OIL&GAS UK

Strengthening the UK's Offshore Oil and Gas Decommissioning Industry

Call for Evidence Response

May 2019

1. Introduction

Oil & Gas UK (OGUK) welcomes the opportunity to respond to the *Decommissioning Call for Evidence: Strengthening the UK's offshore oil and gas decommissioning industry*.

This is a well-timed consultation. The UK is rapidly developing a reputation for decommissioning excellence – one which we should nurture to build on our reputation as a global leader in offshore Exploration and Production (E&P).

Local decommissioning hubs and harbour facilities are growing rapidly around Shetland, mainland Scotland and the East Coast of England, servicing the UK Continental Shelf and winning business further afield. The quality and diversity of decommissioning work already undertaken provides the UK supply chain with a competitive edge when pursuing regional and international decommissioning markets.

Excellence in decommissioning delivers an unrivalled "full cycle" E&P capability which will enable the UK to maximise the recovery of its own oil and gas resources; it will also assist the UK to export decommissioning capability as part of a wider E&P offering both regionally and into international markets.

2. Response Structure

OGUK has compiled this response in consultation with its members, incorporating a wealth of industry experience that reflects both operator and supply chain perspectives. OGUK's decommissioning forum (representing 190+ companies across the UK) has actively contributed to the submission, providing an insightful perspective on how the UK can best make the most of its decommissioning capabilities.

In addition to addressing the list of questions included in the Call for Evidence, OGUK also takes the opportunity to provide some wider reflections of the state of the decommissioning market in the UK which are included in the narrative.

Prior to the release of the call for evidence, OGUK conducted a survey to consult its members and inform this response. The results of this survey are shown in Appendix 1 and referenced throughout the report.

3. Summary

The following highlights the key conclusions with reference to the questions within this Call for Evidence. Additionally, it also identifies certain wider initiatives which should help strengthen the UK's decommissioning capabilities.

3.1 To drive decommissioning excellence

A strategic approach should be adopted – We would suggest that the strategy for building a global decommissioning capability should be in three phases:

1. **Excelling in the UK market**: In the immediate term, the UK should seek to maximise its share of the UK decommissioning market, building on areas where a competitive advantage already exists and creating alliances with others where the UK lack suitable capability.

2. **Competitive regionally:** In the short term, the UK supply chain must take full advantage of the regional decommissioning market around the North Sea, much of which can be handled by UK facilities and using UK capability to its full extent.

3. **Targeted international ambition:** In the longer term, the UK should pursue opportunities globally based on its reputation for delivering North Sea projects. It should be recognised that some capabilities developed for the regional / North Sea market may not be as relevant internationally. Therefore, in developing as an international hub for decommissioning, it is essential to identify those areas (activities and services) where the UK has an advantage when considered against local competitors.

Building on the UK's global E&P reputation: Policies which support decommissioning should also be consistent with Maximising the Economic Recovery of the UKCS and supporting the growth of the UK's oilfield services supply chain. Decommissioning broadens the services the industry offers and emphasises the role of the UK as a global E&P hub. Decommissioning still only represents a small part of the overall E&P activity within the basin and whilst it is rightly valued, it should be seen in that broader context. Investment in new barrels could deliver an additional 8.4 billion barrels of oil and gas equivalent (boe) between 2019 and 2035, adding a generation of productive life to the UK Continental Shelf (UKCS). During this period, it is anticipated that £175 - £215 billion will be spent on the UKCS with decommissioning comprising about 10% of the total expenditure[1].

The UK's wider E&P industry provides employment for around 280,000 people – directly, indirectly and through the activity it generates in the wider economy. The sector exported over £10.6 billion in oil field goods and services in 2017[2], representing 39% of the supply chains total turnover and demonstrating the impact of UK internationally as a global E&P hub.

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[1] *Oil & Gas UK Business Outlook Report 2019*

[2] *https://www.ey.com/uk/en/industries/oil---gas/ey-review-of-the-uk-oilfield-services-industry-january-2019#section0*

3.2 Conclusions Regarding the Consultation Questions:

Strengths in the UK Decommissioning industry – Industry has already established key strengths in preliminary engineering and project management, late life operations management, decommissioning of wells, onshore dismantling and onshore facilities management, as well as broader strengths in environmental sciences and commercial law. The UK's regulatory framework, industry standards and technical guidance (available through OGUK) add to the international reputation.

Gaps in UK Capability – Whilst Topsides and Substructure removal were identified as gaps, they were not seen to disadvantage overall competitiveness. More generally, it was recognised that the UK should build on its decommissioning strengths and seek to selectively enter areas only where a competitive advantage can be created and sustained.

Technology – Technology has an important part to play in the development of the decommissioning industry in the UK and the creation of the Oil and Gas Innovation Centre (OGIC), the National Decommissioning Centre (NDC) and the Oil and Gas Technology Centre (OGTC) demonstrates excellent collaboration between industry, academia and government.

The Global Market and potential for UK export – Project management, well decommissioning, subsea infrastructure removal and late life asset management present particular opportunities. Emerging markets in Asia, South America and Africa are considered as key target markets; unlike more established regions such as the Gulf of Mexico, these areas do not have an established supply chain and hence have fewer barriers to entry.

International experience and barriers – The majority of OGUK's supply chain members (63%) are already working on decommissioning projects out with the UK. However, local regulatory requirements and competition from the local supply chain present specific barriers to entry.

Barriers preventing the UK becoming a global hub – Whilst the UK market is maturing rapidly, running at approximately £1.5 billion per year, greater visibility of near and medium-term decommissioning activities in the UK is perceived by some to drive further efficiencies.

Enabling a proficient UK market to enhance exportability – The UK has first-mover advantage in the delivery of complex, deep water, integrated asset decommissioning, supported by the diversity of local experience. Greater visibility should be given to the decommissioning Key Performance Indicators (KPIs) to drive further performance improvement.

The OGA's Impact on UK decommissioning – The OGA has helped provide emphasis on costs and drive efficiencies whilst sharing benchmarked performance. It has worked closely with industry and the Decommissioning Task Force to encourage regulators to take a coherent approach. More could be done to share data and provide more granular benchmarking.

Other considerations – Re-use or repurposing of oil and gas infrastructure for alternative means should remain a priority area including CCS. Design for decommissioning should also be recognised as a focus area as it will assist the UK to be more proficient in our own market and could also be an exportable capability.

3.3 Key Requests / Proposals

The following section summarises key proposals in pursuit of a more efficient UK decommissioning market, to help the domestic industry grow its export capability, and encourage the UK to become a global hub for decommissioning:

1. The UK oil and gas industry is already a well-established global hub for E&P activities and it should be recognised that decommissioning forms an integral part of this wider capability. More broadly, government should help promote the UK's E&P and decommissioning capability regionally and internationally. Policies which support decommissioning should also be consistent with Maximising Economic Recovery in UKCS and supporting the growth of the UK's oilfield services supply chain.

2. The skills mix required to support the E&P sector is undergoing significant change as we enter the digital era and embrace the Energy Transition. Many overseas companies have chosen to base themselves in the UK, recognising its capabilities. The UK needs to focus on skills development, innovation and training to ensure it has the appropriate resources to meet its own needs as well as service its growth into international markets.

3. The UK oil and gas industry has strengths across most of the decommissioning value chain. However, achieving a competitive UK decommissioning market does not imply that the UK need be present to the same extent in all aspects of the value chain. OGUK's position would be to focus on further enhancing our strengths and seek to selectively enter areas where a competitive advantage can be created and sustained. The government and its regulators should carefully judge any intervention in the decommissioning market, to avoid distorting it or otherwise reducing efficiency.

4. A more open approach to sharing project and benchmark data collated by OGA and more information on the status of current decommissioning projects should be considered. This might allow the market to respond yet more effectively to upcoming opportunities and help them to plan and invest accordingly.

5. The oil and gas industry has made and continues to make significant progress in reducing decommissioning costs and ensuring an efficient and safe approach. Whilst the drive to reduce decommissioning costs is an imperative, the need to develop a sustainable, long-term supply chain should be recognised as it will require margin for investment to develop longer term capability.

6. Industry and government should work more closely together to promote UK capability and expertise abroad targeting key international markets and building on the existing reputation of the UK's oil and gas supply chain. OGUK is well positioned to assist government to develop such decommissioning opportunities overseas.

7. Based on feedback across the supply chain, it is proposed that the impact of long-term liability of licensees (liability in perpetuity) on the UK decommissioning market should be reviewed to assess whether it is a barrier to innovation or otherwise restrains the market from developing efficient commercial decommissioning models.

8. A pragmatic approach to decommissioning by regulators has helped develop an efficient, cost-effective industry which is best able to meet its societal and environmental obligations. Regulations devised several decades ago may no longer be appropriate or reflect current knowledge or accepted practices in other sectors. The regulatory framework needs to remain open to technical and operational innovation to ensure it continues to deliver the best outcomes for society.

9. Due consideration should be given regarding the wider application of "decommissioning in situ", i.e. leaving some infrastructure in place, under agreed circumstances. This may enhance the marine environment and offer greater utility than opting for a clear seabed.

10. HM Government's own energy projections show that the UK will continue to rely on oil and gas to form a vital part of the energy mix for decades to come, even as we move into an increasingly low carbon future. Careful consideration of the impact of re-use of assets for CCS and interaction with renewable energy technologies should be given by industry, policy makers and regulators alike.

OGUK would appreciate the opportunity to work with UK government to find solutions for the above findings.

Question 1

What core strengths does the UK have in offshore decommissioning, where we might be able to build a competitive advantage?

The UKCS is a mature oil and gas region. There are already many assets which have been developed and installed, resources produced and depleted and then associated infrastructure decommissioned. In the UK, 4,182 wells have been decommissioned[3], 53 steel piled jacket structures decommissioned, and 103 subsea structures removed.[4] It is clear that the UK has established itself over many decades as a 'global hub' for E&P and that extensive capability is now growing further to include late-life and decommissioning.

Experience in decommissioning has been growing rapidly since the first major projects were undertaken in the UKCS in the late 1990s. Projects such as Total's Frigg, Phillips' Maureen, and BP's North-west Hutton decommissioning projects provided the opportunity for UK companies to develop their decommissioning skills and experience. In recent years, that experience has extended to late-life asset management and a focus on optimising the decommissioning process, both contributing towards Maximising Economic Recovery (MER) in the UK.

