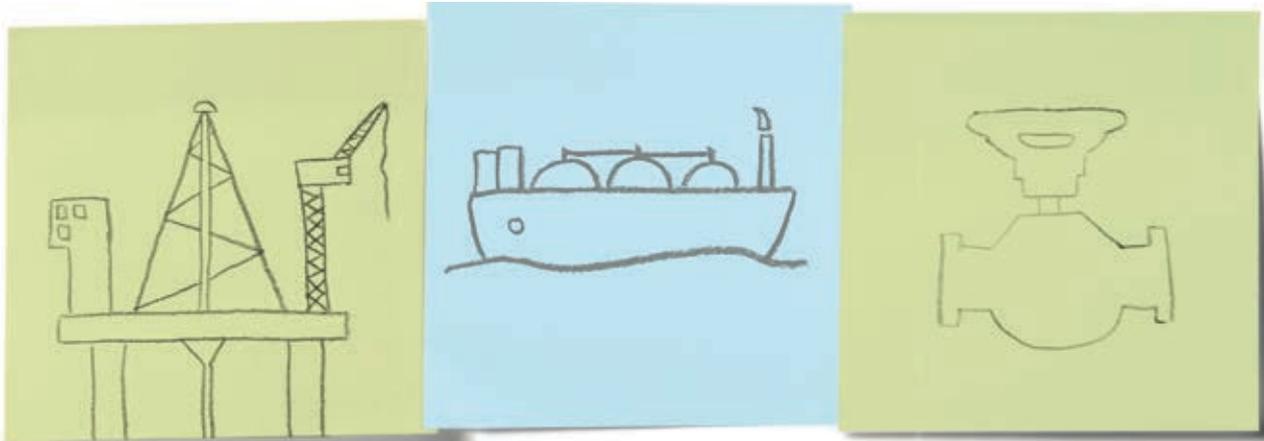


Outlook for oilfield services

Cautious optimism



Executive summary

Cautious Optimism

This is a forward-looking report. Its purpose is to obtain companies' views of their current business environment and where they think the market is heading, both in the short and long term. The report also focuses on the major factors limiting expansion and what will make a company successful in the future.

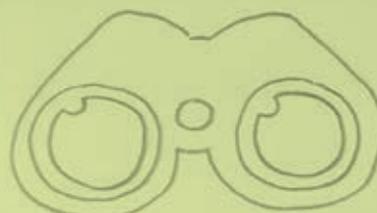
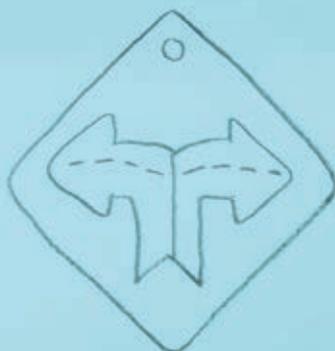
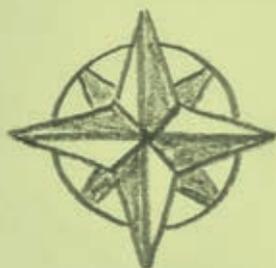
The interviews Deloitte conducted with industry executives in the UK suggest that against the backdrop of customer capital expenditure constraints and despite recent project warnings, services companies are cautiously optimistic about the current operating environment. This sentiment is driven by consistently high crude oil prices, a robust demand outlook for hydrocarbons and the potential of the National Oil Company as a major customer. Some companies that are exposed to the United States shale boom are continuing to enjoy its success. Access to finance has also not been an issue.

However, oilfield services companies face a number of challenges. Cost control pressures on the part of the oil and gas operators and talent shortages are the most pressing with the oil and gas sector's cautious approach to innovation and regulatory challenges following closely behind.

In the near term, oilfield services companies will continue to focus on opportunities in the UK and Norwegian Continental Shelves and the area west of Shetland. Outside Europe, Southeast Asia, West and East Africa, and the Falkland Islands are considered promising but oilfield services companies have mixed views about the US shale market. Although some have successful operations in Russia, China, India, Brazil or the Middle East, many do not consider these priority markets in the short term. All oilfield services companies expect consolidation in the market in the next few years.

The top five factors that would stop companies from expanding include deteriorating market conditions, political risk, a complex regulatory environment, brand credibility and competition. Longer-term barriers to the sector's expansion could be increasing demand-side efficiencies and a lack of political will to develop unconventional resources.

Over the long term, interviewees do not expect major structural changes in the industry. Rather, they believe that the sector will be more automated and efficient, share more risks with its clients, and enter into more increasingly collaborative arrangements. The successful oilfield services company of the future will be global yet act local; it will be diversified yet focused on core functions and it will be a good employer and a good global citizen. Companies believe that deepwater, decommissioning, some marginal frontier regions and shale outside the US could provide the sector with some new opportunities in the long run.



1. Where are we now? Current opportunities and challenges



Against the backdrop of customer capital expenditure constraints and despite recent profit warnings, most oilfield services companies are cautiously optimistic about the current operating environment. This sentiment is driven by consistently high crude oil prices, a robust demand outlook for hydrocarbons and the potential of the National Oil Company as a major customer. Some companies that are exposed to the US shale boom are continuing to enjoy its success. Access to finance has also not been an issue. However, oilfield services (OFS) companies face a number of challenges. Cost control pressures on the part of the oil and gas operators and talent shortages are the most pressing with the oil and gas sector's cautious approach to innovation and regulatory challenges following closely behind.

