Offshore Oil & Gas Sector Deal Proposal
Summary for the Scottish Affairs Committee
20 July 2018

Purpose

The purpose of this document is to provide the Scottish Affairs Committee with a high-level summary of the 40-page Offshore Oil & Gas Sector Deal Proposal submitted to the Department for Business, Energy and Industrial Strategy (BEIS) in March 2018. Each element of the full proposal is covered below but this document focuses on the opportunity for the industry and Government to partner in the development three innovation hubs: transformational technology, underwater innovation and decommissioning.

Executive summary

The Offshore Oil & Gas Sector Deal Proposal builds on the strong partnership that has been in place between the Government and the industry over many decades, which was reinvigorated following the 2014 UKCS Maximising Economic Recovery Review.

This collaborative ‘tripartite’ relationship between the industry, the Government and the Oil & Gas Authority has been pivotal in setting the long-term strategic priorities for the sector and has yielded strong results during a particularly challenging period for the industry.

From 2014 to 2017 the main focus has been upstream exploration and production operations aligned to MER UK.

Our sector deal is about investing in our supply chain to develop competitive advantage, not only to deliver value for UKCS investors and achieve MER UK, but to compete for and win significant additional value from international markets and diversification longer term.

Innovation is at the heart of our proposals to fundamentally transform the industry to thrive in the future; harnessing the power of technology to increase productivity, innovating to play a central role in the energy transition and building an industry fit for the future.

It will help connect oil and gas supply chain expertise to opportunities created by the energy transition. The potential value to the UK is huge and the catalytic effective of Government investment can be very significant.

The industry’s Vision 2035 shows that producing an additional 3 to 4 billion barrels and doubling the UK’s share of the global technology and services market from 3.7% could generate £290 billion of additional revenue for the UK by 2035 – up to £1 trillion in total.

Our proposals are designed to help realise a significant proportion of the revenue identified in Vision 2035 and are aligned to the foundations set out in the Industrial Strategy – ideas, people, infrastructure, business environment and places.

Context

There are 10-20 billion barrels of oil and gas remaining on the UKCS. The value at stake is almost £1 trillion. Worth almost £30 billion per annum our oil and gas supply chain is the engine room of our domestic industry and exports sought-after expertise across the world.

But only 47% of UK Continental Shelf (UKCS) supply chain contracts are awarded to UK companies. Our supply chain has just 3.7% of the global oil and gas services market.
With existing infrastructure and resources on our doorstep, oil and gas are crucial to tackling the UK’s energy trilemma: affordability, security of supply and moving to a lower carbon economy.

**Vital for our homes:** BEIS forecasts that oil and gas will supply around two-thirds of UK domestic energy demand in 2035.

**Critical for our industries:** Fuelling the UK Government’s Industrial Strategy with energy for heat, power, transport, manufacturing and present in more than 6,000 everyday products.

**Essential for the future:** Part of a balanced, low carbon energy mix for the UK with the potential to make a significant contribution to the UK Government’s Clean Growth Strategy.

We are experiencing a period of unprecedented change. The energy transition, digital revolution and evolving societal expectations mean we must transform to survive and thrive in this new world. Change creates opportunity and we must seize the moment.

It is about investing in our supply chain to develop competitive advantage not only to deliver value for UKCS investors and maximise economic recovery, but to compete for and win significant additional value from international markets and diversification longer term.

Since 2014, against a backdrop of prolonged low commodity prices, the industry has been on a journey to regain competitiveness and ensure its survival. The Wood Review led to the Maximising Economic Recovery UK Strategy (MER UK) and a progressive new regulatory regime led by the Oil & Gas Authority (OGA).

The industry, the Government and the OGA have worked together to successfully implement the Wood Review recommendations and HM Treasury has delivered several new measures to create a stable and globally attractive fiscal regime.

Three years on, oil and gas companies have significantly improved efficiency, and capital investment is beginning to return to the UKCS. More than £6 billion of deals were transacted in 2017 with many new players entering the industry.

The sector supports around 300,000 jobs across the UK, the majority of which are in the supply chain, and contributed 1% of UK Gross Value Added in 2016 – £17 billion. Workforce engagement will continue to be vital as we to drive performance and transform the industry.

In the Oil & Gas Technology Centre (OGTC) – a key part of the Aberdeen City Region Deal – the industry has a new focal point to inspire, accelerate and co-invest in technology development and deployment, and create a thriving innovation hub in North East Scotland.

We have a competitive fiscal regime, a progressive regulatory environment, a renewed focus on technology innovation, and operating companies are working hard to increase collaboration and improve commercial behaviours.

