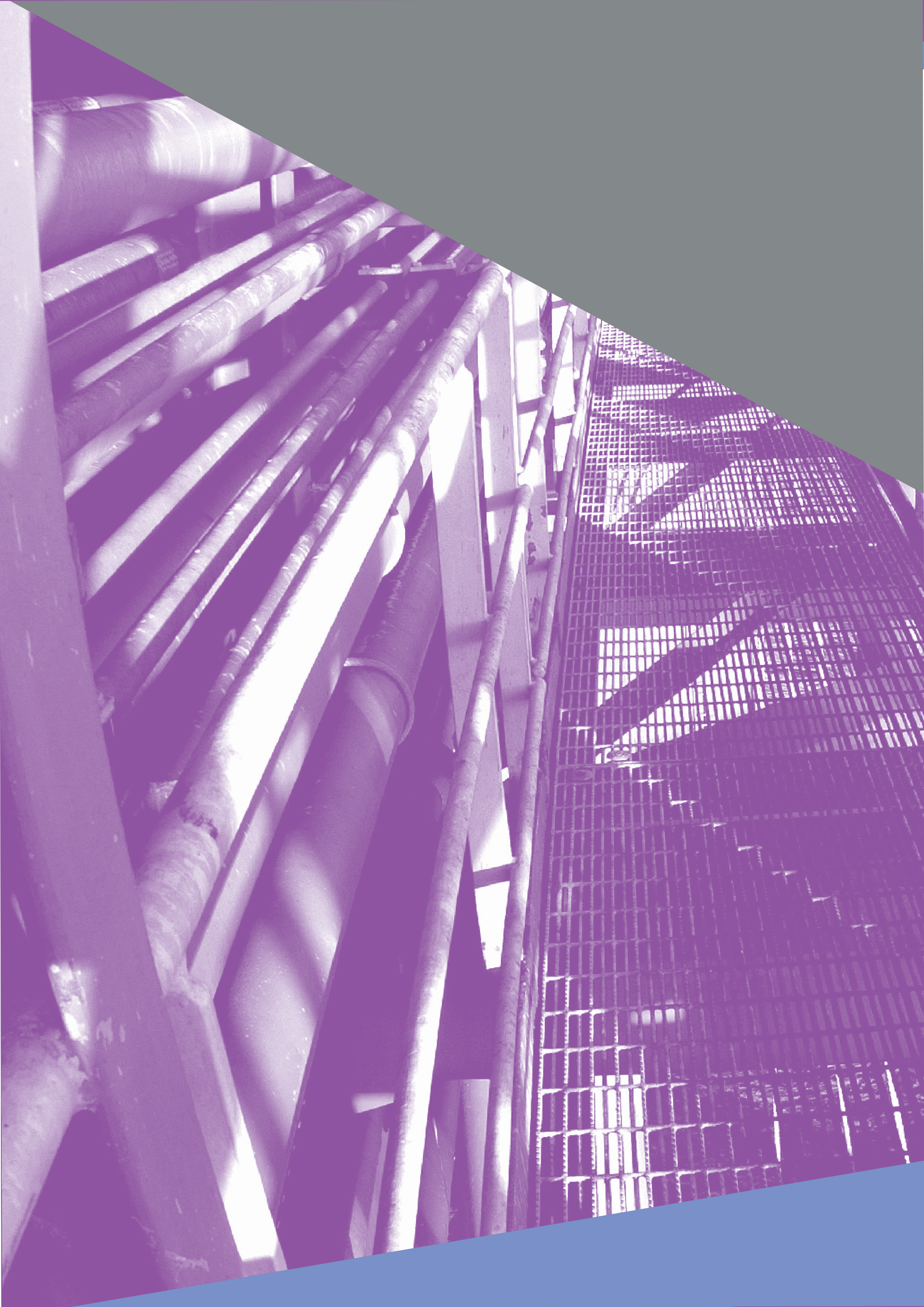
OIL&GASUK

BUSINESS OUTLOOK 2017



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1. Foreword

Welcome to Oil & Gas UK's 2017 *Business Outlook*, the new report from the UK offshore oil and gas industry that reflects on the sector's past performance and assesses its future prospects. The information that forms the basis of this report is provided by our members from across the industry, uniquely positioning us to set out the business outlook for the whole sector.

2017 will be a critical year for the industry as companies look to consolidate and build upon the cost and efficiency gains secured in the last two years. The upturn in oil price has coincided with signs of confidence slowly returning to the basin. This is led primarily by the exploration and production companies who, for the first time since 2013, may collectively see a return to positive cash-flow, provided costs are kept under tight control and commodity prices hold.

The industry's drive to improve competitiveness through its cost and efficiency focus has had a significant impact. Within two years, the sector has halved its average unit operating costs, from $29.70 per barrel to $15.30 per barrel, while at the same time safely increasing oil and gas production. UK offshore oil and gas output has risen by a further 5 per cent in 2016, and should continue to rise over the next two years as long as new fields come on-stream in a timely manner and improved production efficiency on existing assets is maintained.

Crucially, there are also signs that capital efficiency is improving. For example, robust upfront design and planning and improved drilling efficiency have helped remove around $500 million (15 per cent) from the development costs of the landmark Culzean field since it was sanctioned. The development costs of new projects being sanctioned are now averaging half of those approved in 2013 and are expected to fall further in 2017, reflecting the broader improvements in capital efficiency and the investment constraints imposed by current commodity prices.

The new lower cost base is critically important for the industry's future in the UK. The adjustment has been painful, resulting in significant job losses and average supply chain revenues falling by over 30 per cent in the last two years. It has however been necessary to help the UK Continental Shelf (UKCS) demonstrate that it is again becoming a region that can compete globally against the best, both for inward investment and the export of British oilfield goods and services.

Acquisition and divestment activity during the early months of 2017 may be read as another positive indicator. UKCS asset and corporate deals worth almost $4 billion have been announced, a strong signal of the attraction the basin still holds for investors and a sign of confidence in its future.

Exciting new opportunities still exist on the UKCS. It is encouraging, for instance, to see Hurricane Energy intent on getting investment approval for part of its Lancaster Area development this year. The project could open up a whole new hub in the west of Shetland region, the area with the most untapped resource potential. Likewise, drilling in the southern North Sea by BP and Perenco could unlock a new carboniferous opportunity. Equally encouraging is how the Efficiency Task Force's Subsea Standardisation Group has been working with companies like Chevron and Centrica to identify more cost-effective ways to bring small pool discoveries into production.

However, despite these positive signs, 2017 is still likely to be tough for many businesses across the UK supply chain. Total expenditure on the UKCS fell to £17.2 billion in 2016 from a peak of over £26 billion in 2014. Investment is forecast to fall further in the years ahead as the industry continues to adjust to the challenging business environment and fields currently in development come on-stream.

Last year, only two new field development plans were approved, with less than £500 million of associated capital. Similarly, there has been little new brownfield investment, reflected in the fall in development drilling by a third in 2016. The number of new field approvals is expected to increase this year, bringing a possible £1 billion or more of fresh capital into the basin. There are also a number of multi-billion-pound investment opportunities under consideration for approval in 2018 and 2019.

While producing assets will continue to provide operational and maintenance contracts for some companies, others, particularly those dependent on exploration and development activity, are still clearly under extreme pressure. It may be some time before there is any material upturn in investment in exploration and new developments.

As a consequence, supply chain companies are increasingly reliant on overseas markets to offset the domestic shortfall. Exports of goods and services are expected to be around £12 billion in 2017. Although they have fallen by £4 billion since 2014, reflecting the contraction in global spend, they are expected to account for 43 per cent of supply chain revenues this year, demonstrating the importance of our international markets.

Oil & Gas UK welcomes the opportunity to shape the UK Government's Industrial Strategy to ensure that our oil and gas sector, a UK industrial success story, is at the heart of domestic policy going forward. The insight included in this report will be used to respond to the consultation, but also to set out a strong business case for a sector deal for the oil and gas industry. Such a deal could establish the country's primary source of domestic energy supply as a priority within the strategy, attracting crucial investment in technology, infrastructure, skills and exports and so continue to contribute to the productivity and economic performance of the UK overall.

Our intent is to drive forward a case for specific actions from government, matched by commitments from the industry, that will secure a long-term future for our supply chain, exporting to the world but anchored in the UK. We look forward to testing our initial observations and suggested steps for a sector deal with our members before presenting it to government.

The UK oil and gas industry is a vital sector of the national economy. Its supply chain is a world leader in subsea technology and marine equipment design and manufacture, with unrivalled experience in maximising recovery from a mature basin. It also needs to ensure that decommissioning is managed in a way that maximises economic recovery, while providing the supply chain with the opportunity to develop a centre of excellence both nationally and internationally.

With up to an estimated 20 billion barrels of remaining hydrocarbons to recover, and with the right governmental support, the industry can continue to provide a secure supply of primary energy for many years to come, as well as high-value jobs, transferable technologies and wealth for the nation.

Deirdre Michie,
Chief Executive, Oil & Gas UK

2. Key Performance Indicators

Year-On-Year % Change	'13	'14	'15	'16	Forecast '17
Brent Oil Price ($/barrel)	108.7 -3%	99 -9%	52.5 -47%	43.7 -17%	50-60 +26%
National Balancing Point Day-Ahead Gas Price (pence/therm)	68 +14%	50 -26%	42.6 -15%	34.6 -19%	40-50 +30%
Liquids Production (million barrels of oil equivalent)	316 -9%	311 -2%	352 +13%	369 +5%	380-390 +4%
Net Gas Production (million barrels of oil equivalent)	230 -7%	234 +2%	250 +7%	261 +4%	265-280 +4%
Total Production (million barrels of oil equivalent)	546 -8%	545 0%	602 +10%	630 +5%	645-670 +4%
Exploration Well Count[a]	15 -32%	13 -13%	13 0%	14 +8%	13-16 0%
Appraisal Well Count[a]	29 -6%	18 -38%	13 -28%	8 -38%	5-8 -25%
Development Well Count[a]	120 -2%	126 +5%	129 +2%	88 -32%	80-100 0%

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a. Including geological sidetracks but not mechanical sidetracks or respuds.
b. All data shown in 2016 money.
c. Refers to the average unit development costs of projects approved within year.
d. 2016 and 2017 may not fully represent the long-term outlook due to the nature and low number of field approvals.