1. Positive factor: Short- and long-term crude oil prices consistently above \$80 per barrel

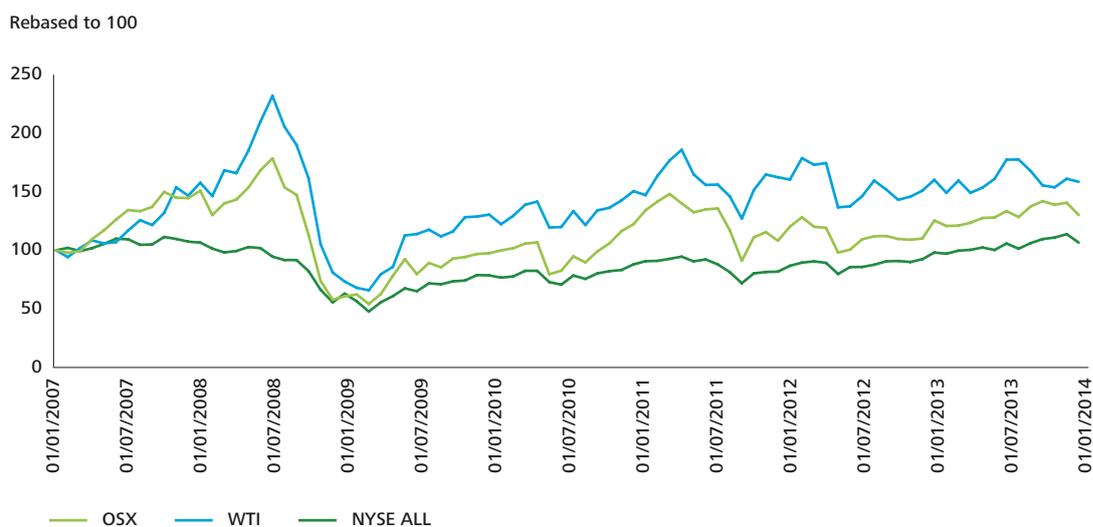
The OFS sector's performance is more closely linked with crude oil prices than with general market price movements (see Figure 1). This is because long-term expectations of hydrocarbon prices drive the level of oil & gas (O&G) operator capital spending. This, in turn, determines their need for oilfield services.

OFS companies consider the historically high crude oil prices as one of the most important positive factors for their current operations. However, opportunities will only materialise if spot prices and long-term crude oil forecasts stay above \$80 to \$100 per barrel.

Investment decisions are typically based on the estimated cost of producing the hydrocarbon resource plus the expected Internal Rate of Return. In the long term, oil prices will reflect the marginal cost of production. Based on cost curve analysis, most industry specialists argue that the market balance currently is somewhere between \$80 and \$100 per barrel. If crude oil prices were to drop below \$80 per barrel, or where the marginal cost of producing a barrel of oil becomes too high for a sustained period, operators would look to reduce production and delay or abandon planned projects.

While short-term fluctuations in commodity prices do not have a major impact on the rationale of capital investment, commodity price shocks can still cause project start-up delays, with the consequent negative effect on OFS company earnings.

Figure 1. Philadelphia Stock Exchange oil services index (OSX) relative to West Texas Intermediate (WTI) and the New York Stock Exchange All Shares index (NYSE ALL)



Source: DataStream

2. Positive factor: Robust future demand for oil and gas continues to drive OFS spending

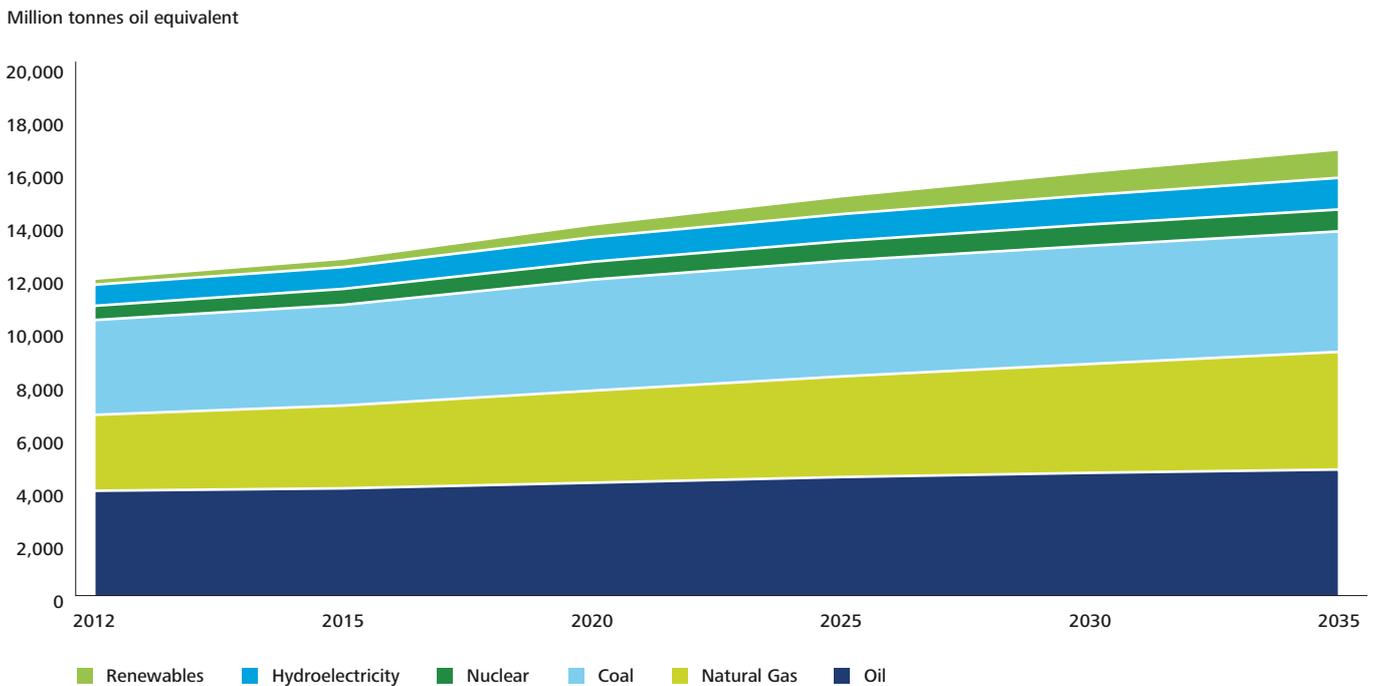
Another reason why OFS companies are cautiously optimistic about the market is the positive short- and long-term outlook for global hydrocarbon consumption. As Figure 2 shows, demand for hydrocarbons is expected to increase. According to *BP Energy Outlook to 2035*, combined hydrocarbon consumption was 7,118 million tonnes of oil equivalent (mtoe) in 2012. This is projected to increase to 9,598 mtoe by 2035, equivalent to a growth rate of 35 per cent. The increase in demand is due to projected growth in consumption from emerging economies.

In the UK, Department of Energy and Climate Change projections for 2013 show that oil and gas will continue to make up over 70 per cent of the UK’s primary energy mix to 2030. Currently, the UK Continental Shelf (UKCS) provides 66 per cent of the UK’s oil needs and 50 per cent of its gas needs.¹

In addition to the growing demand, an increasing percentage of offshore projects will be located in greater water depths and in new geological, geographical and technical frontiers. These will drive demand for specialist equipment and skills.

