

The North Sea Transition Deal

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Starting soon.....

The North Sea Transition Deal

Context and overview

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What is the North Sea Transition Deal?

In their own words, the parties are setting out to:

- “work together to deliver the skills, innovation and new infrastructure required to decarbonise North Sea oil and gas production as well as other carbon intensive industries”
- “transform the sector in preparation for a net zero future”
- “catalyse growth throughout the UK economy”
- “keep the UK at the forefront of the changing 21st century energy landscape”

Other sectors that have deals

Aerospace	Artificial Intelligence	Automotive	Construction	Creative industries
Life sciences	Nuclear	Offshore wind	Rail	Tourism

Themes: Ideas – People – Infrastructure – Business Environment - Places

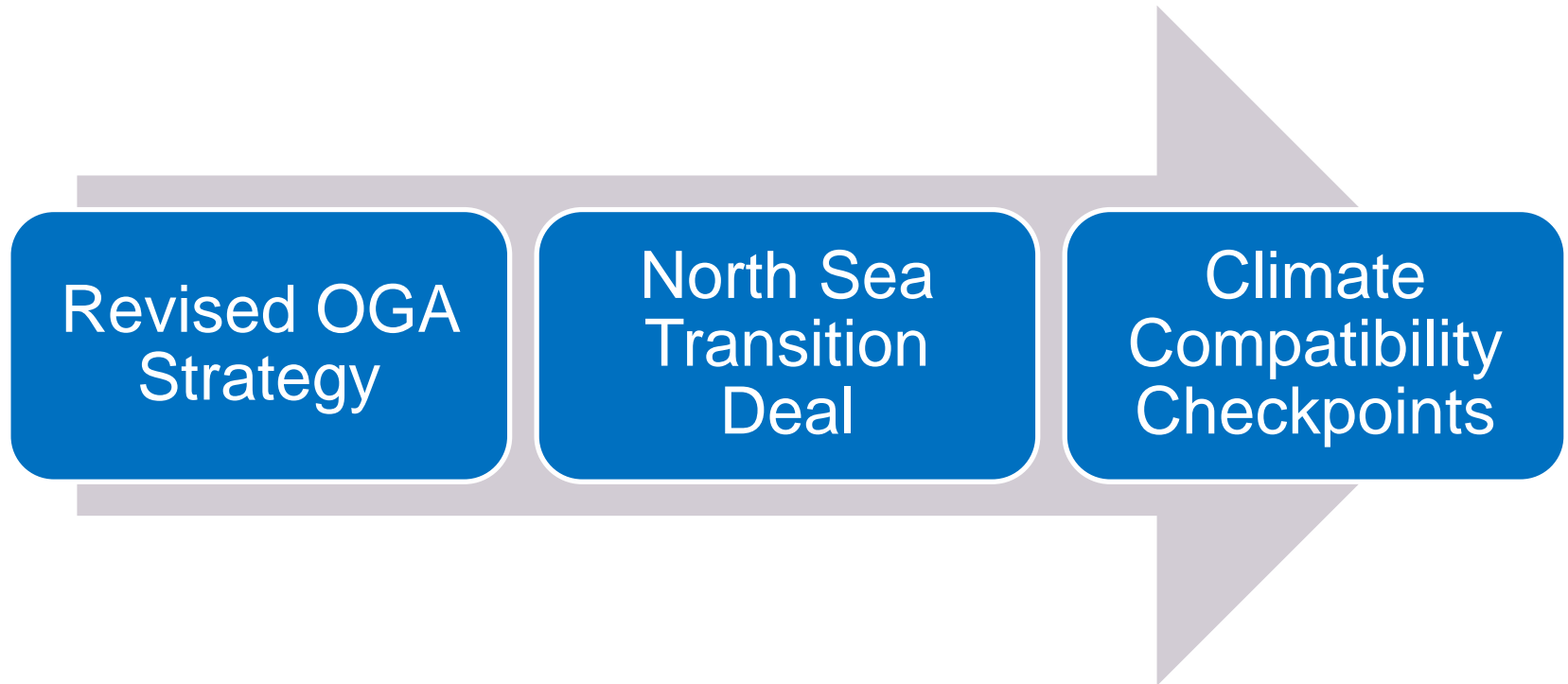
Background to the deal (1)

Industry context

	Upstream	Midstream	Downstream
Pressures ↓	C A R B O N P R I C I N G		
	Low oil / gas prices		
	Venting / flaring / fugitive methane / air quality rules		
	N E T Z E R O / C O P 2 6		
	ESG and investor / lender hesitancy to finance fossil fuel-based projects		
	Uncertainty about the industry's future prospects		
Opportunities ↑	Gas replaces coal / oil		
	CCUS: asset re-use / new revenues / life extension		
	CCUS: production / use of blue hydrogen (e.g. in refineries), producing syngas		
	Offshore wind		Supply of green power
	Digitalisation (and other tech), scale and know-how bring efficiencies		
	Using financial strength, sector knowledge and global footprint to diversify		

Background to the deal (2)

Government context: steps towards a Net Zero North Sea?



UK: regulating for energy integration?

The revised OGA Strategy (in force as of 11 Feb 2021)

Central Obligation

“Relevant persons must, in the exercise of their relevant activities, take the steps necessary to:

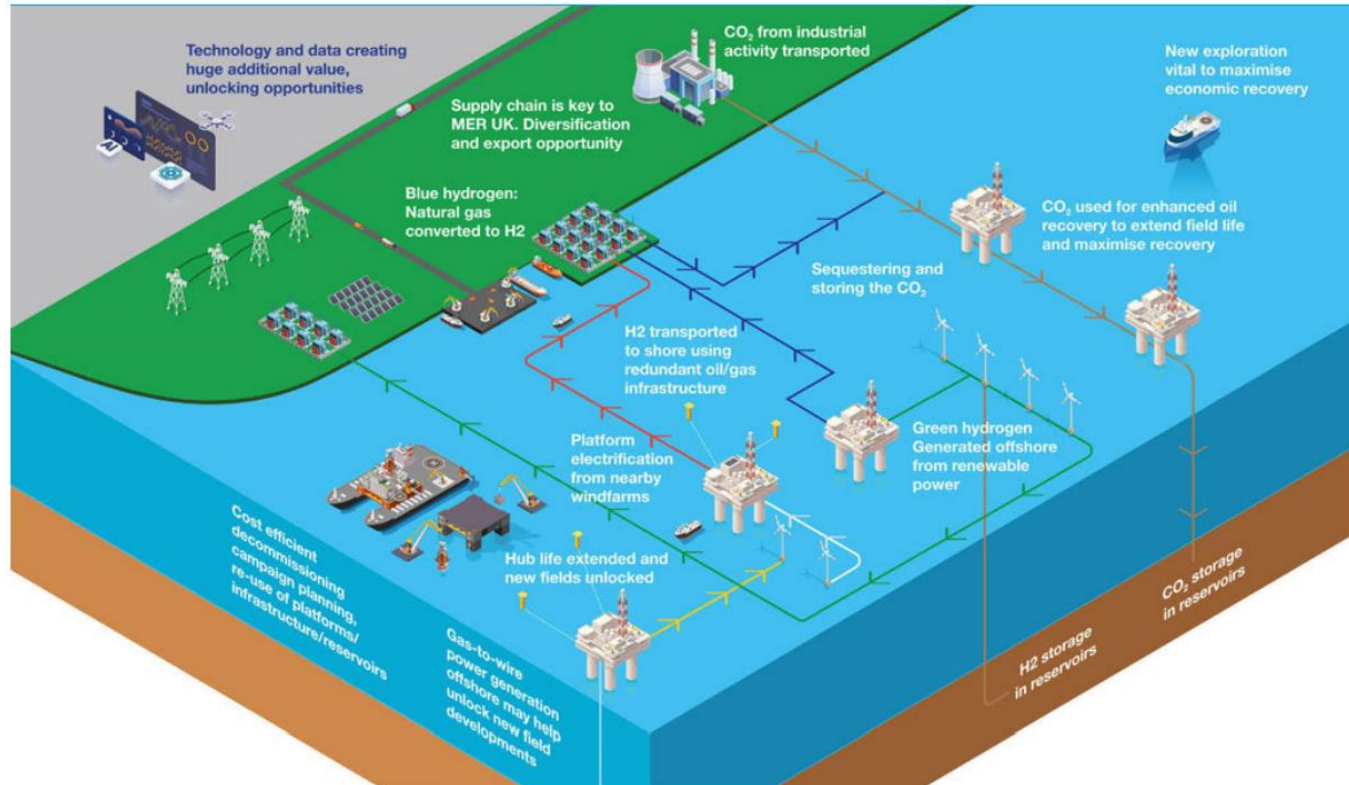
- (a) secure that the maximum value of economically recoverable petroleum is recovered from the strata beneath UK waters, and in doing so,
- (b) take appropriate steps to assist the Secretary of State in meeting the net zero target, including by reducing as far as reasonable in the circumstances greenhouse gas emissions from sources such as flaring and venting and supporting carbon capture and storage projects.”

See also

- Multiple further references to net zero, flaring, venting and CCUS
- References to energy efficiency, hydrogen, re-use / re-purposing of assets
- Introduction to Strategy refers to “social licence to operate” and ESG

The OGA's vision

Energy integration in the UKCS



OGA Stewardship Expectation 11 (March 2021)

Fleshing out the detail (1)

A: Measuring, reporting and tracking

- A.1 Embed atmospheric emissions reduction throughout the organisation
- A.2 Implement Key Performance Indicators (“KPIs”), metrics and targets relating to GHG emissions and GHG emissions intensity
- A.3 Align with, and track performance against, targets set by government, the OGA and/or Industry
- A.4 Invest and deploy appropriate GHG emissions measurement technologies

B: Corporate behaviours and decision making

- B.1 Incorporate consideration and quantification of the societal costs of GHG emissions into company decision making
- B.2 Seek continuous improvement across all areas of GHG emissions reduction

C: General

- C.1 Develop, implement and maintain asset and/or infrastructure hubs GHG Emissions Reduction Action Plans
- C.2 Meet obligations in relation to any applicable OGA Plans
- C.3 Collaborate with industry peers to deliver GHG Emissions Reduction Action Plans
- C.4 Commit to investment in skills & technology (e.g. digitalisation, machine learning)
- C.5 Assess and where appropriate deploy in a timely manner available abatement technologies

D: Lifecycle Phases

Exploration and Appraisal Phase

- D.1 At licence application stage, provide an indicative evaluation of the GHG emissions impact of the work programme and project lifecycle
- D.2 Assess the emissions of all GHGs from proposed activities and options and seek opportunities to collaborate with other licensees to reduce the GHG emissions of activities such as shared seismic surveys, shared drilling programmes (e.g. minimising mobilisations and demobilisations)
- D.3 Fully consider acquiring information which could enable future energy projects such as CCS, hydrogen, windfarms
- D.4 Evaluate the opportunity to incorporate in well design and plugging and abandonment (“P&A”) the potential for their reuse
- D.5 Well tests, Extended Well Tests and well clean-ups be designed to achieve their goals whilst appropriately reducing GHG emissions (e.g. optimal duration, reduced flaring/venting)