	'13	'14	'15	'16	Forecast '17
New Field Start-Ups	13 (+63%)	4 (-69%)	8 (+100%)	9 (+13%)	13-18 (+67%)
New Field Approvals	10 (-52%)	8 (-20%)	5 (-38%)	2 (-60%)	4-6 (+150%)
Capital Expenditure (£ billion)[b]	14.6 (+26%)	15 (+3%)	11.7 (-22%)	8.3 (-29%)	6.4-6.9 (-20%)
Unit Development Costs ($/barrel of oil equivalent)[b,c]	30.60 (+41%)	23.90 (-22%)	15.20 (-36%)	12.70[d] (-16%)	8-10[d] (-29%)
Operational Expenditure (£ billion)[b]	9.2 (+18%)	9.8 (+7%)	8.3 (-15%)	7 (-16%)	7-7.5 (+5%)
Unit Operating Costs ($/barrel of oil equivalent)[b]	26.30 (+26%)	29.70 (+13%)	21.10 (-29%)	15.30 (-27%)	14.10-14.60 (-6%)
Decommissioning Spend (£ billion)[b]	1.1 (+55%)	1 (-9%)	1.1 (+10%)	1.2 (+9%)	1.9 (+58%)
Supply Chain Revenues (£ billion)[b]	40.5 (+11%)	41.3 (+2%)	36.1 (-13%)	28.3 (-22%)	27.4 (-3%)

3. Market Outlook

In Summary

Oil and gas prices remained suppressed through much of 2016, driven primarily by the unexpected resilience of global supply.

Prices did however begin to pick up towards the end of last year, following the OPEC agreement to restrict supply, and have sustained into the early part of this year. If these relatively higher prices remain and recent efficiency improvements across the UK sector are maintained, many exploration and production (E&P) companies on the UK Continental Shelf (UKCS) may see a rise in operating profits.

However, only a small proportion of free cash-flow generated from the UKCS is expected to be reinvested in new projects in 2017 as companies focus instead on rebalancing their finances. Reinvestment in new developments may increase over the next two years if long-term confidence in the oil price continues to improve.

This year will likely be a much busier year for mergers, acquisitions and asset transfers. Almost $4 billion of UK upstream deals were announced during the first two months of 2017 alone, with the potential for many more later in the year as the valuation gap between buyers and sellers closes.

Recent deals offer the opportunity for new owners to invest in and grow assets, signalling a strong vote of confidence in the UKCS.

Brent oil price has averaged $54.8/bbl so far in 2017

25% higher than the 2016 average of $43.7/bbl

Exploration and production companies are expected to return to a position of free cash-flow in 2017

2017 has already seen almost twice as much money invested through mergers and acquisitions ($4 billion)

than across all of last year

3.1 Oil and Gas Markets

The average dated Brent oil price fell by a further 17 per cent last year to $43.7 per barrel (bbl), from an average of $52.5/bbl in 2015, driven by both demand- and supply-side factors. Global oil demand growth slowed from around 1.8 million barrels per day in 2015 to around 1.5 million barrels per day last year[1]. Meanwhile, the contraction in non-OPEC supply – driven by a lack of recent investment in upstream projects – was not as sharp as expected as producers yielded more output from existing assets. Furthermore, OPEC production grew through most of the year, largely because of increased output from Iran and Iraq.

Towards the end of 2016, however, the supply-demand dynamic began to change. This follows an agreement to restrict output at the OPEC meeting in Vienna on 30 November. As a result, Brent moved to $53.6/bbl in December – the highest monthly average since July 2015. The cautious optimism heading into 2017 has so far been justified. The price has traded in the $53-56/bbl range over the first two months of this year, offering hope that the margins for E&P companies will improve if cost and efficiency improvements are also sustained.

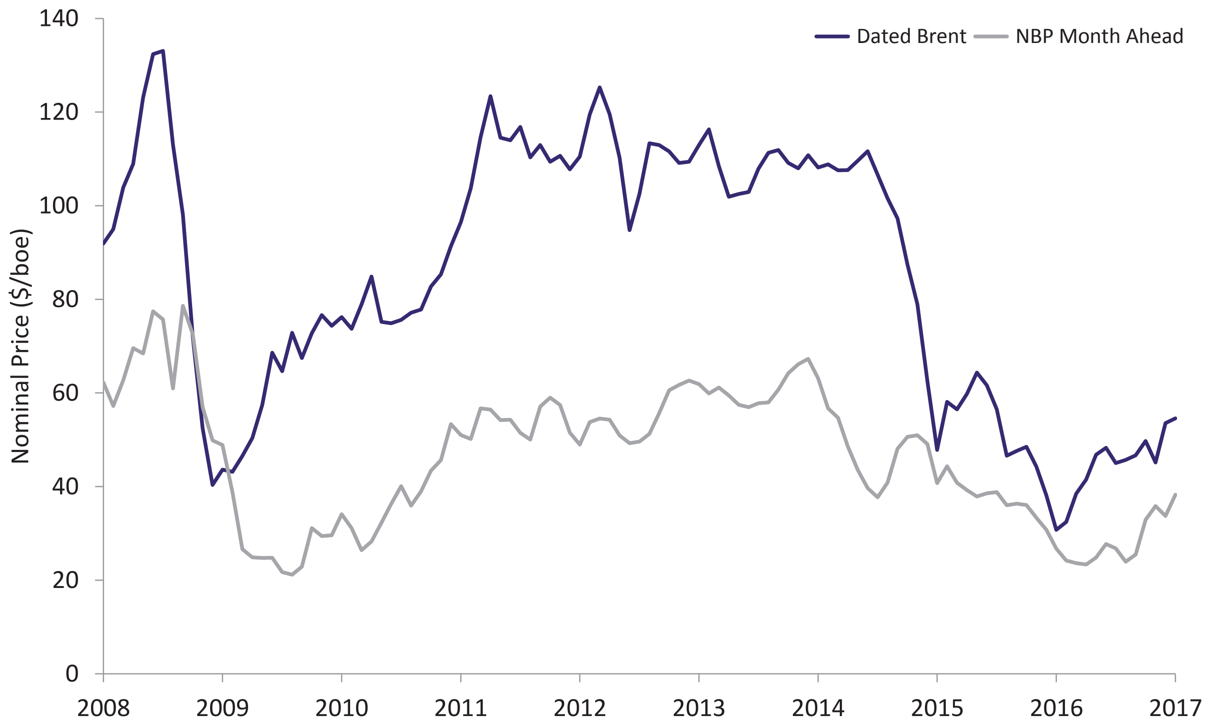
While the early signs for the year are positive, the longevity of the price recovery is uncertain. It is possible that flexible North American shale production will increase, bringing the oil price back down during the latter part of this year.

The day-ahead National Balancing Point (NBP) gas price averaged 34.6 pence per therm (p/th) last year, 19 per cent lower than the average of 42.6 p/th in 2015. That does not tell the whole story, however. The price more than doubled during the fourth quarter of last year from the low-20s in September to the mid-50s by the end of December. The lack of available UK gas storage and LNG (liquefied natural gas) supply to the UK heightened the impact that winter demand for gas has on prices.

The increase in gas price in the last quarter of 2016 was partially negated in dollar-terms by the weakening of the pound against the dollar. Sterling reached 1.21 against the dollar in January 2017, a 30-year low. The weaker pound meant that unhedged UK-based producers that sell dollar-denominated products, yet have a local cost base, benefitted from the exchange rate movements over the last 12 months.

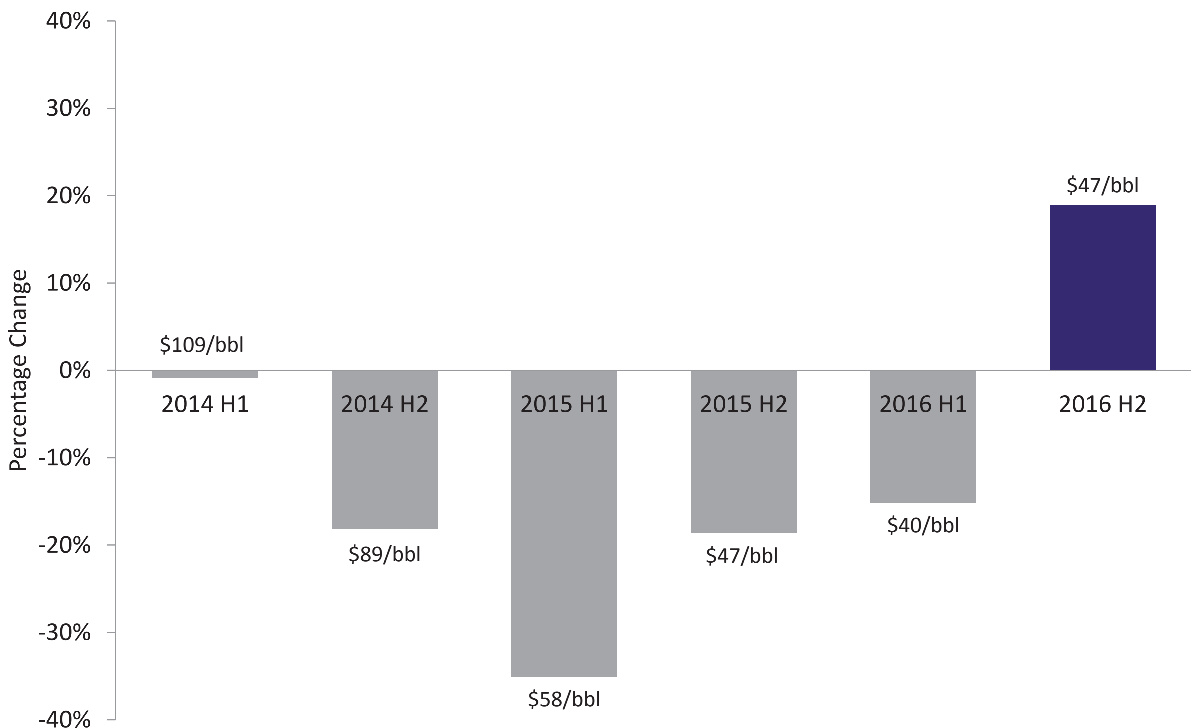
[1] Source: International Energy Agency Oil Market Report.

