



exploration
task force

Q3 2020

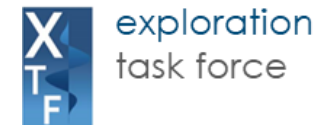
Exploration Task Force meeting

Task Force Purpose Statement

“Maintaining UKCS Exploration and Appraisal activity, making the most of the UK’s own energy resources in support of the transition towards a net zero carbon future and beyond”

1st September 2020

Exploration Task Force - Agenda



1:00pm – Start

- | | | |
|--|---------------|-------------------------------|
| • Introduction, Agenda & Review of Actions | <i>10 min</i> | <i>Nick T & Nick R</i> |
| • Energy Transition: Exploration in a Low Carbon Future | <i>40 min</i> | <i>Jenny, Katy & John</i> |
| • OGA Energy Integration report | <i>20 min</i> | <i>Carlo Procaccini</i> |
| • Technology | <i>20 min</i> | <i>Gillian</i> |

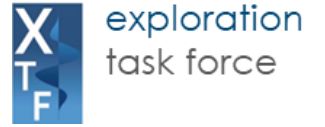
2:30pm – Break

10 minutes

- | | | |
|----------------------------------|---------------|------------------------------|
| • Licensing | <i>20 min</i> | <i>Colin, Ben & Katy</i> |
| • Opportunity Maturation | <i>20 min</i> | <i>Anne-Sophie</i> |
| • Data | <i>20 min</i> | <i>Julie & Graham</i> |
| • AOB | <i>20 min</i> | <i>Nick T</i> |
| • MERUK Exploration Forum agenda | | |

4:00pm – Meeting Close

XTF Membership



Jenny Morris
Head of Exploration,
Chrysaor



John Underhill
Chief Scientist & Professor,
Heriot-Watt University



John Colleran
UK Expl & Dev Director,
Neptune



Graham Goffey
Founder/Direct
Soliton Resources Ltd.



Nick Richardson
Head of Exploration & New
Ventures, OGA



Rod Crawford
Technical Director,
Zennor Petroleum



Anne-Sophie Cyteval
UK Exploration Manager,
Spirit Energy



Nick Terrell
Managing Director,
Azinor Catalyst



Chrysanthe Munn
Exploration Manager,
BP



Gillian White
Solution Centre Manager -
Subsurface, OGTC



Graham Turner
Business Development Manager
Spectrum Geo, TGS



Mohamed-Amine Soudani
North Sea Area Exploration
Manager, Total



Ben Hillier
Exploration Manager UK,
Shell



Julie Branston
Region Manager, Europe & Russia
WesternGeco
(IAGC Representative)



Colin Percival
Technical Director,
Athena Exploration



Katy Heidenreich
Operations Director,
Oil & Gas UK



Andy Alexander
Chief Geophysicist,
Siccar Point Energy

The XTF provides leadership and support to UKCS exploration & appraisal activity

Energy Transition

Ensuring the case for continued UKCS exploration is made

- Advise on & promote ‘case for continued exploration’ through Roadmap 2035
 - Requirement to meet UK Energy needs through ET
 - Net Carbon benefit of domestic production vs imported energy
- Attract and retain transferrable skills, expertise and data
- Securing Social Licence to Operate through the ET and beyond

ROADMAP 2035



- On track to be a net-zero oil and gas basin
- Develop CCUS and other low carbon technologies, at scale
- Underpin an increasingly diversified energy system



- Continue to add billions of pounds to the economy
- Increase exports from the diversified oil and gas sector to £20 billion each year
- Increase the number of supply chain firms exporting by 50%



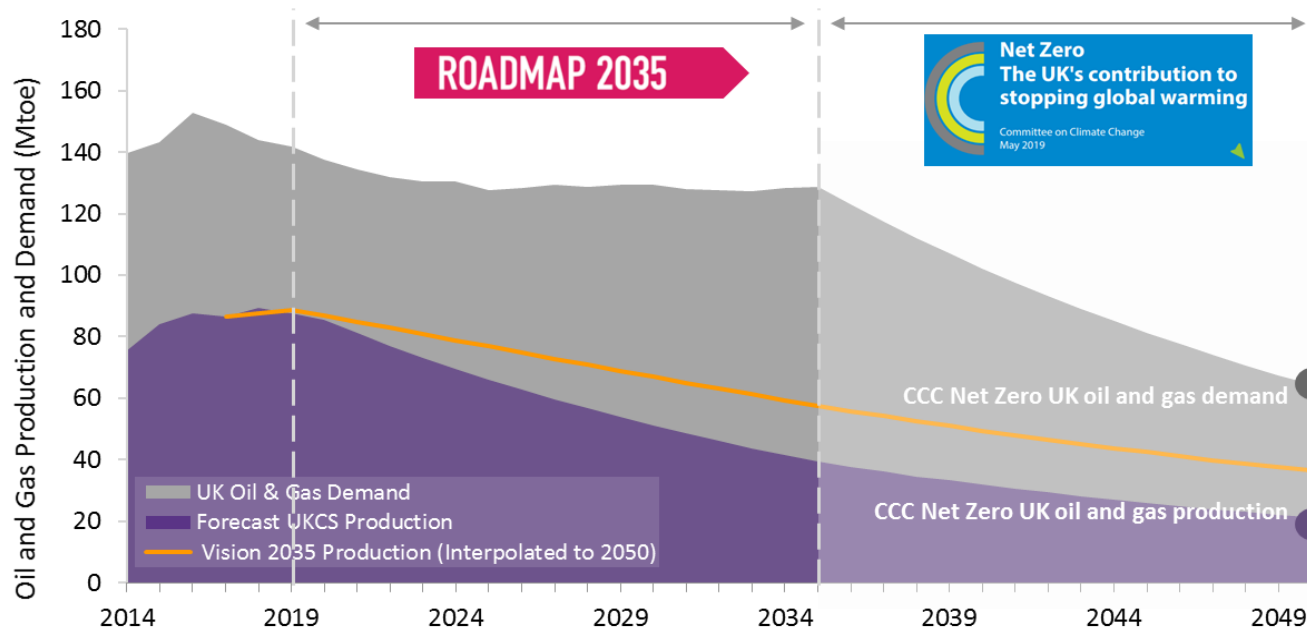
- Develop a diverse workforce with transferable skills, supported by an inclusive culture
- Attract 40,000 people, a quarter in new roles
- Be recognised as a global leader in carbon management



- Establish a Net Zero Technology Solution Centre
- Create more than 100 new technology start-ups, adding £2bn in economic value
- Add over £10 billion in economic value through technology & innovation



- Providing over half of the UK’s oil and gas demand
- Deliver over 1 million barrels of oil and gas each day
- Provide the foundation of an integrated energy system on the UKCS

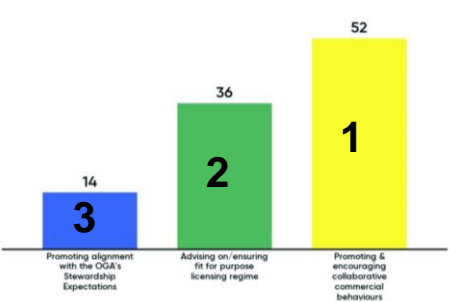
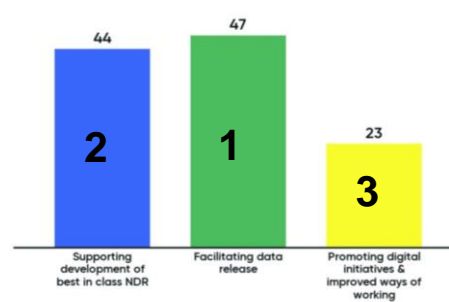
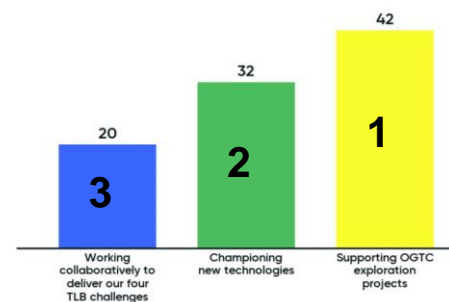
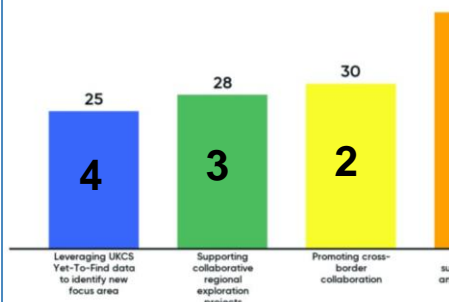


Source: BEIS, CCC, OGUK

Making the most of the UK’s own energy resources towards a net zero carbon future and beyond.

2020 MER UK Priorities & Initiatives

Endorsed & ranked by Industry at recent MER UK Exploration Forum

PRIORITIES																																																						
1. Licensing	2. Data	3. Technology	4. Opportunity Maturation																																																			
Initiatives																																																						
<p>1.Promote & encourage collaborative commercial behaviours</p> <p><i>2.Advise on & ensure fit for purpose licensing regime</i></p> <p><i>3.Promote alignment with the OGA’s Stewardship Expectations</i></p>  <table border="1"> <caption>Licensing Initiative Rankings</caption> <thead> <tr> <th>Initiative</th> <th>Count</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>Promoting alignment with the OGA’s Stewardship Expectations</td> <td>14</td> <td>3</td> </tr> <tr> <td>Advising on/ensuring fit for purpose licensing regime</td> <td>36</td> <td>2</td> </tr> <tr> <td>Promoting & encouraging collaborative commercial behaviours</td> <td>52</td> <td>1</td> </tr> </tbody> </table>	Initiative	Count	Rank	Promoting alignment with the OGA’s Stewardship Expectations	14	3	Advising on/ensuring fit for purpose licensing regime	36	2	Promoting & encouraging collaborative commercial behaviours	52	1	<p>1.Facilitate data release</p> <p>2.Support development of best in class National Data Repository</p> <p><i>3.Promote digital initiatives and improved ways of working</i></p>  <table border="1"> <caption>Data Initiative Rankings</caption> <thead> <tr> <th>Initiative</th> <th>Count</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>Supporting development of best in class NDR</td> <td>44</td> <td>2</td> </tr> <tr> <td>Facilitating data release</td> <td>47</td> <td>1</td> </tr> <tr> <td>Promoting digital initiatives & improved ways of working</td> <td>23</td> <td>3</td> </tr> </tbody> </table>	Initiative	Count	Rank	Supporting development of best in class NDR	44	2	Facilitating data release	47	1	Promoting digital initiatives & improved ways of working	23	3	<p>1.Support OGTC exploration projects</p> <p><i>2.Champion new technologies</i></p> <p><i>3.Work collaboratively to deliver our four TLB challenges</i></p>  <table border="1"> <caption>Technology Initiative Rankings</caption> <thead> <tr> <th>Initiative</th> <th>Count</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>Working collaboratively to deliver our four TLB challenges</td> <td>20</td> <td>3</td> </tr> <tr> <td>Championing new technologies</td> <td>32</td> <td>2</td> </tr> <tr> <td>Supporting OGTC exploration projects</td> <td>42</td> <td>1</td> </tr> </tbody> </table>	Initiative	Count	Rank	Working collaboratively to deliver our four TLB challenges	20	3	Championing new technologies	32	2	Supporting OGTC exploration projects	42	1	<p>1.Support sustainable hubs and implemented area plans</p> <p><i>2.Promote cross-border collaboration</i></p> <p><i>3.Support collaborative regional exploration projects</i></p> <p><i>4.Leverage UKCS Yet-To-Find data to identify new focus area</i></p>  <table border="1"> <caption>Opportunity Maturation Initiative Rankings</caption> <thead> <tr> <th>Initiative</th> <th>Count</th> <th>Rank</th> </tr> </thead> <tbody> <tr> <td>Leveraging UKCS Yet-To-Find data to identify new focus area</td> <td>25</td> <td>4</td> </tr> <tr> <td>Supporting collaborative regional exploration projects</td> <td>28</td> <td>3</td> </tr> <tr> <td>Promoting cross-border collaboration</td> <td>30</td> <td>2</td> </tr> <tr> <td>Supporting sustainable hubs and implemented area plans</td> <td>43</td> <td>1</td> </tr> </tbody> </table>	Initiative	Count	Rank	Leveraging UKCS Yet-To-Find data to identify new focus area	25	4	Supporting collaborative regional exploration projects	28	3	Promoting cross-border collaboration	30	2	Supporting sustainable hubs and implemented area plans	43	1
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Actions arising from previous meeting(s)

Q3 2020 Exploration Task Force meeting (01 September 2020)