Now, we must enable our supply chain to invest in the opportunities that MER UK creates, develop the competitive advantage to significantly increase the current 47% of UKCS spend held by UK firms, and deliver significant international growth while anchoring high-value skills and jobs in the UK.

The industry’s Vision 2035 captures the ambition of the Wood Review – to produce an additional 3 to 4 billion barrels by 2035.

Vision 2035 shows that this additional production coupled with doubling the UK’s share of the global technology and services market from 3.7% could generate £290 billion of additional revenue for the UK by 2035 – almost £1 trillion in total.

Work by the industry, the Government and the OGA over the past three years has identified how to achieve an additional 1.4 billion barrels by 2035 and more thereafter. However, to
help deliver Vision 2035 we must now identify a series of additional steps.

Our sector deal proposals create the opportunity for the industry and the Government to align behind Vision 2035. They are aligned to the foundations set out in the Industrial Strategy and Clean Growth Strategy.

Working together we can drive innovation to increase the productivity and overall value of the UK oil and gas industry, transform it for the low carbon economy, increase supply chain capability across the country and double the value of exports.

**Summary of proposals**

We undertook extensive engagement with the industry to further develop the key opportunities identified, which generated more than 180 related ideas. These were evaluated and refined to create the themes in our sector deal proposal.

**Aim**
To contribute to Vision 2035, securing highly-skilled jobs, providing energy security and generating up to £1 trillion of revenue for the UK economy.

**Objectives**
1. Increase productivity, competitiveness and investment
2. Anchor and grow our domestic supply chain and double market share of exports
3. Develop transformational technologies to support competitiveness and energy transition

**Strategy**
To co-invest with the Government to initially create three Innovation Hubs:

- Transformational technology
- Underwater engineering
- Decommissioning (already underway)
They will connect academic and scientific research institutions on a hub and spoke basis across the UK, working with industrial partners to leverage expertise, knowledge and funding to deliver clean growth, increase productivity and sustain high-value jobs.

Aberdeen is the industrial heart of the sector and demand is largely set in the North East of Scotland by operating companies and their tier one contractors. We will use this strong position to reach outward, drawing in expertise and knowledge from places across the UK.

The spokes extend across the country, from Portsmouth to Fort William, Shetland to Great Yarmouth. We will connect institutions, research facilities and companies, bringing together the very best ideas, people and places to drive earning power, productivity and investment.

Our proposed deal also identifies additional areas of focus including people and skills, industry culture and behaviours, carbon capture usage and storage, international and export growth, and efficiency and productivity.

It is estimated that a total investment of £176 million can deliver up to £110 billion of potential value between now and 2035. This is 38% of the prize identified in the industry’s Vision 2035.

Without this deal – or a similar focused intervention – we will not deliver Vision 2035. We will not achieve the full potential of MER UK or the additional supply chain value from increased UKCS production or significant additional value from growth in international markets.

We will also miss the opportunity to transform our industry for the low carbon economy and harness the full potential of the fourth industrial revolution.

Producing the next 20 billion barrels of oil and gas from the UKCS will require innovation. We need to embrace the opportunity to transform, building on the strong and successful tripartite relationship between the industry, the Government and the OGA.
Key proposal: Transformational Technology

The industry has successfully adapted to operating in a lower oil price environment by focusing on cost and operating efficiency. To make these improvements sustainable and secure the industry’s long-term competitiveness, while supporting the energy transition, the deployment of technology is essential.

The industry, through the OGTC, with support from the UK and Scottish Governments, is focused on technology solutions to address immediate challenges to maximise economic recovery. In just 18 months, the Centre has attracted more than 90 memberships, and £51 million has been committed to almost 100 ongoing projects.

The oil and gas industry must transform to be an integral part of a balanced, low carbon energy mix for the future and industry demand for low carbon technologies is growing. This is beyond the current remit of the OGTC and additional investment is required to respond.

Proposal

For industry and Government to co-invest £50 million (£25 million each), based on the successful OGTC funding model, to create a hub from Transformational Technology as an additional part of the OGTC.

Objectives

- Deliver lower carbon operations
- Increase efficiency and productivity to support MER UK
- Increase automation and remote operations to support MER UK
- Create global competitive advantage as a leader in transformational energy technologies

Potential focus areas

- **Robotics and artificial intelligence**: Partner with the Edinburgh Centre of Robotics on the wide-scale deployment of robotics in the offshore oil and gas industry.
- **Renewable offshore grid**: Explore how to replace current gas-fired power generation across UKCS oil and gas installations with reliable sources of renewable power through an offshore grid.
- **Low carbon, smart facilities**: Design flexible, re-usable and recyclable facilities, that minimise emissions, optimise productivity, maximise recovery and enhance safety.
- **High value products produced at source**: Develop technologies and processes that enable the production of low carbon, market-ready products at source eg, hydrogen.
- **Offshore automation**: Develop technologies that enable remote operations on the UKCS as well as onshore control centres in the UK operating in basins across the world.