Development Phase

- D.6 Assessment phase of field development planning to demonstrate consideration and economic assessment of GHG Emissions Reduction Action Plans, such as:
 - Low GHG emission operations e.g. low carbon power generation, low carbon hydrocarbon export
 - Zero routine non-safety related flaring/venting
 - Gas recovery systems
 - Measurement of GHG emissions
 - Technology and digitalisation to reduce GHG emissions
 - Possibilities for Energy Hubs
 - Collaboration with peers in area
- D.7 Quantification of GHG emissions of selected concept vs alternative concepts, to include:
 - Re-use/re-purposing of infrastructure and facilities
 - Evaluation of GHG emissions impacts on selected host infrastructure
- D.8 Authorisation phase of field development planning demonstrates:
 - A forecast of the field’s energy consumption and GHG emissions
 - The selection of energy efficient equipment for power generation
 - The incorporation of accurate instrumentation for the measurement of GHG emissions
 - A provision for tie-in of future technologies to reduce GHG emissions
 - Consideration of and where appropriate incorporating flexibility for future re-use/repurposing of the reservoir, infrastructure and equipment
 - Consideration is given in well design to provide flexibility where appropriate for potential re-use
 - A well emissions monitoring regime, designed to provide sufficient information to inform future energy transition activities
 - Their Supply Chain Action Plan (“SCAP”) incorporates opportunities to share supply chain and logistics synergies to reduce GHG emissions
 - Consideration given to GHG emissions of project construction and logistics in suppliers proposals
 - Commissioning plan evaluates the GHG emission profiles of different commissioning strategies
 - Well tests, Extended Well Tests and well clean-ups should be designed to achieve their goals whilst reducing GHG emissions (e.g. optimal duration, minimised flaring/venting)

OGA Stewardship Expectation 11 (March 2021)

Fleshing out the detail (2)

Production Phase

D.9 Asset and/or Energy Hubs should have a GHG emissions reduction action plan & GHG emissions reduction project "hopper"

D.10 GHG Emissions Reduction Action Plan should have an associated SCAP

D.11 Zero routine flaring and venting and the use of the lowest GHG emission fuels should be the base case for power generation and GHG emissions targets

D.12 Daily/weekly asset reporting should incorporate power/energy consumption and GHG emissions

D.13 Measuring and monitoring of power generation efficiency through regular energy surveys.

D.14 Maintenance and inspection strategies that utilise technology to reduce downtimes/start-ups e.g. predictive rather than time based.

D.15 Active flare reduction strategy with, for example:

- Flare measurement including tracking of "unlit" periods and composition analysis
- Protocol for GHG emissions management during "trips"
- Monitoring of flare combustion efficiency

D.16 Active vent reduction strategy

D.17 Logistics operations strategy should seek to minimise GHG emissions through collaboration with other operators and sectors.

D.18 KPIs and targets incorporated into asset performance reporting

Late-life/pre-cessation of Production Phase

D.19 Six years before cessation of production - identify and evaluate infrastructure for CCS and H2 and other reuse opportunities (ref. SE10)

D.20 Actively consult with regulatory bodies and other stakeholders regarding infrastructure re-use or re-purpose

D.21 Openly collaborate and share data with 3rd parties interested in reuse or re-purposing infrastructure/ equipment, subject to applicable competition law requirements

D.22 Evaluate process system, utility and power requirements in late life and post-cessation of production to optimise power requirements and reduce associated GHG emissions

D.23 Assess new and emerging technologies which could reduce emissions pre and post-cessation of production

D.24 Ensure a well emissions monitoring regime which minimises GHG emissions

Decommissioning Phase

D.25 Plan and execute decommissioning activities to minimise GHG emissions (which may include investing in new technologies and/or undertaking some decommissioning activities ahead of cessation of production e.g. well decommissioning)

D.26 Evaluate materials and resources required during decommissioning to identify environmental synergies across other projects both within and beyond the licensee's portfolio

D.27 Actively engage with Industry to reduce GHG emissions through campaigning and scope aggregation

D.28 Understand infrastructure and equipment with re-use/re-purposing potential and where appropriate plan decommissioning such that the opportunity can be later realised e.g. decommissioning of wells to facilitate future storage projects

D.29 Trial and utilise new technology where available

D.30 Work with removal and drilling contractors to optimise decommissioning operations to reduce GHG emissions

Emissions sources considered as part of this stewardship expectation This stewardship expectation focuses on emissions from the development of new hydrocarbon projects, their existing producing assets and the abandonment and decommissioning of fields, this includes:

- direct emissions from sources that are owned or controlled by the organisation
- indirect emissions from the generation of purchased or acquired energy. This includes purchased electricity, heat, steam or cooling
- the OGA may also consider other indirect emissions that occur in the value chain of an Upstream Oil and Gas Industry company where that company can influence or control emissions – such emissions sources may for example include: UK onshore terminals processing UKCS oil and gas, offshore shipping supporting UKCS oil and gas production (logistics and drilling rigs) and aviation transportation (helicopter journeys)

GHG Emissions Reduction Action Plan

A plan of actions/projects/investments which the licensees plan to undertake to reduce the emissions of their operations. This plan should be asset based, annualised with projects costed and accountabilities for delivery assigned.

Climate compatibility checkpoints

What has BEIS said?

Timing and purpose

- Checkpoint to be in place by end of 2021 and applied before each licensing round
- Licence awards to be compatible with wider climate objectives and UK's diverse energy supply

Factors to be considered

- Domestic demand for oil and gas, sector's projected production levels
- Increasing prevalence of clean technologies such as offshore wind and carbon capture, and sector's continued progress against its ambitious emissions reduction targets.

Threshold test?

- “If the evidence suggests that a future licensing round would undermine the UK's climate goals or delivery of Net Zero, it will not go ahead.”

North Sea Transition Deal (1)

Cash and other commitments in support of the Strategy

	DECARBONISING SUPPLY	CCUS	HYDROGEN
NUMBERS	<ul style="list-style-type: none"> £2-3 billion sector investment. Emissions ↓ 10% (2025), 25% (2027), 50% (2030) on 2018. OGCI methane 2025 intensity target; World Bank Zero Routine Flaring by 2030. 	<ul style="list-style-type: none"> £2-3 billion T&S investment. £1 billion infrastructure fund. 10MT/y CO2 capture by 2030. 	<ul style="list-style-type: none"> 5GW of low carbon H2 production capacity by 2030.
COOPERATION	<ul style="list-style-type: none"> Support Expectation 11. Streamlined emissions monitoring & reporting. Support for electrification (including "potential funding"). 	<ul style="list-style-type: none"> Develop industry standards. Share learnings from international CCUS and UKCS decommissioning cost reduction initiatives. 	<ul style="list-style-type: none"> Funding support for H2 R&D. Support green H2 projects. H2 safety programme; work on public opinion.
LEGISLATION & REGULATION	<ul style="list-style-type: none"> Address barriers to electrification: Offshore Implementation Group. 	<ul style="list-style-type: none"> T&S revenue mechanism. Cluster funding competition. Economic regulator for T&S. Infrastructure reuse policy. Strategic deployment. 	<ul style="list-style-type: none"> H2 revenue scheme. Gas market reform to help H2. Facilitate H2 project planning. Support iron mains replacement.