At the same time, the O&G industry faces the rapid decline of mature assets in certain O&G provinces. For example, the number of fields in the UKCS has grown from 90 to 300 in the last two decades.² However, the average size of new fields dropped from 248 million barrels of oil equivalent (boe) in the ten years from 1966 to just 26 million from 2000 to 2008.³ Today 90 per cent of fields produce less than 15,000 barrels per day (bpd), a small portion of the 500,000 bpd that the Forties field produced in the 1970s. Current fields require higher levels of capital investment to maintain production. This is reflected in Oil & Gas UK’s *Economic Report 2013* estimate for record-high investment of £13.5 billion in the North Sea in 2013.⁴ Therefore, there is a continued need for technologies to maximise development, recovery and production efficiency through drilling, stimulation and enhanced recovery techniques in these fields.

Figure 2. Global energy consumption by fuel



Source: BP Energy Outlook to 2035

OFS companies also noted that their customer base is slowly shifting from International Oil Companies to National Oil Companies.

3. Positive factor: A customer with a growing appetite – the continued rise of the National Oil Company

OFS companies also noted that their customer base is slowly shifting from International Oil Companies (IOCs) to National Oil Companies (NOCs).

NOCs are growing in size, number and influence. The International Energy Agency's *World Energy Outlook 2013* notes that NOCs and their host governments today control some 80 per cent of the world's proven and probable oil reserves.⁵ Their share is expected to continue growing in light of their foreign expansion plans. According to the *Petroleum Intelligence Weekly's* Top 50 Oil Companies in 2013, four out of the top five and half of the world's top ten largest oil companies were NOCs.⁶

But more importantly for the OFS sector, NOCs are the biggest spenders in terms of capital expenditure. The 'Barclays Supermajors' list shows that of 15 O&G operators that spend over \$15 billion globally, eight are NOCs. Their capital spending is expected to grow by over 11 per cent internationally in 2014, compared with two per cent growth for IOCs during the same period.⁷

From a UK perspective, NOCs and sovereign wealth funds are overtaking banks and stock exchanges as the main source of upstream funding. For example, Abu Dhabi's TAQA, China's CNOOC and Sinopec, and the Korean National Oil Corporation have all bought assets in the North Sea in the past three years.

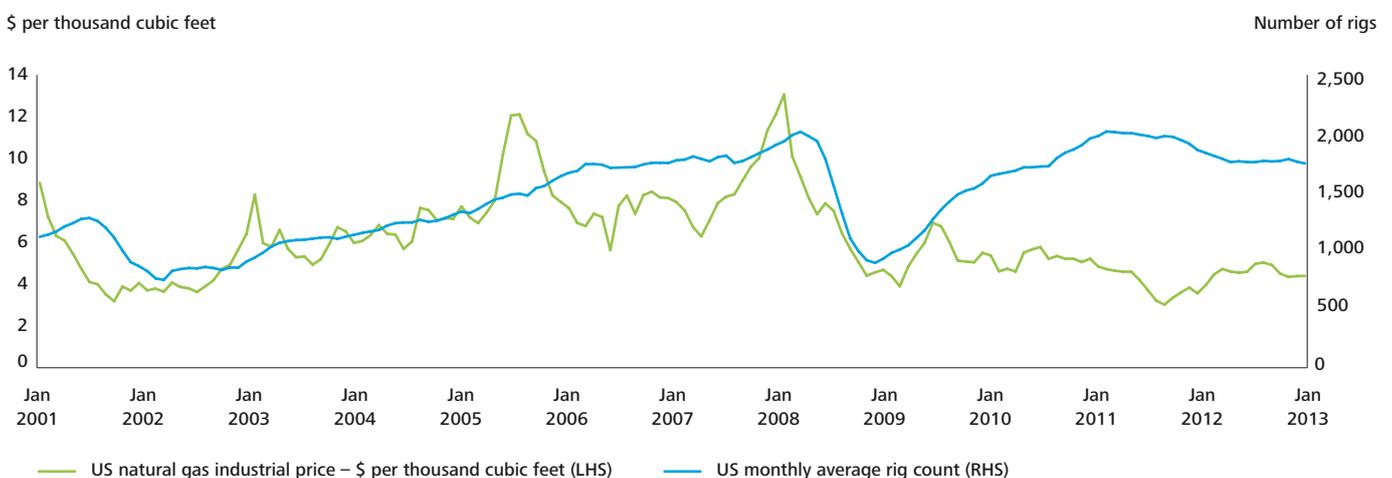
Because of the high proportion of their ownership and spending ability, NOCs are a powerful force. They also present OFS companies with a challenge. IOCs and the majority of independent operators are European or North American companies and share common cultures, and technical and engineering skills with OFS companies. However, most NOCs have widely differing technical expertise and strategic objectives. Some NOCs have also become more active in developing assets or investing in research and development (R&D). OFS companies that find the right NOCs, and are able to devise a plan for closer engagement, could be in a better position to establish longer-term relationships with them. These could open up further opportunities for investment and collaboration.

4. Positive factor: The impact of the shale revolution continues, although at a slower pace

The exploitation of unconventional resources has had a profound political and economic impact both in the US and other parts of the world. The 'unconventional revolution' is expected to turn the US from a net importer of energy to a net exporter by around 2018, making the country less reliant on Canadian, Middle Eastern and South American fuel.

Figure 3 shows that since early 2010 US natural gas industrial prices have been hovering at levels not seen since 2002. Lower energy prices are paving the way for the renaissance of the US manufacturing sector. This raises concerns over the competitiveness of Europe and some Asian countries. Many leading manufacturers are now considering shifting production from Europe to the US to take advantage of lower energy costs.

Figure 3. US natural gas industrial price and US monthly average rig count



Source: US Energy Information Administration and Baker Hughes North America Rotary Rig Count Archive, US Monthly averages by state

The shale revolution is 'dislodging' part of the well-established O&G supply chain and has implications for the downstream and midstream sectors.

In addition, lower feedstock costs are helping revive the US petrochemicals industry.