Figure 1: Monthly Oil and Gas Prices



Source: Argus Media, ICIS Heren

Figure 2: Percentage Change in Brent Oil Price on a Half Yearly Basis



Source: EIA

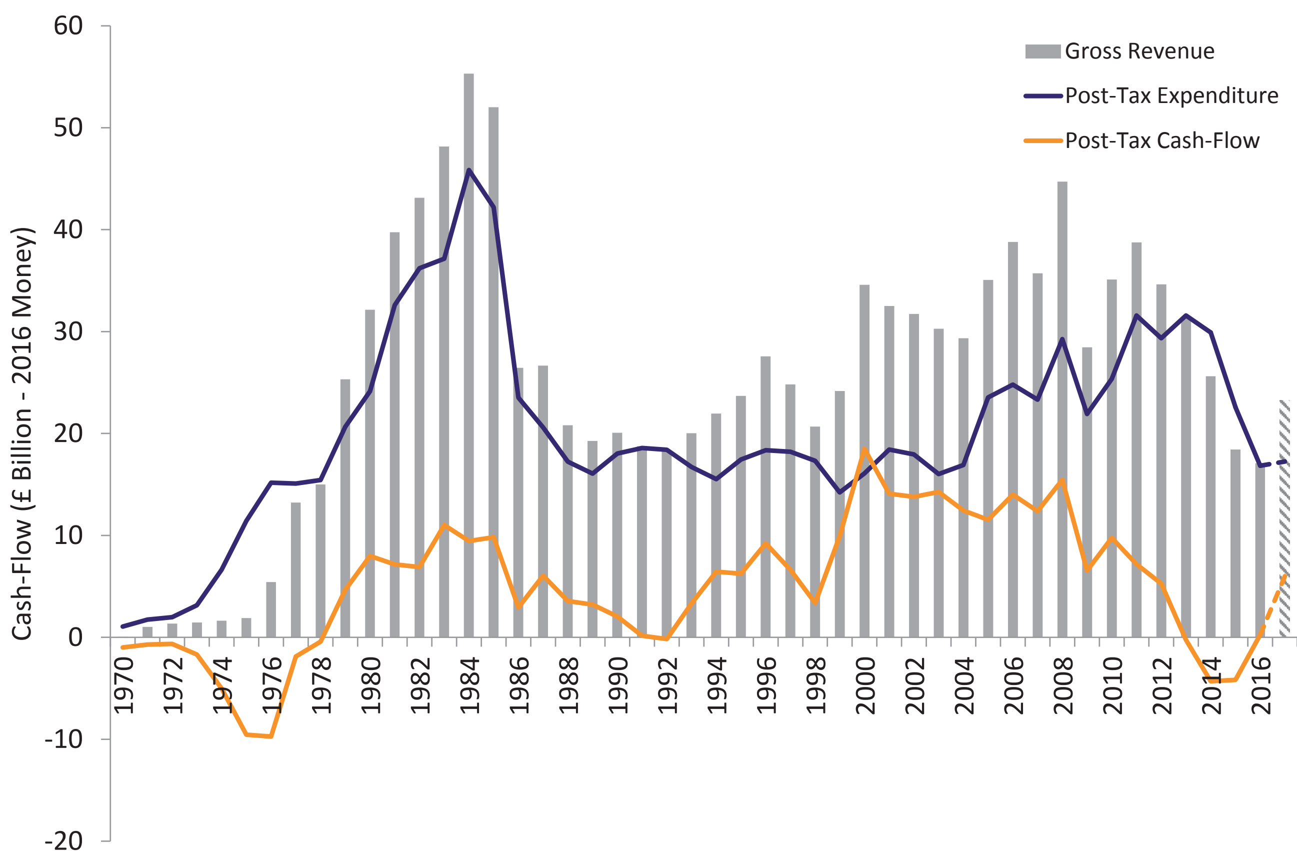
3.2 Profitability

The latest data from the Office for National Statistics show that the average rate of return for oil and gas companies in the UK improved slightly in the third quarter of 2016 to 1.6 per cent. This is the first positive sign of recovery after six years of declining rate of return and can be attributed primarily to improvements in operational efficiency and costs.

In light of the modest upturn in oil and gas prices since the third quarter of last year, the average rate of return is likely to have increased further over late 2016 and early 2017. There is the potential to improve again over the course of this year, provided industry efforts to improve productivity are sustained.

Total free cash-flows generated from E&P companies in the basin are expected to increase to around £5 billion this year, following a prolonged period of deficit where expenditure exceeded revenues (see Figure 3). While this is positive news for the UKCS, it is unlikely to drive immediate growth across all areas of the supply chain. Companies that support production-related activities may see revenues increase this year, but those that support drilling and new project development, where activity is forecast to remain low (see section 5), will likely experience another tough year. As well as realising the benefits of cross-industry efforts to drive further efficiency, only when E&P companies have rebalanced corporate financial structures and regained some confidence in the long-term oil price will they seek to proceed with new investments – provided they have attractive opportunities.

Figure 3: Exploration and Production Revenue, Expenditure and Post-Tax Cash-Flow[2]



Source: OGA, Oil & Gas UK

[2] 2017 forecast revenues are based on an average annual oil price of $55/bbl and an average annual gas price of 45p/th.

3.3 Mergers and Acquisitions

After a period of little activity, mergers and acquisitions (M&A) have begun to pick up in 2017. A number of asset and corporate deals were announced in January as the valuation gap between buyers and sellers closed. BP has reached an agreement to sell a proportion of its interests in the Magnus field and Sullom Voe Terminal to EnQuest[3]. Meanwhile, Shell has announced a deal worth over $3 billion that will see a number of its assets transfer to private equity-backed independent Chrysaor[4].

Integrated energy company, Delek Group, agreed to buy Ithaca Energy in February in a deal worth $524 million, a 12 per cent premium on Ithaca's closing share price the day before the announcement[5]. This follows Delek's purchase of a 13.18 per cent equity stake in Faroe Petroleum in December, worth around $53 million[6].

There is speculation that more M&A activity may emerge with many more mature assets transferring into the hands of operators who are focused on maximising economic recovery during a field's late-life. This allows other operators to focus on the frontier under-explored prospects that the UKCS still has to offer. Taken together, this is a strong vote of confidence in the basin, which has seen substantial efficiency improvements and reforms in fiscal policy over the last two years.

Both the Shell and BP deals, however, involve complex solutions to deal with the challenges that the current decommissioning liability regime presents the seller and the buyer. This complexity is becoming common place when trading UKCS assets and is designed to offset the asymmetric availability of decommissioning tax relief between the buyer and seller of an asset. Currently, the corporate tax history for an asset – and therefore eligibility for full relief against the decommissioning liability – does not transfer to the new owner along with the asset. Industry is providing evidence to the UK Government about the number of mature assets affected by the current tax rules, which can impede transfer to new ownership. It is important that the fiscal regime develops in line with the basin's maturity to support new investors entering the market.

M&A activity has of course not been limited to the upstream sector. Within the oilfield services sector there have been some significant deals including the merger between FMC and Technip[7]. This shows how companies are readjusting to the current market and aligning their complementary products and services to offer a more integrated and broader portfolio of solutions that increase innovation, improve execution, reduce costs and enhance customer success.

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[3] http://bit.ly/BPEnQuest
[4] http://bit.ly/ShellChrysaor
[5] www.ithacaenergy.com
[6] http://bit.ly/DelekFaroe
[7] http://bit.ly/Technip-FMC

4. Supply Chain Outlook

In Summary

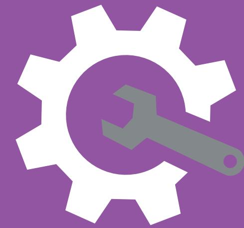
Companies providing goods and services to support oil and gas production in the UK may begin to stabilise this year, having seen revenues fall by over 30 per cent since peaking in 2014. However, the range of performance both across and within different parts of the supply chain is varied.

Many UK businesses are becoming more reliant on overseas markets to secure orders for goods and services to offset the shortfall of work available on the UKCS in the current downturn. Forty-three per cent of revenues are expected to arise from exports this year.

Employment across the industry has contracted over the last two years in response to the downturn. Oil & Gas UK estimates that around two-thirds of companies reduced headcount during 2016, in addition to those during the previous year. However, there is now more confidence that companies have made the required adjustments to sustain their businesses in the current climate, meaning that labour force reductions are expected to be far less widespread this year.

In spite of the obvious challenges, while the average share price of a representative group of listed oil and gas service companies hit a low point during the first quarter of 2016, there was steady growth across the rest of the year and into 2017. This signals that the market also considers that business will improve for some parts of the supply chain.