The UK's core strengths in decommissioning are in the following areas:

- **Breadth of Experience** – The UK has developed extensive experience in delivering a wide range of decommissioning projects from fields with smaller lighter structures situated in the shallow waters of the southern North Sea, to those with much larger in-place facilities situated in the deeper, more hostile waters of the northern North Sea. As well as the differing environmental conditions, the UK has experience in decommissioning varied types of infrastructure including wells, installations, pipelines and subsea structures.

- **Decommissioning Services and the Supply chain** – Due to the breadth of experience, the UK has developed a world-leading supply chain in decommissioning**.** Expertise has been developed in late life management as well as front end skills for decommissioning such as engineering and project management with the UK leading the way in the planning, technical delivery and conceptual aspects of decommissioning projects. Strengths are can also be seen in well decommissioning and in the onshore disposal sector with the ever-growing number of licenced disposal sites around the UK and a developing experience in running these facilities and in the responsible handling of waste. Since 2017, the Scottish Government's Decommissioning Challenge Fund (DCF) has provided £4.8 million in grants to support the development of such infrastructure[5] further driving improvement.

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[3] *OGA WONS system – (Well consents portal)*

[4] *Figures provided by BEIS*

[5] *https://www.gov.scot/policies/oil-and-gas/oil-and-gas-decommissioning/*

The survey results validate the experience and strengths shown above. Companies in the UK are working for operators in all areas of the Decommissioning Work Breakdown Structure (WBS) with strengths recognised by operators and contractors in all areas of the decommissioning value chain (See Figure A - 1 & Figure A - 2 in Appendix 1).

- **A Common approach** – Through OGUK, industry has developed guidance based on this extensive decommissioning experience. Guidance such as the OGUK Comparative Assessment guidelines, the WBS and the Cost Estimation Guidelines[6] provide a 'de-facto' standard for activity in the UK and are now being adopted in other jurisdictions.

- **Pragmatic regulation** – Through experience in the North Sea, the UK industry and regulators have collectively learned how the regulatory framework determines the scope and ultimately the cost of decommissioning. The close working relationship between regulators and industry has fostered a pragmatic and aligned approach to optimise decommissioning outcomes and an established and stable regulatory structure has been developed.

- **Stable Fiscal Regime** – This relationship between industry and regulators has allowed a common understanding of decommissioning challenges to be developed. This has led the government to establish a stable, 'fit-for-purpose' fiscal regime. The government understands where decommissioning fits in the wider oil and gas industry and incentivises further investment in the UKCS.

Decommissioning is part of the natural lifecycle of the oil and gas industry. The UK has developed world-leading expertise in E&P, exporting goods, services, knowledge and skills globally and decommissioning can continue to build on from this success. Decommissioning activities are already offered by UK companies as part of a full lifecycle capability as they continue to service world markets in all aspects of the oil and gas industry.

[6] *https://oilandgasuk.co.uk/product-category/decommissioning/*

CASE STUDY: OPTIMISING PERFORMANCE IN DECOMMISSIONING

Wood has built an extensive track record in the delivery of decommissioning projects spanning over 20 years and encompassing over 3 million execution manhours.

Leveraging the learnings and innovation from consecutive projects Wood has developed optimised working processes and procedures specifically tailored to the execution of decommissioning enabling scopes.

By way of example, the topsides preparation of Shell's Brent Bravo benefited from the selection of key personnel engaged on the Brent Delta to ensure **seamless knowledge transfer**, the development of a **collaborative integrated project management** environment utilising the Engineering Construction Industry Training Board (ECITB) collaboration toolkit, and the **refined working methodologies** that ensured efficient and effective execution.

Together these delivered the alignment of project drivers and key outcomes such as **minimising post CoP OPEX**, **reducing exposure to personnel** and the achievement of **early down manning** of the asset.

Experience, continuity of scopes, refined working methods and collaborative working practices have enabled the Brent Bravo project to achieve a new level of excellence in decommissioning significantly reducing the costs associated with enabling scopes. Wood is now working to build on this success story and surpass it as we move on to the next installation to be decommissioned.

Question 2

Are there any gaps or areas of weakness in UK capability, and if so, is there a need to actively seek to address them?

In consultation with OGUK members (detailed in Figure A - 3 & Figure A - 4 in Appendix 1), the following are identified as gaps in UK decommissioning capability; feedback was also provided on whether the gaps should be addressed:

- **Heavy Lift Vessel** – Although UK companies provide engineering services such as lift analysis for heavy lift providers, we are not aware of any UK company owning or operating a heavy lift vessel. Thus, larger removals typically use the services of a limited number of non-UK companies which have specialised in heavy lifting. (It is worth noting that even here decommissioning lifting services are coupled with installation and pipe laying activities to keep such assets fully deployed). The scale of investment needed to create a specialised UK owned heavy lifting / decommissioning capability has not proved an attractive investment opportunity to-date, nor is there seen to be any market failing. Alternative opportunities may emerge using new technology to disrupt the market and provide competition to the heavy lifters.

- **Deep water quayside** – A related gap in UK capability is the absence of a deep-water quayside which would allow ease of access for the largest structures to be removed during North Sea decommissioning projects. Such a quayside would provide additional competition to the market and could increase the opportunity for these structures to be landed in the UK and a surrounding disposal supply chain to be developed.

As much transparency and information as possible regarding upcoming decommissioning projects, and the provision of more clarity to the supply chain on the status of ongoing decommissioning projects, will allow the market to invest accordingly.

OGUK's position would be to focus on further enhancing our strengths and seek to selectively enter areas where a competitive advantage can be created and sustained. The government and its regulators should carefully judge any intervention in the decommissioning market, to avoid distorting it or otherwise reducing efficiency.

Question 3

Are there any emerging technology areas that should be pursued that will support the development of a world-class domestic decommissioning industry and help UK-based companies win international business?

The UK continues to develop capabilities and efficiencies in decommissioning as projects gather pace. Optimisation of methodologies and processes are starting to take effect as project delivery continues to improve. There have been successes, particularly in the southern North Sea where the 'industrialisation' of processes has seen them optimised through repetition. Embedding these learnings into central and northern North Sea regions, where the largest proportion of decommissioning expenditure will take place, should see large reductions in overall expenditure. It is important to continue to focus on optimising, streamlining and moving towards the industrialisation of decommissioning processes throughout the UKCS.

For technology development, it is important to understand which technologies to focus on, how they are going to affect the industry, and over what timeframe. It is then vital to understand how to incentivise the application of these technologies and anchor them to the UK before internationalisation.

Some technologies enable optimisation of current methodologies and will aid incremental efficiencies in the short term. There are also technologies which could offer a step change in the cost delivery of many of the individual aspects of a decommissioning project and provide an exportable service. While it is important to highlight these key areas, it is also important to understand that their development, testing and adoption may take longer.

The following have been highlighted by OGUK members as priority areas for the development of technology in decommissioning. Highest priorities are recognised to be in well decommissioning, accounting for 49% of UK expenditure over the next 10 years; topsides and structure removals 13%; late life management (post-CoP Opex) 9%, and subsea infrastructure 11%[7]. Technologies highlighted through correspondence with our members were as follows:

- Thermite and Bismuth Alloy well decommissioning (Well decommissioning)
- Automated piece small removal methods (Removals)
- Virtual deep-water port (Removals)
- Heavy load transportation with shallow draft (Removals)
- Ambient lifting (Removals)
- Robotics and automation in late life management (Late-life management)
- Automation in survey and inspection (Post-decommissioning monitoring)
- Digitalisation (Project management)
- Re-use and design for decommissioning (Project management)

[7] *OGUK – Decommissioning Insight Report 2018*

The Oil and Gas Technology Centre (OGTC)[8] was established as a stand-alone organisation in 2016 and is making significant progress in incentivising and driving the development of new technologies across the oil and gas industry. The OGTC currently has 17 projects running through its decommissioning solutions centre and 15 projects running through its wells solution centre which are specifically relevant to wells decommissioning. OGTC has coinvested in these projects with industry partners, totalling £21m.

The OGTC has recently published their Decommissioning Technology Roadmap[9] which identifies four key focus areas for technology development:

1. Late life management
2. OPEX reduction post CoP
3. Innovative removal
4. Optimised well decommissioning

The National Decommissioning Centre (NDC)[10] is a new global research centre that combines academic excellence and industry expertise to support decommissioning activity. A partnership between the University of Aberdeen and OGTC, the NDC is the first of its kind in the world and demonstrates the UK's emphasis and intentions to become world leaders in decommissioning.

Other organisations are also seeking to progress technologies within the decommissioning sector, including the Oil and Gas Innovation Centre (OGIC) Scottish Enterprise and Opportunity North East within their *SME Decommissioning Programme.*[11]

All these initiatives are unique and provide a significant differentiator for the UK as a global decommissioning player.

[8] *https://theogtc.com/*
[9] *https://www.theogtc.com/about-us/technology-roadmaps/*
[10] *https://www.ukndc.com/*
[11] *http://www.opportunitynortheast.com/oil-gas/sme-decommissioning-programme/*

Question 4

What specific areas or capabilities of the decommissioning value chain have the greatest potential for export?

Over the past 50-years the UK has established itself as a global leader in oil and gas across the lifecycle of a field and decommissioning fits naturally into that capability. The greatest areas for export are shown below:

Project management and front-end services – The UK has a robust, fully developed process of front-end planning and preparation skills that support the successful delivery of a decommissioning project. Much of this planning is the contractual and technical methodology of decommissioning a facility, pipeline or well. There is also a significant amount of work involved in regulatory compliance and stakeholder engagement activities that are also vital for project success. UK companies have a comprehensive skillset covering technical, safety and risk, environmental and cost estimating which are applicable to any decommissioning project worldwide. Whist our knowledge is exportable, is important that the UK understands how to embed capability in the UK.

Well decommissioning – Well decommissioning typically represents almost half of the total cost of a field decommissioning project. Naturally this has attracted significant effort in the UK, both in the process of delivering well decommissioning projects, but also in development of new technologies that cut the cost of the process itself. Common well construction methodologies have been applied globally and hence skills for decommissioning developed in the UK are also widely applicable.