Unconventional resources are also changing the way many O&G and OFS companies think about their asset portfolios. Investments by O&G and OFS companies in Canadian oil sands now look less attractive. At the same time, the shale gas revolution challenges the way gas is monetised and increases the appetite for technological innovations. Rig count is an important barometer for the health of both onshore and offshore drilling and their supply chain. As Figure 3 shows, rig count grew significantly in the US between 2001 and 2013. Many OFS companies benefited from early stage involvement in US shale gas developments. However, a number of interviewees now believe that the shale gas boom has passed its peak and are not reallocating resources with the same magnitude that they once did. Nevertheless, the market will continue to play an important role in their project portfolio for another five to seven years.

In the UK, OFS companies are waiting to see how the shale gas debate develops. Nearly all believe that fracking could provide major opportunities for O&G operators and the OFS companies. The country has the resources, the industry and the Government are keen, and technology is readily available. Some companies believe that most of the impact will be felt in the supply chain and the surrounding communities in terms of infrastructure investments. However, there is still some way to go in terms of planning and regulatory changes to allow the industry to develop. For these reasons major drilling activity is not expected to commence in the near future, despite what the media may suggest.

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5. Positive factor: Financing

While the availability of financing is an important factor, the vast majority of the top global and mid-tier companies indicated that access to funding has not been a significant issue over the past year. Financial markets and banks have reassured OFS companies that they would consider lending to them. Therefore, these companies are now focusing on getting the best deal from the wide range on offer.

In contrast, smaller companies more often turned to private equity for finance rather than sourcing funding from banks or the financial market. This, was also available for most companies Deloitte interviewed.

In general, investors seem to be interested in the OFS sector. This is because they can access the O&G sector without being exposed to the volatility that smaller O&G exploration and production companies face.

6. Challenge: Oil & Gas operator focus on cost control

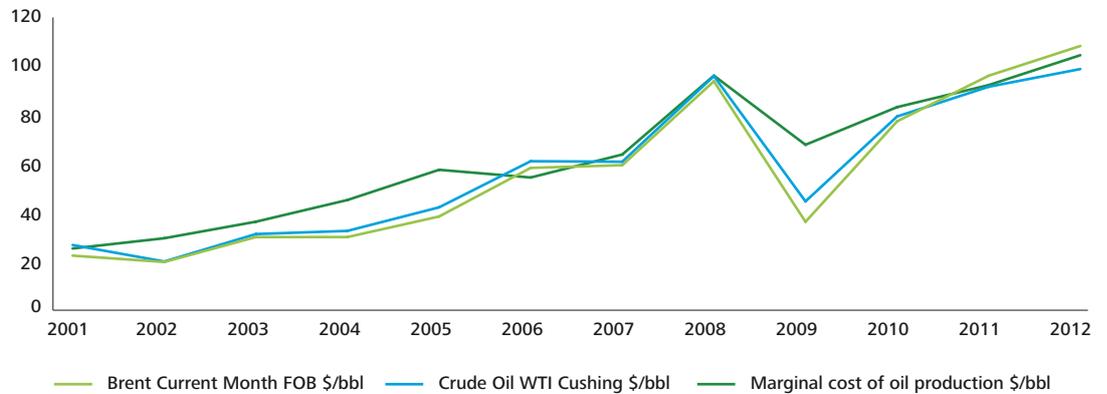
Interviewees have commented on an increasing O&G operator focus on capital and operating expenditure cost control.

Commodity prices have been high since early 2010. For the third consecutive year, the Brent crude spot price averaged above \$108 per barrel in 2013. In its December 2013 note, Barclays forecast that global exploration and production capital expenditure would reach record levels of \$723 billion in 2014, up 6.1 per cent from \$682 billion in 2013.⁸

Figure 4 shows that project costs have been steadily increasing for the past decade. According to reports by Sanford C. Bernstein & Co, the Wall Street research firm, the marginal cost of non-OPEC and Former Soviet Union production grew at a 13 per cent Compound Annual Growth Rate (CAGR) over the last ten years and reached \$104.5 per barrel in 2012.⁹

Cost rises result from oil majors having to move to more challenging and politically riskier parts of the world. Higher employment costs and the increasing complexity of projects are also contributing to the rise in overall costs. In addition, project delays and cost overruns are also becoming more frequent and larger.

Figure 4. Brent crude oil price (\$ per barrel) and marginal cost of production (\$ per barrel)



Source: Bernstein Energy, Financial Times and DataStream

A number of OFS companies noted that gas discoveries made up a higher proportion of discoveries over the past decade. Gas can be more expensive to transport and sell, and profits can be lower than in oil production.

Increasing exploration and production costs can put intense pressure on an operator’s margins. In addition, shareholders expect the same or higher level of dividend payments. The combination of these factors leaves little room for manoeuvre and is forcing O&G operators to cut capital and operating expenditure. A number of oil majors have recently announced that they will reduce capital spending in 2014, compared with 2013. Some operators have already started divestment programmes, while others are concentrating on projects with higher earnings potential.

The shift in O&G company attitudes towards cost reduction provides OFS companies with a new focus. OFS companies that provide technological solutions to reduce risks and lower costs for their customers will be best placed to maximise opportunities.

7. Challenge: Talent shortages to continue

Workforce issues were the most often cited external factors that have a negative impact on an OFS company’s performance. Most companies face challenges in recruiting staff in sufficient numbers with appropriate qualifications and experience. This not only applies to engineers but also to accounting and legal professionals with industry knowledge.

While most companies agree that attracting young graduates is not a major problem, some would like more young people to choose engineering careers.

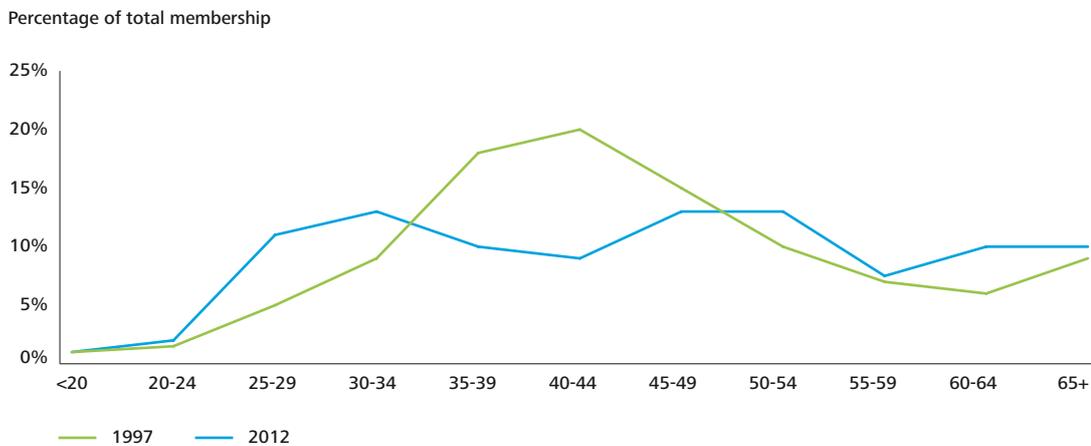
However, companies across the board are concerned about the shortage of engineers with 15-20 years of experience – engineers aged 35 to 45. This is also demonstrated by the membership demographics of the Society of Petroleum Engineers, an international organisation of managers, engineers and scientists in the upstream sector.¹⁰

