

IDRIC – CO₂ from Port to Pipeline (CO₂P2P)

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CO₂ SHIPPING AND FUTURE PORTS

- ▶ The Carbon Capture and Storage National strategy is to store around 50Mtpa by 2035, as set out in the Net Zero Strategy.
- ▶ Shipping of CO₂ is critical to providing the resilience in the 2030s required to facilitate Carbon Capture and Storage.
- ▶ Shipped CO₂ needs to be enabled by both capture and storage business models



CO₂ SHIPPING AND FUTURE PORTS

- ▶ Techno-Economic Model will be developed to optimise transportation of CO₂ from ports in the East and South of the UK, supplied from industrial clusters delivering CO₂, to the geostorages.

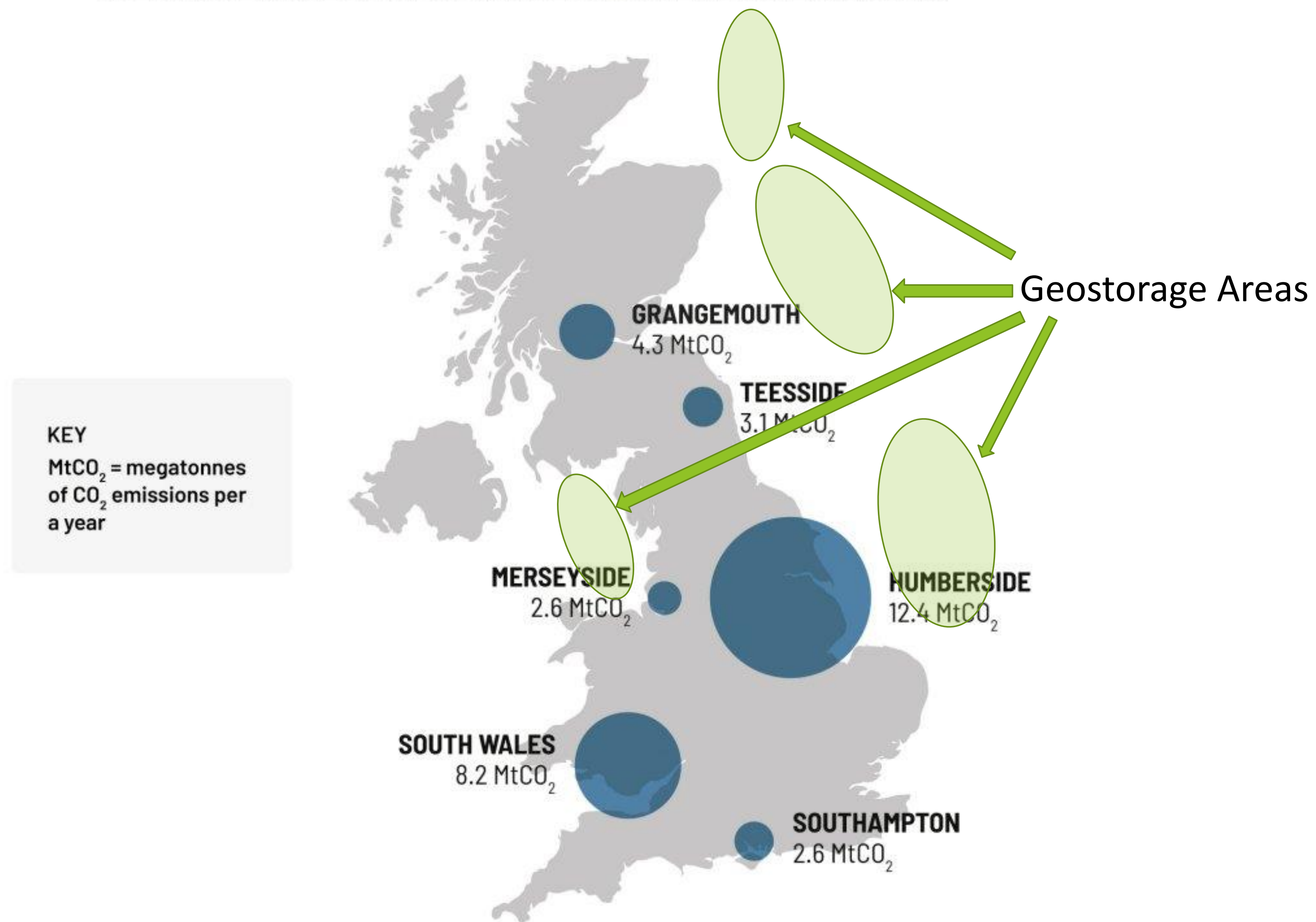
THE UK'S LARGEST INDUSTRIAL CLUSTERS BY EMISSIONS



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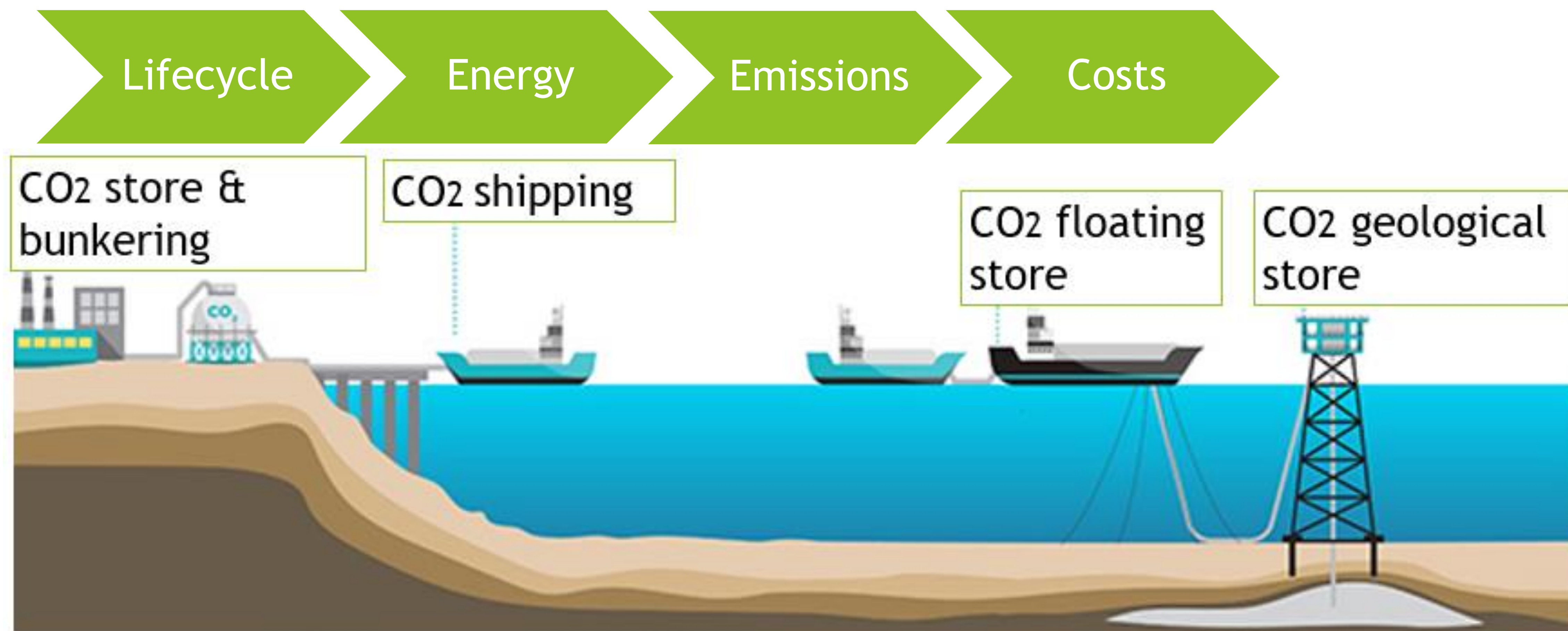
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Research Objectives

- ▶ Developing a techno-economic model for optimising CO₂ shipping and port storage
- ▶ Techno-economic design for preferred CO₂ ship concept
- ▶ Optimisation of CO₂ carrier ship design



CO₂ CARRIER SHIP DESIGN OPTIMISATION

Techno-economic Model Scope

- ▶ Ship size
- ▶ Optimal Speed for short and long shipping routes
- ▶ Ship stability
- ▶ Ship loading approaches
- ▶ Consideration for net-zero emission ship propulsion

Port	Ship Size Variations	Ship Propulsion	Shipping Operations	Port Supported Operations
Port efficiency Ship waiting time Shore Side Electricity	CO ₂ transportation conditions	Hydrogen, Methanol, LNG, other options	Energy efficiency, Speed, Load	Minimise Energy demand of CO ₂ phase changes, pumping rates, storage

Expected results

- ▶ Number of ships needed, driven by the capacity of vessels, to transport 2 mill metric tonnes/year
- ▶ Energy of CO₂ transport
- ▶ Emissions of CO₂ transport
- ▶ Energy + costs + emissions - lifecycle
- ▶ Costs of different scenarios

Thank you, questions, please!