Key: red = O&G sector; purple = government / public sector; black = joint action.

North Sea Transition Deal (2)

Wider agendas

SUPPLY CHAIN TRANSFORMATION	PEOPLE & SKILLS
<ul style="list-style-type: none">• Develop world-class UK low carbon supply chain and appoint supply chain champion• Anchor UK content in supply chain ($\geq 50\%$, and $\geq 30\%$ for locally produced technology)• Develop industrial scale capability for low carbon industry in UK• Promote net zero energy supply chain capability to the world• Attract further inward investment for net zero• Incubate new technology development• Develop Global Underwater Hub• Support Prompt Payment Code	<ul style="list-style-type: none">• Support Energy Skills Alliance• Integrated People & Skills Plan• Facilitate transferability of skills• Support academic geoscience programmes• Promote UK's high employment standards• Ensure equality of opportunity

Deal Implementation Plan:

- North Sea Transition Forum (April 2021, October 2021)
 - Appoint Supply Chain Champion (Summer 2021)
- Implementation Report, People & Skills Plan (March 2022)

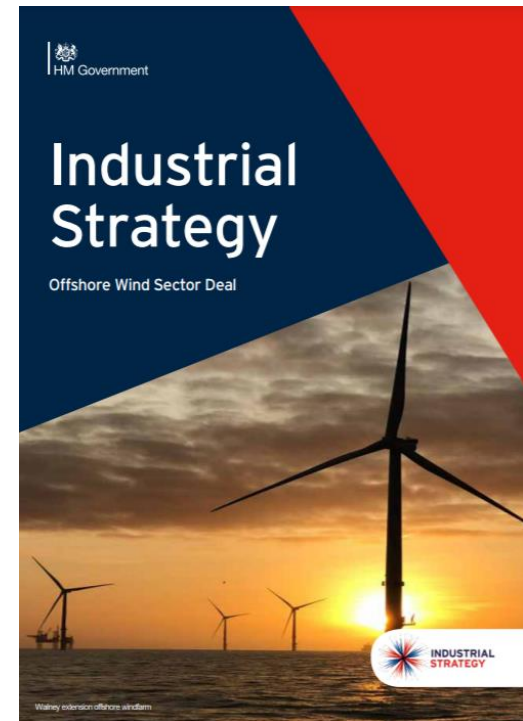
Comparative view of the deal

North Sea Transition and Offshore Wind



Some themes

- Supply chains: local content
- Quantitative targets
- Government financial support
- State of evolution of the industry
- Expansion and exports



Carbon Capture and Storage

Stephen Tromans QC

- Carbon is captured from facility either by pre- or post-combustion technologies
- It is transported by pipeline or shipment
- It is sequestered in suitable geological formations

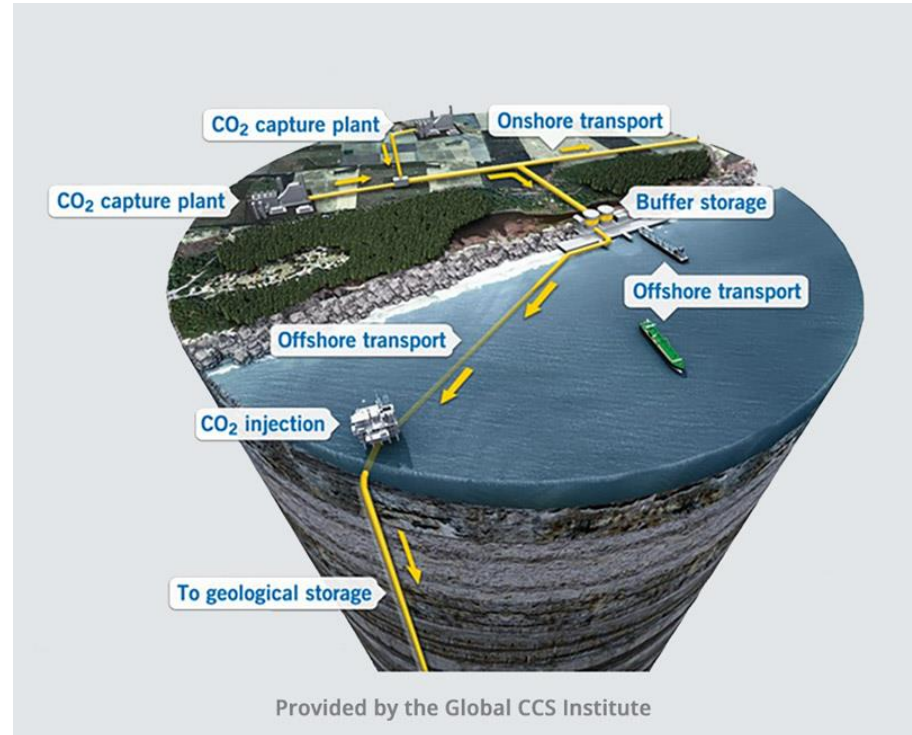


Importance of CCUS

- Recognised by IEA, IPCC and UK Committee on Climate Change as being essential to net zero goal
- The only current way of deep decarbonization of major industries: steel, cement, chemicals
- Key to clean hydrogen production
- Would provide a more flexible baseload for renewables than nuclear could
- Key part of UK policy in Industrial Strategy and Clean Growth Strategy, Carbon Capture and Storage Infrastructure Fund (CIF), PM's Ten Point Plan

Issues to be addressed

- Capture infrastructure – industrial clusters to capture carbon (4 by 2030)
- Infrastructure to store and transport
- Development of well infrastructure
- Incentivising investment
- Regulation: safety, environmental, economic