Supply chain revenue fell from £41.3 billion in 2014 to around £28 billion in 2016



Exports are expected to account for 43% (£11.8 billion) of supply chain turnover this year

The average share price of supply chain companies active on the UKCS increased marginally by

3%

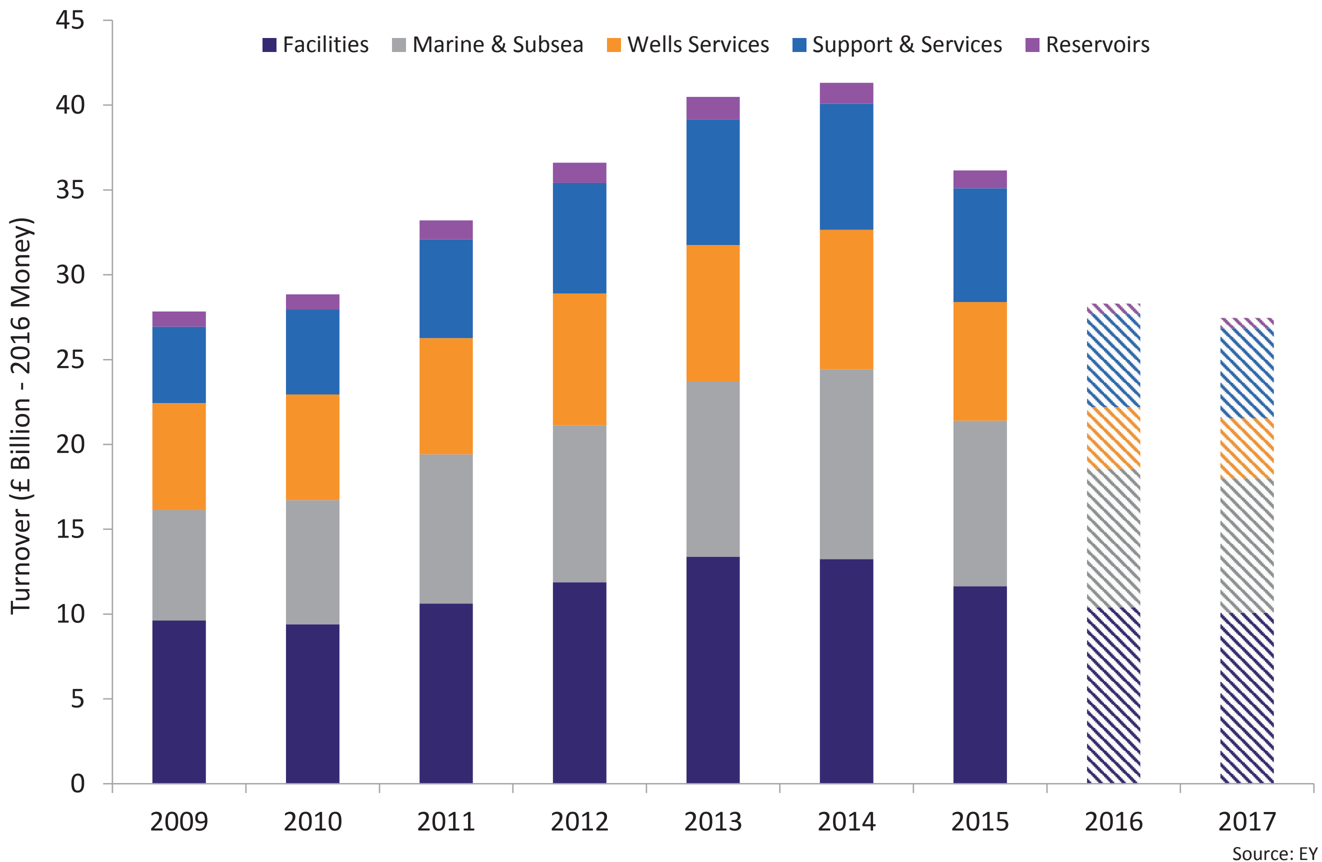
in 2016

4.1 Financial Performance

Average supply chain revenues have decreased by more than 30 per cent since 2014 from £41.3 billion to £28.3 billion in 2016. However, there are stark variations in company performance across and within sectors of the supply chain, with respective specialisms and the ability to control costs being key differentiating factors. Some companies have grown over the last two years by diversifying product ranges and expanding into new geographies and sectors, while others have been constrained by more rigid business models and have contracted in size or liquidated.

Statistics from the Department for Business, Energy & Industrial Strategy show that the number of annual insolvencies within the oil and gas supply chain has more than quadrupled since 2013, peaking in the second quarter of 2016. It is vital for the economy that the number of companies leaving the industry does not create a capability gap that cannot be filled in a timely manner should demand within the sector recover.

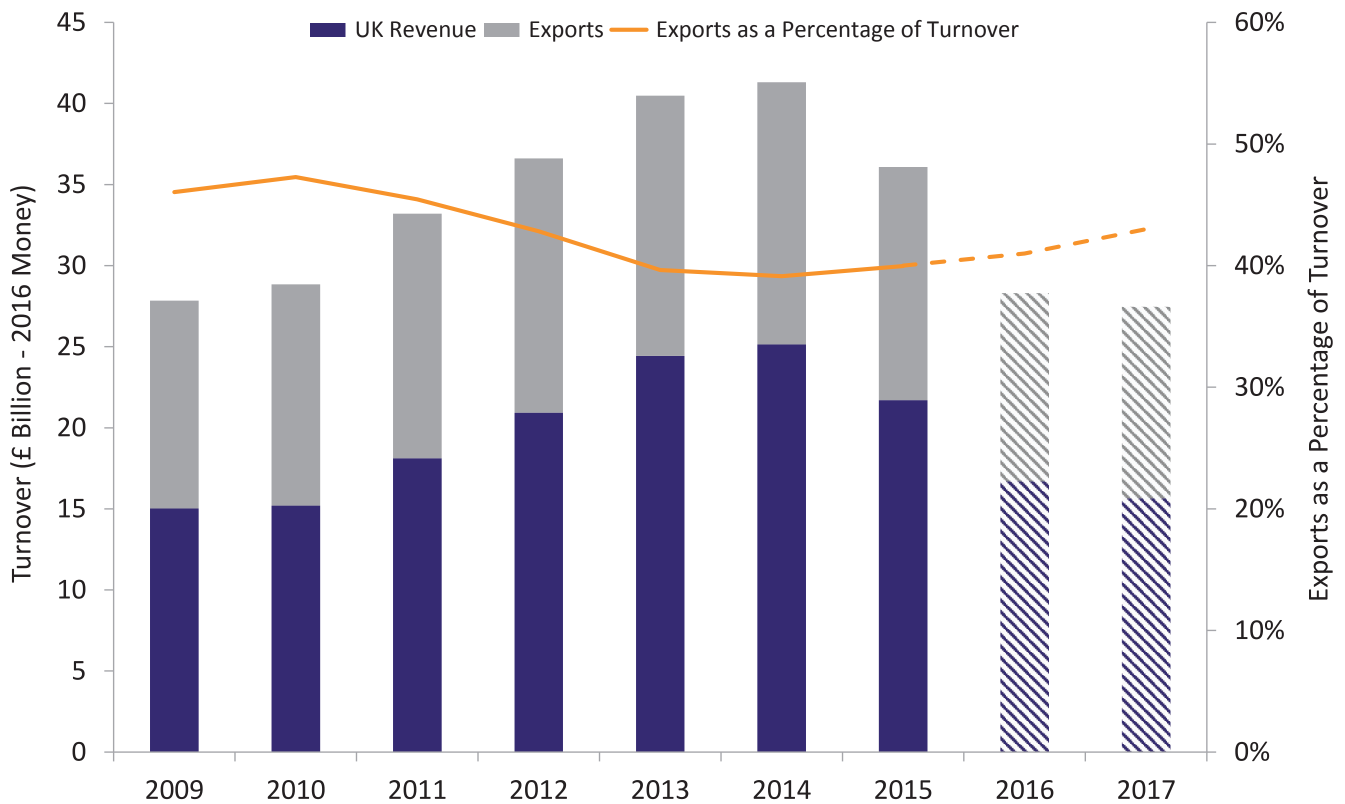
Figure 4: Supply Chain Revenue by Sector



Source: EY

The importance of local business to the health of the UK supply chain can be seen when looking at the proportion of supply chain revenues coming from domestic activity, as shown in Figure 5. From 2011-14, a significant increase in UKCS investment resulted in strong growth for the supply chain. Conversely, the oil price decline that followed coincided with the end of an investment cycle in the UKCS and domestic revenues fell far more sharply than those gained through international business. Further expansion into new geographies is therefore expected to be a key strategy for companies this year. Exports are forecast to account for 43 per cent (£11.8 billion) of UK supply chain turnover in 2017.