Priority	Actions	Who	When	Status	Comments
COVID 19/Low oil and gas price	OGUK to consider providing guidance to industry on coordination and prioritisation of offshore related resources. This should also include a definition of what is deemed 'Critical Operations' during the COVID-1- health crisis.	Katy Heidenreich	Ongoing	Closed	
Task Force Priorities	There was general agreement that ongoing XTF Priorities must continue to be progressed expeditiously. Issues/opportunities around Licencing, Data and Technology are as critical as ever in order to facilitate Opportunity Maturation. The case for continued exploration must be made with respect to ensuring UK energy demand through the energy transition and in support of Roadmap 2035.	All	Ongoing	Closed	
Energy Transition	XTF to consider how carbon emissions could be incorporated into future Licensing Round assessments	Colin Percival	Ongoing	Closed	Industry views received through June 2020 questionnaire. Recommendations made today
Licensing	OGA to provide information to industry to confirm further details on their approach and requirements regarding amendments to existing licence terms. This may include: <ul style="list-style-type: none"> • Outline of OGA's approach to requests from industry in order to support activity, the supply chain and MER UK • A request for industry to approach the OGA as early as possible with any amendment requests. Requests must be supported by evidence. • Each request to be considered on a case by case basis. • Decisions will be prioritised based on situation. 	Nick Richardson	Ongoing	Closed	Undertaken through Q2 industry Licence engagements
Licensing	Initial 32nd Round announcements of award not to be delayed beyond mid-2020 where possible, and OGA has already offered to speak to licence awardees at this time if they have queries or requests.	Nick Richardson	Ongoing	Ongoing	Announcement expected imminently
Licensing	Katy Heidenreich to ask OGA how subsurface uncertainties are being considered in small pools	Katy Heidenreich	By next meeting (03 June 2020)	Closed	
Opportunity Maturation	OGA to provide data on uptake of Phase 1 of the Petroleum Systems project (data/downloads) etc.	John Colleran	By next meeting (03 June 2020)	Ongoing	Initial discussion held with Nick R on this in May 2020



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Energy Transition

Q3 XTF meeting

Jenny Morris (Chrysaor)

John Underhill (Heriot-Watt University)

Katy Heidenreich (OGUK)

1st September 2020



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OGA Energy Integration report

Q3 XTF meeting

Carlo Procaccini, OGA Head of Technology

1st September 2020



Oil & Gas
Authority



Department for
Business, Energy
& Industrial Strategy

THE CROWN
ESTATE

ofgem

UKCS Energy Integration Final report



August 2020

Energy integration project



Oil & Gas Authority



Funded by £900k grant from the Better Regulation Executive's Regulators' Pioneer Fund

Led by:



in collaboration with:



- Engaged widely across industry and regulators
- Understood potential of UKCS assets and technologies for net zero, and synergies across the different energy sectors
- Identified hurdles (economic, regulatory) and recommend avenues to realise full technologies' value

Project timeline

1

Technical options
1Q – 2Q 2019



2

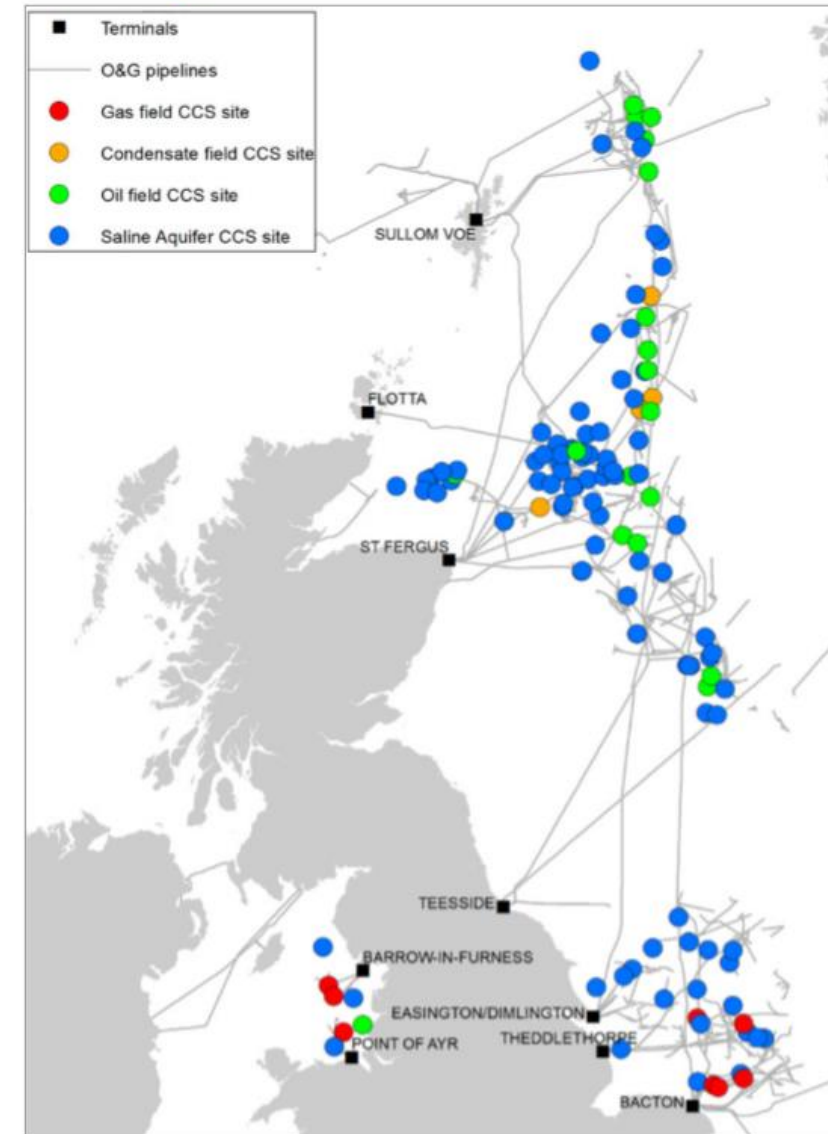
Economic and
regulatory assessment
3Q 2019 – 1Q 2020



3

A Phase 3 is proposed to implement recommendations, accelerating UKCS energy integration projects

UKCS CO₂ potential stores and O&G infrastructure



ETI and BGS CO2stored.co.uk (2015); BGS and EIP analysis (2019)

UKCS net zero opportunity



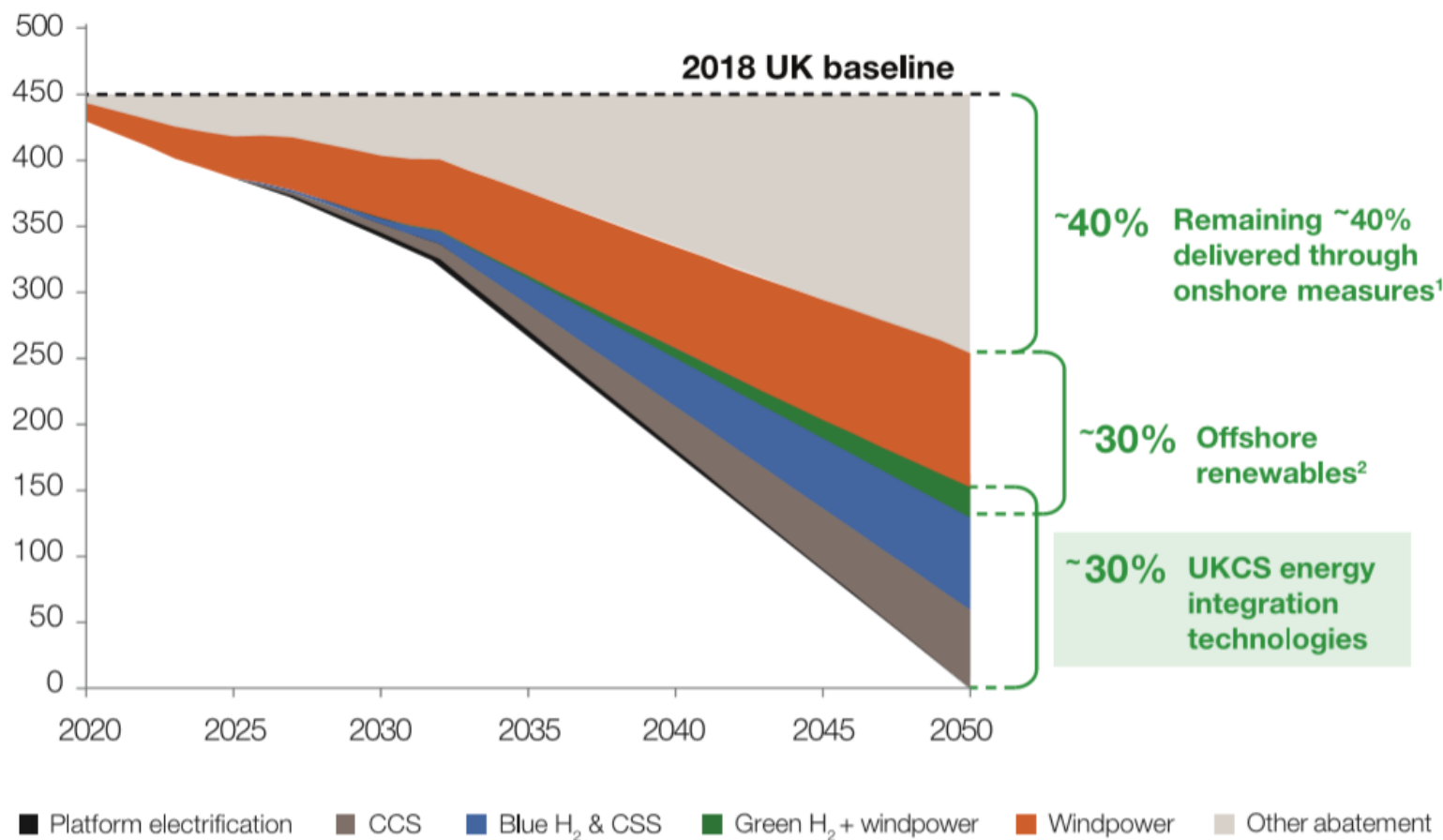
Oil & Gas Authority

The UKCS is a critical energy resource which could play a significant role in achieving the UK net zero target.

Energy integration technologies (offshore electrification, CCS, blue and green hydrogen) could contribute around **30% of the UK emissions abatement needed**.

In addition, these technologies could **support the expansion of offshore renewables**, which could deliver around a further 30% contribution to the net zero abatement target.

UKCS potential contribution to net zero target



Note: See description of methodology in appendix

¹ Other abatement includes energy efficiency measures

² Offshore renewables ~30% contribution would include the amount of electricity used for green hydrogen production



Offshore O&G installations emit ~10MtCO₂e p.a. to generate power (~10% of the UK total energy supply emissions). **Platform electrification** will be key to cutting upstream O&G emissions, and to the industry's social licence to operate.



Offshore electrification may unlock the **faster growth of renewables**, expansion of offshore transmission infrastructure, and establishment of floating **windpower technologies** in the UK, contributing to offshore renewables' **75GW capacity ambition** by 2050.



CCS is critical to achieving net zero, **removing over 130MtCO₂** from the UK emissions. The UKCS has enough CO₂ storage capacity to fully support the UK needs and **oil and gas infrastructure** which can be reused.



Blue hydrogen can convert the UK natural gas supply to low-carbon fuel and accelerate the growth of CCS.

Green hydrogen (electrolysis using renewable electricity) will be critical to support the expansion of offshore windpower in the 2030s and beyond.



Oil and gas **infrastructure, capabilities and supply chain** can support energy integration on the UKCS, contributing significantly to offshore renewables expansion and UK net zero.



Combining these technologies into **energy hubs, linked to existing and future onshore net zero clusters**, can accelerate deployment and improve project economics.