Subsea Infrastructure – The UK is recognised as a world leader in building subsea systems and development of subsea technology. This experience is directly relevant to offshore decommissioning. The UK subsea industry's expertise means we are well placed to conduct decommissioning activities effectively while the in-country knowledge and experience unlocks the potential to develop innovative and novel approaches. Again, these skills are specialist and have global application and are exportable.

Late Life and Post-cessation management – UK operators, the supply chain and regulators have recognised the link between late-life operations and the optimisation of decommissioning scope. In some cases, larger operators have divested assets to specialist late life operators. In other cases, operators have reviewed its operating strategy to optimise production and the ultimate decommissioning outcome. Equally important is the management of an asset once it has ceased production and revenue generation comes to an end. At this stage, costs need to be carefully managed and new operating philosophies adopted before it is ultimately decommissioned.

CASE STUDY: LATE LIFE ASSET MANAGEMENT

A recent concept study and Front-End Engineering Design (FEED) project carried out by Xodus Group determined that a North Sea operator will save up to £59 million by adopting a Not Normally Attended (NNA) status ahead of decommissioning the field.

The North Sea field recently completed well decommissioning programmes for two platforms. A third platform is not due to commence well decommissioning activities for at least two years and although it operated as a manned facility, it ceased production several years ago.

The operator required support to convert the platform to a minimum facilities asset which would significantly reduce the operational costs after production had been terminated. The saving would be realised over a six-year period until the final decommissioning programme commences.

Following a competitive tender process, Xodus initiated a concept study in October 2017 which was closely followed by a FEED project in December 2017. The transition of the platform to Not Normally Attended (NNA) status has now been completed.

Training & Education – Having developed new thinking and methodologies around decommissioning, the UK is well-placed to deliver training and education in decommissioning. As an example, The University of Aberdeen currently runs the only MSc in Decommissioning. Training can also be provided in other jurisdictions around the world. Several UK companies are already providing training around the world.

CASE STUDY: DECOMMISSIONING TRAINING

Jee Ltd is a UK-based subsea engineering and training consultancy. Jee offers a range of courses from design to decommissioning. Courses are written and delivered by engineers to engineers. Jee has trained 8,000 engineers worldwide to date offering public courses in Aberdeen, Houston and Lagos (through a local partner). In addition, bespoke courses for individual companies have been delivered (and are available) worldwide. Courses take engineers on a path through different levels from Introduction, through Foundation, Application and on to Specialisation. Over the years Jee has found that there is a strong appetite for training in emerging markets.

Late-life and decommissioning have always been featured within Jee's courses, however in recent years Jee has developed dedicated courses for decommissioning. In 2019 Jee launched a foundation course on decommissioning titled: "*Overview of decommissioning regulations and planning.*" This course supplement to another popular course already offered called, *"Decommissioning programme development."*

Jee has also delivered tailored decommissioning training courses to E&P companies globally.

Regulation – The UK benefits from a robust, pragmatic regulatory regime and associated guidance that is being used as 'best practice' by other regions of the world. Export of regulatory advice inputting to a regulatory regime overseas could provide a useful entry point for UK companies, as it would enable the UK companies to efficiently execute scopes in export markets given their familiarity with the requirements. There are many opportunities for the UKCS decommissioning industry to advise and train regulatory personnel in developing countries where CoP is nearing. Delegations from a number of countries (including Australia and Thailand) have already been seeking regulatory support from the UK through industry bodies and the University of Aberdeen.

Figure A - 5 and Figure A - 6 in Appendix 1 show that OGUK operator and contactor members identified project management, well decommissioning, subsea infrastructure and late life asset management (post CoP OPEX) as having the greatest potential for export.

Question 5

What are the main export markets for the UK decommissioning industry and over what timeframe?

In 2018, Wood Mackenzie reported that $82bn would be spent on decommissioning by the top 12 markets (Figure 1). The report indicates that the largest expenditure is expected in the UK at 33% of the total predicted spend. It also suggests that the combined decommissioning spend in the North Sea basin, i.e. Norway, the Netherlands and the UK, equates to around half of the global expenditure over the next 10 years.

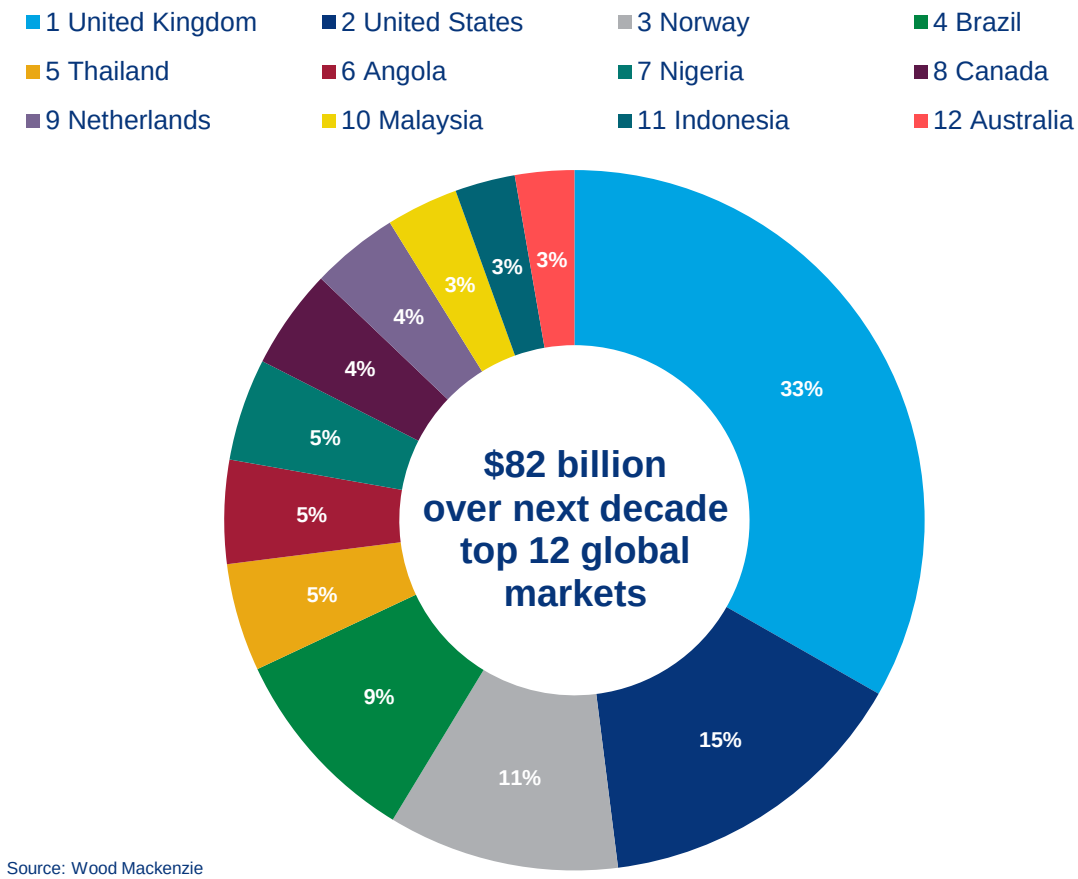

Figure 1 - Global Decommissioning Expenditure, 2018 – 2027

Rystad produced figures in 2019 showing that annual decommissioning expenditure would average $12bn from 2019-21 with Europe and Asia as the two largest areas of expenditure (Figure 2). Notably, Asia, South America and Africa regions are seen as emerging markets with a large increase in expenditure in comparison to previous years. Based on these data, these emerging regions represent key opportunities for the UK supply chain, where new supply chains must be established. In addition, while North America has an incumbent supply chain for shallow water projects, more complex deeper water projects in the USA could also benefit from the experience base in the UK supply chain.

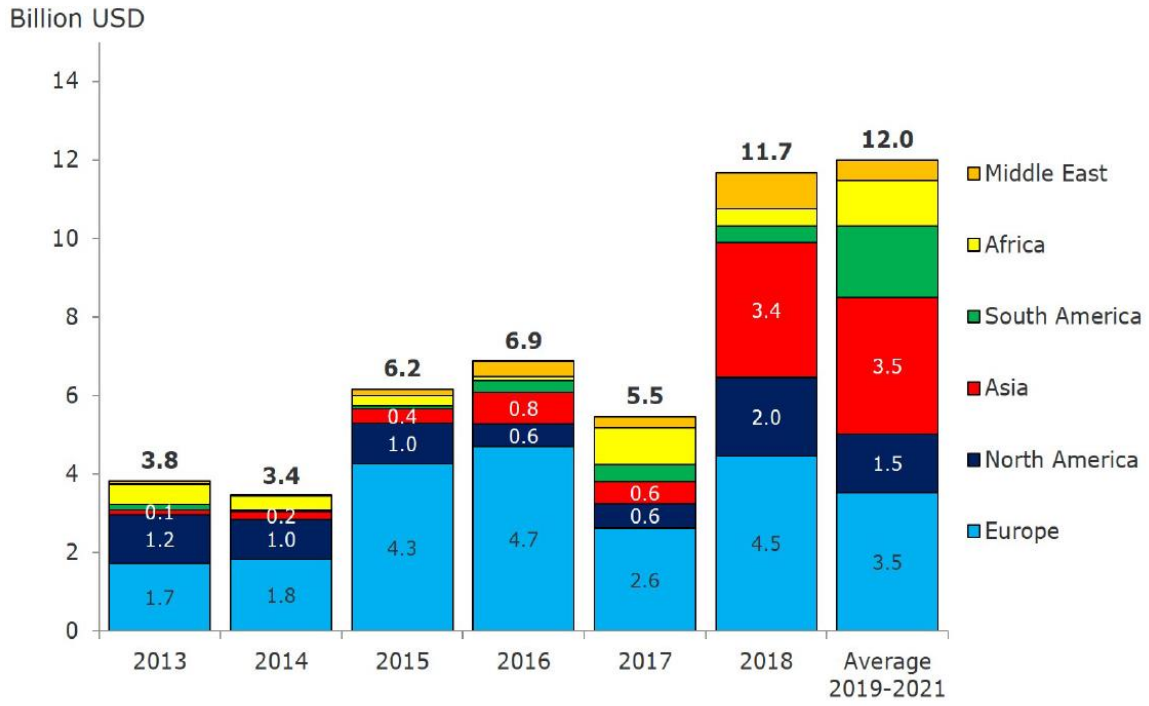

Figure 2 - Total decommissioning cost by year of production cessation *Source: Rystad Energy ServiceCube*

In Figure A - 7, Appendix 1, the survey of OGUK Members shows that Contractor members consider South East Asia as the main growth market in decommissioning with many members stating that Malaysia, Indonesia, Thailand and Australia are also target markets. North Sea countries Norway, Netherlands and Denmark are also seen as target markets, validating the focus seen in the Wood Mackenzie and Rystad figures.