Regulation

- How will the relevant operations be regulated?
- EU Directive 2009/31/EC
- Energy Act 2008 provides for a licensing regime for offshore storage of CO₂
- Carbon Dioxide (Licensing, etc) Regulations 2010/2221
- Licensing authority is Oil and Gas Authority, or Scottish Ministers
- Rights will need to be acquired from Crown Estate or Crown Estate Scotland
- Major accident hazard to be regulated by HSE in respect of mass escape of CO₂ especially if supercritical phase
- Need for new economic regulation regime

Synergy with North Sea Transition Deal

- Relevant expertise of North Sea operators – geology, well technology, pipelines, safety
- Existing industry commitments to supporting net zero
- Decline in North Sea production
- Large asset base of suitable geology in abandoned hydrocarbon fields and saline aquifers
- Proximity to potential coastal industrial hubs, e.g. North East, Yorkshire and Humber, Scotland
- Use of existing oil and gas transport and storage infrastructure

Barriers to achievement

- Not yet financially viable without price signals
- First of a kind technology
- Fate of previous projects: Peterhead (scuppered by cheap coal); Kingsnorth and Longanet (spiralling costs and 2008 financial crash)
- Government aim to design supportive business model and new commercial framework by 2022
- Possibly public perception – strong opposition to some early schemes in US and Europe

BEIS HC Select Committee Report 25 April 2019: CCUS: Third Time Lucky?

- Net Zero target not credible without CCUS
- Very favourable conditions in UK but no consistent Government Policy support
- Commendable ambitions but lack of specificity in terms of required “cost reductions” and “at scale”
- “Kick start” required



BEIS HC Select Committee Report 25 April 2019: CCUS: Third Time Lucky?

- The UK's expansive geological storage resource and world-class oil and gas supply chains mean that we have a unique opportunity to lead the world in the development of a new CCUS industry. ... We risk losing our early-mover advantage if the UK's slow progress in developing CCUS continues.
- CCUS can impose significant costs on industrial processes, and so will require substantial policy support to enable its adoption. However a failure to develop it could force many heavy industries to close in the coming decades, if the UK sticks to its climate change targets.
- The benefits of CCUS are thought to be poorly understood across Government departments, notably the Treasury.

BEIS HC Select Committee Report 25 April 2019: CCUS: Third Time Lucky?

- The greatest barriers to the development of CCUS in the UK are commercial, rather than technical. It is inconceivable that CCUS will be developed without government support. Witnesses agreed CCUS costs could be substantially lowered by separating the business model for carbon capture at individual facilities from that for carbon transport and storage infrastructure. We recommend that the Government separates the funding models for these activities, and that BEIS investigates the appropriateness of the Regulated Asset Base model.

Government Response: all about money and risk

- In our CCUS Action Plan, we underline our view that the greatest barriers to the development of CCUS in the UK are commercial, rather than technical.
- We have reviewed analysis conducted by a number of bodies including the National Audit Office, Parliamentary Advisory Group on CCS, and CCUS Cost Challenge Taskforce, who broadly concluded that the full chain, fixed price model under the CCS Competition may not be capable of absorbing the different risk appetites of different organisations involved in the full chain.
- This work identified that this approach had an impact on the cost of the CCUS project. As such, each of these bodies concluded that a separate CO₂ T&S business model should be established.

Government response: various moving parts



- CCUS Action Plan –commissioning of project by mid 2020s
- CCUS Advisory Group
- Industrial Cluster Mission – first new Net Zero cluster by 2040
- CCUS Innovation Funding
- Work on potential re-use of current North Sea assets of oil and gas infrastructure – possible release of decommissioning liabilities if transferred to CCUS
- Adaptation of Regulated Asset Base model for transport and storage

Consultation on sequencing deployment of CCUS clusters

- Two phase process leading to FID on initial clusters for 2022. Highly ambitious and dependent on negotiating agreements with private sector with politically acceptable level of risk and cost for taxpayers and consumers
- CO2 transportation and storage projects to receive economic licence allowing project to receive regulated fee from network users on completion (TRI Model)
- Power CCUS plants to be operated in mid merit order to complement intermittent renewables under Despatch Power Agreement with Low Carbon Contracts Company
- Industrial CC projects supported with CFD based contract with LCCC



THE UK'S LARGEST CLUSTERS BY INDUSTRIAL EMISSIONS ONLY



Risks

- High impact low consequence risks to be subject to government support package
- CO2 leakage, asset stranding and other uninsurable risks
- Initial projects to be negotiated rather than by competitive tender
- Future projects involving sponsors taking pricing, cost or availability risk on CO2 disposal would require mature market for CO2 and ability to hedge or fix future price; also allocation of pricing of risks along the value chain and into other value chains, e.g. power, emissions, hydrogen
- Plans based on proven project development and finance techniques and models

DECARBONISATION OF THE SUPPLY AND THE SUPPLY CHAIN

Victoria Hutton

Supply Decarbonisation



Supply Decarbonisation

‘The Deal is designed to change the nature of oil and gas production in the UK by 2030. This will be achieved through a combination of industry efforts with respect to operational practices and investment, appropriate changes to the regulatory regime, and the development of offshore infrastructure, in parallel with the major changes already needed to significantly expand offshore wind production.’

Targets

- Reduction in emissions from production, as against a 2018 baseline by:
 - 10% by 2025
 - 25% by 2027
 - 50% by 2030

Government Measures

- Streamline emissions monitoring and reporting
- Identify potential funding opportunities for early-stage offshore electrification studies that businesses could bid into on a match-funded basis by the end of 2021
- Work with the Sector to identify potential decarbonisation funding solutions by late 2022.
- OGA to promote adoption of cost-effective electrification opportunities
- Creation of an Offshore Implementation Group addressing regulatory and legislative barriers to electrification and other integration measures.

2 Focuses

- Reduction of emissions from flaring
- Electrification of assets.