Figure 5 shows that the composition of membership changed significantly between 1997 and 2012. Although the proportion of graduates and young engineers is higher than 15 years ago, the ratio of those aged between 35 and 50 has declined by almost half. This means that once engineers aged 55 to 65 retire – those with 20-30 years’ experience – a gap will develop for staff with experience in leading large and complex projects. This age group also has an important role in training the next generation of engineers.

Increased staff costs are not the only result of the shortage of skilled staff. The lack of trained staff can also make the delivery of some projects difficult or even threaten their viability. In some cases, the lack of a skilled workforce is also viewed as a potential barrier to company expansion. Therefore, companies are trying hard to stop employees from joining a competitor.

Companies are spending more on recruitment and training. Some are building long-term relationships with universities or technical colleges, while others regularly do university road-shows. Most companies have established training programmes, and some give specific engineering certificates that are well regarded in the industry. More companies also aim to set up apprenticeship programmes to attract graduates.

Figure 5. Society of Petroleum Engineers membership by age range



Source: Society of Petroleum Engineers

Some companies are broadening their talent search and are recruiting from regions with lower salary expectations. Countries where English is widely spoken, such as India, Thailand or Malaysia, are considered to be particularly attractive. Engineers from countries in southern or eastern Europe are also attractive because they are well trained. Some are looking at other sectors such as manufacturing or the military for potential candidates.

A number of interviewees raised concerns about Aberdeen’s capacity to continue accommodating the growing number of companies. Aberdeen has traditionally been considered as the O&G capital of the UK. The city has an ambitious development plan in place and needs to ensure that it continues to maintain its position.

8. Challenge: Oil & Gas industry’s cautious attitude to innovation

Hydrocarbon discoveries in the UKCS have been getting smaller since the 1990s. As a result, there is an increasing need for innovative technologies both to reduce the cost of developing these resources and increase production from declining fields. But, projects are getting more complex and capital intensive. In addition, the Deepwater Horizon accident may have made companies more risk averse. A number of interviewees believe that these factors make many O&G operators generally reluctant to be the first to adopt an unfamiliar technology, preferring others to take the initial risk. Shareholders also support risk aversion and are against potential short-term cost increases associated with the introduction of new technologies. The O&G industry is slower than other sectors such as pharmaceuticals or aerospace and defence to adopt new technologies.

The UKCS is considered particularly slow in this respect, or as one respondent aptly put it: “The UK rushes to be second”. According to Scottish Enterprise data, the O&G sector only invests 0.3 per cent of sales in R&D in the UK. This could explain why it takes longer for a technology to go from proof of concept to the market in the UK than the worldwide O&G industry average of 16 years.¹¹ In contrast, Norway is much quicker to adopt new technologies as the average time for concepts to enter the market is between six to ten years.

A number of interviewees noted that there is considerable activity in industry and research councils in the UK to promote deployment of existing technology and development of new technologies. Recently, Sir Ian Wood in his *UKCS Maximising Recovery Review: Final Report* said that the development and implementation of a technology strategy should be one of the proposed new regulator’s priorities.¹²

Interviewees also believe that this activity has to be more centrally coordinated, focused and accelerated. There is a need for more collaboration between O&G operators, OFS companies, academia and the regulator. The sector needs to be more incentivised to develop and adopt new technologies through grants and tax breaks. The automotive industry provides perhaps the best example of a sector which took advantage of government funding for R&D while being forced to adopt efficiency measures.

There is a need for more collaboration between O&G operators, OFS companies, academia and the regulator. The sector needs to be more incentivised to develop and adopt new technologies through grants and tax breaks.

9. Challenge: Regulatory environment

Another major external factor that has an impact on the OFS sector's performance and outlook is the O&G regulatory framework of host countries.

Regulatory certainty: A must Most OFS companies interviewed commented on the importance of a stable, predictable regulatory framework and tax regime. They are necessary to attract and retain investors, and are essential for the success of both current and future projects.

Commenting on the UK regulatory regime, most companies agreed that the relationship between the O&G industry and government has improved in recent years. However, some argued that recent tax changes make the system more complicated and are eroding the industry's trust in the regulator. Considering that the UK North Sea is already a high cost environment, these changes could have an impact on the region's attractiveness to investors.

There is a generally held view in the industry that tax incentives – for technical innovation or decommissioning for example – can not only make a material difference for individual companies, but could also raise the industry's profile and attract more investment in the sector.

Health and safety regulations: A positive differentiator? O&G operators in the North Sea Continental Shelf are required to adhere to one of the strictest health, safety and environmental (HSE) regimes in the world. Companies believe that such strict standards are both necessary and useful for the sector.

Some interviewees felt that being able to navigate complex HSE regulatory systems should be viewed as a competitive advantage. Strict HSE standards can act as a barrier to entry for companies with little experience of such regulations. Companies that maintain high standards could be considered attractive partners in markets where regulatory regimes are less evolved. However, in some of these markets western companies may be less competitive on a cost basis.

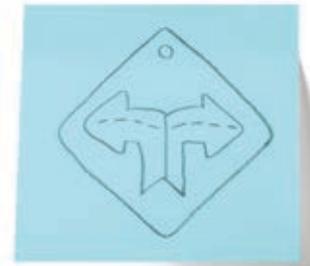
While the 2010 Deepwater Horizon accident did not result in a major tightening of HSE regulations around the world, the ensuing moratorium stopped operations in the Gulf of Mexico for six months. It also had a negative impact on the O&G industry's appetite for innovative technologies. Some of the supermajors have become more risk averse. More internal controls and slower decision-making processes make these companies more challenging customers for the OFS companies.