Key proposal: Underwater Innovation

With over a third of the global market share, the UK is the global leader in underwater engineering. 650 UK companies deliver >30% of turnover from underwater activities and the UK Subsea Activity Report 2017 identifies huge domestic and export growth potential.

North-East Scotland is the UK’s operational hub and focal point for underwater engineering and technology expertise, with more than 150 companies and thousands of highly-skilled people based in Aberdeen. There are also significant clusters across the UK, including Scotland’s central belt, North-East England and the South of England.
Governments around the world are focused on expanding their underwater engineering capability. Brazil, Norway, USA, France and Japan are all investing heavily. It is essential that the UK is equally focused and recognises the scale and potential of underwater engineering as a significant, standalone industry sector.

We currently have the competitive edge, but we must act now to maintain this strong position, seize the growth opportunity and counter competitive threats.

The underwater engineering market is expected to grow significantly by 2035. Gaining a larger share of this growing global market requires investment in technology, innovation and market development.

| Securing a larger share of the growing global underwater engineering sector could yield more than **£15 billion** per annum (c.£7.5 billion in 2017) |
| Creating a National Underwater Innovation Hub has the potential to deliver **£75 billion** of additional value for the UK |
| If growth is sustained, the annual global market spend for oil and gas-related activities is forecast to be **£30-50 billion** by 2035 (c.£20 billion in 2017) |
| Including other underwater activities – offshore wind, tidal, wave and CCUS – the annual global spend is likely to be **£50-100 billion** by 2035 |

Proposal
For the industry and Government to co-invest **£88 million** (£53 million industry and £35 million Government) to create a National Underwater Innovation Hub to integrate and leverage the collective strengths of the UK’s underwater industries – marine, tidal, wind, aquaculture, defence, mining and oil and gas – with a focused strategy to target around **£75 billion** of potential additional value for the UK, protecting and enhancing the UK’s competitive advantage.

The Hub will be both virtual and physical, located near the existing oil and gas subsea cluster in North-East Scotland, connecting underwater expertise in four key UK regions:

- **North East Scotland**: underwater engineering operations and technology innovation
- **North East England**: underwater manufacturing
- **South of England**: marine science
- **North West Scotland**: underwater training and testing

Objectives
- **Leadership**: Maintain the UK’s position as global leader in underwater engineering
- **Diversification**: Create a diversified, multi-sector underwater engineering industry
- **Internationalisation**: Help deliver global growth and attract inward investment
- **Leverage**: Align cross-sector activities to maximise scale, reach and leverage
- **Energy**: Harness underwater engineering to help deliver cost effective energy of the UK
- **Low carbon**: Create solutions that support the low carbon and blue economies
- **Education and skills**: Deliver the skills required to sustain world-class performance
- **Innovation**: Help develop and communicate an aligned R&D strategy for the sector

Potential focus areas
- **Create a UK-wide underwater engineering network**: Leverage the combined expertise of underwater centres across the UK, using state-of-the-art collaboration technology to connect The Hub with spokes around the country
- **Establish an integrated hub**: Be the single point of contact to access the most appropriate underwater R&D and test facilities, bringing together world-class facilities across the UK.
- **Invest in science, research and innovation**: An international hub for underwater science, research and innovation, with a strong industrial and commercial focus
• **Deliver industry-led R&D projects:** Work with institutions across the UK to establish an R&D community with shared priorities aligned to industry needs, delivering an integrated programme to accelerate technologies.

• **Enhance skills and capabilities:** Create new jobs, drive skills development and increase the UK’s capability to support domestic growth and export growth.

• **Upgrade infrastructure:** Create new state-of-the-art infrastructure and upgrade connected infrastructure through the hub and spoke model.

• **Support businesses to start and grow:** Directly support new and established businesses, providing test facilities, incubator programmes and extensive network support start-ups and company growth.

• **Encourage international trade and inward investment:** Attract inward investment and drive international trade with support of BEIS, DIT, SE/SDI and UK Export Finance.

• **Deliver affordable energy and clean growth:** The Hub’s research and development work, and industrial testing capability, will directly support the UK’s transition to a lower carbon economy, working with other research facilities.

• **Cultivate world-leading sectors:** The Hub will enable the UK to retain and capitalise on its position as the global leader in subsea engineering – opening new geographical and sectoral markets to grow share.