Figure 5: UK Supply Chain Domestic and International Revenue



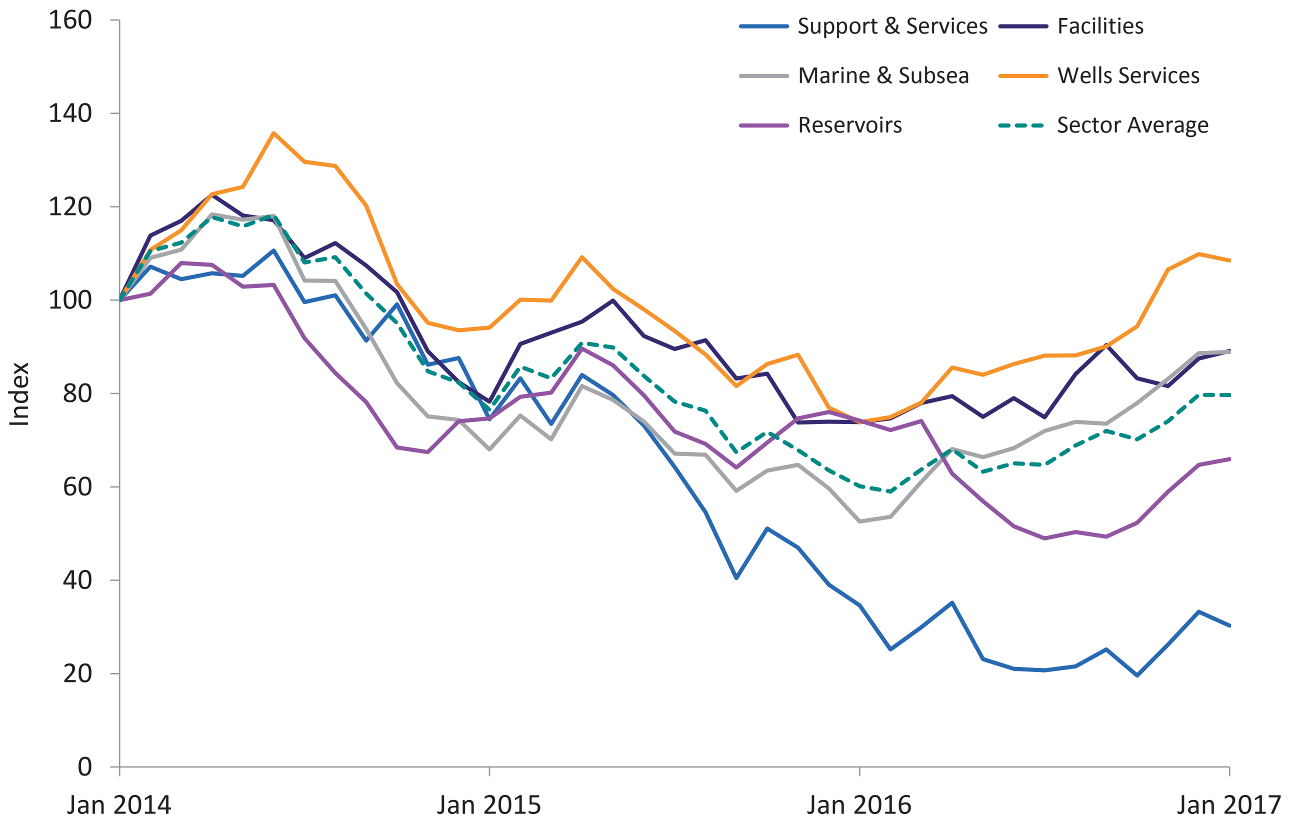
Source: EY

Looking forward, it is expected that supply chain revenues will begin to stabilise across most sectors during 2017, reflecting the sentiment that industry may have gone as far as it can in terms of cost reduction and that efficiency gains are now resulting in increased activity. However, any future recovery will likely be slow as question marks persist over the medium-term price outlook and cash-constrained E&P companies do not necessarily prioritise their cash-flows to new project developments on the UKCS. The potential recovery may in part be driven by a reduction in competition caused by some companies leaving the sector.

Figure 6 tracks share price performance of a sample of listed supply chain companies that have a strong UK presence across a number of sub-sectors, providing an indication of the sector's health. On average, the downward trajectory in share prices reflects the revenue reductions during 2014 and 2015. In 2016 however, a sustained period of gentle share price recovery across most of the sub-sectors can be seen as another sign that the market believes the bottom of this cycle may have been reached. The outlier is the broad support and services sector, a major component of which is aviation companies.

The wells services sector includes a number of companies with a strong North American position who are big players in the unconventional market. Therefore, while the share price recovery is encouraging for this sector as a whole, it should be considered as a global indicator, rather than one specific to the UK.

Figure 6: Share Price Performance of Supply Chain Companies



Source: Yahoo Finance

4.2 Employment Outlook

Against a backdrop of falling revenues, companies had to make severe cost reductions and undergo extensive restructuring to curtail unsustainable expenditure. The difficult decisions that had to be made have caused the number of jobs supported by the UK oil and gas sector to contract from its peak of 450,000 in 2014 to 330,000 last year. Even through this difficult period, the industry remains a major employer and industrial contributor to the UK economy.

Looking ahead to 2017, the assessment that it may be a year of stabilisation is reflected in company recruitment strategies. Information gained from Oil & Gas UK members suggests around two-thirds of companies are now smaller in terms of headcount than they were at the end of 2015, but it would appear far fewer are planning to make further headcount reductions this year. On the other hand, a subset of smaller companies have emerged across the supply chain in recent years, often driven by technological innovation, who are expecting to increase headcount during this year as they pursue market share growth.

5. Exploration and Production Outlook

In Summary

Over the last two years the UK upstream industry has demonstrated its resilience. The UKCS has transformed from being an inefficient basin with a decade of production decline, sustained only by a high oil price, to one that has cut unit operating costs in half while at the same time increasing production. These changes affected many supply chain companies, but were necessary for the industry to manage its way through the downturn. The E&P sector is now better positioned to secure future growth as market conditions stabilise and improve.

However, significant challenges remain. Drilling activity is at a record low. The wave of projects approved between 2011 and 2013 are nearing completion and, although some investment opportunities are being considered, very little new capital was committed to the basin in 2016. Any delays to developments earmarked for approval in 2017 and 2018 could result in a damaging decline in capital investment and production post-2020.

The industry must consolidate the efficiency improvements made this year and ensure that much needed new capital projects are progressed through to sanction. E&P companies with the right opportunities and access to finance can maximise value at a time when the upstream oil and gas market appears to be reaching the bottom of a cycle.

UKCS production has increased by

16%

since 2014, following over a decade of continual decline

Expenditure in the basin fell to around £17.2 billion during 2016, a reduction of 35% in two years

Unit operating costs fell to

during 2016, down 48% from the peak of $29.70/boe in 2014

5.1 Production

The UKCS' recent strong production performance continued in 2016. Year-on-year growth of 4.7 per cent took production to 630 million barrels of oil equivalent (boe) (1.73 million barrels per day (boepd)). This increase was largely driven by strong production during the first quarter, in-part, due to the start-up of the Laggan and Tormore fields.

Overall, new fields[8] contributed over 39 million boe to production last year, up from 33 million boe in 2015. The west of Shetland Laggan-Tormore development was by far the largest new development to come on-stream in 2016, although Solan and Cygnus are also significant start-ups. Fields that continued to increase volumes after coming on-stream late in 2015 include Alma Galia, Cladhan, Brigantine, Enochdu and Solitaire.

Increased uptime from existing assets[9] has also contributed to the rise in output over the last two years. Production decline rates from existing fields slowed to just 3 per cent in 2016 (a decline of less than 17 million boe) from 4 per cent in 2015 and around 12 per cent in 2014.

This indicates the benefits of recent improvements in production efficiency[10] – from 65 per cent in 2014 to 71 per cent in 2015 – that were built upon last year. The industry's Production Efficiency Task Force (PETF) has focused its efforts on cascading best practice to help companies minimise the frequency and duration of planned maintenance shutdowns while still maintaining the reliability and safety of installations[11]. Figure 7 overleaf demonstrates how improvements in efficiency during planned maintenance, which is traditionally carried out in the summer months, has resulted in an upturn in production volumes over this period since 2014. Improved scope planning, collaboration between operators in terms of sharing learnings and the adoption of new technologies are all helping to reduce the duration of planned shutdowns.

Going forward, the PETF, Oil & Gas UK's Wells Forum and the joint industry-regulator MER UK Asset Stewardship Task Force will seek to build on this work through sharing of production optimisation opportunities, encouraging increased well intervention activity and better use of available technologies and subsurface data.

[8] For this purpose, output from new fields is defined as any additional production from fields that started in 2015, as well as any output from new fields that started production in 2016.
[9] For this purpose, an existing field is one that has been in production for at least two years.
[10] Production efficiency is the total annual production divided by the maximum production potential of an asset.
[11] Guidance for the *Efficient Execution of Planned Maintenance Shutdowns* is available to download at http://bit.ly/plannedMS

Figure 7: Monthly Production Trend

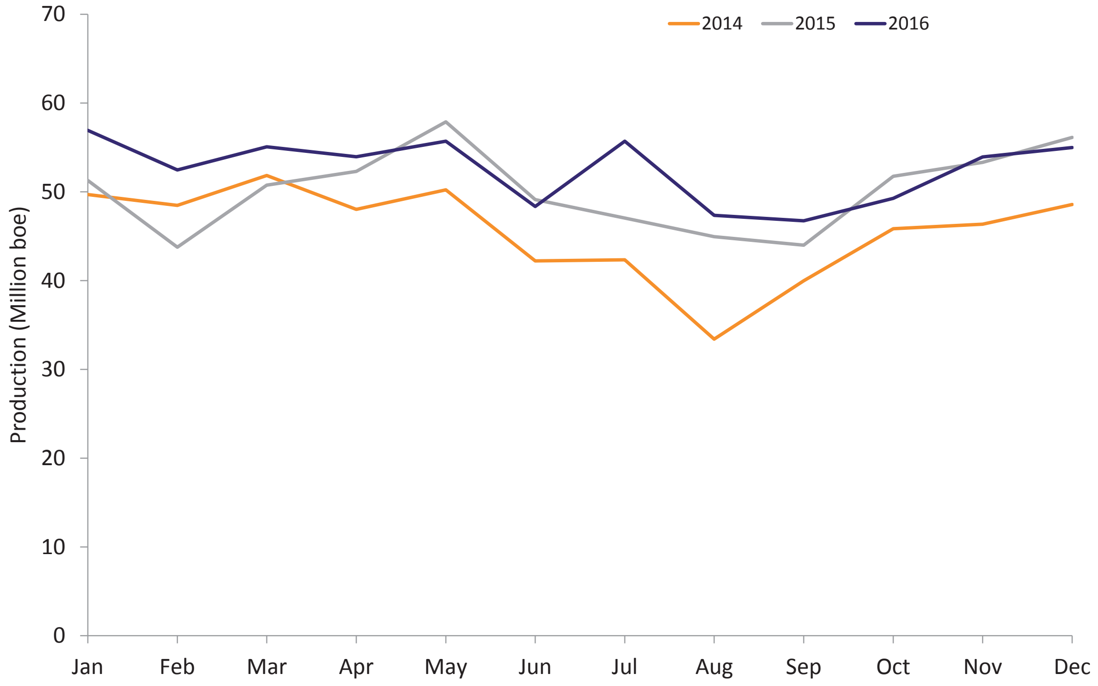
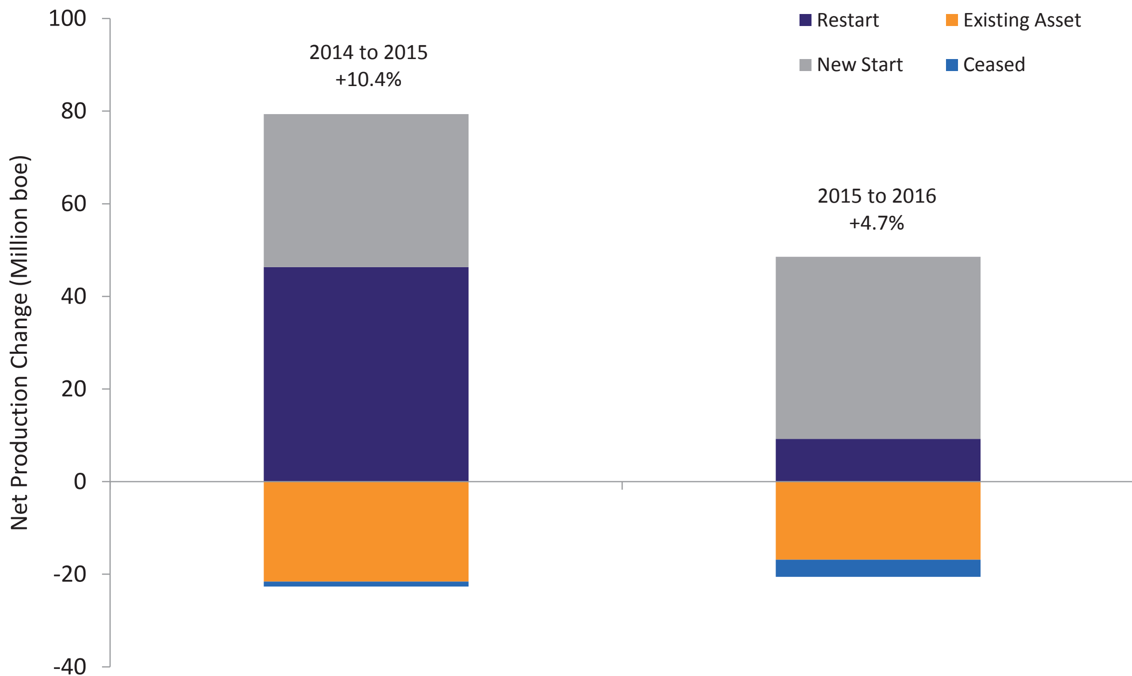