Regional opportunities

Northern Scotland and Islands

- Electrification of new O&G developments
- Blue H₂ and CCS
- Windpower expansion and Green H₂
- Leveraging O&G terminals and other infrastructure

Central Belt of Scotland

- Carbon capture from industrial cluster and transport to storage facilities
- Blue H₂ production from natural gas

East Irish Sea

- Carbon capture from industrial cluster and transport to storage facilities
- Blue H₂ production from natural gas
- O&G and windpower synergies, including Green H₂

Moray Firth & North East Scotland:

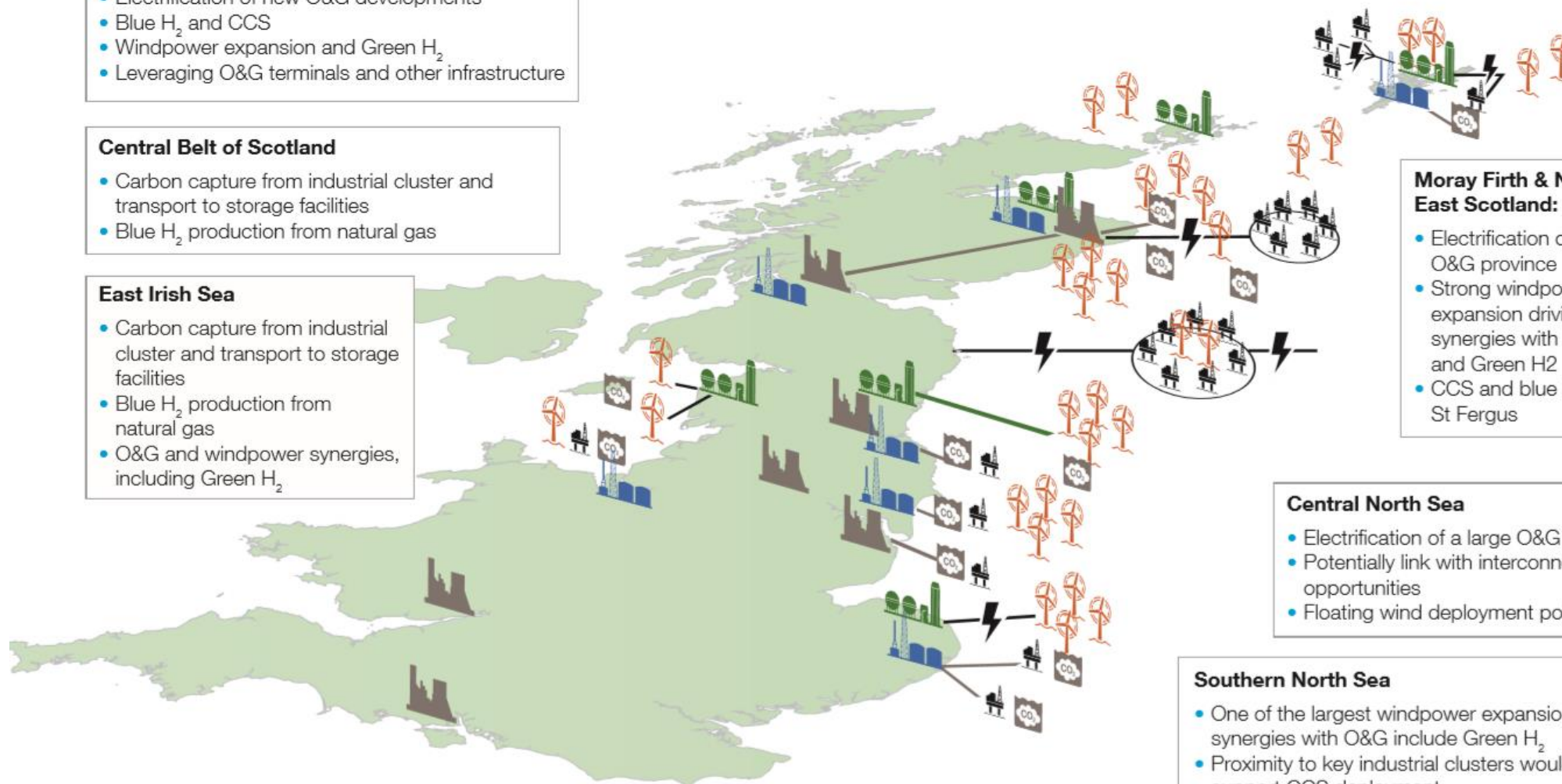
- Electrification of a large O&G province
- Strong windpower expansion driving synergies with O&G and Green H₂
- CCS and blue H₂ at St Fergus

Central North Sea

- Electrification of a large O&G province
- Potentially link with interconnector opportunities
- Floating wind deployment potential

Southern North Sea

- One of the largest windpower expansion areas, synergies with O&G include Green H₂
- Proximity to key industrial clusters would support CCS deployment
- UK natural gas production and imports would support Blue H₂

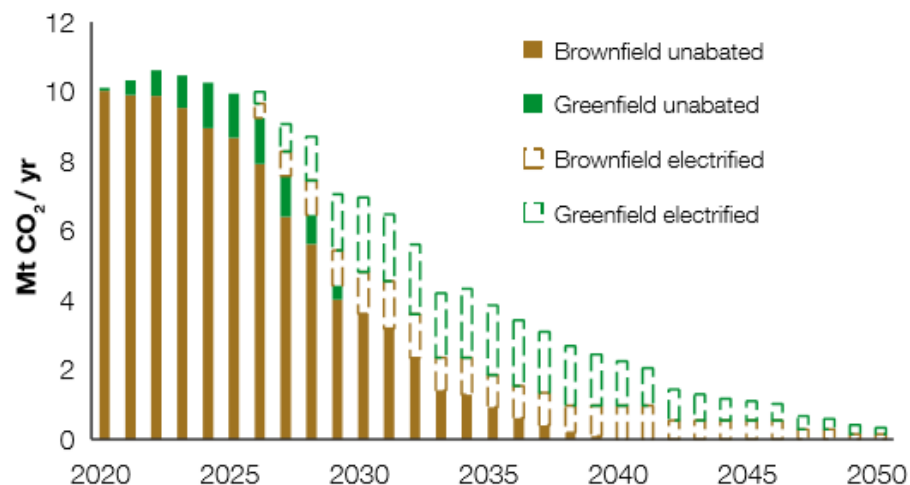


Electrification



Oil & Gas Authority

Reduction of O&G power emissions by electrification



- Applying electrification to existing assets with >15 yrs of remaining life and 50% of future greenfield projects would lead to 2-3MtCO₂ pa emission reductions
- The resulting power demand would support ~2GW of new offshore windpower capacity
- Industry collaboration and synergies with windpower can reduce costs and accelerate roll-outs
- Project timeline is critical to realise the opportunity



Electrification is an essential response by O&G industry to net zero

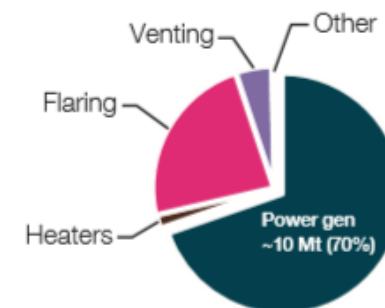
- Abate power emissions from O&G platforms (10 MtCO₂, 70% of offshore emissions or 10% of total UK energy sector)
- Extend operating life of existing assets and achieve cost efficiencies in the development of new oil and gas fields
- Economics critically depend on electricity and carbon pricing - power from UK shore would be unattractive at current prices
- Joint projects to share infrastructure and sourcing power directly from offshore windfarms can significantly improve economics



Opportunity to accelerate offshore windpower growth

- Large potential growth in offshore windpower (75GW in 2050)
- Expansion in new areas (eg Scottish waters) with favourable wind conditions but water depth and infrastructure challenges
- Energy supply to O&G platforms could represent a commercial opportunity for renewable power developers today
- Co-investing in transmission infrastructure and leveraging O&G deep-water technologies could support growth

UKCS O&G emissions (14MtCO₂e)



Source: EEMS 2018, EIP

ScotWind Leasing expansion



Source: CES

Carbon Capture and Storage



CCS is critical to achieve UK net zero, and the UKCS role is key

- 75-175 MtCO₂ / year captured and stored by 2050¹, or up to one third of the current UK emission baseline
- 78 GtCO₂ potential storage capacity² on the UKCS, sufficient for 100s of years of UK demand



Accelerating projects would be needed to achieve expected CCS volumes

- >2 pilots followed by >2 commercial-scale projects developed by 2030 necessary to provide critical learnings for the subsequent expansion
- 130 MtCO₂/yr by 2050 flow rate (central case) would then require ~4 Gt CO₂ storage capacity developed across >20 individual stores³

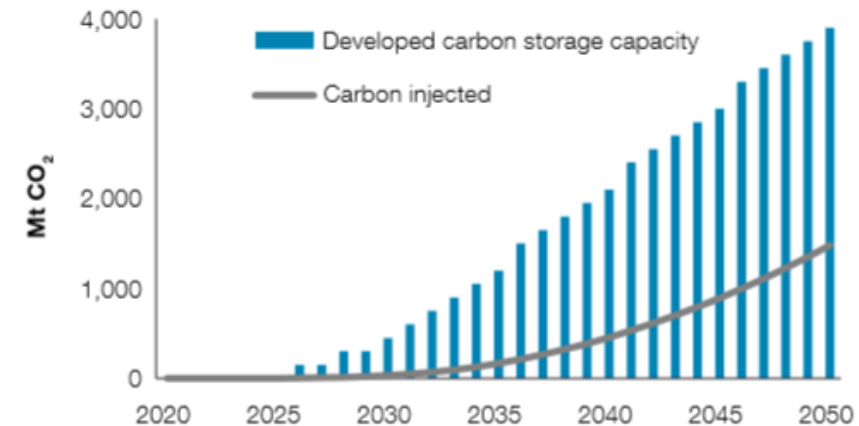


CCS could be economically competitive as emission abatement technology

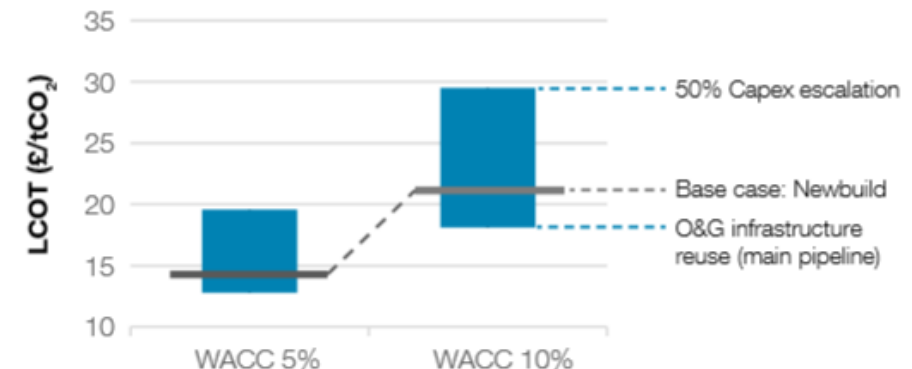
- Levelised transport and storage costs of £12-30/tCO₂ could be attained
- Adding onshore capture costs, CCS is cost-competitive against long-term carbon price forecasts

- Combination with blue-hydrogen can enhance economics and create scalable business models
- Levers to reduce CCS costs include economies of scale (e.g. CCS clusters and hubs) and reuse of O&G infrastructure

Developed CO₂ T&S capacity and cumulative injection (EIP central case⁴)



Levelised costs of T&S (£/tCO₂, notional project examples⁴)



Hydrogen



Blue hydrogen could support the faster CCS ramp-up

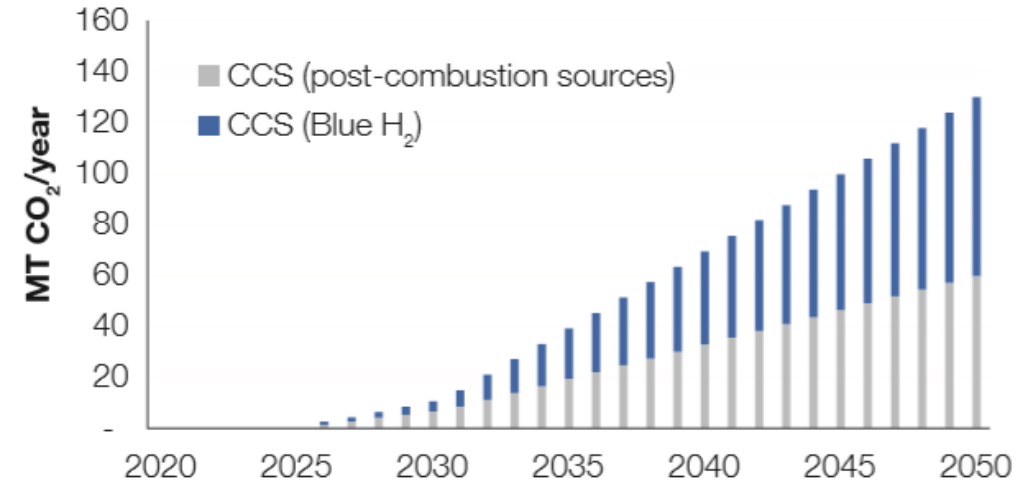
- 2020s/30s, by leveraging available supply of natural gas and mature technologies
- Provides a zero-carbon fuel (Hydrogen) at cost advantage with conventional power gen when combined with CCS (BCR up to 1.4)
- Leverage oil and gas infrastructure (e.g. terminals) and capabilities
- Would rely on the hydrogen market/sales to absorb CCS cost