Overall it is recognised that the UK strategy for building a global decommissioning capability should be in three phases:

1. **Excelling in the UK market**: In the immediate term, the UK should seek to maximise its share of the UK decommissioning market, building on areas where a competitive advantage already exists and creating alliances with others where the UK lack suitable capability.

2. **Competitive regionally:** In the short term, the UK supply chain must take full advantage of the regional decommissioning market around the North Sea, much of which can be handled by UK facilities and using UK capability to its full extent.

3. **Targeted international ambition:** In the longer term, the UK should pursue opportunities globally based on its reputation for delivering North Sea projects. It should be recognised that some capabilities developed for the regional / North Sea market may not be as relevant internationally. Therefore, in developing as an international hub for decommissioning, it is essential to identify those areas (activities and services) where the UK has an advantage when considered against local competitors.

Question 6

What is your experience in international markets and what are the main challenges/barriers you have faced?

The UK has already made many inroads to becoming a global hub for decommissioning and a lot of UK companies are already selling decommissioning capabilities globally today based on the reputation they have developed in the UK as oil and gas service providers. In terms of barriers, OGUK member companies expressed concern in the following areas:

- **Regulatory framework in other regions –** The UK has a mature regulatory framework when it comes to decommissioning and specifically in Health and Safety and in Environmental standards. Quite often in countries with less developed codes of practice or with less emphasis on environmental responsibility it is difficult for UK companies to compete with local members of the supply chain. It must also be recognised that in jurisdictions with different decommissioning standards, some of the techniques and technologies developed and used in the UKCS are not applicable.

- **Established markets versus emerging markets –** Companies stated that there were difficulties breaking into already established supply chain markets. In the North American region where there is an established supply chain, companies in the UK struggle to gain traction. Underpinning the need to look at emerging, rather than established markets for export opportunities.

- **Access to key buyers and decision makers –** Supply chain companies find it difficult to access the key decision makers within non-UK companies who are conducting decommissioning projects.

- **Trade restrictions / local content requirements –** Many countries where decommissioning work scopes (or work scopes in other areas of the oil and gas) is required there are local content requirements or trade restrictions which prevent UK companies participating in tenders.

- **A lack of continuity and mobilisation costs –** The stop / start nature of decommissioning projects is present at home and abroad. In the UK market a lack of continuity of decommissioning projects has meant that companies have struggled to build and maintain a skill set of decommissioning expertise which is exportable.

  A lack of continuity, or certainty of scope abroad has meant that it has been difficult for UK companies to justify mobilising staff and equipment to new regions.

CASE STUDY: DECOMMISSIONING INTERNATIONAL EXPERIENCE

Rotech Subsea has a large track record in decommissioning performing workscopes in the UK as well as overseas. Rotech Subsea's track record includes projects in the all areas of the UK, the wider North Sea, with further extensive experience in the Gulf of Mexico including projects in the US, Venezuela and Mexico. Rotech has also been involved in decommissioning projects in the Middle East and South East Asia.

From small to large de-burial and mass clearances, the Rotech Subsea range of tools have constantly been evolved to meet new challenges for access through to the cutting of harder materials. Rotech's decommissioning applications range from de-burial for cutting & abandonment, rock dump or debris removal through to pipeline lowering or exposure for removal.

Rotech continues to engage with the main decommissioning players in the UK and indeed throughout the world in general. Whilst being headquartered in the UK, Rotech has the ability to service the global market with current projects in the Middle East and the Far East being managed from the UK.

Rotech SUBSEA

Results from the OGUK member survey shown in Appendix 1, Figure A - 9 show that the majority (63%) of contractors who responded stated that they have worked on decommissioning abroad and 55% of the respondents stated they are currently working on decommissioning projects outwith the UK. This response demonstrates that UK-based companies already have a global presence in decommissioning.

Despite the barriers, operators and supply chain companies in the UK are already working all over the world on decommissioning projects. The supply chain are following their clients around the world and meeting their needs across the full spectrum of the oil and gas industry. Current long-term contracts between operators and suppliers are enabling decommissioning capabilities to be formed and their exportability.

Question 7

What are the main barriers to the UK becoming a global hub for decommissioning and what could be done to address these?

Barrier	Description	What can be done to address
A lack of continuity of projects	Due to the nature of decommissioning and the inherent uncertainty about timing, there is a lack of visibility of upcoming decommissioning projects in the UK. This lack of confirmed future opportunities means that there are limitations in the availability of investment funding, which in turn constrains business growth, including the development of skills and experience.	• New delivery models are now being offered looking to aggregate scope, these could mitigate these barriers should they be adopted. However, Care should be taken to avoid "backing" any one type of business model over another, rather regulators and government should promote an open well-informed market, addressing barriers to entry and encouraging competition across the sector and between sectors. More should be done to provide additional information to the market on an open transparent and unrestricted basis. A competitive market benefits from the ready access to information on supply and demand. Access to further data could also allow the development of enabling digital technology.
Diluted skills across the North Sea industry	Currently, decommissioning capability is spread thinly throughout the industry. For example, most UK operators will establish their own decommissioning team which will fit the needs of their organisation and current workload. This may be because they are a global operator and therefore need to develop capability for their global decommissioning liabilities but many UK only operators also have decommissioning teams. It is possible that attitude to the risks associated with long-term liability are leading operators to develop their own decommissioning teams, rather than creating expert, cross-industry organisations.	
Market fluctuations	When oil prices are high, due to the stability of the UK regime and political stability in comparison with other regions, companies are investing in the basin and therefore decommissioning is delayed in the favour of extended late-life production. When oil prices are low there are cash flow constraints which prevent decommissioning projects.	• Determine a method to segregate decommissioning costs from models whose offerings are affected by the oil price. • The service sector is best placed to optimise the utilisation of their equipment. As above, exploring supply chain driven solutions could mitigate this issue.

Barrier	Description	What can be done to address
Competitiveness	In order to sell our capability, the UK needs to offer competitive solutions. Many of our operator members are conducting decommissioning work scopes, (such as onshore decommissioning) abroad due to the costs associated with undertaking the activities the UK.	• Produce High level KPIs – The Development of Key Performance Indicators to measure industry performance, benchmark and advertise success is vital. This will allow us to identify key areas where expenditure reduction can be targeted to allow the UK to become more proficient in its home market, increasing the attractiveness of our services abroad.
UK Content	Many supply chain companies based in the UK and providing services to the oil and gas industry are not UK-owned. This is not necessarily an issue if they have a capability base in the UK and are supporting and growing UK-based employment. However, work needs to be done to ensure this capability remains in the UK when decommissioning work scopes become more prominent abroad.	• Explore possibilities to attract companies to house their decommissioning capability in the UK. • Support to technology developers for UK inward investment - OGTC and Tech X • Continued support of NDC and universities to produce high calibre decommissioning practitioners in the UK
Liability in perpetuity	Operator statutory liability for decommissioned assets can restrict the development of more innovative risk-sharing models.	• If there were a means to effectively transition liability back to the state, for example, operator takes risk for 10 years, risk is shared with state for 10 years and then liability is then transferred, it might enable the adoption of these new delivery models

Question 8

What can be done to enable the UK industry to become more proficient in its domestic market and to enhance UK exports of decommissioning services?

Many of our members already believe that the UK is a global hub for decommissioning. 21,700 jobs were supported by the expenditure of decommissioning in 2018 in the UK.[12]

The UK is already spending £1.5 billion per year on decommissioning, more than any other country. We are first movers in the decommissioning of complex, deep water assets, and therefore must seize the opportunity, develop expertise and utilise this to our advantage. Becoming more proficient in our home market is vital particularly if we are to realise further success in exporting abroad.

Our members consider that in order to become more proficient the following needs to occur:

- **Key Performance Indicators (KPIs) –** Demonstrate performance through meaningful time and cost KPIs, understand key improvement areas and seek efficiencies in current practices to service the UK market. This is also essential for the domestic industry to benchmark itself against what is being achieved globally and thus determine whether the UK is a market-leading performer in decommissioning. In this regard, the high level KPIs offered by the OGA /Decommissioning Task Force need to be published.

- **Create a competitive, open and well-informed market –** Encourage or incentivise more open planning from operators and the supply chain while staying clear of prescriptive regulation. Open and informed market will further enable the use area plans to where similarities and proximity of projects can allow accumulation of scope and efficiencies. New delivery models seeking to aggregate scope are starting to be offered by the supply chain. Care should be taken to avoid backing any one type of business model over another, rather regulators and government should promote an open well-informed market, addressing barriers to entry and encouraging competition across the sector and between sectors.

- **Certainty comes at a potential price –** whilst operators may be attracted to a lump-sum / fixed price contract for decommissioning, uncertainty in scope and condition and lack of market experience may lead to a more expensive outcome. Service providers will need to build in suitable contingency to manage commercial and project risks which might otherwise be mitigated by alternative risk sharing strategies. As the market continues to mature and gains greater experience of scope, it may well be that risks are better quantified, making lumpsum contracts a more competitive choice.

[12] *Experian – Oil and Gas Economic Impact 2019*

- **Generate best value, not focus just on cost –** Operators are keen to decommission at the lowest cost, which makes it difficult for the supply chain to reinvest in the improvement of methodologies or technologies. Whilst the drive to reduce decommissioning costs is an imperative, the need to develop a sustainable long-term market should be recognised.