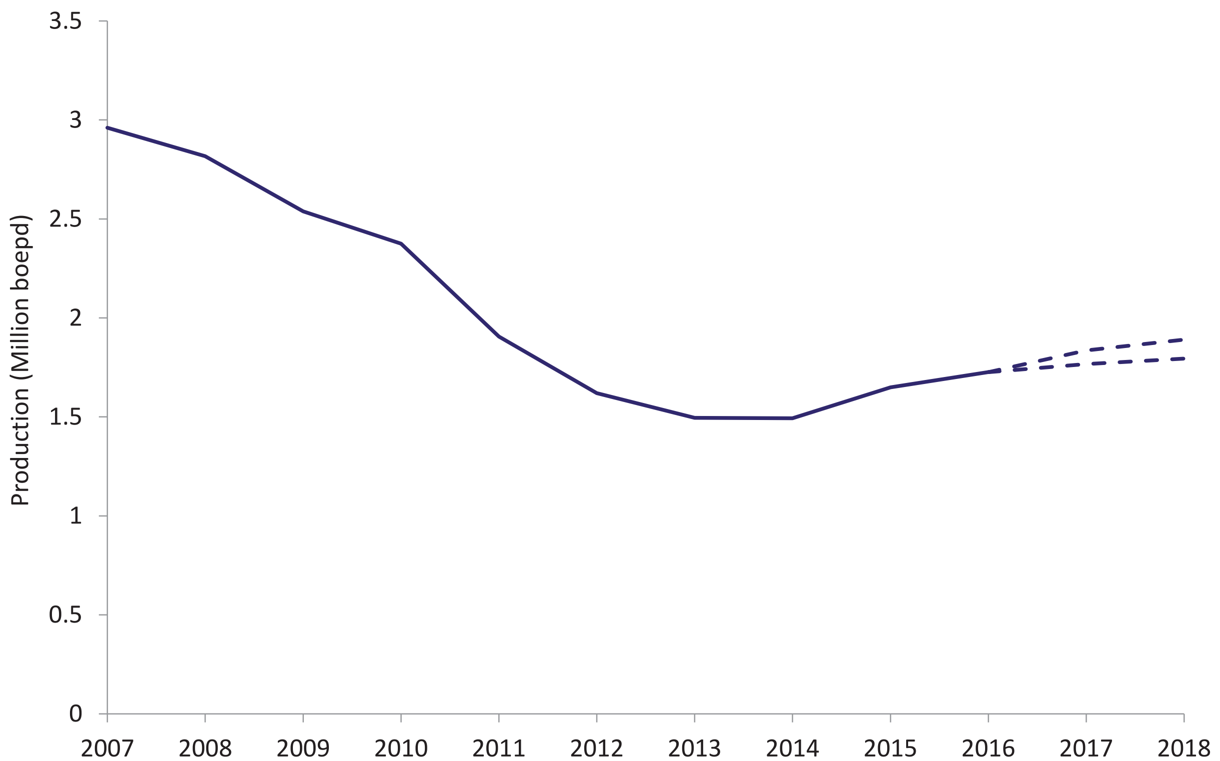
Figure 8: Drivers of Production Change



The strong production performance is forecast to continue through 2017 and 2018. A further upturn of between 3 and 6 per cent can be expected this year, with production then reaching a peak in 2018 at between 1.8 and 1.9 million boepd. The upper forecast for 2018 represents growth of more than 25 per cent on 2014 output (1.5 million boepd), following record levels of investment between 2012 and 2014 and impressive efficiency improvements across the UKCS.

Several major developments are planned to come on-stream, including Schiehallion, Clair Ridge, Kraken, Western Isles, Catcher and Mariner. While recent start-ups, including Cygnus, Laggan-Tormore, Solan and Golden Eagle are ramping up to peak production. These ten developments alone are anticipated to contribute up to 600,000 boepd in 2018, accounting for just under one third of production and demonstrating the importance of continued new investment.

Figure 9: Production Outlook



Source: Oil & Gas UK

The west of Shetland area has long been categorised as the UKCS' frontier region with vast potential. This is now starting to be realised as, for the first time last year, it saw the greatest production increase of any area in the basin. This is largely due to Laggan-Tormore and Solan coming on-stream, and also increased output from the Clair and Foinaven fields. The region's contribution to production will only continue to grow over the next two years as major new developments such as Clair Ridge and Schiehallion come on-stream. By 2018, between 15 and 20 per cent of UKCS production will come from the west of Shetland region.

5.2 Expenditure

Total expenditure on the UKCS fell to around £17.2 billion in 2016, down from £21.7 billion in 2015 and £26.6 billion in 2014 as industry continues to react and adjust to the challenging business environment. Most operators cut discretionary expenditure to improve their cash-flow position.

Operational Expenditure

Improving operational efficiency and asset sustainability remained a priority last year. The pace of operating cost improvements exceeded expectations at the start of the year. Just over £7 billion was spent operating UKCS assets last year, a decline of 16 per cent compared to 2015 (£8.3 billion) and more than a quarter since 2014 (£9.8 billion). These improvements have been achieved while maintaining a relentless focus on safe operations[12].

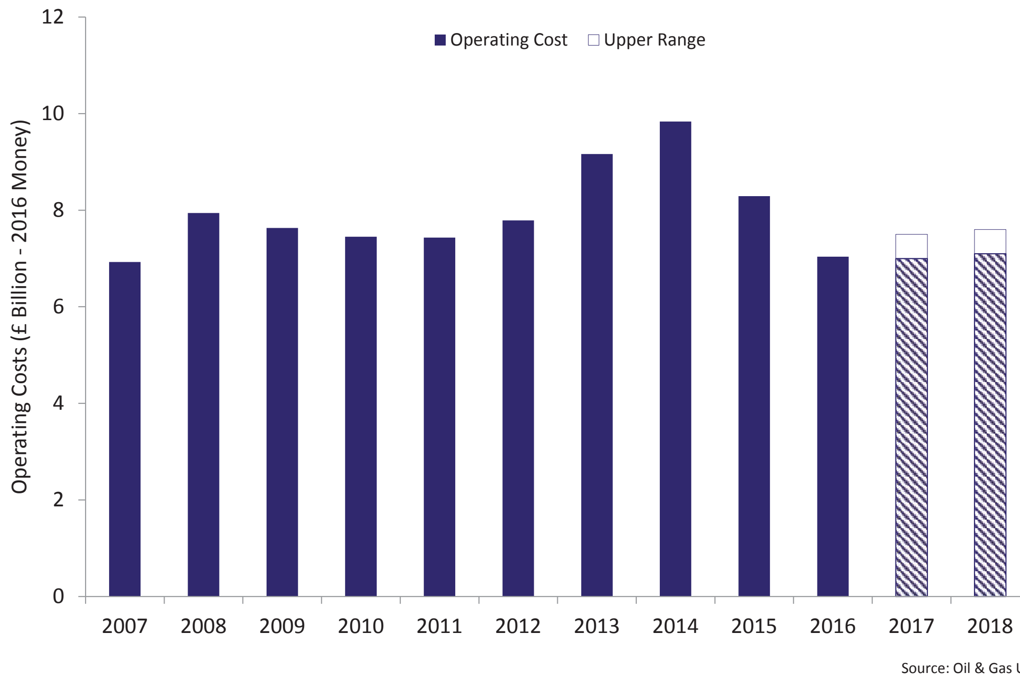
E&P companies have taken advantage of the suppressed market conditions to achieve cost and efficiency gains across key areas such as logistics, maintenance and personnel. The depreciation of the pound against the US dollar has also positively benefitted many operators' margins where their revenues are typically generated in US dollars and expenditure incurred in sterling denomination.

Oil & Gas UK's Efficiency Task Force has carried out analysis that indicates that more than half of the cost improvements realised over the last two years are systemic and have the potential to be sustained in the long-term, even against a backdrop of improving market conditions. Further efficiency gains can still be achieved, particularly across mature and late-life assets, by adopting new ways of working and the uptake of basin-wide initiatives driven by the Efficiency Task Force.

The average pace of cost savings, however, is expected to slow dramatically during 2017 and 2018 as some companies have reached the stage where further cost reduction is not practicable. Indeed, it is possible that operational expenditure could even begin to increase slightly through 2017 and 2018 to £7-7.5 billion. Although there will be a number of fields ceasing production in 2017, the operational expenditure associated with new start-ups will be far greater. It is expected that new developments over 2016 and 2017 will make up more than 10 per cent of operational expenditure this year and account for around 15 per cent by next year. This forecast is sensitive to changes in market conditions and potential project delays.