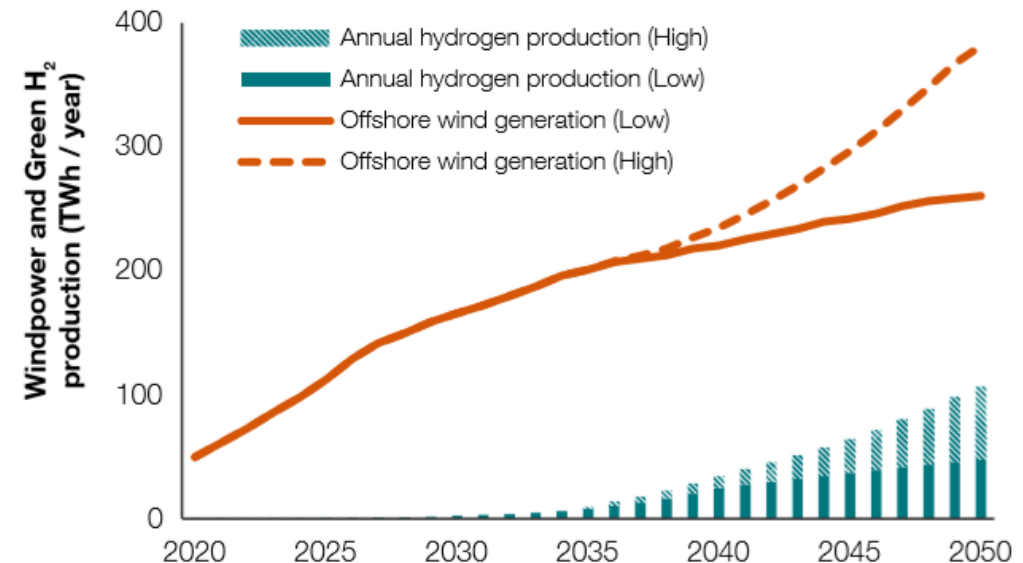
Green hydrogen is a required enabler of large-scale windpower expansion

- Potential to provide efficient energy storage to address power source intermittency on the expected scale (~75GW windpower capacity in 2050)
- Efficient energy transportation solution over the long-distances required
- Due to the high electrolyser costs, green H₂ is not economically attractive today (BCR ~ 0.7) but technology improvements are expected to reduce these costs to achieve project breakeven in this decade

Blue hydrogen contribution to CCS ramp-up (EIP central case)



Green hydrogen supporting windpower expansion



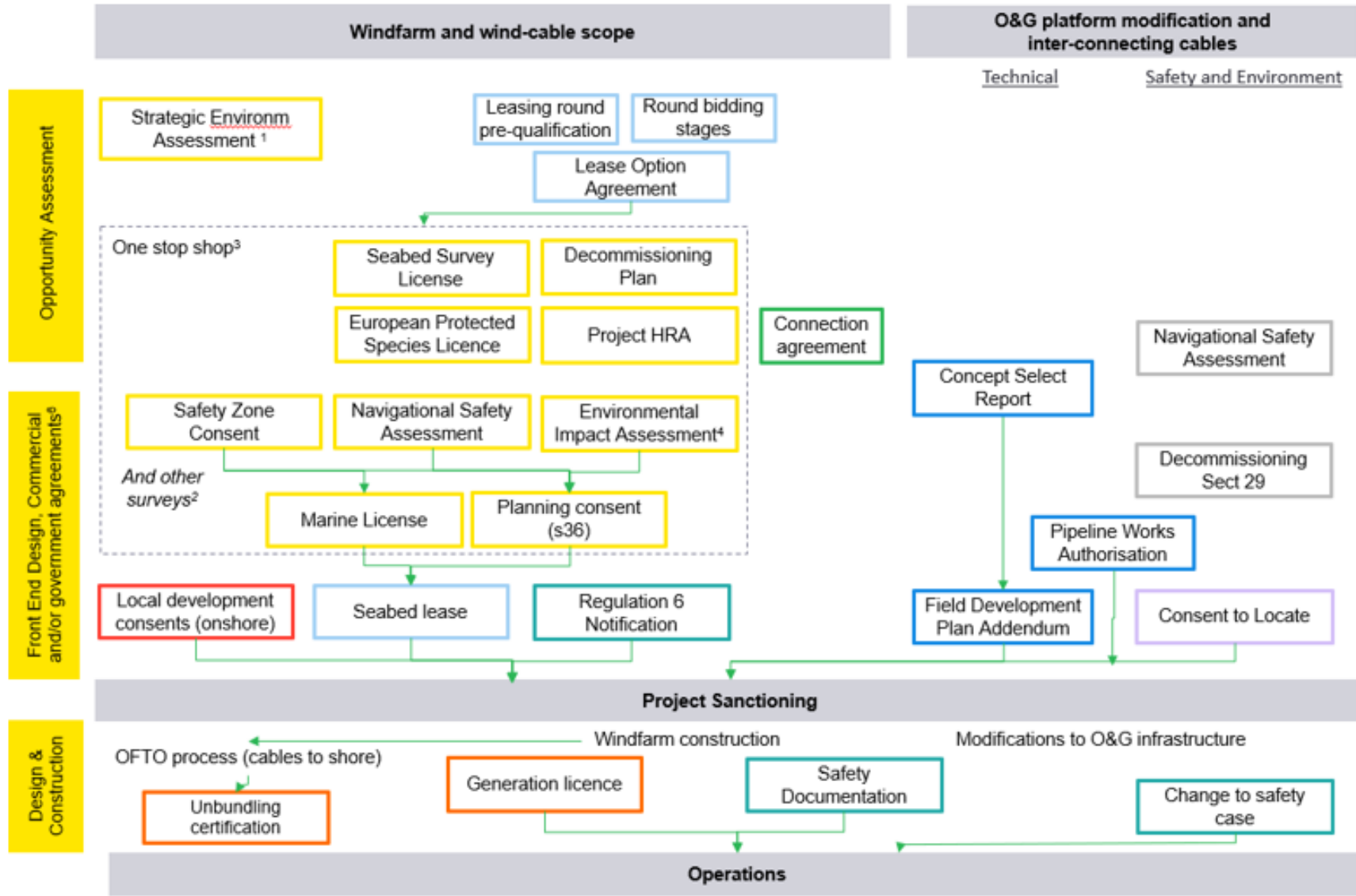
¹ See note on methodology in appendix

Regulatory enablers

Example: O&G electrification from windfarms (Scotland)



Oil & Gas Authority



- Understand applicable legislation (Electricity Act and Petroleum Act)
- Windfarm planning and consenting
- O&G platform modifications
- Decommissioning & HSE
- Critical path driven by windfarm consenting
- Existing projects consented but not sanctioned, could be unlocked by supply contracts with O&G
- Multiple regulators working together to facilitate regulatory pathway

Recommendations / next steps

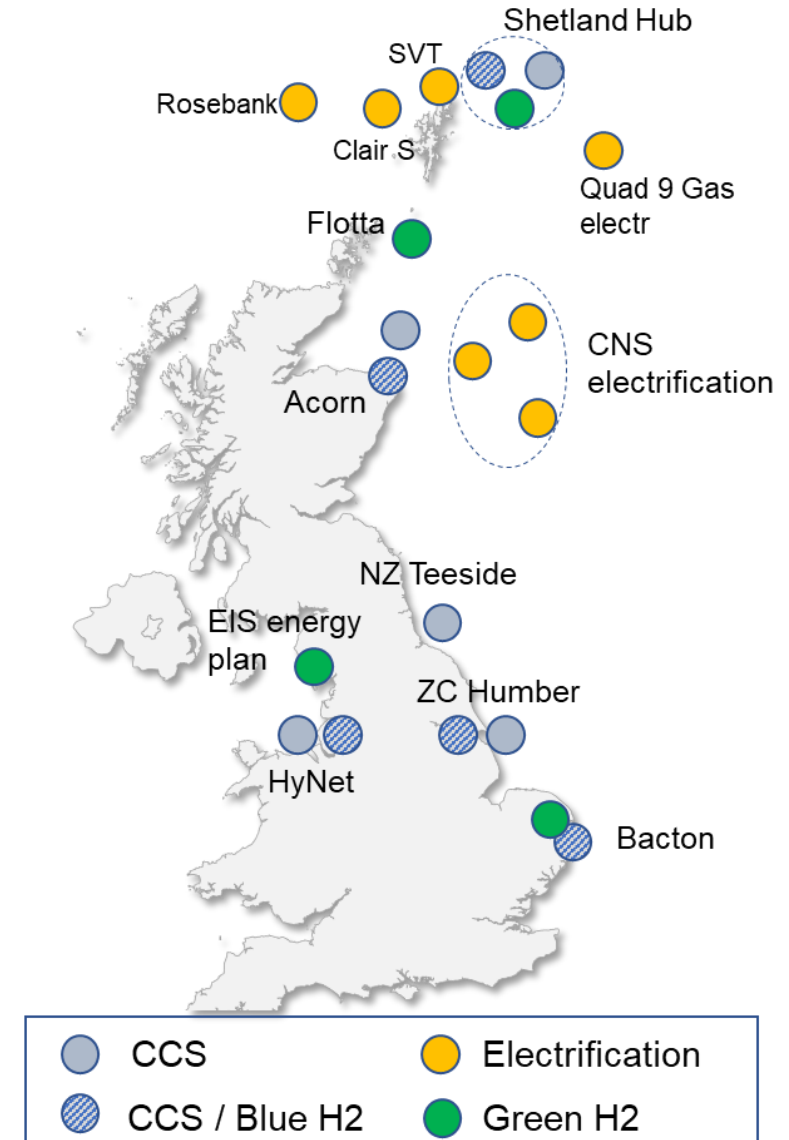


3

A Phase 3 is proposed to implement recommendations, accelerating UKCS energy integration projects

- Accelerate net zero pilots and projects
- Leverage O&G assets and capabilities, preserving existing infrastructure value
- Realise synergies across different industries (O&G, windpower, utilities)
- Co-ordinate regulatory processes for the deployment of net zero technologies
- Improve data availability across multiple regulators and industries

Net zero opportunities





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Technology Priority

Q3 XTF meeting

Gillian White (OGTC)

Mohamed-Amine Soudani (Total)

1st September 2020

Technology Priority

Task Delivery Group

Key Initiative

1. Support OGTC exploration projects

Tasks

- Support OGTC in delivery of NNS Machine Learning Project, ensuring results are published to industry as soon as possible
- Support progression of OGTC Exploration Call for Ideas projects
- Ensure progression of TLB Challenge – short and medium term priorities

Key Stakeholders

- OGTC, TLB, OGA, OGUK, OGIA

XTF Leads







- Mohamed-Amine Soudani (Total)
- Gillian White (OGTC)

AGENDA

- NNS Machine Learning Project
- Call For Ideas Projects

Technology Priority

NNS Machine Learning for Pay Analysis

- Conditioned Dataset Issue – agreed with D Lecore & T Knowles
 -  Batch 5 (without depth tie corrections)
 -  Conditioned data with OGA
 - Batch 6 Data (depth tie corrected) available Oct (Covid19 delayed from August)
- 2 OGTC Webinars held
 - 4th June 14:00 – 16:00   167 attendees
 - 9th June 14:00 – 16:00   203 attendees

Technology Priority

NNS Machine Learning for Pay Analysis

- Analysis of all three developers is available to all participants
- Steer comm support already (Taqa Total Shell BP)
- Other participants' feedback
- XTF members requested to support QC efforts
- OGTC to compile feedback
- Promotion & Use
 - Abstract in for Petex 2020 accepted
 - Dave McKinnon industry collaboration ongoing
 - ...



Operator		Boreholes
Taqa	✓	526
CNR	✓	501
Apache		459
Shell	✓	457
Enquest		436
Total	✓	285
Marathon		236
Total&Maersk	✓	223
BP	✓	164
Equinor		40
Contributed Boreholes		3327
Wells from NDR for these		556
NPD Wells in Area	✓	767
		4650

Technology Priority

NNS Machine Learning for Pay Analysis



The Oil & Gas
Technology Centre



The Oil & Gas Technology Centre / Events hosted by the OGTC and related events / Events programme / 2020 / Welcome to the machine – data conditioning for machine learning

04 June 2020, 14:00 to 16:00
Welcome to the machine – Data conditioning for machine learning

When

Address

Book your place

04 June 2020, 14:00 to 16:00

Online via Zoom.

Click here to register.

[https://www.theogtc.com/
events/events-
programme/2020/welco
me-to-the-machine-
digital-analytics-to-find-
pay/](https://www.theogtc.com/events/events-programme/2020/welcome-to-the-machine-digital-analytics-to-find-pay/)

Technology Priority - MER alignment

MER Exploration priorities

Short term

1 Demonstrate the successful application of code to automate the identification of missed pay zones in diverse seismic datasets, using well calibration

2 Use AI workflows to cleanse and prepare all structured and unstructured UKCS exploration data to deliver a complete, high quality and searchable National Data Repository to industry

✓ NNS Portfolio
✓ NNS Portfolio

✓ Sword-Moveout
✓ Rockflow

MER Exploration priorities

Medium term

1 Dramatically reduce seismic processing timelines from months down to days for a 3D survey including FWI production.

2 Drive down cost of Full-Azimuth/High-Density ocean-bottom seismic acquisition to the same or less than an equivalent streamer survey.