Increasing local content requirements International OFS companies are under increasing pressure from governments to employ a larger proportion of their workforce locally. While most companies understand the reasons for such measures, they admit that the measures can significantly reduce the attractiveness of projects where a skilled workforce is not readily available. Therefore, tax support and incentives may be a good way to encourage foreign companies to employ more people locally.

2. What is next? Short-term plans, developments and limiting factors

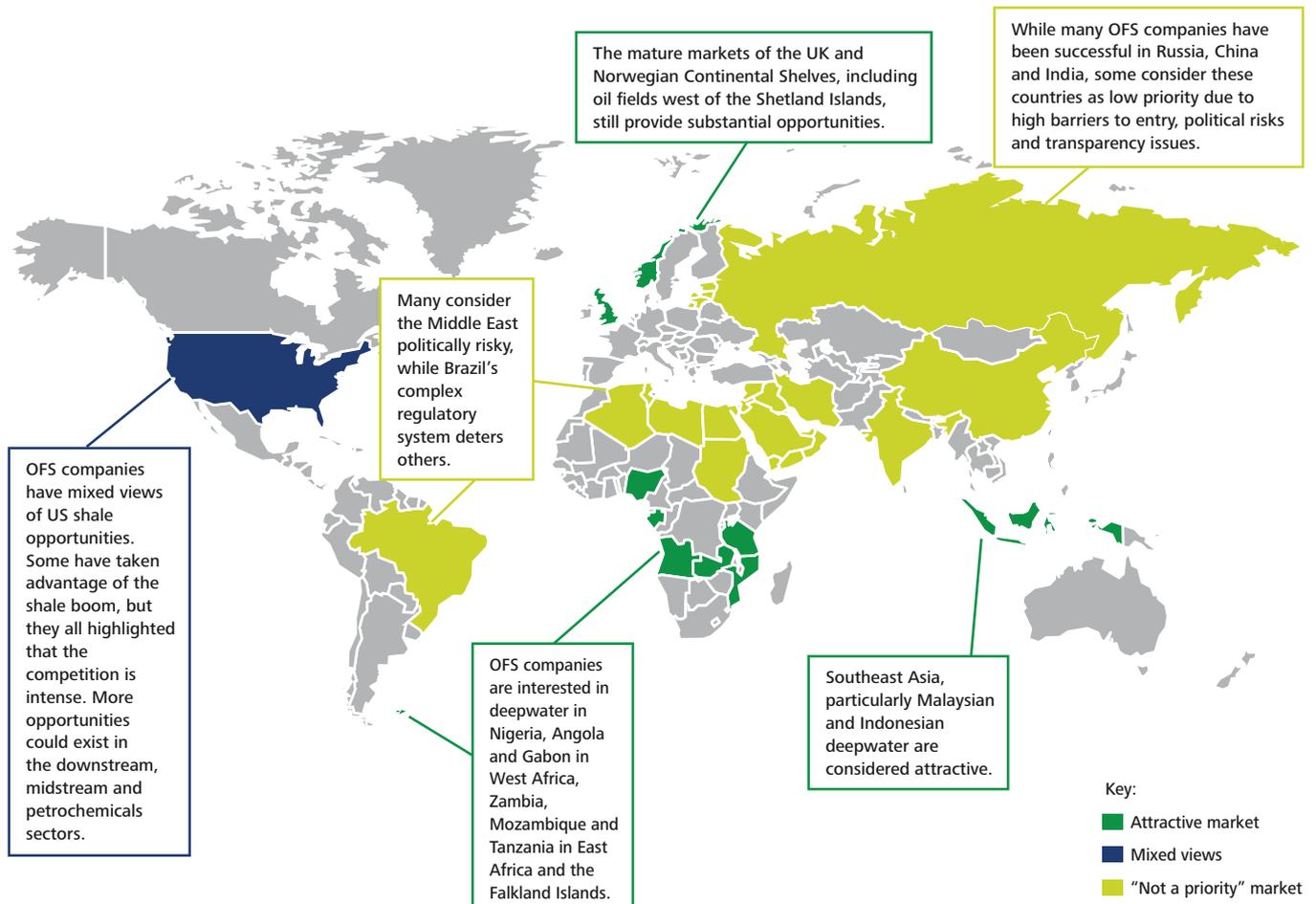
Interviewees told Deloitte that in the near term they will continue to focus on opportunities in the UK and Norwegian Continental Shelves and the area west of Shetland. Outside Europe, Southeast Asia, West and East Africa, and the Falkland Islands are considered promising but OFS companies have mixed views about the US shale market. Although many have successful operations in Russia, China, India, Brazil or the Middle East, some do not consider these priority markets in the short term.

All OFS companies expect consolidation in the market in the next few years. The top five factors that would stop companies from expanding include deteriorating market conditions, political risk, a complex regulatory environment, brand credibility and competition. Longer-term barriers to the sector's expansion could be increasing demand-side efficiencies and a lack of political will to develop unconventional resources.



1. Near-term market opportunities

Figure 6. World map of opportunities



All interviewees expect the strong M&A activity in the OFS services sector to continue in the near future.

2. Mergers and acquisitions: Further consolidation on the cards

There was robust mergers and acquisitions (M&A) activity in the OFS sector in 2013. According to *Deloitte Oil & Gas Mergers & Acquisitions*, there were more OFS deals in 2013 than the previous year but the transactions were smaller: the number of deals globally increased by 21 per cent to 104 in 2013 from 86 in 2012, but the value of transactions fell 25 per cent during the same period¹³. The report highlights that smaller acquisitions could be indicative of the desire of private equity to capitalise on the US shale boom.

All interviewees expect the strong M&A activity in the OFS services sector to continue in the near future. Most companies indicated that they are closely monitoring the market and waiting for the right opportunity to arise.

The main driver behind acquisitions continues to be vertical integration. Larger players will also keep on acquiring small, niche companies that provide specialist skills to expand their portfolio of offerings. The Deloitte report also indicated that small acquisitions dominated the M&A landscape in 2013.

The second most popular driver for M&A was access to new international markets.

A number of interviewees have mentioned the new trend of small companies being acquired for their attractive pipeline of orders. In recent years, a considerable number of small companies have been set up in the UK with readily available private equity funding. Some of these companies have built up an attractive pipeline of projects, which they could struggle to deliver. Such companies will attract interest from players looking to increase their customer base.