- **Regulatory Pragmatism –** The regulatory regime needs to be responsive to innovation in decommissioning and needs to ensure fitness for purpose. As technology and science evolve, regulations should be reviewed to ensure they deliver the best outcomes for society. Regulations devised several decades ago may no longer be appropriate and reflect current knowledge. In all circumstances, operators and regulators should be utilising the best available data to ensure their decision making is robust and reflects current societal values. Examples are as follows:

    - **Safety –** The UK is rightly proud of its safety regime and the industry will do nothing to diminish the performance objectives it sets. However, the long-established operations culture and gold standard procedures can inhibit the fit-for-purpose, risk-based pragmatism that is required for carrying out more efficient decommissioning. For example, once assets are deemed to be hydro-carbon free the expectations of the safety case should be consistent with other marine applications. Such an approach should deliver safe outcomes whilst driving efficiency and containing costs and reinforce the UK's reputation as a global leader in operational decommissioning practices.

    - **Environment –** Environmental assessment techniques such as "NEBA" – Net Environmental Benefit Assessment – when combined with existing comparative assessment requirements may offer additional insight into the most appropriate means of decommissioning and where the balance should be set between complete removal and prevailing environmental conditions. Likewise with "decommissioning in situ" – leaving certain assets in place may enhance the marine environment and offer greater utility than opting for a clear seabed.

  Success will also depend on the future recruitment and retention of personnel within the regulators having relevant subject matter expertise and being empowered to make decisions in a timely manner.

- **Embed processes and regulation abroad –** Aim to embed UK processes across the world to enable UK supply chain entry to other regions.

- **Research and development** – Use the UK's Technology and Research centres at the Oil and Gas Technology Centre (OGTC) and the National Decommissioning Centre (NDC) to enable innovation and develop methods and technologies for the industry. Look for technologies to enable more cost-efficient decommissioning in the near term and support efficiencies for designing for decommissioning of infrastructure in the future.

Question 9

With regards to decommissioning, which interventions by the OGA have you found most valuable? What other actions might make an impact?

OGUK members identified the following areas where the OGA have added value to the decommissioning process:

- **Drive to be cost effective –** The OGA has helped to provide an emphasis on decommissioning costs working together with industry to become more cost effective and Maximise Economic Recovery.

- **Utilisation of industry guidance –** The OGA has worked well with the industry to utilise industry guidance as part of their processes. The OGUK Decommissioning Work breakdown structure is used as a guide for the OGA Asset Stewardship Survey to portion costs for decommissioning projects consistently across operators and allows for a consistent approach for the management of projects. Also, the National Data Repository should further enable the efficiency of the decommissioning industry by having continually improving data readily available for industry.

- **Positive engagement with industry** – The OGA is an informed regulator and have an open and amicable relationship with industry. This has enabled industry to approach the OGA with any unique problems associated with decommissioning projects and work together to solve them.

CASE STUDY: WORKING WITH THE REGULATORS IN DECOMMISSIONING

A Joint Industry Project (JIP) was led by ABB in collaboration with Genesis and the Industry Technology Facilitator (ITF) to develop safety case guidance and technology solutions for Late Life and decommissioning. This would help operators reduce costs associated with decommissioning. The members of the JIP put competitive forces to one side to lead a collaborative fast track project that sought to drive benefits in offshore decommissioning.

ABB aimed to bring industry leading knowledge to the project team with the idea of building trust for collaboration across the full UKCS, whilst recognising the need for representation and skills from the entire industry. A core team was formed, and the regulator was engaged to act as a facilitator to assist with bringing these parties together and provide key inputs throughout the project.

Working with the regulators, the group aimed to develop industry guidance and technology solutions that will:

- Reduce end of life / decommissioning facility running costs;
- Bring step change technologies into the decommissioning; and
- Support the change of 'mind-set' required for effective decommissioning.

OGUK considers the following to be where the OGA could provide more help to the industry:

- **Transparency –** The OGA typically discusses benchmark performance in isolation with individual operators. Sharing of OGA-collated benchmark cost performance data more widely should be considered to help the market develop norms and drive performance improvements on a more transparent basis, provided this can be achieved without distorting the market.

- **Benchmarking & Access to data –** The current cost benchmarking data shared by the OGA is at very high level only. Some operators are seeking more granular benchmarks and are working with consultants to gather similar cost data to develop their own understanding of cost performance. Ideally this duplication should be avoided by more open sharing of OGA's benchmarking data, so an industry-wide understanding of cost performance is available.

- **Realistic Cost Forecasting and performance measurement –** The OGA are currently measuring industry performance on cost using the 2016 baseline P50 estimate of £59.7 billion to track success. So far, the OGA have reported a 7% reduction on this overall figure reducing the estimate to £55.7 billion in 2018 on a like for like basis.[13] The current goal is to reduce this overall forecast figure by 35% by the year 2022 – which corresponds to a 7% saving year on year. There are a few issues with this approach. Firstly, there has been more infrastructure installed in the North Sea since 2017 therefore, to get a like-for-like figure, some infrastructure must be excluded. This differential in infrastructure will continue to increase as the North Sea remains and investible basin until before long, the figure will become irrelevant. Secondly, measuring success against cost could be a risky strategy.

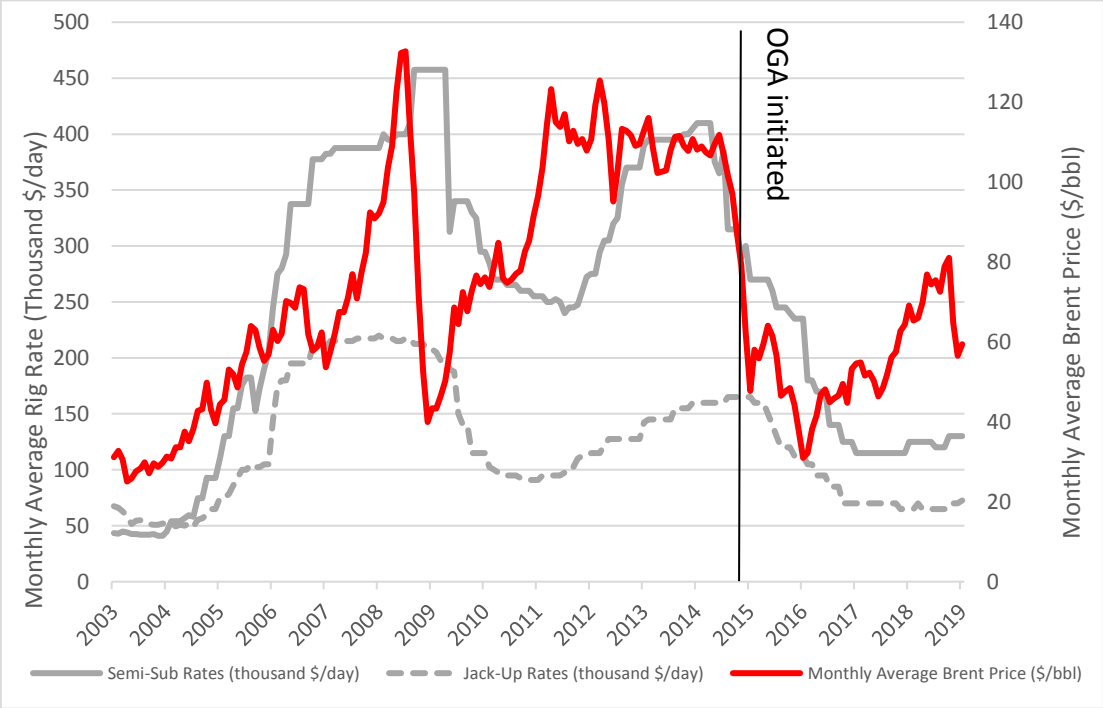

Figure 3 - Rig Rates against Brent Crude price

For example, Figure 3 shows that both the rates for jack up and semi-submersible rigs are correlated with a lag of one to two years against Brent crude oil price, such that when the oil price rises the rig rates rise at a slight offset and when it decreases, the rig rates decrease at a slight offset. In the most recent cycle, we have seen the oil price rise while the rig rates have stayed flat, we have not seen the offset rise yet. As activity increases in line with higher oil prices, there will be increased demand for rigs, vessels, equipment and personnel all of which may lead to decommissioning cost inflation. These inflationary pressures can be countered through new approaches to contracting and further focus on efficiency. Decoupling the decommissioning supply chain from the installation, construction and operations market could also prove beneficial.

[13] https://www.ogauthority.co.uk/news-publications/publications/2018/ukcs-decommissioning-2018-cost-estimate-report/

- **Decommissioning Supply Chain Action Plans (SCAP) –** The OGA Supply Chain Action Plan (SCAP) process requiring operators, ahead of their decommissioning programme submission, to lay out how they plan to approach the market to conduct their decommissioning activities. These SCAPs are not available publicly and there has been no visible output yet. Perhaps there is an opportunity to map the SCAP responses and anonymously publish when activities are due to occur. Alternatively, a method for interim reporting by operators between the Decommissioning Programme and Close-out Report submissions would benefit the supply chain in helping them understand, what has been completed and what is yet to come.

Appendix 1 Figure A - 11 shows the results of an OGUK survey where contractor and operators were asked for the top 3 things the OGA could do to further help the decommissioning industry.

Question 10

Is there anything else you want to share with us on this topic?

The knock-on effect to other industries – Enabling the decommissioning industry in the UK may also enable others. This consultation response is focused the offshore oil and gas decommissioning industry in the UK. There are obvious parallels with other industries like, onshore well decommissioning, the decommissioning of vessels, FPSOs and drill rigs, and the offshore wind industry of which BEIS is a regulator. Any decisions to enable the offshore decommissioning industry should remain aware of these industries and perhaps the economic benefits of those should be factored in.

Re-use – Re-use or repurposing of oil and gas infrastructure for alternative means should remain a priority area. If the UK becomes innovative and informed on the potential re-use of assets, this could reduce the costs of decommissioning in the domestic market but also open doors to other exportable markets worldwide. The OGA and BEIS should focus on how, why, when and whether we re-use assets and incentivise solutions to make available to operators as they may not be the best candidates to explore re-use options.

Design for Decommissioning – We need to ensure that we incorporate lessons and make necessary improvements to ensure decommissioning is considered when new items are installed in the UKCS. Frontier regions in the west of Shetland and marginal developments in areas where there is already infrastructure will form most of the new infrastructure installed going forward. Decommissioning and re-use of equipment should be considered for all new infrastructure incentivising marginal field development and reducing costs in decommissioning.