• **Drive growth across the whole country:** The hub and spoke model, and connectivity to related facilities and institutions, will create a UK-wide approach, directly supporting companies across the UK.

• **Lead a cross-sector marketing strategy:** The Hub will lead a cross-sector marketing strategy to identify target sectors and geographic markets to drive domestic and international growth.

• **Develop cross-sector knowledge and networks:** The Hub will create and manage industry and academic networks, making sure that knowledge is gathered and shared across the underwater engineering community.

• **Deliver an exciting education programme:** The Hub will work with spokes, schools and institutions across the country to establish an education programme to inspire young people and promote STEM careers.

**Key proposal: Decommissioning**

Over the next decade, some 100 platforms are forecast for complete or partial removal and 7,500 km of pipeline need to be decommissioned. Estimated costs to 2050 are £59.7 billion, with the OGA targeting a 35% cost reduction to £39 billion. Annual expenditure is expected to be c.£2 billion by 2018.

Decommissioning therefore presents a significant domestic and global opportunity for supply chain firms and technology developers across the UK. However, the window of opportunity to establish a leading centre of excellence will be limited in the face of overseas competition.

That is why the National Decommissioning Centre (NDC), a partnership between the OGTC and the University of Aberdeen, was established in March 2018 to tackle current and future challenges with world-class research and development in partnership with industry.

Scheduled to open in late 2018, the NDC builds on the original proposal within the Aberdeen City Region Deal and will be based at an existing facility in Newburgh, Aberdeenshire in the Energetica corridor, which stretches from Aberdeen to Peterhead.

In partnership with companies, the NDC will develop and deploy technology that delivers cost effective decommissioning at the end of field life, and during oil and gas production operations, including ‘small piece’ decommissioning techniques.

The NDC will build on the established research and development capability at the University of Aberdeen in the areas of decommissioning technologies, predictive modelling, environmental assessment and the economics of decommissioning.
It will connect with and leverage the capabilities of universities and innovation centres across the country and partner with fishing, marine, safety and environment organisations in the UK and internationally.

Linking industry demand and expertise with academic capability and skills will help create competitive advantage, not only for the oil and gas industry, but for decommissioning challenges in the wider energy sector, for example, in offshore renewables.

**Proposal**
For industry, academia and Government to invest c.£38 million (through the Aberdeen City Region Deal) to establish an industry-led National Decommissioning Centre in Aberdeen and for Government to work with the industry to promote decommissioning supply chain capability and expertise in global and diversified markets.

**Objectives**
- Tackle current and future decommissioning challenges with world-class R&D
- Extend field life to achieve MER UK and reduce decommissioning costs by 35%
- Build R&D capacity at the University of Aberdeen and other UK universities
- Establish a hub and spoke model that connects R&D activities across the UK
- Evaluate the potential for recycling and secondary use of offshore infrastructure

**Focus areas**
- **World-class R&D:** A global centre focused on technology innovation
- **Environmental assessment:** Properly understand and manage environmental impacts
- **New technologies:** In areas such as facilities clean-up and removal and well P&A
- **Innovative materials:** That enable support the reuse of facilities on the UKCS
- **Predictive modelling:** Plan and execute decommissioning activities through basin-wide impact studies and detailed economic analysis

**Potential contribution to Vision 2035**

![Vision 2035 Graph](image)
Industry focus: Investing in employment, skills development and workforce engagement.

The oil and gas sector relies on a pipeline of skilled professionals. We have invested heavily in programmes to improve the UK’s science, technology, engineering and mathematics (STEM) capability. Even during the industry downturn, the level of activity to support STEM careers has been high.

We recognise that the activity could be even more effective with better collaboration between this sector and those from related sectors such as nuclear, renewables and other heavy industries. Cross-sector collaboration increases impact and is the right future model. OPITO, the skills body, is now in discussion with these sectors to increase skills transfer.

Future activity

In order to ensure the next generation of skills are developed:

- **Workforce Review**: BEIS and industry bodies will need to engage with the OPITO UKCS Workforce Dynamics Review study and provide practical support in next level of data analysis and consider the next steps to co-create skills intervention plans.

- **Funding Mechanisms**: BEIS, DfE, Skills Development Scotland and industry bodies will need to consider what existing funding mechanisms could be focused on deepening and extending the reach of the school engagement plan, building on, without duplicating, the positive work already done to promote STEM careers.

- **Attracting New Talent**: Industry bodies will continue develop the most compelling materials to inspire and engage young people, agree the best delivery vehicle and then provide high-calibre talent to take the materials to schools.