[12] Oil & Gas UK's *Health & Safety Report* is available to download at www.oilandgasuk.co.uk/healthandsafetyreport

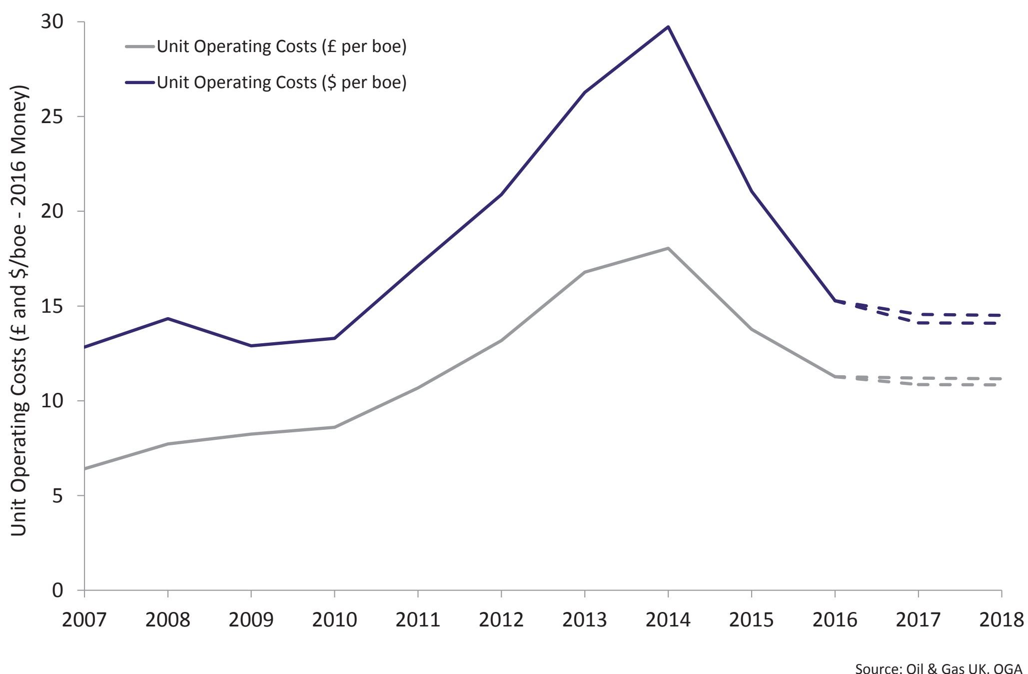
Figure 10: Operational Expenditure



Source: Oil & Gas UK

The impressive pace of cost improvement and strong production performance on the UKCS have meant that unit operating costs (UOCs) have fallen by 37 per cent in pound terms and 48 per cent in dollar terms[13] from $29.70/boe (£18/boe) in 2014 to around $15.30/boe (£11.30/boe) in 2016. The measures taken have been necessary for producers to retain or regain margins and have transformed the UKCS into a region that can compete against other mature basins for capital. It is expected that UOCs will stabilise in the region of $14.30/boe (£11/boe) during 2017 and 2018[14], the lowest since 2010 in dollar terms.

Figure 11: Unit Operating Costs



Source: Oil & Gas UK, OGA

[13] Dollar terms have been impacted by the depreciation of the pound against the US dollar.
[14] Assumed US dollar to pound rate of 1.3 for 2017 and 2018.

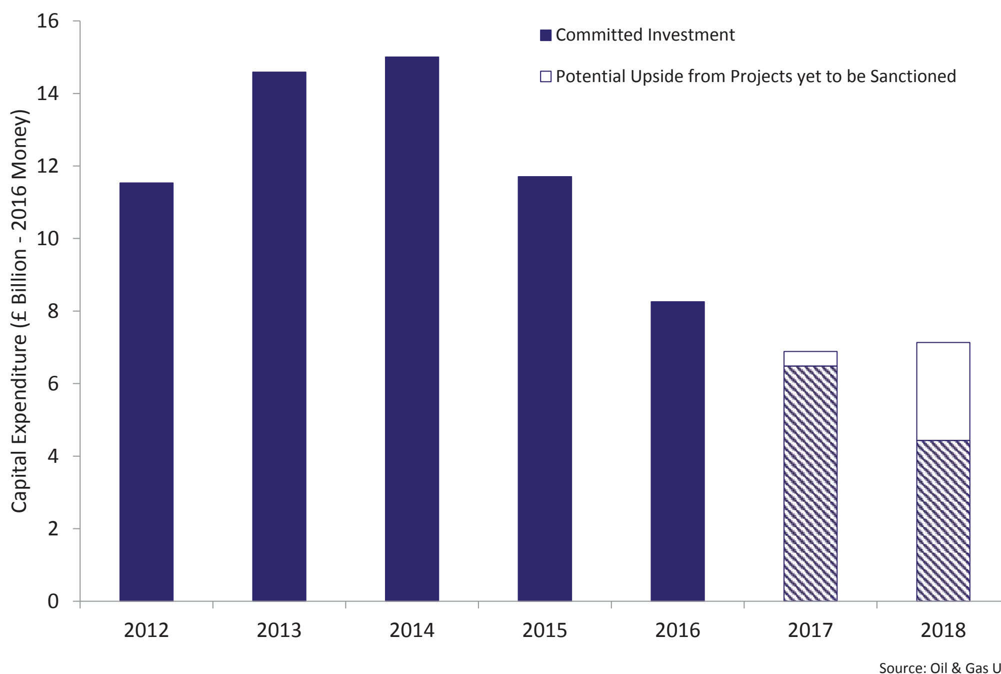
Capital Investment

Investment in the basin fell by almost 30 per cent to £8.3 billion last year, around 8 per cent less than forecast at the start of 2016. It is expected to fall further in 2017 and 2018 as a number of major UKCS projects are now close to coming on-stream, with most of the associated capital already spent.

If the basin's maximum potential is to be realised, more investment is urgently required to develop new fields. This will only happen if the UKCS is recognised as globally competitive. The significant efficiency and cost improvements implemented since 2014 have undoubtedly made it a more attractive investment destination than it was, but it now has to compete more effectively with overseas projects for a smaller pool of available capital. Appetite for oil and gas investments has fallen globally since the downturn and E&P companies are seeking to preserve cash-flow, proceeding with only the most attractive opportunities.

It is encouraging that a number of private equity funds have recently purchased equity in the UKCS, perhaps looking to capitalise on a market that they identify as being at the bottom of a cycle, but more traditional sources of capital remain scarce.

Figure 12: Capital Investment



Source: Oil & Gas UK

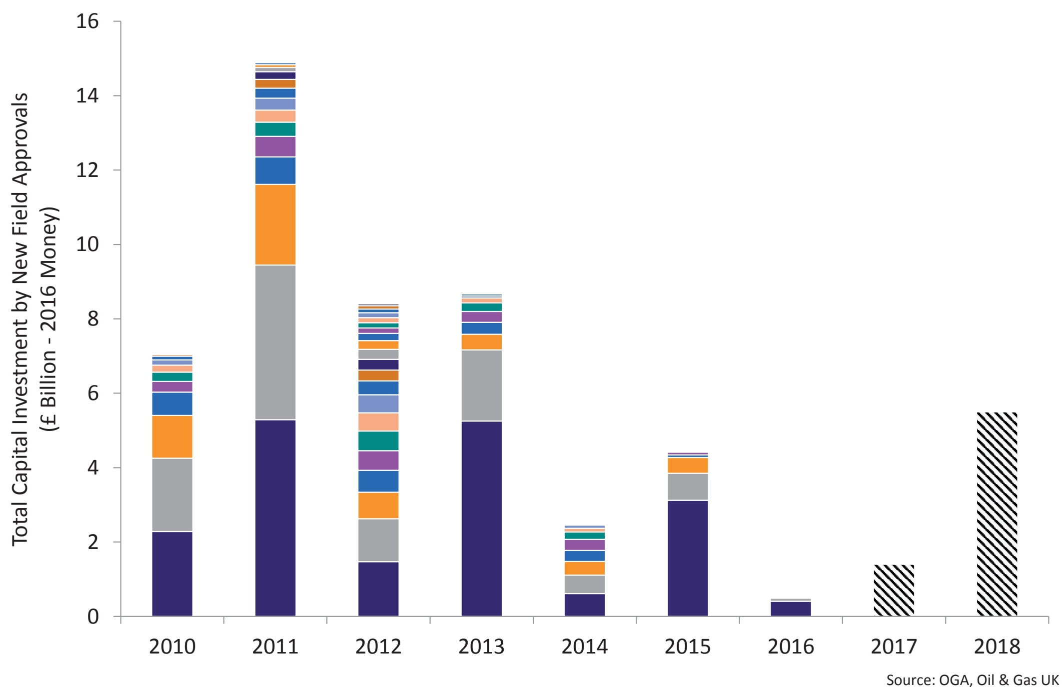
As well as the lack of new projects causing capital investment to fall, like-for-like projects are also becoming less capitally intense. Unit development costs (UDCs) of newly approved projects have fallen from over $30/boe (£19.50/boe) in 2013 to $12.70/boe (£9.40/boe) in 2016 and are forecast to be around $9/boe (£6.70/boe) in 2017. This in part reflects current suppressed market conditions, an increase in the proportion of smaller near-field projects that are typically cheaper to develop by tying back to existing facilities, and significant improvements in capital efficiency. However, this reduction is unlikely to reflect the longer-term outlook due to the nature of developments under consideration. Capital efficiency gains have also been made within projects currently being developed. Maersk, for example, has recently stated that development costs on its Culzean development have been cut by around $500 million, worth around 15 per cent of the total investment. Improved drilling efficiency and robust upfront design and planning are credited as being the primary reasons behind the cost improvement[15].

[15] http://bit.ly/CulzeanProgress

The lower cost base will be crucial to attract much needed new capital to the UKCS. The level of investment over the rest of the decade is highly dependent on the amount of new fields sanctioned this year. Last year only two new field development plans were approved, with less than £500 million of associated capital, and there were few notable brownfield investments. There is some optimism that the number of approvals will increase from this low point. Between four and six greenfield projects are expected to be sanctioned this year, releasing upwards of £1 billion of new capital. As many as eight new projects are being considered for approval in 2018 with associated capital of up to £5 billion and, thereafter, a number of multi-billion-pound investment opportunities remain in company business plans.