✓
✓

✓

✓

Optic Earth (BP)
S-Cube

Seismic Image Processing

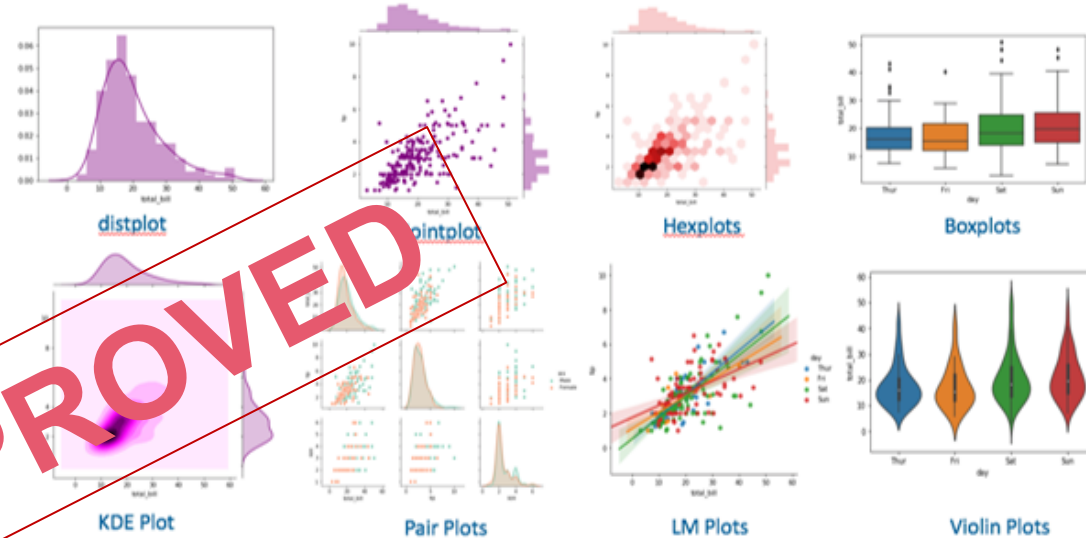
ARL

Technology Priority - MER alignment



May 2019 Call
for Ideas

Revitalise Exploration – Reduce Time to
Process Data



APPROVED



Rapid Zonal Analysis
AI/ML for basin wide
reservoir properties

TRL 6 to TRL 8

Project: Build and Beta Test Zonal Well Analysis Tool

STEP 1: Scale up existing algorithm to handle large dataset using NDR data

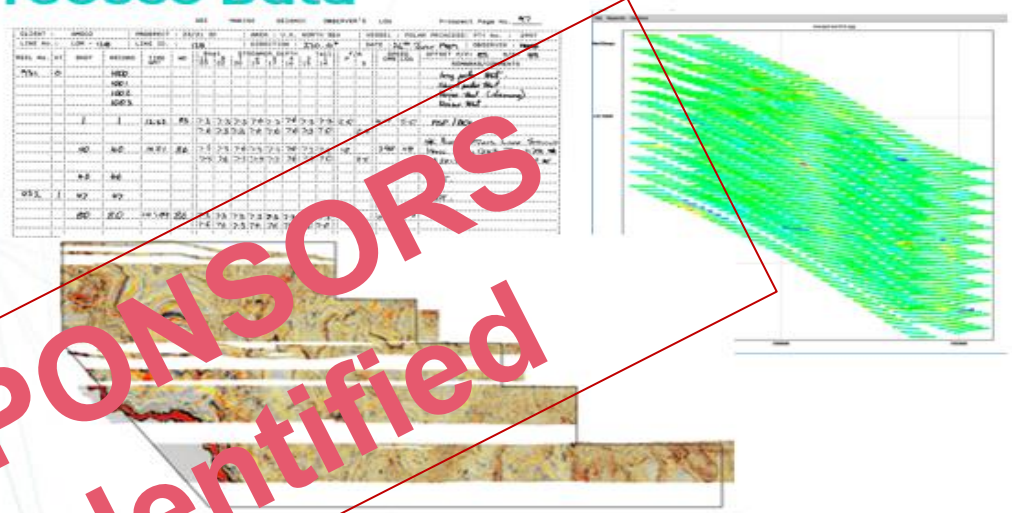
STEP 2: Demonstrate & test Rapid Zone Analysis Tool

Technology Priority - MER alignment



May 2019 Call
for Ideas

Revitalise Exploration – Reduce Time to
Process Data



Process Ready Seismic
AI/ML to QC and edit raw marine
seismic volumes generating
processing ready data
accessible by all [via NDR]

TRL 3 to TRL 6

Project: ML/A to rapidly assimilate, prepare & QC raw seismic data for processing

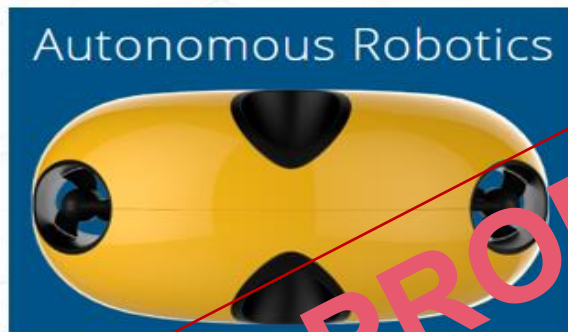
STEP 1: Train algorithms through raw data available in NDR and archive
Need: Released seismic surveys of various vintages with the raw field data (SEGD) along with the navigation (p1/86 or p1/90) and obs logs. Nav merged field data can also be provided.

STEP 2: Blind Test
Need : Resources from industry to test automated result against existing methods

Technology Priority - MER alignment

May 2019 Call
for Ideas

Revitalise Exploration - Affordable OBN
for Exploration



Flying Nodes
Autonomous Ocean
Bottom Nodes
TRL 4 to PL 5



Project: Simple Inshore Field Trial to prove operational scale up potential

STEP 1: Electronics for miniaturised sensor of redeveloped node

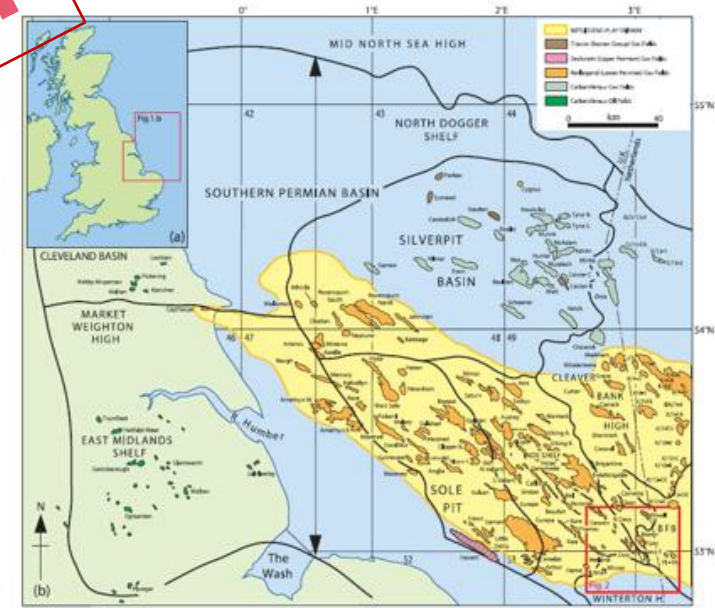
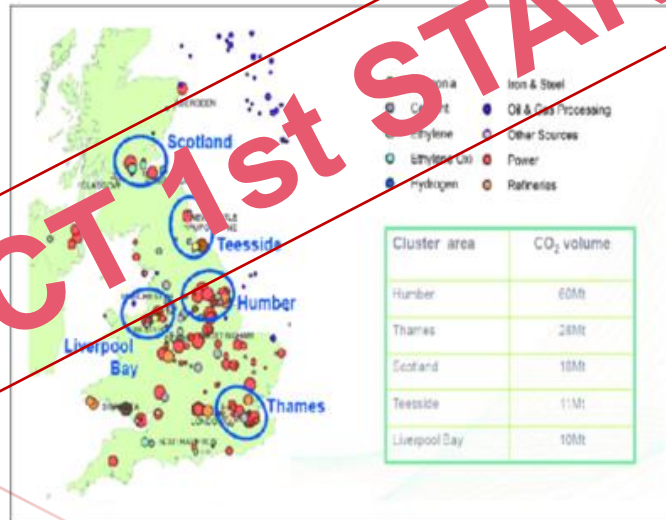
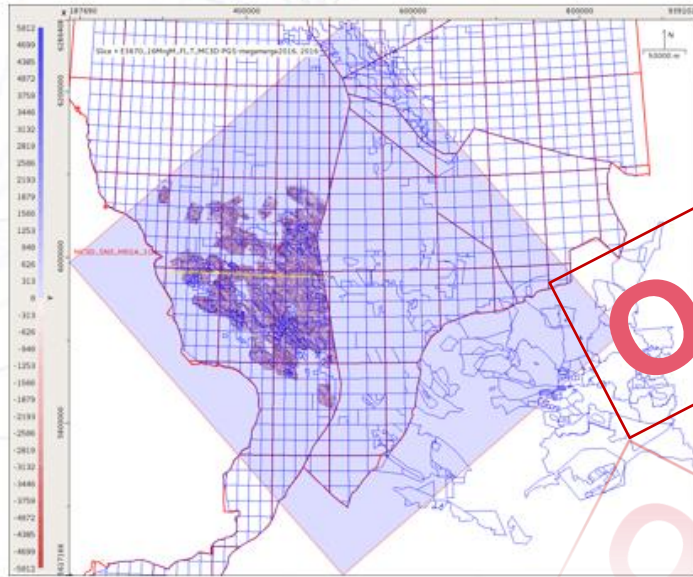
STEP 2: Test acquisition quality by comparing ARL (Flying) Node with industry standard

Need : Access to field trial equipment (e.g. nodes, boat)
Help to process Data
Resource to QC ARL data Vs. industry standard

Technology Priority — 2050 Net Zero UKCS

CCS Research Study

Evaluating the Geological Case for CO₂
Storage in Depleted Gas Fields, UK SNS
Heriot Watt University



- Investigate critical geological factors that maintain seal integrity and entrapment through a forensic assessment of the trap
- Evaluate overburden effects of CO₂ storage
- 60+ applicants being screened estimated start May 2020
- 6 companies (Shell Nam, Premier, Spirit Energy, EBN, Verus, Neptune) plus OGA on steering committee



exploration
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Licensing Priority

Q3 XTF meeting

Colin Percival (Athena Exploration)

Ben Hillier (Shell)

Katy Heidenrich (OGUK)

1st September 2020

Licensing Priority

Task Delivery Group

Key Initiative

1. Promote & encourage collaborative commercial behaviours

Tasks

- Review JOA Standard Agreement and revise if required
- Review and recommend improvements to LARRY. Facilitate training on LARRY system for all users
- Licensing of offshore Wind vs Oil & Gas - establish the Industry issues
- Licence award and Stewardship process – ensure collaboration is a key part of the process

Key Stakeholders

- OGA, OGUK (including Commercial Managers and Legal Forum), OGIA, Crown Estate, BEIS

XTF Leads

- Ben Hillier (Shell)
- Colin Percival (Athena Exploration)

Objective:

- Make the UKCS a great place to do business for Oil & Gas
 - Ease of acquiring licences
 - Ease of delivering success

Issues:

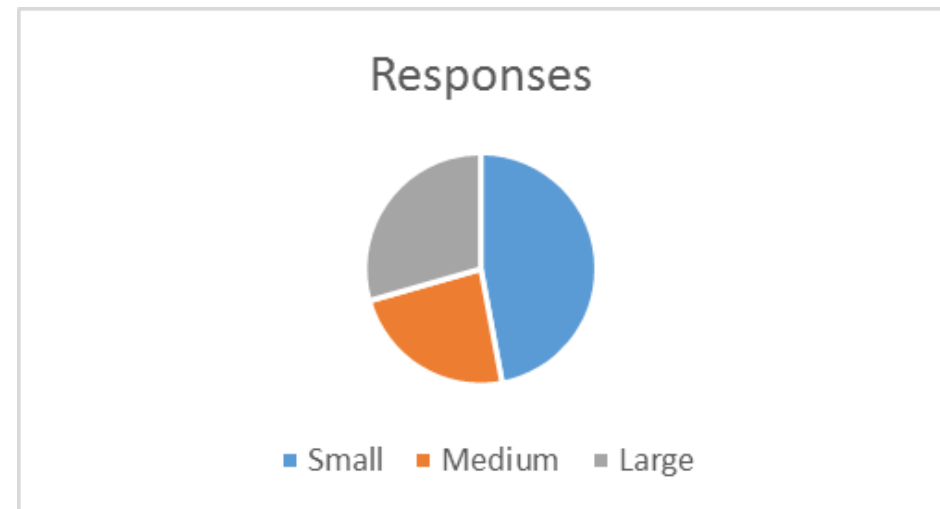
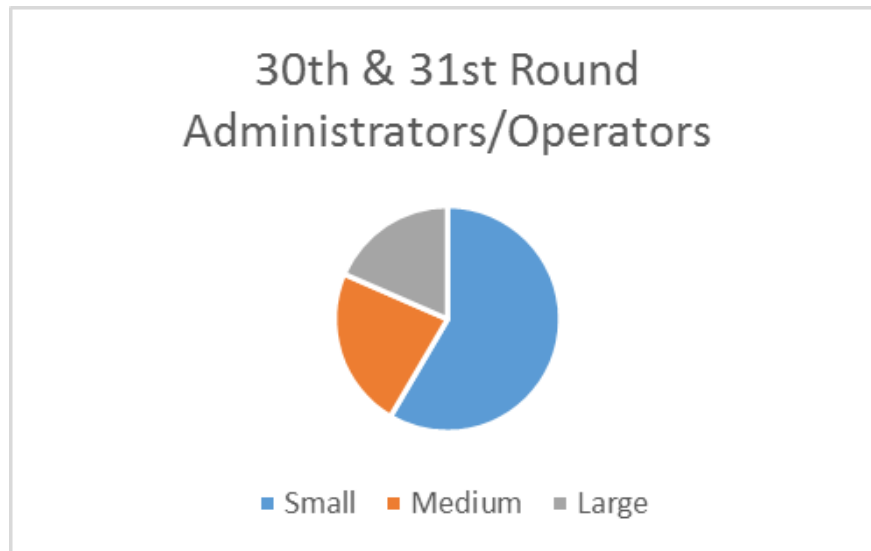
- Licence Award
 - LARRY update and training
 - Ensuring collaboration is rewarded
- Licence Ownership
 - Standard Agreements e.g. JOA
 - Interaction with other users e.g. Offshore Wind
 - Ensuring collaboration is rewarded

Standard JOA

- Commercial Managers Forum meeting 5/5/20 agreed that changes required to align JOA with Innovate Licence and that Operators Legal Committee will action.
- OGUK (Tracey Keith) liaising with Operators Legal Committee Chair to effect changes.
- Additional points raised are under review by OLC – notably alignment with Financial Responsibility Guidelines.
- Meeting to be reconvened once additional points are further clarified to discuss next steps as part of potential wider review.

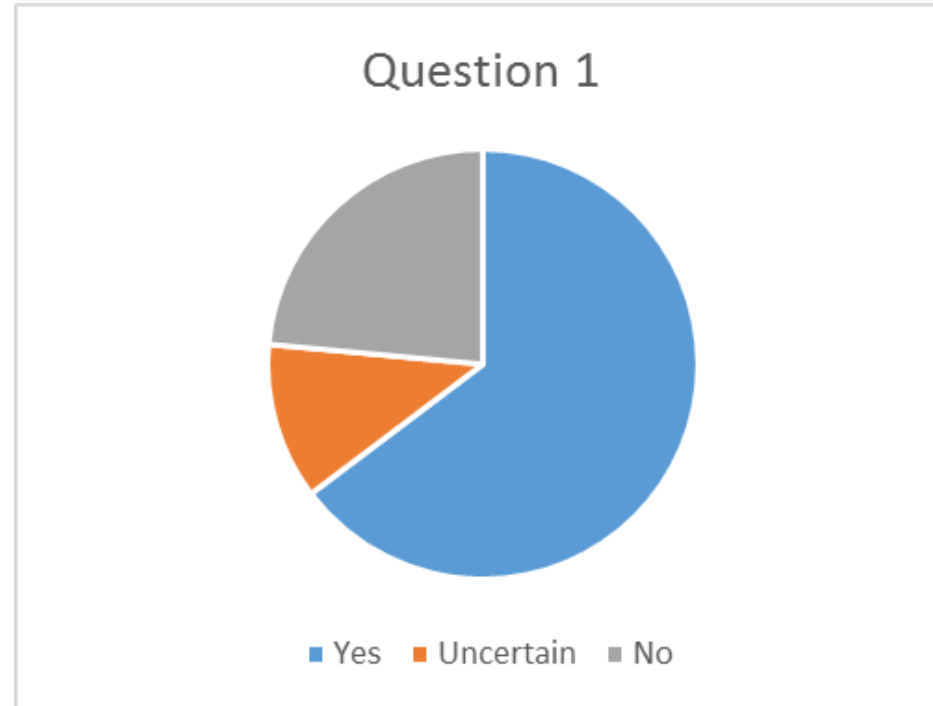
LARRY & Marks Scheme

- Questionnaire sent to all 30th and 31st Round applicants and OGUK and OGIA members with deadline for responses of 26/6/20.
- 17 Responses received. 30th Round – 45 applicants as licence administrator/operator. 31st Round – 20 applicants.



Marks Scheme Question 1.

Should marks be awarded for collaborative projects e.g. area plans, joint reprocessing projects, sub-regional studies? If so how many (maximum 100)

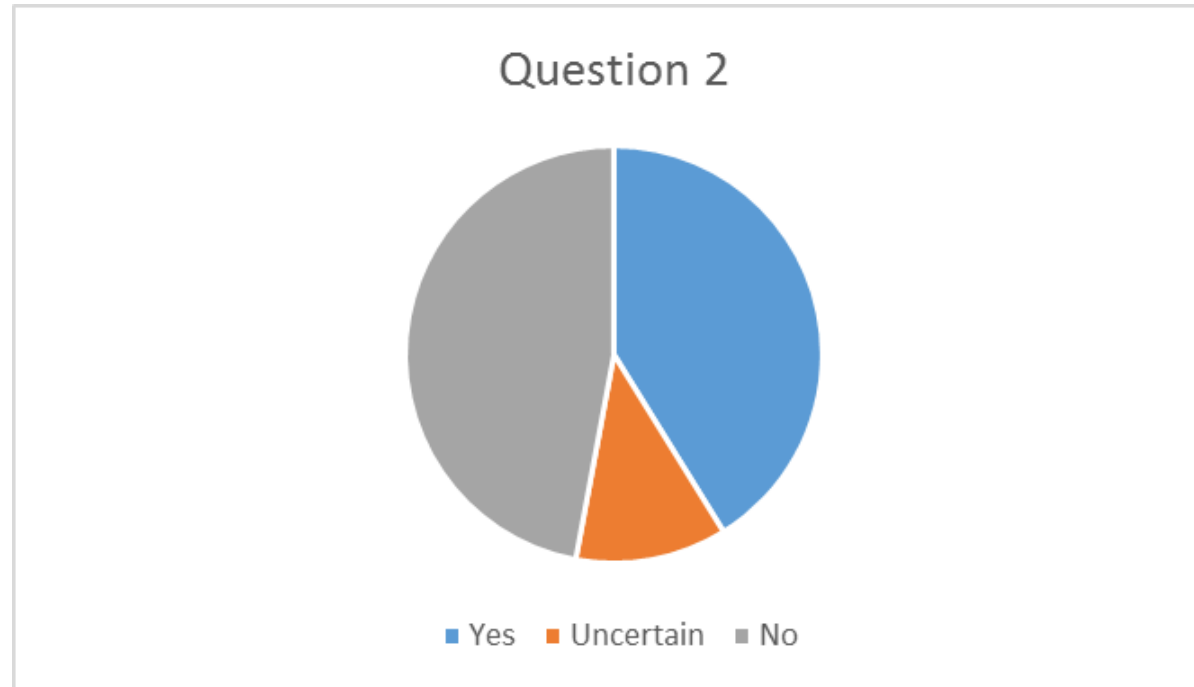


Yes – But wide range of views on number of points but generally up to 50 points and practicalities on how to deliver this. Possibility of collaboration bonus (MER compliance) of up to 2 times points in any category for joint projects?

No – Main reason - need to ensure that small companies or new entrants to an area are not discriminated against.

Marks Scheme Question 2.

Should marks be awarded for net zero plans? If so how many (maximum 100)



POLARIZED

Yes – But focus on straight to second term applications or at corporate level as limited opportunities at E&A stage. However, we need to send the right message. Possibility of a net zero bonus (MER compliance) of up to 2 times points in any category?

No – How do you judge the effectiveness of a net zero plan at the E&A stage? More relevant to second term.

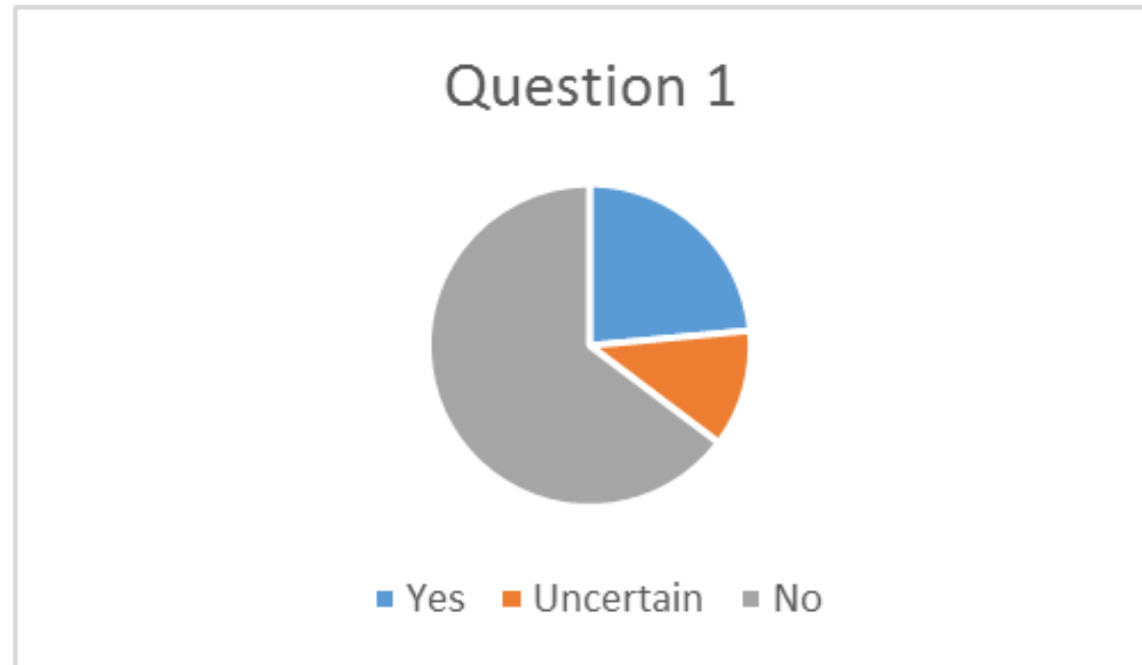
Proposed Way Forward – Focus on second term applications

Marks Scheme Question 3.

What other changes would you like to see to the marks scheme? (maximum response 3 bullet points)

- Designate application as E&A, New/Redevelopment or CCUS up front and mark accordingly
- Simplify scheme
- Focus on delivery (MER compliance) rather than box ticking to score points
- Potentially cap points available in areas such as prospects and leads
- New technology or new ideas to be rewarded

LARRY Question 1. Would you like the entire technical application material to be in LARRY i.e. no separate Appendix B? If so would you like a series of standard questions and standard templates to replace the Appendix B?