The US unconventional shale boom has resulted in a surge in the number of small companies offering services in the sector. This has led to intense competition and forced OFS companies to lower their prices. Many interviewees now believe that there are too many companies in the sector, and that this could lead to likely consolidation in the near future.

The recent profit warnings among both small and mid-tier companies were mostly due to lost or postponed contracts. These had a negative impact on share prices and could accelerate the speed of M&A activity in 2014.

3. Limiting factors in the short and long term

When asked what would prevent them from pursuing opportunities for further expansion, most interviewees listed the following factors.

Short-term factors

Deteriorating market conditions Top of the list is prolonged hydrocarbon price volatility or the long-term forecasts for crude oil dropping below \$80 per barrel. OFS companies also consider O&G operator focus on cost control and the shortage of skilled workers pressing issues that could affect expansion plans. In addition, O&G operators' conservative attitude towards innovative technologies was cited as a short-term barrier to development.

Political risk This is the second largest deterrent for OFS companies looking to invest in new markets. Most interviewees expressed concern regarding countries that lack hydrocarbon regulatory framework, have security problems or rapidly changing requirements that broadly fit under the 'resource nationalism' umbrella. Some would also like to see their companies' exposure to 'Arab spring' countries limited, almost all of which are important O&G producers.

Complex regulatory environment Complicated regulatory frameworks and tax regimes have been a major barrier to entry to new markets for many OFS companies. For example, Brazil's multi-layered planning, permitting and tax systems were singled out as being difficult to navigate for foreign companies.

Brand credibility Entering new markets is challenging. Interviewees said that O&G operators often prefer service providers that they have already worked with, or companies that have credentials in the market, rather than new entrants.

Competition from Southeast Asian countries

The low prices offered by some Southeast Asian companies caused a number of western OFS companies to lose out on attractive contracts, notably in the Middle East. However, given that some of these Southeast Asian companies have now announced profit warnings due to lower than expected returns, it will be interesting to see if this could benefit European OFS companies.

Acceptability of technology It is a significant concern for advanced technology and services provider companies. These interviewees noted that their products and services can appear more complex than needed and can result in lost opportunities. This can be a particular problem when local engineers are needed to assemble and operate their products. The local workforce, which may lack the necessary technical knowledge and skills, can damage or fail to operate equipment correctly.

Technological breakthroughs New devices and materials could change the OFS landscape. This is a major concern especially among the smaller, niche technology providers that have a narrow product portfolio.

'Black swan'-like events For example, another Deepwater Horizon accident could lead to additional regulations, drilling moratoria and reduced appetite for innovation.

Long-term factors

Lack of a route to customers Companies looking to enter new countries, such as China, often find it difficult to identify ways to promote their services. The easiest option is to partner with local businesses. However, there is also a concern that these local partners may not respect patent laws for technological solutions that OFS companies spent a considerable amount of money and effort in developing.

Lack of a regulatory framework to develop shale resources In many countries with considerable shale deposits there needs to be the political will to develop regulatory frameworks, which make the sector unattractive to investors.

According to a Deloitte report, high natural gas prices, technological advancement, and efficient supply chain, the availability of capital and favourable regulations (including land rights and ownership right of surface rights) were the main drivers behind the US shale revolution.¹⁴

Regulations for unconventional resources are already changing in China and Russia. Energy security concerns may also cause some European countries, where fracking is currently banned, to change their views.

Demand side efficiencies that reduce demand for hydrocarbons could also limit the expansion of the sector. For example, increasing fuel efficiency in transport and industrial processes, combined with a population decline in developed countries resulted in demand remaining flat for petroleum and other liquids over the past decade.

According to the Energy Information Administration's (EIA) *International Energy Outlook 2013* forecast, the transport sector will account for the majority of demand growth for petroleum and other liquid fuels between 2010 and 2040.¹⁵ In Organisation for Economic Co-operation Development (OECD) countries, energy consumption for transport is expected to decrease by 0.1 per cent on average per year between 2010 and 2040. In contrast, non-OECD transport sector energy consumption is forecast to increase by 2.2 per cent on average per year in the same period. But the electrification of cars could be a silent revolution that creeps up on the O&G sector. The rapid uptake of hybrid engines, especially in the emerging countries could also put significant pressure on future demand.

3. Looking further ahead



Over the long term, interviewees do not expect major structural changes in the industry. Rather, they believe that the sector will be more automated and efficient, share more risks with its clients, and enter into more increasingly collaborative arrangements.

The successful OFS company of the future will be global yet act local; it will be diversified yet focused on core functions and it will be a good employer and a good global citizen.

Companies believe that deepwater, decommissioning, some marginal frontier regions and shale outside the US could provide the sector with new opportunities in the long run.

1. What will the OFS sector of the future look like?

More of the same Most interviewees do not envisage fundamental changes in the structure and way in which the industry operates. They expect continued consolidation (larger companies acquiring smaller ones), some new players, as well as some casualties along the way.

More technology and automation Many companies expect the sector to become more technologically advanced with a larger proportion of services and products provided remotely.

More efficiency Some interviewees believe that austerity measures undertaken by O&G operators will force OFS companies to become leaner and more efficient. This could lead to more synergies and rationalisation, non-core activities being outsourced, more dynamic workforce planning and increased use of technology.

More risk taken While some O&G operators are keen to retain control over project risks, an increasing number are putting pressure on OFS companies to share more of the risk. Some interviewees think that more clients will challenge the current industry practice of charging for services regardless of the overall success of the project.

More new forms of collaboration and ownership

Some interviewees expect innovative forms of collaboration to emerge in the industry. With the increasing size and influence of the NOCs, new opportunities are opening up for closer collaboration with OFS companies. For example, NOCs may increasingly find it easier to collaborate with OFS companies directly and avoid production sharing with IOCs. This would allow NOCs to retain control over reserves, which has been a top priority for them.

2. What will the successful company of the future look like?

Global ... All interviewees believe that the successful OFS company of the future will have a more global reach both in terms of markets and workforce. It will be flexible and comfortable operating in a number of petroleum provinces. More of its employees will be recruited locally in countries where it operates. In addition, its workforce will be more connected and mobile.

... **yet local** Despite its global presence, the successful OFS company will look and act local. This is to emphasise that it is building a long-term presence in the country.