Reduction of emissions from Flaring



Flaring

- Gas is flared both onshore and offshore: (a) as a routine measure to dispose of waste gas and (b) for safety reasons.
- Flaring is a major source of methane emissions.
- The World Bank's 'Zero Routine Flaring by 2030' estimates approx. 140 billion cubic meters of natural gas being flared annually across the globe causing 300 million tonnes of CO2 emissions.
- Action plan is being developed on the reduction of methane. This is likely to include: zero routine flaring in the design of newbuilds, improved gas recovery in field development plans and the development and implementation of flare management plans.

Electrification of Offshore Assets

- The largest sources of upstream emissions are from hydrocarbon fuelled electricity generation, process heat generation and direct powering of gas compression and pump systems.
- The options under consideration are the full or partial electrification of offshore assets through connection to onshore power networks in the UK and/or Norway.
- Also being considered is the potential to link to offshore renewables (e.g. wind).

Electrification of Offshore Assets

- Significant investment required
- It 'is likely to take a decade to deploy at scale' (p.26).
- Cost estimates given in the NSTD are between £0.2 billion and £2 billion depending on the project. The expected reduction opportunities is estimated as between 40,000 to 2 million tonnes of CO2 pa.
- The suitability of measures is likely to vary between facilities.

Electrification of Offshore Assets

- To deliver the 50% reduction target by 2030 NSTD estimates that between £2-3 billion of investment will be required to allow the completion of at least one or two identified electrification projects.
- The Government is actively looking at funding solutions, including match-funding schemes.
- Offshore Implementation Group to be established which will be led by BEIS and include representation from Ofgem, the Crown Estate, OGA, OPRED, HSE, Marine Scotland and the Crown Estate Scotland. The aim is to reduce regulatory and legislative barriers to achieve electrification.

Supply Decarbonisation

- Challenges ahead in terms of funding, regulation, technology and development requirements.
- Broad implications for the legal sector in terms of:
 - Planning and environmental requirements;
 - Regulatory requirements;
 - Procurement

Supply Chain Transformation



Supply Chain Transformation

- 3 aims in the NSTD:
 - Make the supply chain ‘low carbon’
 - Ensure the supply chain is UK based
 - Promote the UK’s services to the world

Decarbonising the Supply Chain

- ‘...a new approach to transformation and capability development will be required to develop an all-energy, UK-based supply chain that can deliver decarbonisation at scale to meet the net-zero target.’
- Very nebulous proposals.
- Broad idea is to bring the sector together as ‘consortia’ to leverage capability to deliver net zero projects and supply chain diversification.
- Government and the sector to work together to attract and secure investment supporting individual companies and consortia to pursue low carbon-opportunities.
- Sector to leverage incubator funding to kickstart development of new technologies.

Decarbonising the Supply Chain – ideas from elsewhere

- Report by WEF and BCG published on 21 January 2021 ‘Net Zero Challenge: The supply chain opportunity’
 - ‘Supply-chain decarbonization will be a “game changer” for the impact of corporate climate action. ... It enables companies in customer facing sectors to use their influence in supply chains to speed and support rapid decarbonization throughout the economy, and it can put pressure on suppliers in regions where governments do not (yet) do so. As 90% of the world’s businesses are small and medium enterprises (SMEs), working with supply chains and connecting them with the appropriate tools – such as the recently launched SME Climate Hub⁸ – is a vital part of the implementation of ambitious corporate climate action.’ (p5)

WEF and BCG Report – 9 Initiatives

- 9 initiatives:
 - Build a comprehensive emissions baseline, filled with actual supplier data
 - Set ambitious and holistic reduction targets, reducing emissions
 - Revisit product design choices
 - Reconsider geographic sourcing strategy
 - Set ambitious procurement standards
 - Work jointly with suppliers to co-fund abatement levers

WEF and BCG Report – 9 Initiatives

- Initiatives cont.
 - Work with peers to align sector targets that maximise impact and level the playing field
 - Use scale by driving up demand to lower the cost of green solutions; and
 - Develop internal governance mechanisms that introduce emissions as a steering mechanism and align the incentives of decision-makers with emission targets.

UK-based supply chain

- The reported aggregated value of supply chain (within the UK) was said to be £26.5 billion in 2018.
- The Government is keen that this supply chain is used to ‘seize opportunities presented by offshore electrification, CCUS and hydrogen both in the domestic market and internationally.’
- Voluntary target of 50% UK content, including capital investment, over the lifecycle of all low-carbon projects and offshore decommissioning, as well as 30% for locally sourced technology.
- A ‘Supply Chain Champion’ to be appointed to co-ordinate opportunities and help the supply chain access government schemes providing funding support to lower carbon energy projects.

Promotion of the UK supply chain abroad

- Sector to develop market intelligence capability for global energy transition projects where there might be export opportunities. The aim is to integrate this with information from other sectors such as renewables.
- Development of the Global Underwater Hub – to be funded by the sector through a ‘subscription model’ with an initial funding support of £6.3m announced from the Government. The Hub is intended to promote opportunities for our subsea engineering sector across the globe.

What about the global supply chain?

- NSTD largely silent on this but nb statement on p38:
 - ‘The Government will ‘support efforts to ensure Free Trade Agreements (FTA) and other trade policy mechanisms are as supportive as possible of clean energy, with a focus on creating an exemplar ‘green’ FTA.’

EU Carbon Border Adjustment Mechanism



CBAM

- European Parliament has voted to bring into force CBAM which would impose charges upon imports into EU countries of some raw materials to prevent carbon leakage.
- Due to come into force by the end of 2022.
- The ETS only covers emissions generated in the geographical area covered by the scheme (EU, Iceland, Lichtenstein and Norway)
- Although EU domestic GG emissions have been falling, the emissions ‘embedded’ in imports have been rising.
- CBAM would introduce a tariff on imported goods (with a credit or exemption being applied to goods originating in a country which applies a carbon price)

CBAM

- CBAM is controversial for some
 - Queries whether it is compatible with WTO rules
 - The US has expressed some disquiet
- Questions for the UK remain:
 - Will the UK adopt a similar approach?
 - Will the UK have to align itself in any event for its exports not to fall foul of CBAM.

