Prop50: CO2 Ports to Pipelines [CO2P2P]

University of Southampton

Southampton Marine & Maritime Institute

UK Research and Innovation

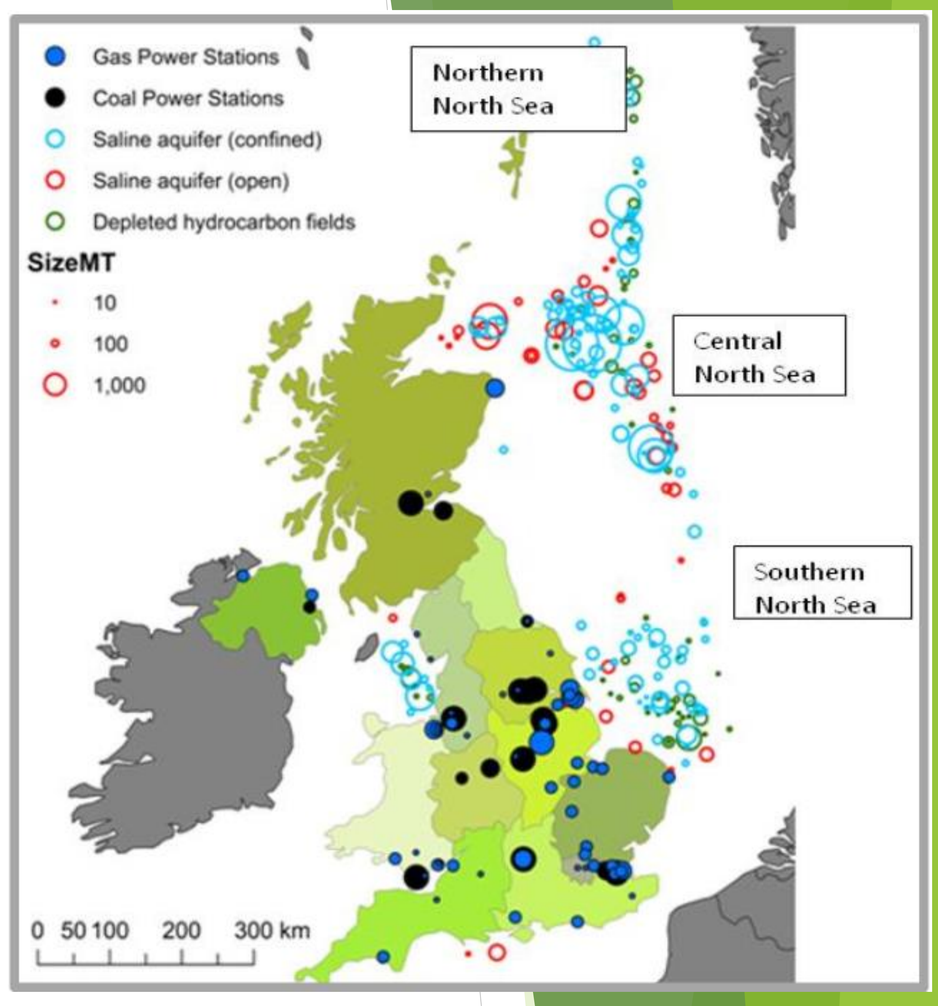
PROGRESSIVE ENERGY

CO_2 SHIPPING AND FUTURE PORTS

Shipping of CO2 is the critical enabling action required to facilitate Carbon Capture and Storage. The Carbon Capture and Storage National strategy is to store around 50Mtpa by 2035, as set out in the Net Zero Strategy.

Research Objectives

Developing a techno-economic model for optimising CO_2 shipping and port infrastructure and storage; Techno-economic design for preferred CO_2 transportation from industry to the geological store.