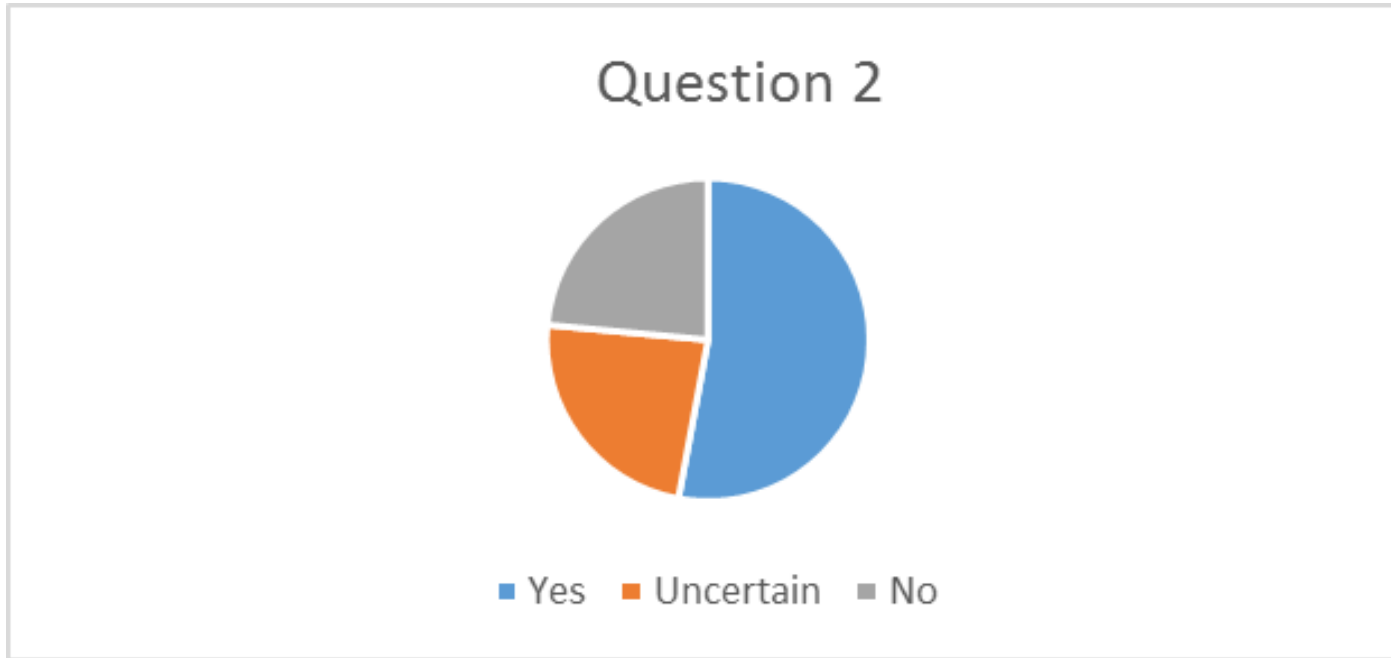


Yes – Concerns over current duplication between LARRY templates and Appendix B. Desire to simplify and remove duplication.

No – Appendix B is a valuable document and needs to be retained. It allows flexibility in the technical evaluation. Minimize any duplication with LARRY templates.

Proposed way forward – Retain Appendix B but streamline interface with LARRY to eliminate duplication.

LARRY Question 2. Would you like to see carbon storage licence applications included within the LARRY system?



Yes – Particularly if it is a way of ranking against E&P applications

Uncertain – No strong view or not planning any CCUS applications

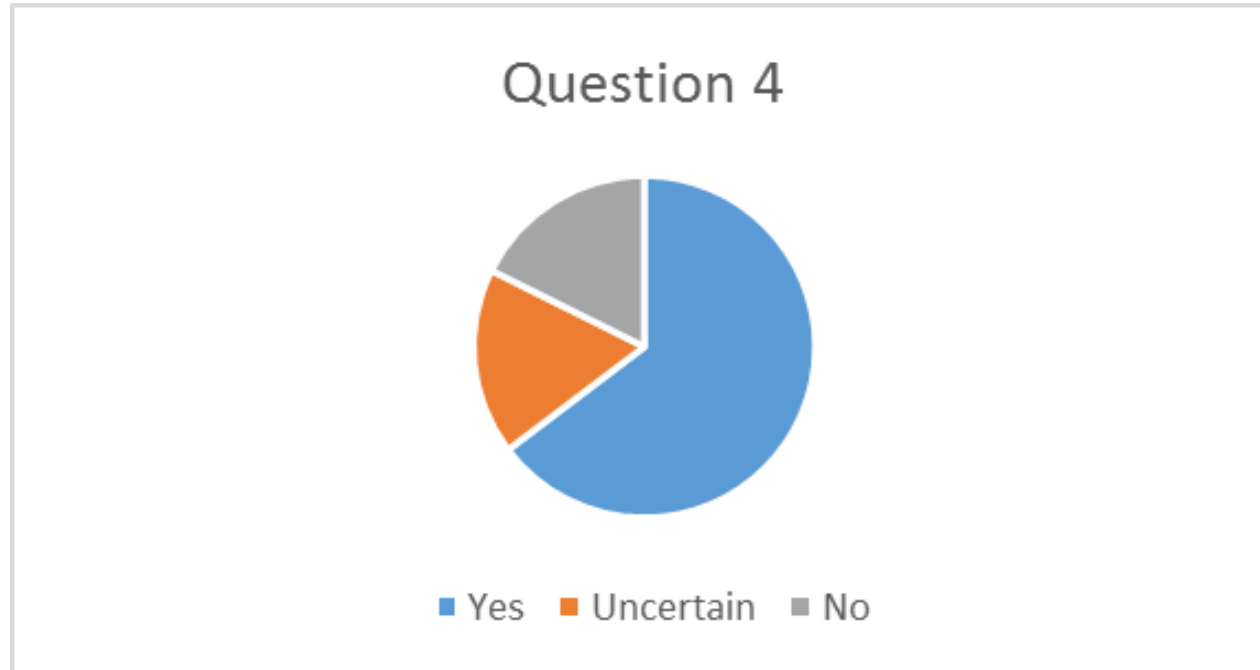
No – Only concern is cost to implement this change

Proposed way forward – Incorporate Carbon Storage Applications into LARRY

LARRY Question 3. What other changes would you like to see to LARRY? (maximum response 3 bullet points)

- Simplification
- Easier Inputs – e.g. direct upload from standard Microsoft applications, auto population of contact details, easier Prospect summary sheets etc.
- Allow multiple simultaneous users
- Remove duplication with Appendix B
- Update Guidance

Energy Portal Question Would you like all Licence related requests automated through the web based Energy Portal, thus removing the need to write formal letters and emails to the OGA on licence related matters?



Yes – A good way to standardize and log and track requests. The portal could also automatically send out reminders regarding licence events. L2S platform in Norway?

No – Happy with current system and concerns about replacing it with a faceless web interface

Proposed Way Forward – Licence related matters to be incorporated into Energy Portal

Licensing Priority – Task Status

- Standard JOA
 - Standard JOA to be updated to align with Innovate Licence – with Tracey Keith at OGUK to implement
 - Additional changes to reflect new guidance/new laws e.g. Financial Responsibilities Guidelines – under discussion/subject to wider JOA review
- LARRY & Marks Scheme
 - Questionnaire distributed and results compiled
 - Results under discussion with OGA (Duncan Bruce & Malcolm Gall) to implement changes and update guidance
- Licensing of Offshore Wind vs. Oil and Gas
 - Issues established – reported at last meeting



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Opportunity Maturation Priority

Q3 XTF meeting

Anne-Sophie Cyteval (Spirit)
John Colleran (Neptune)
Graham Goffey (Soliton)

1st September 2020

Opportunity Maturation Priority

Task Delivery Group

Key Initiative

1. Support sustainable hubs and implemented area plans
2. Support collaborative regional exploration projects

Progress to discuss today

Tasks

- Promote OGUK Reserves Progression Self Verification Tool to explorers
- Work with Asset Stewardship Task Force to identify data sharing improvement opportunities on infrastructure and hosts
- Launch scaled-down version of Phase 2 of Petroleum System Project, following industry commitment of c.£500k industry

Core database concept with Jo B to develop costed proposal

Key Stakeholders

- OGA, OGUK, OGIA, MER UK Asset Stewardship Task Force, MER UK Wells Task Force

XTF Leads

- John Colleran (Neptune)
- Anne-Sophie Cyteval (Spirit)
- Graham Goffey (Soliton)

- Where are the existing hubs and area plans located?
- What has worked well so far and what hasn't? – learn and plan ahead accordingly
- Encourage new hub or play based Special Interest Groups eg a SNS Zechstein play group could include current interested parties – progress/share technical/business issues & build collaborative approach within and between licence groups

Opportunity Maturation Priority

Area Plan

Discussed at the Q2 meeting:

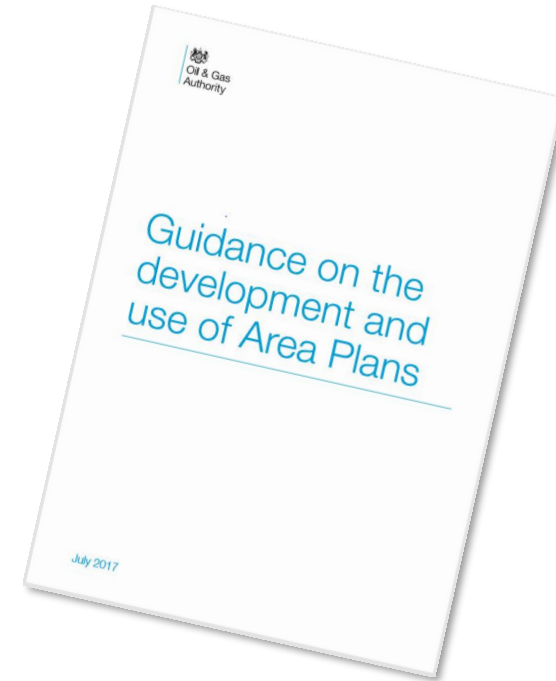
- Guidance exist on the OGA website on development & use of Area plan – however no published listing of existing plans.
- Discussions with Colin Percival (Athena) and Paul Lindop (1st Subsurface, SIG coordinator) to understand experiences with the Moray Firth SIG and identify lessons learned, opportunities for wider deployment of such a model.
- Neptune/Spirit Energy experience of OGA hub area plan shared.

Progress since last meeting:

- Further engagement with the OGA (see next slide)
- Industry feed-back received from the OGUK Survey the expectation of area plan and how to fit net zero objectives within licence application?

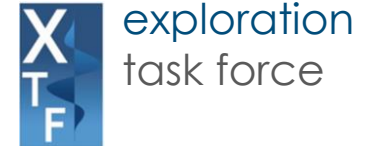
Next steps:

- Further interview(s) with JV participant in Area Plan (Siccar Point?)
- Consider how to best optimize E&A activities into area plan process
- Develop some recommendations (OGA to revise area plan guidelines, publish area plans in some details...)



Opportunity Maturation Priority

Area Plan- OGA's feed-back



Based on a discussion with Tim McNiff

Process

- Process has evolved since OGA's initial 2017 guidelines (<https://www.ogauthority.co.uk/media/3987/area-plans-external-guidance.pdf>) which follow a relatively rigid capital project structure and do not reflect the varying approaches being employed.
- Various styles of area plan have emerged e.g. ranging from a structured and defined 'master area plan' to a more iterative and evolving process to determine best delivery of MER given emerging findings, ongoing drilling results, etc.
- OGA's area plan guidelines could be refreshed to reflect lessons learned to date and range of different area plan processes – reality is slower, more flexible and iterative than guidelines imply.
- Multiple collaborative routes as area plans firm up e.g. formal agreement between JV's/companies (e.g. Quad 9 gas blowdown – pre-unitisation), AMI, unitization...
- Various coordination structures depending on nature and scale of plan – e.g. larger scale/advanced stage might be MD level steering group, SVP project board with OGA present.