The offshore wind industry, learning from the oil and gas industry, now have to put in place a decommissioning programme at the Field Development stage. Submitting decommissioning programmes prior to installation, and then justifying change throughout field life could be a better approach. It will place emphasis on decommissioning at the front end and enable time to focus on technology and methodology improvements over the life of a field to improve cost effectiveness of its eventual decommissioning project.

If focussed on, design for decommissioning could be a core UK strength and is exportable globally. There would be particular interest in frontier regions like the Faroe Islands, Guyana, Colombia, Senegal and Mauritania.

APPENDIX 1

Oil & Gas UK Decommissioning Forum Survey Results

In order to gather evidence for this call, OGUK issued two surveys, one to operating members of our decommissioning forum and one to the contracting members of our decommissioning forum. The surveys targeted the pertinent points required to answer each of the questions within the Call for Evidence. We received responses from 19 operators. This is a good sample size and represents over 50% of the operators in the North Sea. The contractor survey received a poorer response rate with 12 responses, while this does provide some valuable insight, it cannot be seen of representative of the contracting community.

The key responses received are shown and discussed in this Appendix.

Survey Results

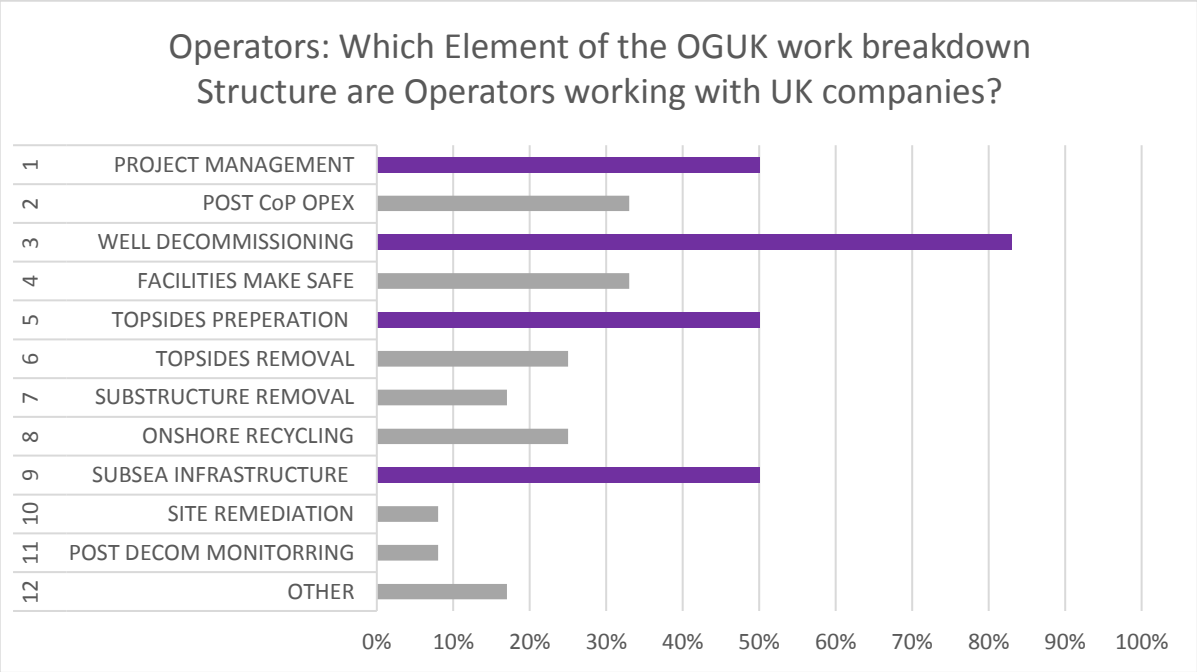

Figure A - 1 - OGUK Call for evidence - Operator Survey – Which element of the OGUK WBS are operators working with UK Companies?

Operators in the UKCS are working with UK supply chain companies in every element of the Oil and Gas UK WBS. Figure A - 1 shows that 83% of the responding operators are working with UK companies in well decommissioning, while 50% are working with UK companies in project management, topsides preparation scopes and subsea infrastructure decommissioning scopes.

Figure A - 2 shows a combined response from contractors and operators rating the UK capability within each WBS area out of ten. Industry considers the UK has core strengths in Project management, well decommissioning, facilities make safe and subsea infrastructure. While there are stand out areas showing core strengths, all areas of the OGUK WBS were represented.

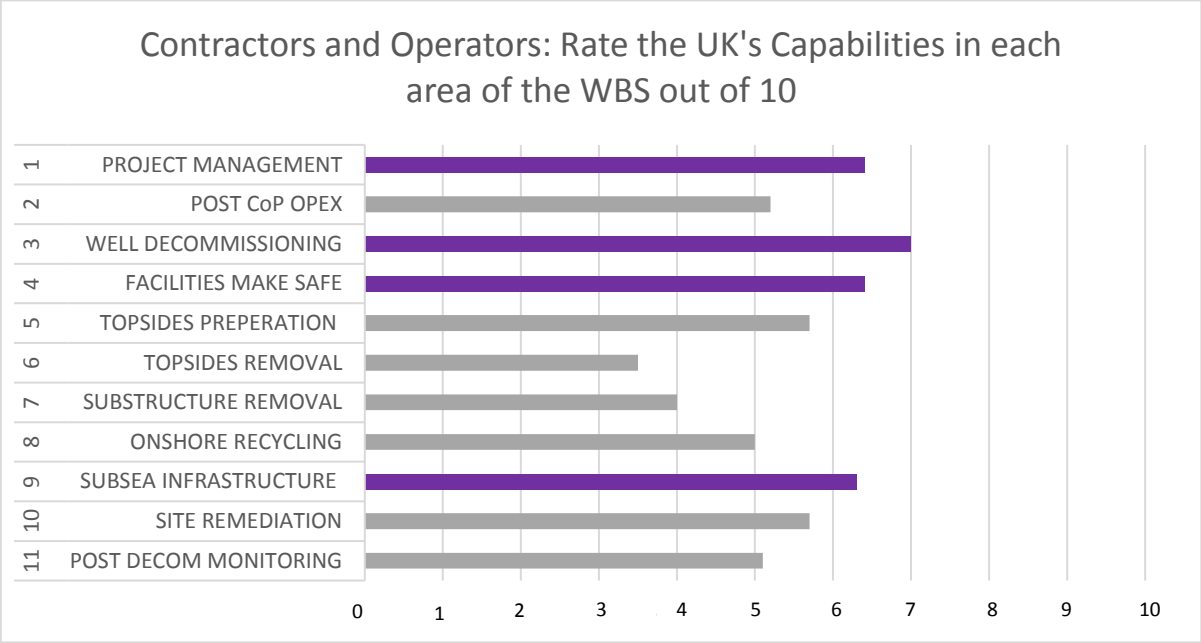

Figure A - 2 - Contractors and Operators Decommissioning forum response – Rate the UK capability in each area of the WBS out of 10?

Figure A - 3 shows the areas where operators identified as gaps in UK capability. As shown topsides removal and substructure removal stand out. Although there are capabilities enabling these activities to take place, the UK does not have a heavy lift vessel and therefore cannot conduct the full work scope within these WBS elements. Interestingly, onshore recycling and well decommissioning were not identified by operators as areas where there are gaps in the UK's capability. However, through the conversations we had with our contractor and operator members, the lack of a deep-water quayside and drill rig were continually raised as gaps.

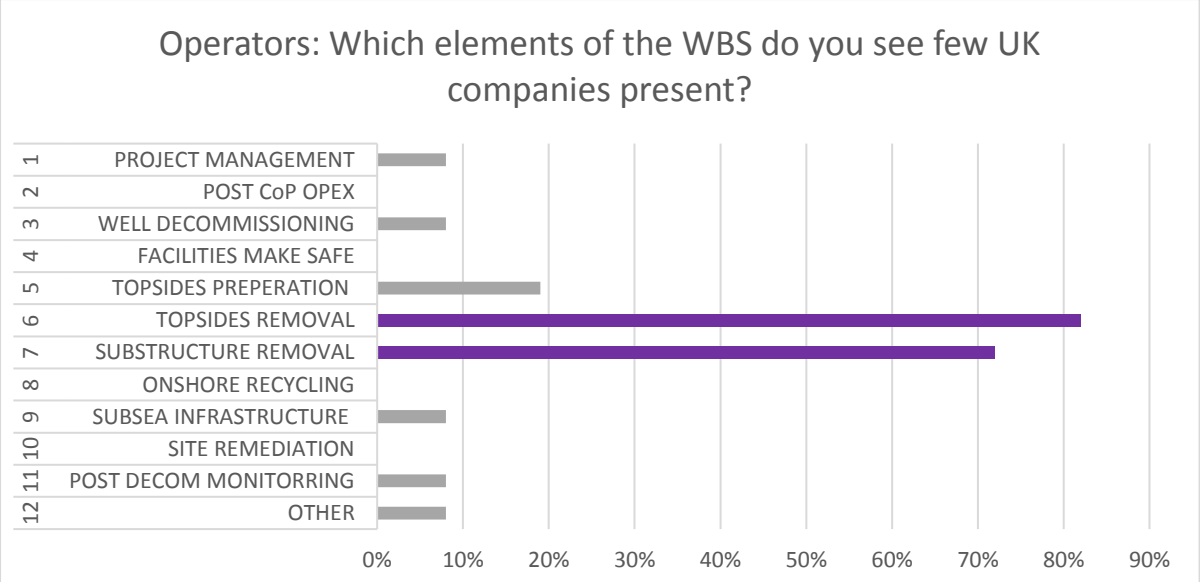

Figure A - 3 - OGUK Call for evidence - Operator Survey – Which WBS element do you see few UK companies present?

Figure A - 4 asks OGUK contractor members to state which areas they do not currently operate in but does form part of their business growth plans. Although Topsides and Substructure removal WBS elements were identified as gaps by operator members these are not areas that contactors see as areas to grow their business.