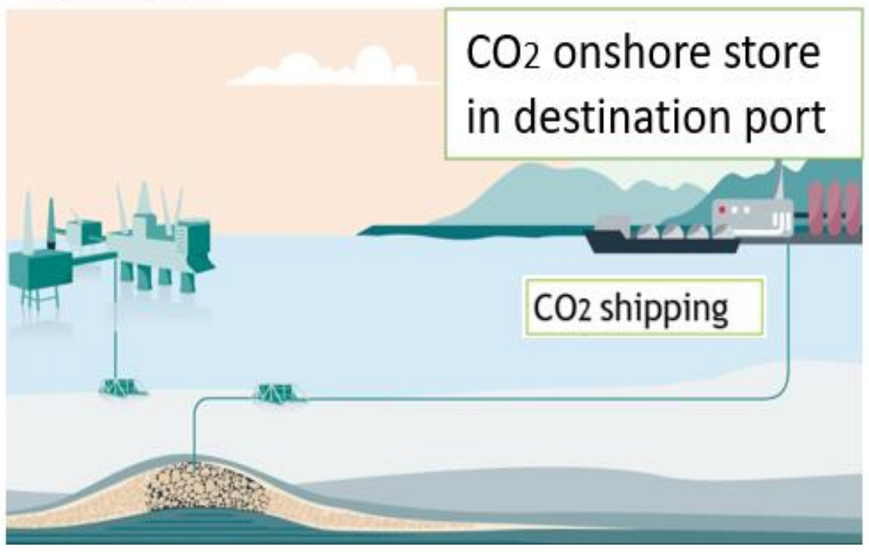


CO_2 Storage in the UK,
(Gammer, 2013)

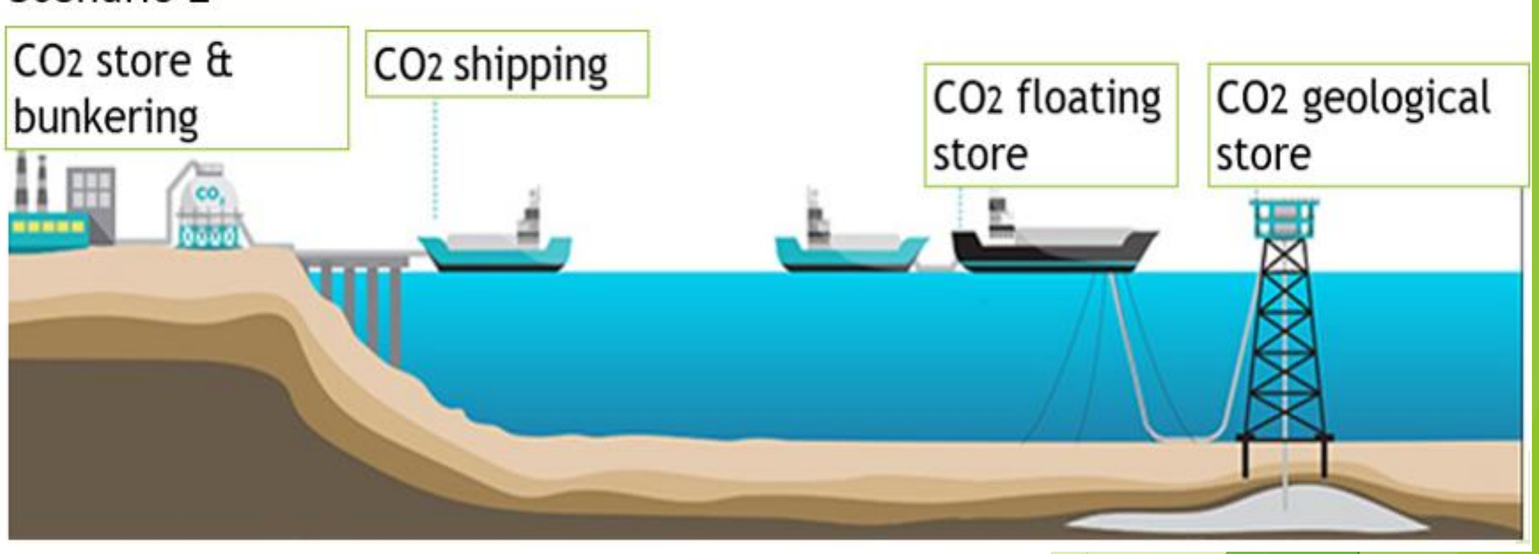
Port	Ship Size Variations	Ship Propulsion	Shipping Operations	Port Supported Operations
Port efficiency Ship waiting time Shore Side Electricity	CO2 transportation conditions	Hydrogen, Methanol, LNG, other options	Energy efficiency, Speed, Load	Minimise Energy demand of CO2 phase changes, pumping rates, storage

Lifecycle → Energy → Emissions → Costs

Scenario 1



Scenario 2



Techno-Economic Model will define costs and the best-case scenario for transportation of CO2, from industrial clusters delivering CO2 to ports in East and South of the UK, to the geostorages in the North Sea, Teeside area.

The model results will show ship number and size; the number of trucks for non-pipeline road transport; optimal storage capacity and road transport solution vs. pipeline.

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