

Report summary



SIG Supply Chain & Technology

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making the **difference**



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SIG: SCT was established to consider:

- The supply chain necessary to support the front-end development and life of asset services
- At a high level, does the supply chain have the necessary competency & capability
- What are the key considerations around the supply chain, type and nature of suppliers needed
- What is the UK context on industrial decarbonisation including opportunities and threats
- The regional context of East Anglia in terms of a major industrial decarbonisation project
- What industry bodies and technology bodies are available to engage with the supply chain
- Technological considerations for the project
- Skills “considerations”

Report overview



Client Confidential



07 October 2022

SIG Supply Chain & Technology report

Bacton Energy Hub

North Sea Transition Authority

making the **difference**

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Key observations relative to supply chain

- 1) Critical and needed throughout the life cycle
- 2) Transferable skills exist
- 3) High level of "UK content" is achievable
- 4) Resource is available. However skills capacity is a major (**industry**) risk
- 5) Wide range of industry and local stakeholder forums available
- 6) A phased approach to supply chain engagement will be necessary to ensure optimum market response

Work Package	Supply chain	Type	Supply chain risk	Perceived Supply chain risk	Perceived risk - Long lead/schedule critical	Local
Engineering & Consultants						
Existing asset reuse study	Mature	Consultant	Capacity	?	High	●
PreFEED/FEED	Mature	Contractor	Capacity	High	High	●
EPC/EPCM	Mature	Contractor	Capacity	High	High	●
Planning (for DCO)	Mature	Consultant	Capacity	Low	High	●
Permitting (for EA)	Mature	Consultant	Capacity	Low	High	●
Legal	Mature	Consultant	Capacity	Low	Medium	●
Funding/financial	Mature	Consultant	Capacity	Low	TBC	●
OE	Mature	Consultant	Capacity	Low	Low	
Modification to existing site(s)						
Site clearance						
Decommissioning, Disinvestment	Mature	Contractor	Capacity	Low	Low	●
Dismantle & Demolition	Mature	Contractor	Capacity	Low	Low	●
Integration						
Control & automation	Mature	Contractor	Capacity	TBC	TBC	●
Process connections	Mature	Contractor	Capacity	TBC	TBC	●
Utilities - Fire, Drains, etc	Mature	Contractor	Capacity	Low	TBC	●
H2 Bacton - new build						
OSBL - Main packages						
HV supply (MW from Grid)	Mature	Utility	Grid connection	High	High	●
Desalination plant	Mature	OEM	Capacity	Medium	High	●
Steam supply?	?	?	?	?	?	●
Seawater connection	?	?	?	?	?	●
Brine connection	?	?	?	?	?	●
ISBL - Main packages						
Enabling works	Mature	Contractor	Capacity	Low	Low	●
Blue Hydrogen main process equipment	Immature	OEM	Capacity & Capability	High	High	● Potent

Key observations relative to technology

A high level of technology maturity exists

Facilities fitted with CCS (at scale) are in operation currently (US, Norway)

Major global investment in CCS at scale between now and 2030

TRL & supply chain capacity for Hydrogen enabled CCS (at scale) is a key issue – early "lock in" recommend

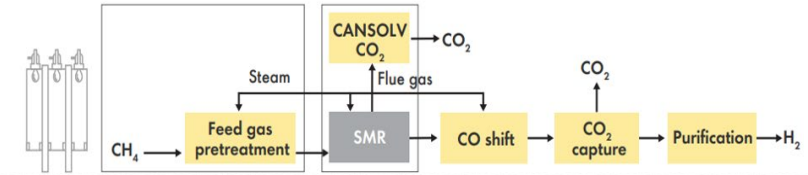
Collaboration with other projects and clusters is key Hynet (Vertex)

The UK is able to supply most of the goods and service - international procurement is anticipated

BEH represents an opportunity to deliver a paradigm shift in the use of digital and automation this will be critical to cost effective delivery of major engineering construction projects going forward

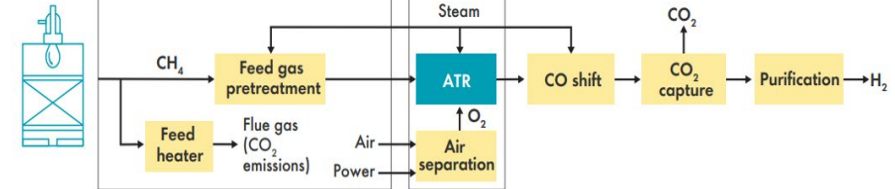
SMR

- Large reference base, but requires post-combustion CO₂ capture for >90% capture



ATR

- Feed pretreatment
- Steam for reaction
- Fired heater



SGP

- No or minimal feed pretreatment
- Steam production using waste heat
- No direct CO₂ emissions from process

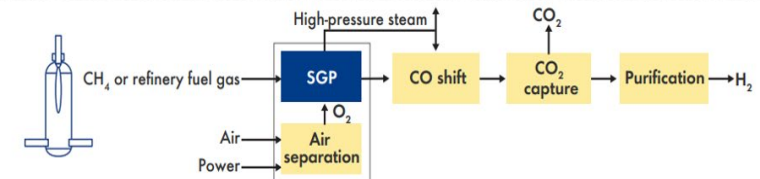
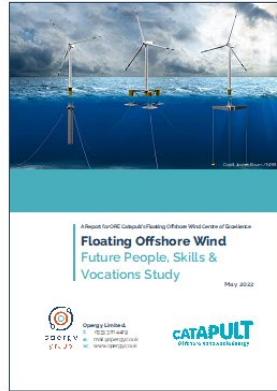


Image Shell Technology

Key observations relative to skills



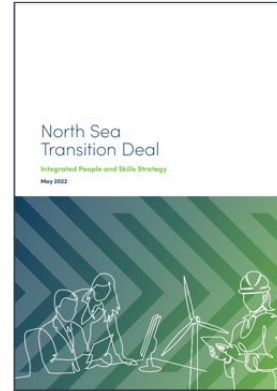
31,000
today increasing to
97,000
by 2030



500
today increasing to
31,000
by 2040



Peaking @
12,000
At height of project



155,000
today increasing to
211,000
by 2030



- The UK does not have sufficient capacity to meet future demand, scarcity as well as recruit & retention are major concerns
- Transferrable skills exist: civil and engineering construction industry as well as the oil, gas, chemical and industrial gases sectors

Dealing with skills capacity

- Pathways, skills passports
- Attracting from other sectors, e.g. military, farming
- Modern Methods of Construction and offsite working
- Digital & automation
- Displaced people

Regional considerations

Threats

- 1) East Anglia is not an industrial heartland when compared with likes of Teesside, Hynet or Grangemouth, so Bacton will need to consider how it competes for supply chain
- 2) Limited dual carriageway or motorway within East Anglia
- 3) Sizewell
- 4) Offshore wind

Opportunities

- 1) Lowestoft is a thriving centre for companies servicing the offshore energy industry
- 2) Norwich Airport & London Stansted Airport
- 3) Felixstowe is the busiest container port in the UK
- 4) Rail links into the area
- 5) Anglian Water



Suggested next steps

Supply chain engagement & management plan:

- 1) Define the contracting & project drivers (local content, SME, digital, MMC)
- 2) Expression of interest or similar process for potential Pre-FEED/FEED consultant & contractors
- 3) Market engagement with technology companies / a paid feasibility study to engage with key technology vendors
- 4) Detailed supply chain analysis to identify local and regional content across work packages including suppliers, manufactures, fabricators and construction contractors
- 5) Supply chain awareness campaign