Focusing on retaining, re-skilling and re-employing existing workers will require:

- **Skills Passport**: BEIS and industry bodies to unleash the skills of the energy sector by developing the energy skills passport.

- **Cross Sector Approach**: BEIS to support in connecting oil and gas with other sectors, including tackling potential barriers to cross-sector collaboration and regulation.

- **Standardisation**: Industry bodies to focus collaborative work to standardise current and future role types to support simplified and shared competence development and training design, building on the connected competence programme established by the major contractors and ECITB.

Realising the potential of industry skills as major export opportunity will require:

- **Skills Development**: BEIS and industry bodies to maintain and enhance the provision of world-class skills development for the UKCS and market to the world.

- **Centres for Doctoral Training**: BEIS and industry bodies to consider how to back-fill the NERC funding to the CDT centre and consider carefully the OPITO model for skills development is maintained both for the UKCS and as an export opportunity.
Supporting focus area: Culture and behaviours

**Industry focus:** Creating a business environment built on strong collaborative behaviours

Major improvements and changes have been made, with the industry coming together both with regulators and across the sector to start tackling these issues. Results to date have been positive, including the halving of operating costs and increased production efficiency.

The improvements that the industry has delivered in efficiency and costs have been in part achieved through more collaborative behaviours. Sustaining and building on these changes to ensure the future competitiveness of the UKCS will require more effort.

**Future activity**
- **Measure:** Adopt common collaboration measurement tools and establish benchmarks
- **Area Plans:** Enable companies to work together to deliver area plans
- **Communication:** Enhance communication channels to share learning and best practice

Supporting focus area: Carbon Capture, Usage and Storage (CCUS)

**Industry focus:** Work with the Government to realise the full potential of the sector

CCUS is widely regarded to be a significant enabler of the UK’s cost-effective transition to a lower carbon economy and a solution to decarbonise multiple sectors. The Clean Growth Strategy re-affirmed the Government’s commitment to be an international leader in CCUS.

The oil and gas supply chain has unique expertise given the strong synergy between oil and gas exploration and production and the expertise required to deliver CCUS. The global market is expected to be £100bn by 2030.

CCUS therefore presents a significant opportunity to create a diversified global oil and gas / CCUS technology and services sector anchored in the UK and exporting to the world.

**Future activity**
- **CCUS Programme:** Work with the industry to provide input to the Government in the development of its CCUS programme
- **Secondees:** Provide project management secondees to work with the Government and partners from other sectors to take forward the CCUS strategy
- **Supply Chain:** Work with the Government and other stakeholders to establish a shared, compelling vision with industry on CCUS deployment possibilities in our supply chain

Supporting focus area: International and export growth

**Joint focus from industry and Government:** Develop a clear strategy and programme to maximise international and export growth.

Vision 2035 highlights the opportunity to increase the UK’s share of the global oil and gas services and technology market and potentially deliver £500 billion revenue for the UK. But 80% of supply chain firms do not currently export.

Data from the Energy Industries Council (EIC) indicates the total value of planned projects between 2018-2024 of nearly £3,580 billion, which is approximately £500 billion per annum.

Data shows that UK based contractors are 2x to 3x more successful in winning upstream capex business, than midstream or downstream, which means the UK is losing out on two thirds of the market. We must therefore address two weaknesses:

1) lack of competitiveness
2) lack of capability
Future activity

- **Competitiveness:** The continued focus of operating companies and the OGA on improving the efficiency and productivity of the UKCS will help to improve overall supply chain competitiveness
- **Supply Chain Mapping:** Complete a full UK supply chain mapping study by early 2019 to identify the strengths and weaknesses and work with the Government to address key capability gaps to enable market share growth
- **Targeted Strategy:** Industry and Government to develop a targeted strategy of countries and markets that will deliver Vision 2035, with a particular focus on the proposed

**Supporting focus area: Efficiency and productivity**

**Industry focus:** Continue improving efficiency and productivity

Even before the 56% fall in the Brent oil price between 2014 and 2016, the industry began a structural change to align operations with lower commodity prices and fierce international competition for capital investment. Unit operating costs have almost halved since 2014.

An independent study commissioned by Oil & Gas UK estimates that at least half of the cost reductions seen on the UKCS have the potential to be sustained over the long-term. As the energy landscape rapidly changes in the face of a dynamic global market, influenced by a number of external factors, the focus on continuous improvement must remain and any short-term upturn in oil price cannot be a distraction.

Future activity

- **Improvement:** Maintain focus on continuous improvement and increased productivity
- **Promote:** Support the necessary culture to achieve sustainable change
- **Culture:** Commitment to cultural change, improved processes and simplification

**Organisations engaged**

July 2018