Diversified ... It will be diversified and integrated, and will have a comprehensive portfolio of products and services.

... **yet focused on core functions** A number of interviewees commented on the need for increasing efficiency, which will lead to companies focusing on what they do best and divesting non-core functions.

A good global citizen and a good employer

The successful OFS company will adhere to international transparency regulations and strengthen its efforts to accommodate the personal and professional preferences of its workforce.

3. Long-term opportunities

Deepwater On a longer time horizon, a number of OFS companies view deepwater as a particularly attractive sector.

Deepwater accounted for more than 50 per cent of conventional new reserves added between 2007 and 2012.¹⁶ Substantial discoveries were made in the Gulf of Mexico, Brazil, West Africa (Angola and Ghana), East Africa (Tanzania and Mozambique) as well as the Mediterranean (Israel and Cyprus). With most of these currently in the discovery, appraisal or development phase, the proportion of oil produced from deepwater fields is expected to grow significantly. The IEA's *World Energy Outlook 2013* estimates that Brazil's offshore oil discoveries will triple oil production to six million barrels per day by 2035.¹⁷ This will make the country the sixth biggest oil producer in the world.

Deepwater projects are among the riskiest and most technologically complex in the industry. As a result, they are extremely capital intensive and typically take five to eight years to bring into production.

Most interviewees believe that the sector will provide opportunities for those engaged in the deepwater supply chain. For example, a September 2013 report from Barclays noted that although the number of drilling rigs for deepwater and ultra-deepwater is increasing, the balance of demand and supply is very tight.¹⁸ In August 2013, the global ultra-deepwater fleet included 131 rigs and reached a 100 per cent utilisation rate. In the same period, the global deepwater fleet averaged 52 rigs with utilisation at 88.5 per cent.

Although considerable technological progress has been made, OFS companies believe that there is still much scope to reach greater depths and make production more cost effective. For example, technological innovation is required to deal with extreme pressure and high temperatures. Finding technological solutions could open up further opportunities for OFS companies.

Decommissioning A number of interviewees think that decommissioning in the UKCS could offer substantial opportunities.

The North Sea is a mature petroleum province with about 470 installations, 10,000 kilometres of pipelines and approximately 5,000 wells to plug and abandon.¹⁹ According to Oil & Gas UK, the UK industry trade body, decommissioning expenditure could reach £35 billion by 2040. It also expects decommissioning expenditure to average £1 billion per year for the rest of this decade. With many assets reaching or passing the end of their design life, it is getting more expensive and less profitable to maintain them. These factors make decommissioning an exciting new market for many OFS companies.

While many interviewees believe that the decommissioning market will provide opportunities, these will be spread over a longer term. This is because high crude oil prices and improved recovery technologies encourage O&G operators to extend the life of assets. With decommissioning being a major expense, assets owners hope that cheaper ways to retire assets will be found in the future. In addition, the Decommissioning Relief Deed could further delay decommissioning activity. The Deed was announced as part of the 2013 Budget. O&G operators welcomed the proposed legislation because it is intended to lock in current rates of decommissioning tax relief through contracts between the UK government and the licensees.

Frontier regions OFS companies also think that some frontier regions where high political risk at present discourages investment could open up in the future. These include Mexico where recent regulatory changes are paving the way for foreign companies. Interviewees also mentioned that East African countries, such as Somalia, Iraq/Kurdistan, Iran and Libya could see an influx of foreign investment.

A number of those interviewed also believe in the potential of the **Arctic** as the next frontier. The region is attractive to many OFS companies because of the engineering complexity associated with projects. However, much progress needs to be made before hydrocarbon production becomes economically viable in the region. For example, there is a need for technological innovations to deal with the harsh environment and deep waters. In addition, regulatory changes are required to ensure the health and safety of the operations, minimise environmental risk and reduce the operations' impact.

A number of interviewees think that decommissioning in the UKCS could offer substantial opportunities.

Depending on how quickly the regulatory landscape develops, unconventional resources could have a bigger impact in China and Russia.

Unconventional resources worldwide While the US unconventional sector continues to flourish in the short and medium term, interviewees wondered how quickly and to what extent the shale revolution could be replicated in other parts of the world. Considering the slow progress in some European countries and the ban on fracking in others, it is unlikely that shale gas and oil will take the continent by storm.

Depending on how quickly the regulatory landscape develops, unconventional resources could have a bigger impact in China and Russia. In an attempt to reduce air pollution from coal-fired power stations, China's five-year plan set the country's shale gas production target at 6.5 billion cubic meters by 2015 and 60-100 billion cubic meters by 2020. Many in the industry believe that the country will miss these targets due to the lack of government incentives. Therefore, they welcomed the October 2013 announcement by the National Energy Administration (NEA) that promised increased fiscal support including reduced taxes for explorers and producers. The NEA also urged increased cooperation with foreign companies for technological know-how.

Russia holds the largest deposits of technically recoverable shale oil in the world – approximately 75 billion barrels of oil according to the EIA. To replace its depleting conventional oil reserves, Russia is keen to unlock the potential of this shale oil. This is the main driver behind recent tax reforms designed to encourage the use of technologies required for unconventional oil production. The new incentives led Rosneft, the state oil company, to form a joint venture with Norway's Statoil at the end of 2013. The joint venture is aimed at assessing the Domanik shale formation's potential for commercial production.²⁰

Conclusions

Based on our interviews, O&G companies are cautiously optimistic about their current business environment despite recent profit warnings and customer capital expenditure constraints.

The O&G sector is expected to grow. This is because of the robust outlook for hydrocarbons, increasing project complexity and potential new markets.

However, the industry also needs to overcome a number of challenges. The most pressing are the operators' focus on cost control, talent shortages, the O&G industry's cautious approach to innovation and regulatory challenges.

The recommendations of Sir Ian Wood's *UKCS Maximising Recovery Review* could help address some of these challenges. The report advocates closer collaboration between the government and the O&G sector to boost economic recovery of oil and gas resources. Its main recommendation calls for the establishment of a new regulatory body with increased resources.

O&G companies that concentrate on helping their clients operate both cost effectively and efficiently are best placed to meet the challenges and take advantage of opportunities as they arise. Such companies are likely to have a fresh strategic approach that will include innovative forms of collaboration with their clients, a focused product portfolio, global reach and a lean operating structure.

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