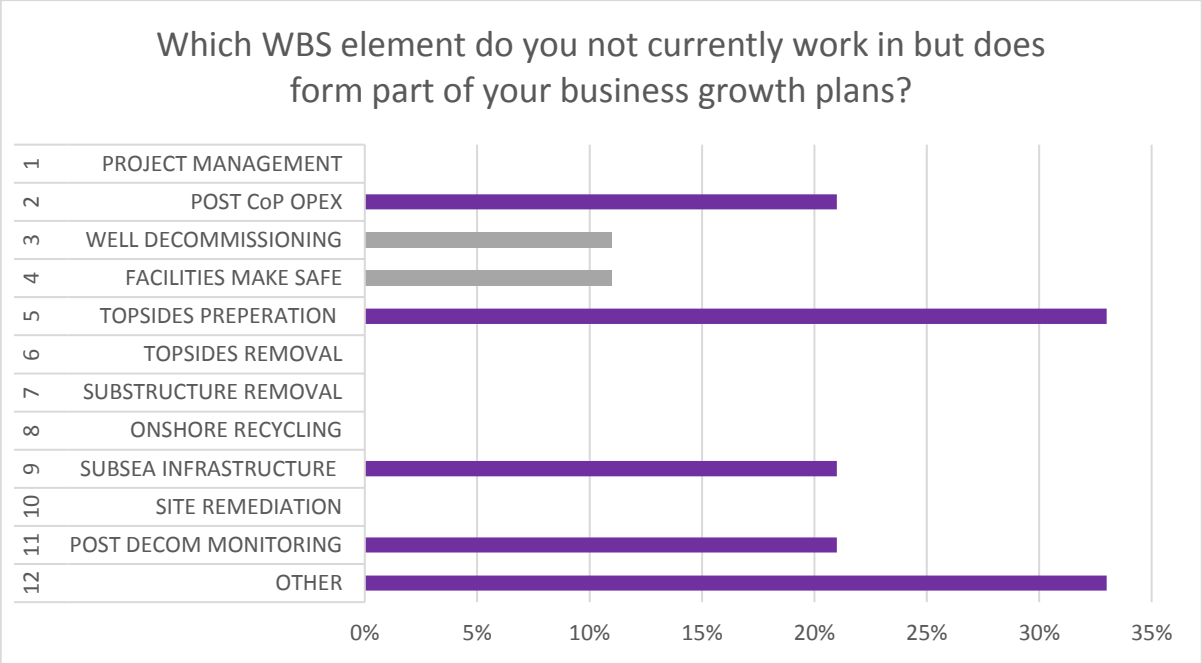

Figure A - 4 - OGUK Call for evidence - Contractor Survey – Which WBS element do you not currently operate in but does form part of your business growth plans?

Our operator and supply chain (Figure A - 5 & Figure A - 6) members agreed that well decommissioning, project management, managing assets in late life (post CoP OPEX) and subsea infrastructure decommissioning are key areas of the value chain which have the greatest potential for export.

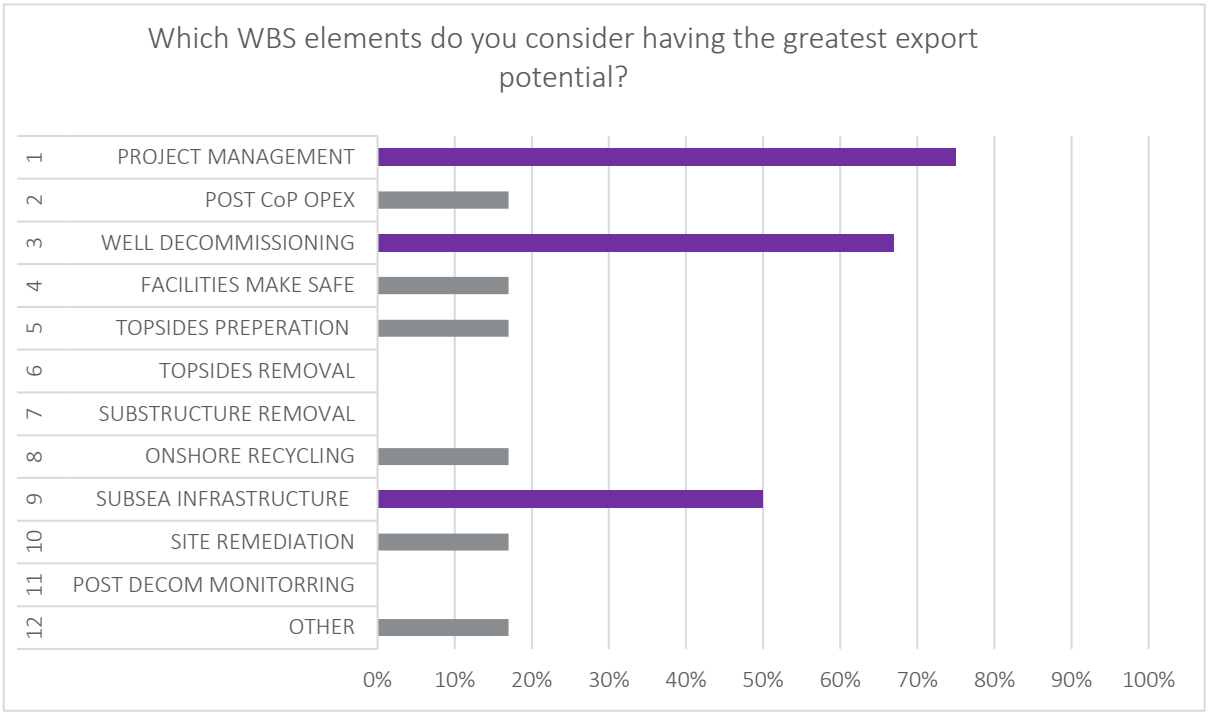

Figure A - 5 - OGUK Call for evidence - Operator Survey – Which WBS elements do you consider having the greatest export potential?

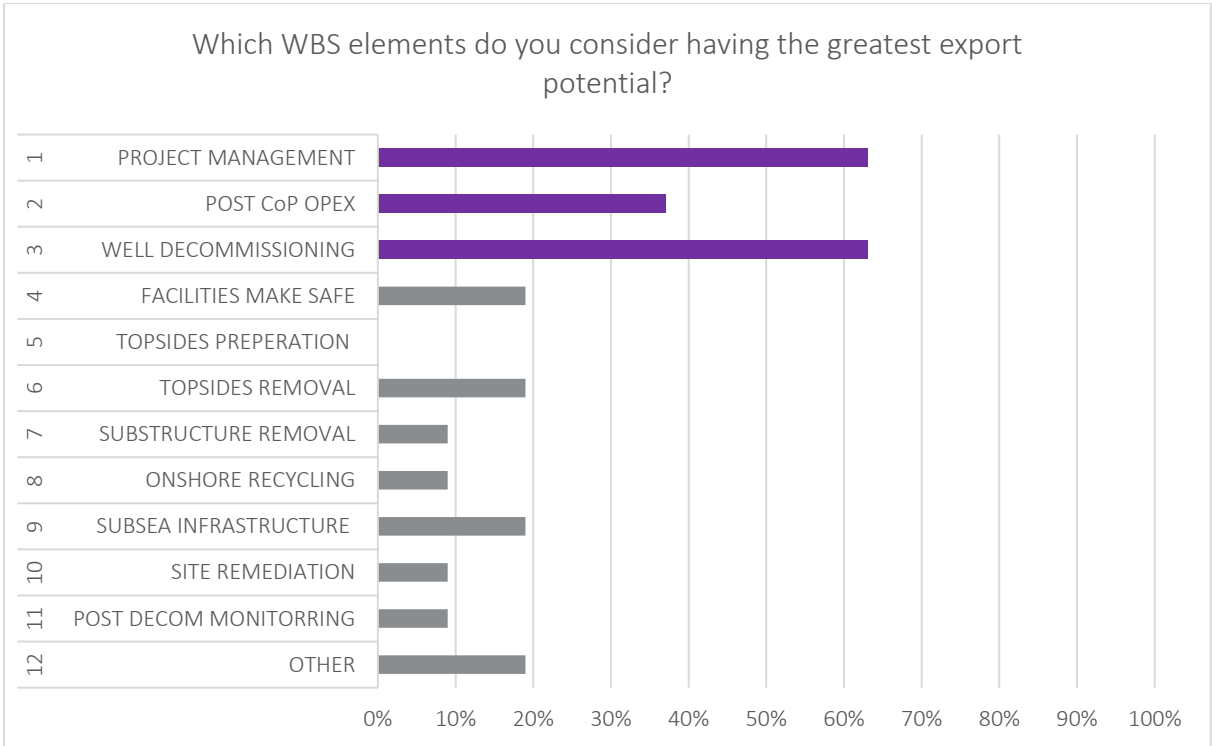

Figure A - 6 - OGUK Call for evidence - Contractor Survey - Which WBS elements do you consider having the greatest export potential?

Contractor members consider South East Asia as the main growth market in decommissioning with many members stating that Malaysia, Indonesia, Thailand and Australia are target markets to grow their businesses (Figure A - 7).

North Sea region countries Norway, Netherlands and Denmark are also seen as target markets validating a keen focus by our supply chain to focus on decommissioning activities in the basin.

