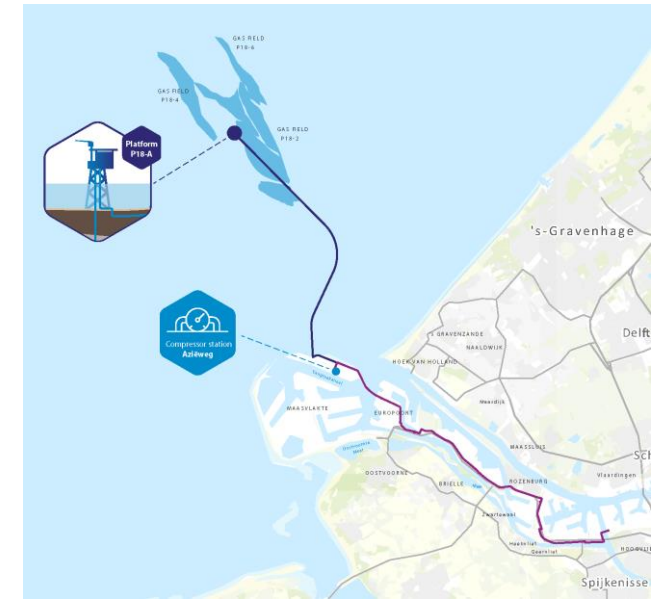
Thursday 16 February 2023, Riyadh

Contribution by Tim Bertels, sr. Partner DAREL



Rotterdam CCS project "PORTHOS"

- ❑ Large-scale CCS "hub" project
- ❑ Capturing & storing 2,5 Mtpa from hydrogen manufacturing in Rotterdam (Shell, Exxon, Air Liquide, Air Products)
- ❑ De-risked and enabled by ;
 - (rising) ETS price and subsidies from the Dutch government (SDE++) and the European Commission (CEF funds)
 - Public-private partnership (State – Industry – Enablers)
 - Decoupling capture from transport & storage
 - Economy of scale and common infrastructure
 - Closeby offshore storage capacity (depleted gas field)
 - Multiple CO₂ sources in an industrial cluster

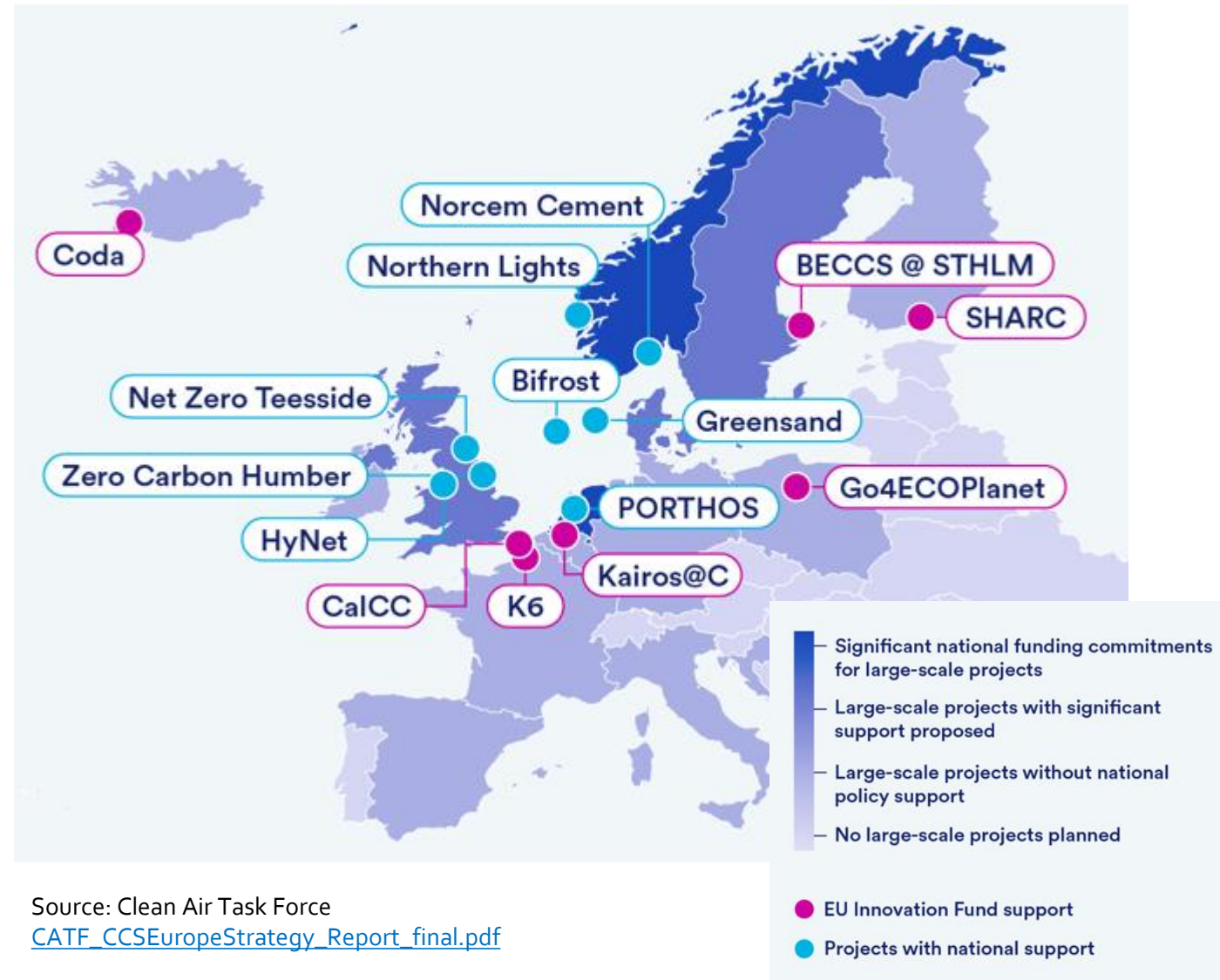


Source: CO₂ reduction through storage beneath the North Sea - Porthos (porthosco2.nl)

CCS state of play in Europe

- ❑ Many **cluster** developments ; e.g. Northern Lights, Porthos, Teesside, Humber, Hynet
- ❑ Variety of CO₂ sources / industrial sectors
- ❑ Mostly located around the North Sea Basin, holding huge offshore storage capacity
- ❑ Driven by policy, carbon price and CO₂ reduction targets
- ❑ Co-funded by national and EU support schemes (e.g. contracts for difference)
- ❑ CO₂ Transport & Storage generally led by Oil&Gas industry

Market incentives required to scale up !



Carbon market incentives and de-risking to address CCUS deployment challenges ;

Financial / commercial <ul style="list-style-type: none">- Cost gap – CCS and alternative- Financing terms - frontier projects- Multiple contracts - emitters & storers	Legal/regulatory & Permits <ul style="list-style-type: none">- Permitting complexity & duration- Long-term liability of CO₂ stored- Safety of operations
Project execution <ul style="list-style-type: none">- Project planning – FID syncing- Value chain integration and CO₂ flow- Connecting multiple stores	Stakeholders & Communication <ul style="list-style-type: none">- Sustained political/societal support for CCS- Public communication on CCS activities