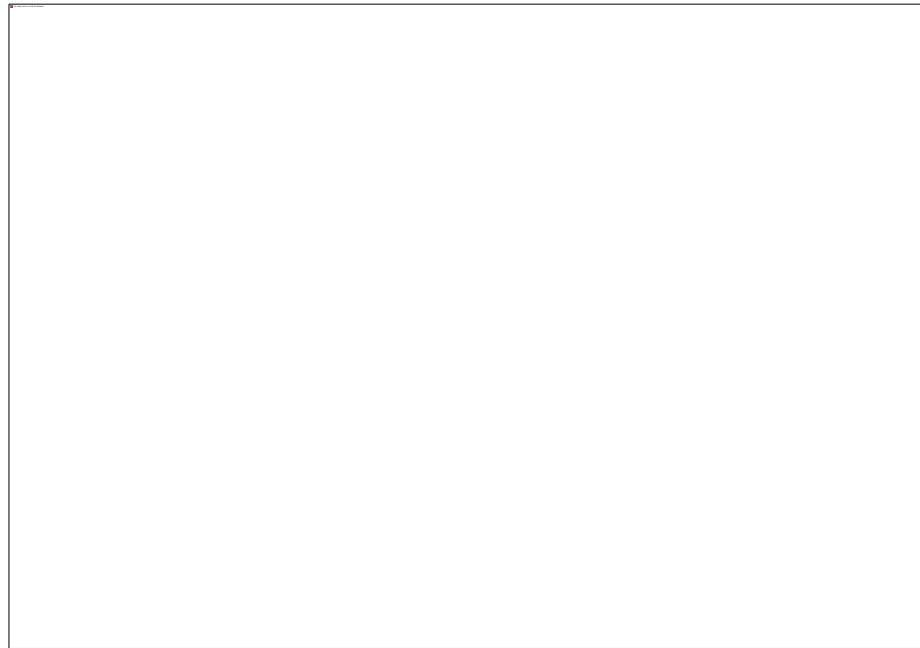
Supply Chains Conclusions

- Proposals are currently nebulous.
- Focus seems to be on UK economic growth as opposed to concrete proposals for achieving carbon neutrality.
- However, this may simply indicate that further guidance/initiatives are on their way.
- The terms of the WEF/BCG report are of assistance in understanding what may eventually be required/encouraged.

Net Zero and Hydrogen

Juan Lopez

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Decarbonisation & Net Zero: The Policy Big Three (...of recent times)

- Ten Point Plan for a Green Industrial Revolution
- Energy White Paper 2020
- National Infrastructure Strategy 2020
- And...NPSs: Energy (EN-1); Fossil Fuels (EN-2); Renewable Energy (EN-3); Oil and Gas Supply and Storage (EN-4)
- 2021 NPS review

Deal Aspirations

- A new partnership between Government and O&G Industry
- Seizing upon economic opportunities of decarbonisation and net zero (OGUK's Roadmap 2035): creating the economic environment for low carbon hydrogen production
- Securing the sector (by 2050) compliance with net zero (O&G production in UK Continental Shelf is responsible for c.3.5% of UK emissions)
- Commitment to joint funding for emissions reduction from the state and sector of up to £16bn, by 2030 (of this, £10bn available to support hydrogen production)

Deal Aspirations (cont.)

- £1 billion Net Zero Innovation Portfolio
- Emissions reductions; CCUS; Diversification of O&G supply chain; Hydrogen production; Job creation
- Incentivising repurposing of O&G infrastructure in support of clean technologies
- Low carbon exporting
- Capacity transformation: enabling UK supply chain to deliver decarbonisation at scale, to meet net zero
- Updating of suite of Energy NPS by the end 2021

Implementation & Oversight

- A North Sea Transition Forum
- Senior offshore implementation group to coordinate integrated energy projects, including hydrogen (April 2021)
- Publication of business models for carbon capture for industrial and power generation and low-carbon (Blue) hydrogen (October 2021)

Hydrogen: Securing UK's Net Zero Commitment

- Target: 5GW of low (clean/er) carbon hydrogen production capacity by 2030
- A key 'Priority Area' in the UK £1billion Net Zero Innovation Portfolio
- Critical in reducing heavy industry emissions, and in power and transport
- Transitioning from 'Blue Hydrogen' to 'Green (Clean) Hydrogen' (Blue hydrogen likely to be most commercially viable in 2030s; green hydrogen to be cost competitive in 2040s (OGA))

Hydrogen: Securing UK's Net Zero Commitment (cont.)

- Announcement of hydrogen “Super Places” clusters; see ‘Industrial Clusters Mission’ (Energy White Paper), delivering 4 x low-carbon industrial clusters by 2030; 1 x net zero industrial cluster by 2040: centres utilising shared clean energy infrastructure (e.g. CCUS; low-carbon hydrogen production): Scotland, South Wales, Merseyside, Humber and Teesside

UK Hydrogen: Developments

- Bacton hydrogen hub (London and Southeast supply): OGA June updating
- National Grid: Project Union, aiming to convert 25% of the country's gas network to carry hydrogen by 2030 (c. ¼ of UK gas demand); identifying pipeline routes and readiness of gas assets
- BP: Teeside 1GW hydrogen production facility at industrial cluster by 2030 (meeting 20% of the UK's 5GW target of low-carbon production capacity by 2030)

Sector Action: Hydrogen Transition

- By 2030 5GW Target
- Hydrogen R&D: Investing in hydrogen technologies, supporting production, transportation, storage and consumption of hydrogen, at lower cost
- Offshore Green hydrogen production
- Hydrogen safety programme: HSE integration; safety at work around evolving equipment and gas handling

Government Action: Hydrogen Transition

- A (carbon) revenue mechanism to stimulate private investment in industrial hydrogen projects: preferred hydrogen business models and revenue mechanism: up to £4 billion of capital investment needed to develop low-carbon hydrogen production, *at scale*
- Hydrogen R&D and testing programme: Government funding (from £1bn Net Zero Innovation Programme) for hydrogen technologies supporting cheaper production, transportation, storage and consumption of hydrogen
- Studies and testing projects (Government and gas sector)
- options evaluation for major new hydrogen infrastructure, such as gas transmission networks and inter-seasonal storage

Government Action: Hydrogen Transition (cont.)