Key takeaways – no one way for an area plan to follow, pragmatic approach with flexibility needed, OGA guidelines not representative of the process

Opportunity Maturation Priority

Area Plan- OGA's feed-back

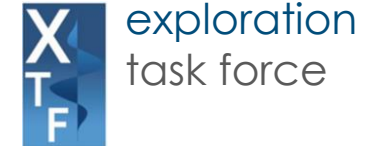
Based on a discussion with Tim McNiff

- OGA role
 - OGA tend to act as a 'push' factor - to catalyse collaboration, overcome corporate barriers (such as infrastructure ownership which can act as a barrier to collaboration), encourage a holistic, UK plc view
 - Often as initiator/driver of intra-asset collaboration towards a larger prize recognised by OGA
 - Sometimes OGA feels conditions are needed to drive collaboration e.g. hard push - "we won't approve a single asset solution here as it is not efficient for MER" or softer approach – "is there a joint development solution or are more resources needed through E and A?"
 - To overcome JV tendency to consider single hub perspective with insufficient regard to wider MER benefits/UK plc perspective or to be 'stop-start' driven by single hub/own asset successes/failures
 - OGA may have specific concerns e.g. risk of infrastructure causing domino field COP's if system changes not made (e.g. to lower onshore terminal cost) and/or no concerted push to raise throughput

Key takeaway – OGA can be an enabler – different levels of engagement needed, but success needs openness and collaborative behaviours from all parties

Opportunity Maturation Priority

Area Plan- OGA's feed-back



- Area plan scale
 - Generally multiple hubs - single hubs come under stewardship SE01 umbrella although area plan process may narrow down on single hub
- Varying area plan drivers
 - Collaboration for better outcomes: to deliver outcomes that are not achievable on a single asset/single JV basis
 - Reaching critical resource: often E & A can play a key role in achieving commercial minimum resource to facilitate a solution (e.g. WoS exploration to permit cluster development, Buchan area data release and mini-round, etc.)
 - Infrastructure-led e.g. concern to ensure continued longevity of key infrastructure via multi-JV collaboration and coordination
 - Opportunity-led e.g. multiple undeveloped pools need a coordinated approach to monetisation and to determine best host(s)
 - Net zero drivers also starting to appear – ‘energy plans’ are in a stage of infancy but OGA starting to recognise need for joined-up view between petroleum assets/infrastructure and other industries and regulators

Key takeaway – various drivers but in all cases achieving the prize demands collaboration between companies, assets, JV's and the OGA

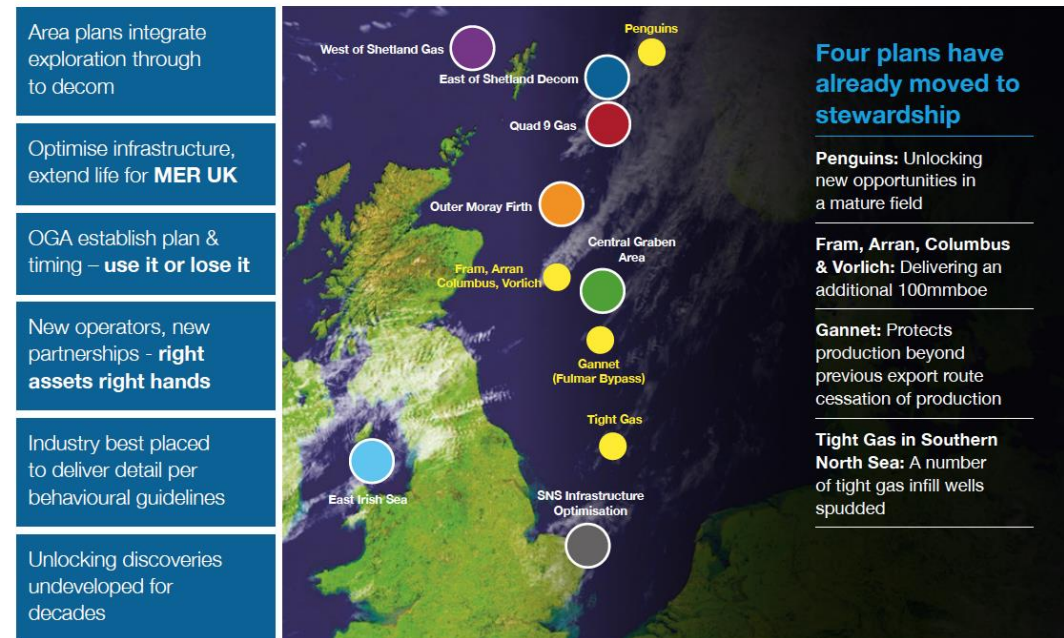
Opportunity Maturation Priority

Area Plan- OGA's feed-back

- Success factors
 - OGA prior work (or third party study) seen as helpful – to demonstrate need for collaboration, size of the prize
 - Avoid over-complicating the process – too many assets/hubs or complex interactions reduces chances of progress. Better to identify main themes then break into manageable sub-areas e.g. based on 1 or 2 hubs
 - Be aware of business drivers and need to work to find ways around possible barriers/blockers; confidentiality and competition law in particular – encourage companies not to hide behind such barriers
 - OGA evidently are adapting their role to the behavior of area plan participants: some need minimal support, others need more encouragement and involvement from OGA, more time to develop collaborative processes or a more directive approach

OGA disclosure of area plans:

Area plans



Key takeaway – a common understanding of the opportunity set/size of the prize is key - need to find ways to ensure confidentiality is not a barrier

Task force view: OGA disclosure of area plans needs to get beyond PR & focus on utility

Opportunity Maturation Priority

Area collaboration model - Moray Firth perspective(Q14/15) special interest group experiences with suggested improvements

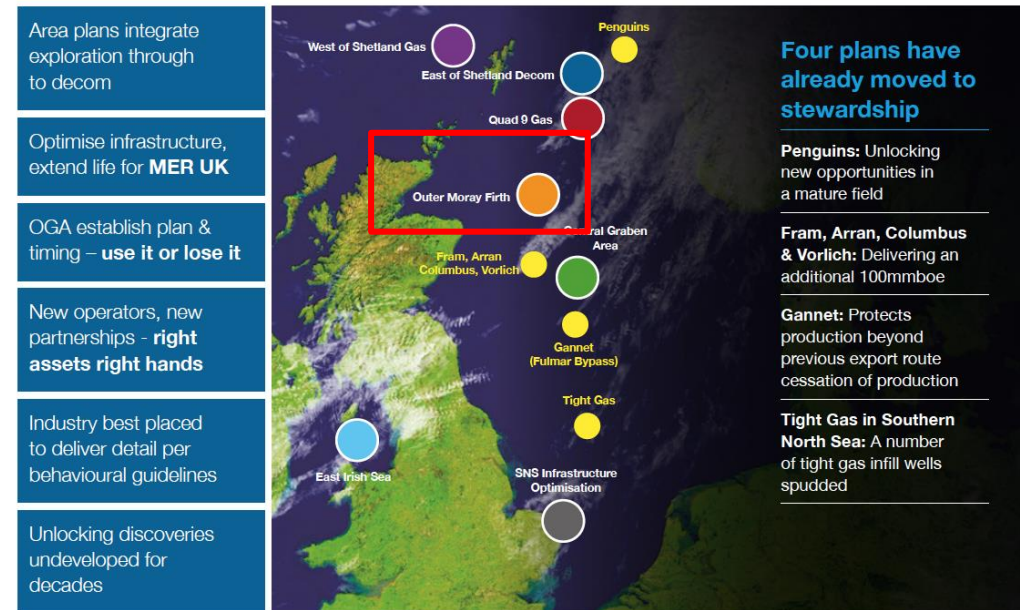
Background:

- Industry-run collaboration of all licensees (and initially the OGA) within defined area – to include undeveloped pools, exploration prospects and multiple hubs each with their own local strategy
- Input from Colin Percival (Parkmead/Athena operator experience) and Paul Lindop (1st Subsurface – facilitators)

SIG organisation and process

- Aiming for a ‘sub-basin area plan viewed from a UK plc perspective’ based on public domain research and try to avoid pre-judging the outcome through local factors – host aspects, operator strategies, etc.
- Phase 1: “How big is the prize?”: public domain data compilation by 1st Subsurface of reserves, contingent (undeveloped pools) and prospective resources (prospects and leads). Aim to ensure thinking is framed by a full and transparent common view of the overall subsurface opportunity inventory (cost c. £200k – needs to be funded by oilco’s – not a risk item for facilitator).
- Phase 2: “What are the barriers and how to remove them?” identified key opportunity themes e.g. sour oil pools, heavy oil pools and evaluated these independently of each other with consideration of what was required to commercialise each subset e.g. facilities, drilling, etc.

Area plans



Key takeaway – shared dataset/common understanding is key

Opportunity Maturation Priority

Area collaboration model - Moray Firth perspective(Q14/15)

Lessons learned

- Independent coordination (1st Subsurface) considered helpful (although OGA reluctant to engage directly with 3rd party coordinator)
- Audit of remaining resources and risked prospectivity seen as useful starting point, especially the independence of the compilation – facilitated constructive collaboration
- Collaborative behaviour on this scale needs encouragement – both ‘push’ and ‘pull’ factors, e.g. OGA encouragement/support, greater weight to collaboration in stewardship/licence award criteria?
- Licencee alignment seen as difficult to achieve without OGA buy-in/involvement throughout
- Cost-sharing is needed, late entrants could subsequently join by contributing to the expended cost and accessing the database (hence needs a structured database/product)

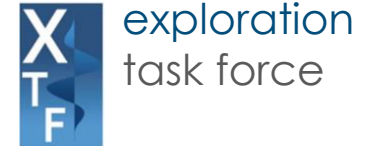
Conversations facilitated by:

- Common starting point in terms of resource and risked reserves
- Involvement of all parties within defined area – regardless of scale or drivers
- At least ICOP-level disclosure re. facilities – can facilitate off-line conversations
- OGA support, encouragement and assistance - helpful to ensure collaboration (although OGA seen as having concerns re. perceptions e.g. seen as favouring one group or one consultant facilitator)
- Endeavouring to avoid competitive stances appearing too early and thus limiting/constraining outcomes (but note – potential for competitive issues to arise later e.g. cluster strategies)

Key takeaways – OGA encouragement and support, wide involvement of parties in an area and working to avoid competitive stances are all key

Opportunity Maturation Priority

Area collaboration model - Moray Firth perspective(Q14/15)



Benefits

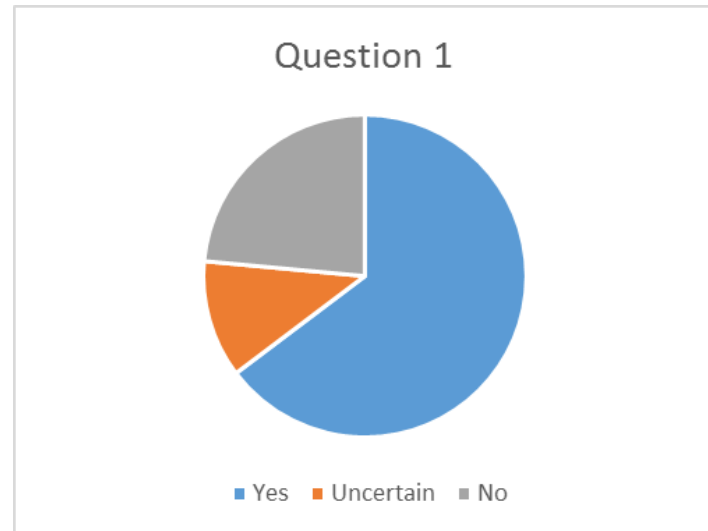
- Exploration/development of greater resource base in support of MER
- More efficient access of resource (and potentially prolonging of infrastructure) in support of net zero
- Greater understanding of local hub strategies within overall area - develops insights such as which hubs are preferred, which are best-suited to particular types of tieback, which are most/least flexible/suitable, etc.
- Forum for generating ideas and initiatives towards inter-licence group collaboration – in particular to explore multi-pool initiatives
- innovative ideas generated from wider forum, diversity of input
- Some high-level sharing of work e.g. at conferences – would facilitate some degree of industry knowledge of main themes

Opportunity Maturation Priority

Area collaboration model – implementation in the licence application?

Marks Scheme Question

Should marks be awarded for collaborative projects e.g. area plans, joint reprocessing projects, sub-regional studies? If so how many (maximum 100)



Positive Responses - Comments:

- Yes – But wide range of views on number of points but generally up to 50 points and practicalities on how to deliver this. Possibility of collaboration bonus (MER compliance) of up to 2 times points in any category for joint projects?
- Yes - Area plans : could be a dedicated chapter to illustrate how application is integrated within a given Area Plan - Max 10 points
- Yes, I think this is a good idea to support cooperation in developing stranded assets for example. Number of points: 10-30
- It seems sensible to reward collaboration. This could be via a 'collaboration bonus' of e.g. 15 points that could be applied in any area of scoring where collaboration is demonstrated and appears to be beneficial
- Yes, this fosters collaboration and encourages commitment to JIPs. 10 points max
- A cautious yes for all but only where a direct link to the licence application can be clearly demonstrated and forms part of the licence commitment.

Negative Responses - Comments:

- No – Main reason - need to ensure that small companies or new entrants to an area are not discriminated against.
- No – this approach rewards and perpetuates incumbents in an area who may already be involved in regional projects commissioned not specifically to assess the unlicensed acreage offered in a licensing round.
- No. It could discriminate against small companies who might not be able to participate in such studies.
- No. isn't regional project work already included



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Data Priority

Q3 XTF meeting

Rod Crawford (Zennor Petroleum)
Julie Branston (WesternGeco / IAGC)
Graham Turner (TGS)

1st September 2020

Data and NDR

Quarterly update

Key Initiative

1. Facilitate data release
2. Support development of best in class National Data Repository

Tasks

- Support improvements to how seismic field data can be accessed
- Support creation of NDR Roadmap and promotion to all stakeholder
- Support the business case for release of well production data (by well/by reservoir)

Key Stakeholders

- OGA, OGUK, OGIA, NDR Steering Committee, IAGC, MER UK Asset Stewardship Task Force

XTF Leads

- Julie Branston (IAGC)
- Graham Turner (IAGC)
- Rod Crawford (Zennor)

Data and NDR

- NDR
 - New provider is being sought
 - ITT in circulation
 - Bids delayed to
- Seismic Field Data
 - Released proprietary 3D data sets increasing available through the NDR
 - Access to vintage multi-client 3D data sets possible only through original vender. On-going discussion between OGA and IAGC.



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AOB

Q3 XTF meeting

1st September 2020