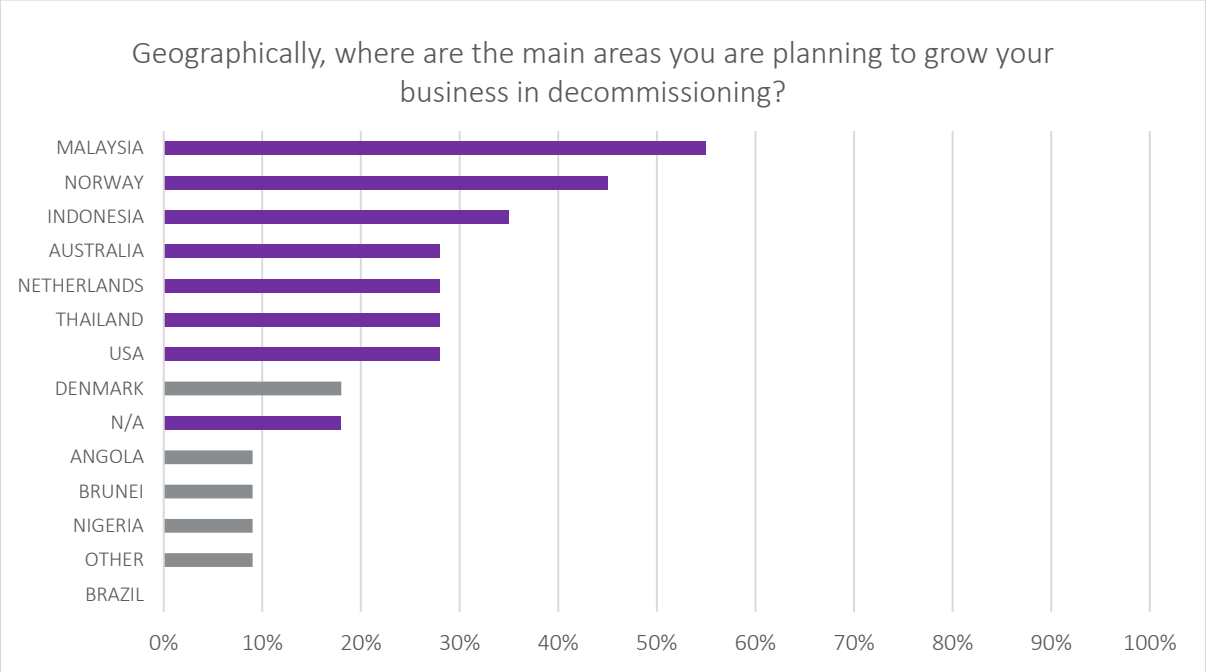

Figure A - 7 - OGUK Call for evidence - Contractor Survey – where are your target markets?

Most of our member operators in the UK basin are working on decommissioning projects globally (Figure A - 8). With decommissioning projects occurring in The USA and in Netherlands and Norway. Our survey provided the opportunity to specify other countries not included on the list, India, Gabon, Trinidad and Mauritania were stated as countries where Operators present in the UK said they had decommissioning projects ongoing elsewhere.

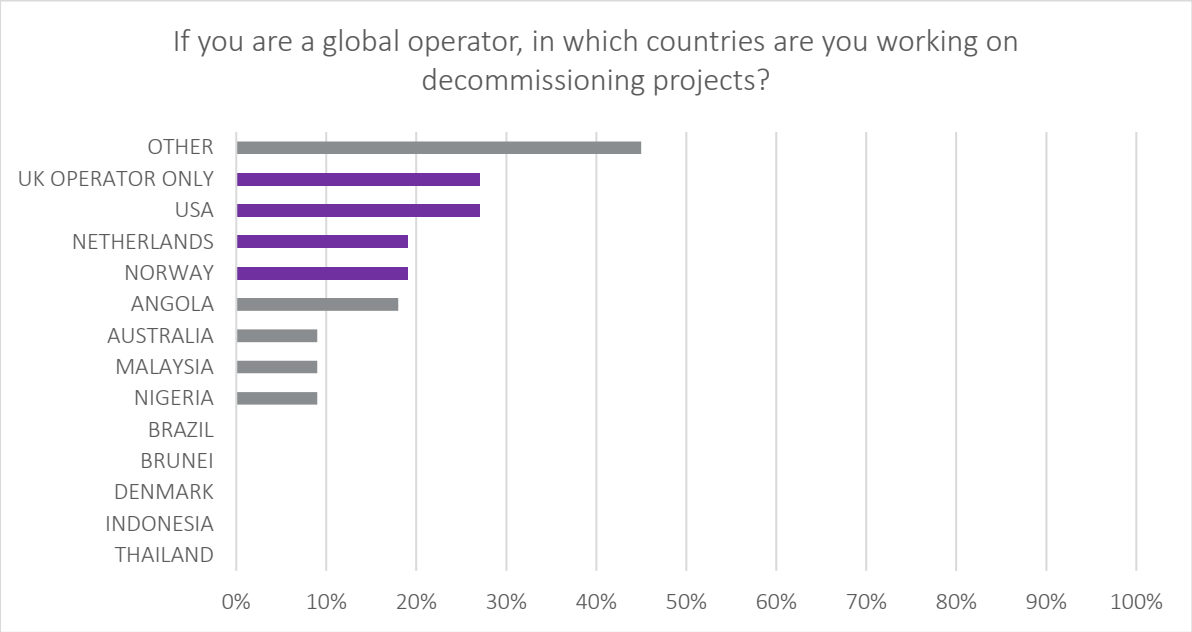

Figure A - 8 - OGUK Call for evidence - Operator Survey – Where are you working?

The majority of contractors responding to our survey (63%) stated that they have worked on decommissioning abroad and 55% of the respondents stated they are working on decommissioning projects out with the UK currently (Figure A - 9).

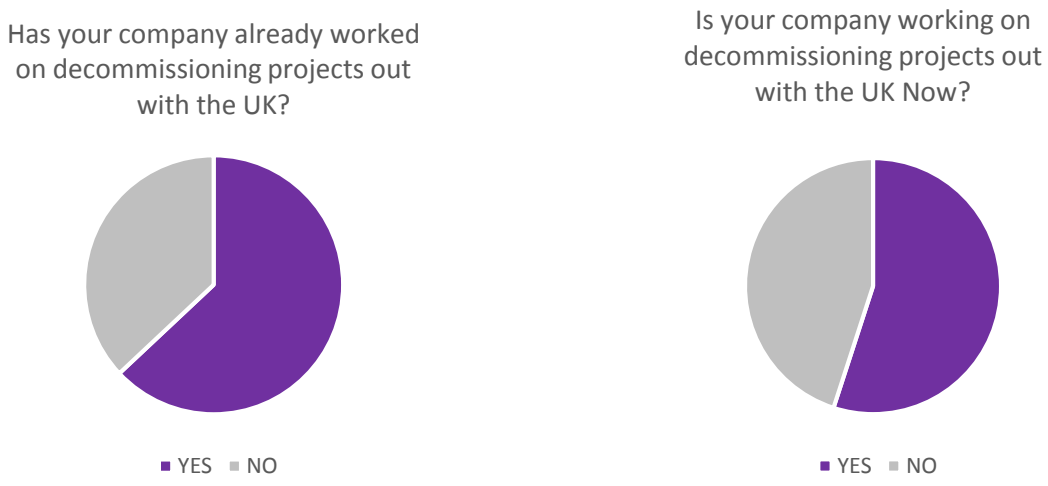

Figure A - 9 - OGUK Call for evidence - Contractor Survey – What experience do you have decommissioning in foreign markets?

Operators with UK presence confirmed that the majority of their decommissioning expenditure was within the UK North Sea, with 35% of respondents stating that under 10% of their company's expenditure is decommissioning abroad. 26% stated that only 10-30% of their decommissioning expenditure is outwith the UK.

However, there were still a relatively high number of operators who stated that a large portion of their decommissioning expenditure occurs outside the UK. A quarter of our operator members responding to the survey stated that 50-70% of their expenditure is abroad and 7% stated that over 70% of their decommissioning expenditure is abroad (Figure A - 10).

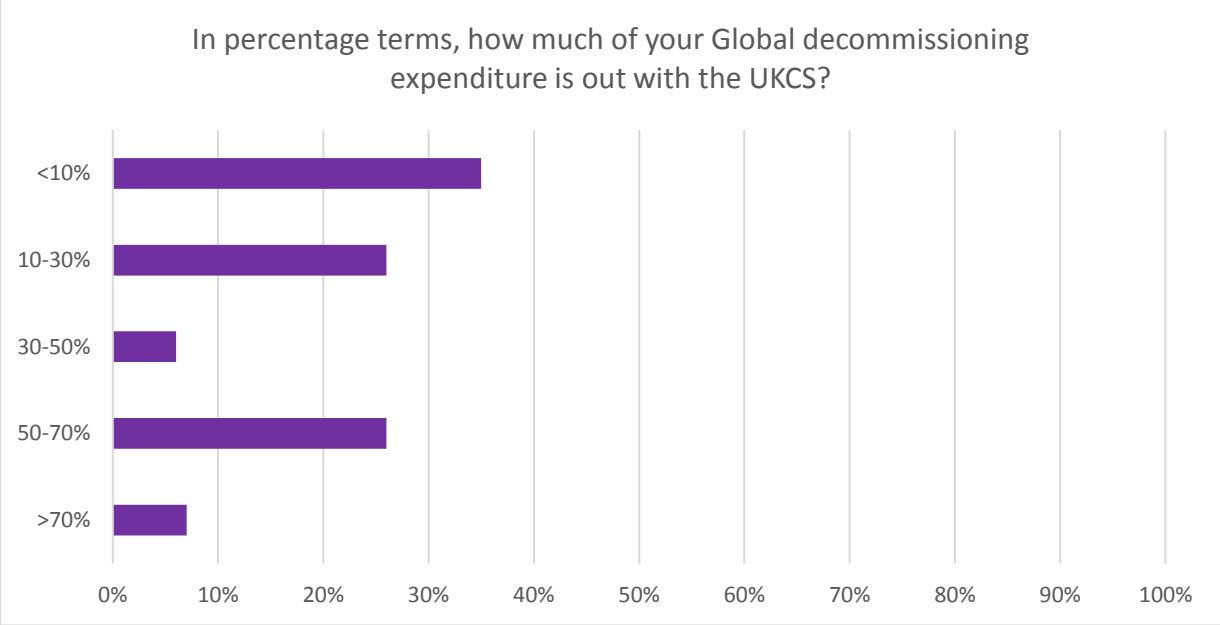

Figure A - 10 - OGUK Call for evidence - Operator Survey – How much of your global decommissioning expenditure is in the UK?

We asked our contractor and operator members to state the top 3 things the OGA could do better to help the industry. The results are shown in word cloud form in Figure A - 11. Access to data, more transparency and better benchmarking were the top 3 submissions in this survey.

Figure A - 11 - How can the OGA help?

oilandgasuk.co.uk

OGUK is the leading representative organisation for the UK offshore oil and gas industry.

Our membership includes around 400 organisations with an interest in the UK's upstream oil and gas sector. As the champions of industry, we work on behalf of industry and our members to inform understanding with facts and evidence, engage on a range of key issues and champion the broader value of this sector in a changing energy landscape.

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