- Market structuring (Gas Act 1995) to promote hydrogen demand: creating powers and responsibilities to facilitate decarbonised gas production, including a review of gas quality standards
- Accelerating hydrogen project planning process: simplifying the planning process for hydrogen production plants
- Accelerating commercialisation of innovative low-carbon tech and industrial systems

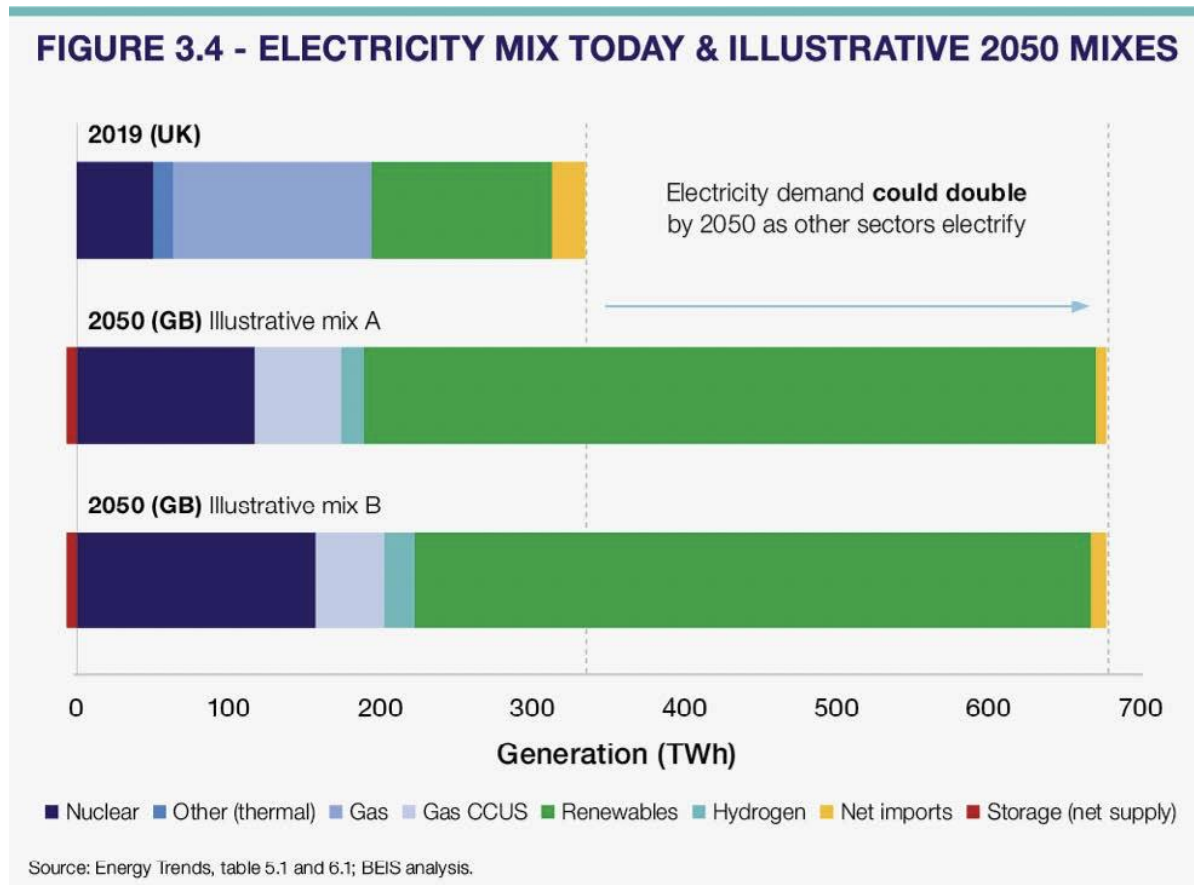
UK Hydrogen Strategy

- European precedent
- Strategy will detail the key steps needed in 2020s to deliver 5GW By 2030 target, and set context for further scale up to net zero 2050
- Clear long-term signalling of Government's commitment to a UK hydrogen economy
- Further clarification of Government and O&G sector collaboration

Net Zero Hydrogen Fund

- Creation of Net Zero Hydrogen Fund in support of low-carbon hydrogen production, providing £240M of investment up to 2024/25
- Delivering “a major boost to production capacity, ensuring that clean hydrogen can be utilised for decarbonising industrial clusters”

Hydrogen: The Unknowns



Unknowns (cont.)

- Attractiveness of private sector investment tools (preferred models by 2022)
- Longevity of Blue hydrogen approach + CCUS (vs. green hydrogen: the European model?)
- Diversification of end uses for clean hydrogen in 2050, dependent on various factors: affordability, and technology
- Hydrogen's efficiency, cost of production, and scale: barriers to investment without Government funding (so, what will the funding model be for hydrogen projects?)
- Extent to which electrification may way for hydrogen
- Extent to which 'electrification-gap' can be met by hydrogen: e.g. hard-to-green sectors

Unknowns (cont.)

- Inevitability of need for Blue hydrogen to decarbonize hard-to-abate sectors: e.g. cement and steel
- Exposure of O&G sector to energy transition. Unemployment risks to concentrated regions such as NE Scotland, N England and East Anglia, from a transition of the scale envisaged
- Low gas prices and low and volatile oil prices
- Implementation oversight: review function of the delivery group, assessing progress against objectives. How will the Delivery Group work alongside Government, Industry, OGA and North Sea Transition Forum?
- Participation by Offshore Petroleum Regulator for Environment and Decommissioning (OPRED) and OGA?

- Series of webinars presented by 39 Essex Chambers on the environment and related areas – webinars and podcasts
- <https://www.39essex.com/category/webinars/>
- <https://www.39essex.com/category/podcasts/>

Thank you for listening!

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