It should be acknowledged, however, that the potential new developments shown in Figure 13 below are not certain to be delivered and may be subject to delay or cancellation. Around one-third of total capital investment in 2018 is forecast to come from projects that are yet to be sanctioned, increasing to over 50 per cent by 2019. If these projects do not materialise in a timely fashion, parts of the UK supply chain will come under severe pressure and capabilities may be irretrievably lost. While the areas of the supply chain that support new developments will be most affected in the near-term, the UK will face another significant production decline in the early part of the next decade if new capital cannot be secured this year, causing all areas of the business to suffer in the longer term.

Figure 13: Capital Expenditure Associated with New Field Approvals



New projects are only likely to proceed if development concepts are optimised further, new efficiency improving technologies applied and there is greater collaboration between companies to progress projects as efficiently as possible[16]. The Efficiency Task Force's Subsea Standardisation Project, for example, has investigated ways in which subsea developments could be made more competitive. The group has applied its findings to both Centrica's West Pegasus prospect and a potential satellite field near the Chevron-operated Captain field. These reviews have demonstrated that savings of up to 25 per cent could be achieved in both cases to support these prospects becoming economically viable[17].

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[16] The ECITB toolkit aims to promote and support collaboration in project delivery. See http://bit.ly/ECITBtoolkit
[17] Find out more about the Subsea Standardisation Project at https://cld.bz/IBBsFhu/18

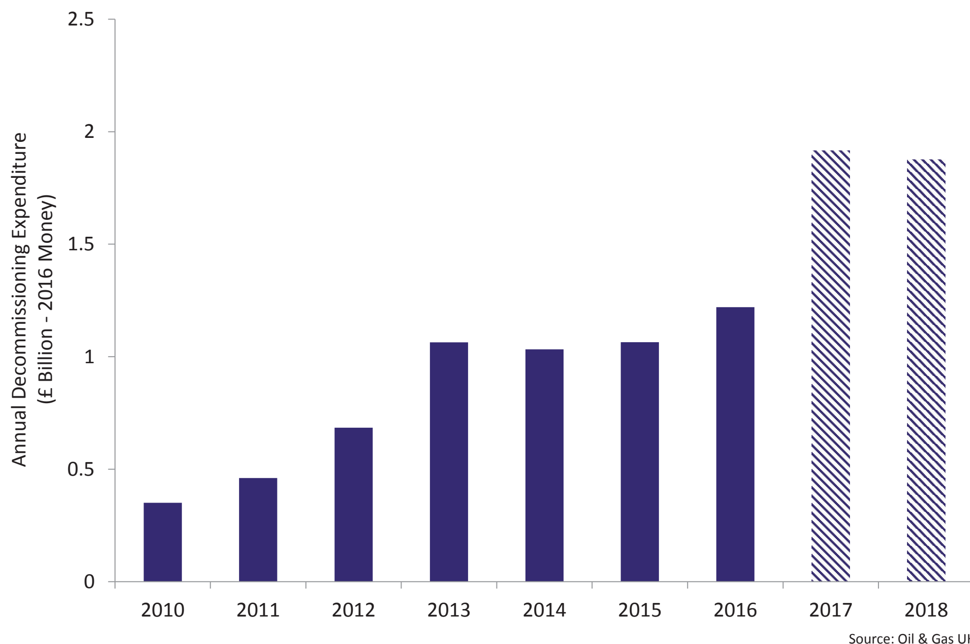
Further work is essential to progress opportunities to the point where unit technical costs are low enough for projects to become attractive on a risked basis to provide much needed new orders for the supply chain and maximise economic recovery from the UKCS.

There is also some hope that an increase in M&A activity and new operators entering the basin in 2017 could result in projects being unlocked as portfolios are scrutinised with different criteria.

Decommissioning Expenditure

Decommissioning activity on the UKCS is rising as the basin matures at a steady pace, but there has not been a rush to decommission despite the fall in oil price[18]. This is largely the result of the impressive cost and efficiency improvements that industry has achieved since 2014, delaying cessation of production. Furthermore, decommissioning programmes represent a large expense that many companies are looking to defer for as long as safely possible in the current climate where capital is scarce.

Figure 14: Decommissioning Expenditure



Nevertheless, decommissioning is the only area of the business where expenditure increased last year on the UKCS, from just over £1 billion in 2015 to £1.2 billion in 2016. Expenditure is expected to rise further in 2017 to around £2 billion as activity around major projects increases, with an average annual expenditure over the next decade of £1.8 billion.

Fourteen fields ceased production in 2016 with at least a similar amount expected this year. Over the coming years, forecasts are less certain with companies adjusting their position as market conditions change. However, somewhere between 30 and 40 fields may cease production during 2018 and 2019, although asset transfers have the potential to extend the life of some mature assets.

[18] Oil & Gas UK's *Decommissioning Insight* report is available to download at www.oilandgasuk.co.uk/decommissioninginsight

5.3 Drilling Activity

The decline in drilling activity over the last decade, particularly exploration and appraisal (E&A), has been exacerbated by the downturn. In 2016, 110 wells were drilled on the UKCS (88 development, 14 exploration and 8 appraisal) compared with 164 in 2013 (120 development, 15 exploration and 29 appraisal). This represents an overall decline of one third in just three years.

Exploration and Appraisal Drilling

Figure 15 overleaf shows that the exploration well count fell sharply in 2009, long before the most recent collapse in oil price, and has failed to recover since. At that time, key drivers behind the fall included the oil price collapse in 2008-09, a shortage in exploration funds, poor technical success rates, a lack of affordable and available rigs, and a lack of access to modern seismic data. The decline in oil price since 2014 has forced most E&P companies to continue to limit their exploration activity. Value generated through exploration typically takes longer to deliver a return than other areas of the business, therefore, exploration struggles to attract funding during periods of rapidly declining or low oil price. Industry instead tends to focus investment on lower risk in-fill or brownfield projects that are more likely to generate short-term returns.

However, despite the ongoing challenging backdrop, there is some room for optimism. The 14 exploration wells drilled in 2016 represent the first, albeit small, increase in activity since 2012. In addition, the volumes discovered have increased with around 360 million boe of oil and gas discovered in 2016. This is more than in any year since 2008 when more than three times as many exploration wells were spudded, adding over 500 million boe of recoverable reserves from 44 exploration wells. Nevertheless, the volumes discovered in 2016 only represent about half the reserves produced (630 million boe) last year. If exploration activity does not increase further, this will lead to a significant decline in production over the longer term.

The outlook for 2017 shows the potential for 16 exploration wells, although this remains highly sensitive to changes in market conditions. The UKCS holds significant resource potential that can be pursued through exploration at comparably lower risk than other basins. A number of key initiatives may help realise this potential:

- A drive to increase cross-industry learning through the Oil and Gas Authority’s analysis of E&A wells drilled in the Moray Firth and central North Sea from 2003 to 2013.

- New insight into the UKCS’ geology from the British Geological Survey’s Palaeozoic study as part of the 21st Century Exploration Roadmap.

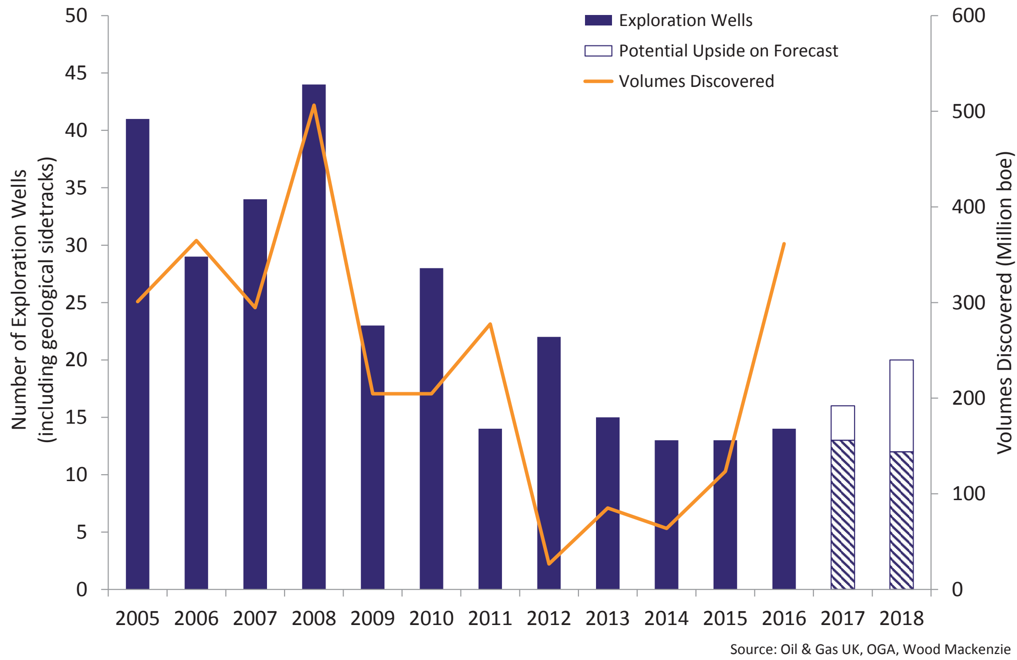
- Release of government-funded seismic survey data from the frontier Rockall Basin and the Mid-North Sea High regions.

- Introduction of a more flexible licensing scheme, attracting 29 applications from 24 companies in the 29th Licensing Round.

- Greater industry collaboration on self-improvement and shared learning, for example, through Oil & Gas UK's 2017 Exploration Conference. This event centred around sharing processes and case studies that support intelligent risk assessment and risk mitigation of oil and gas plays.

- A strong focus on efficiency improvements. The Well Cost Reduction Initiative, supported by Oil & Gas UK’s Wells Forum, is making significant progress to halve well construction costs through application of industry good practice, operational efficiency and adoption of new technology.

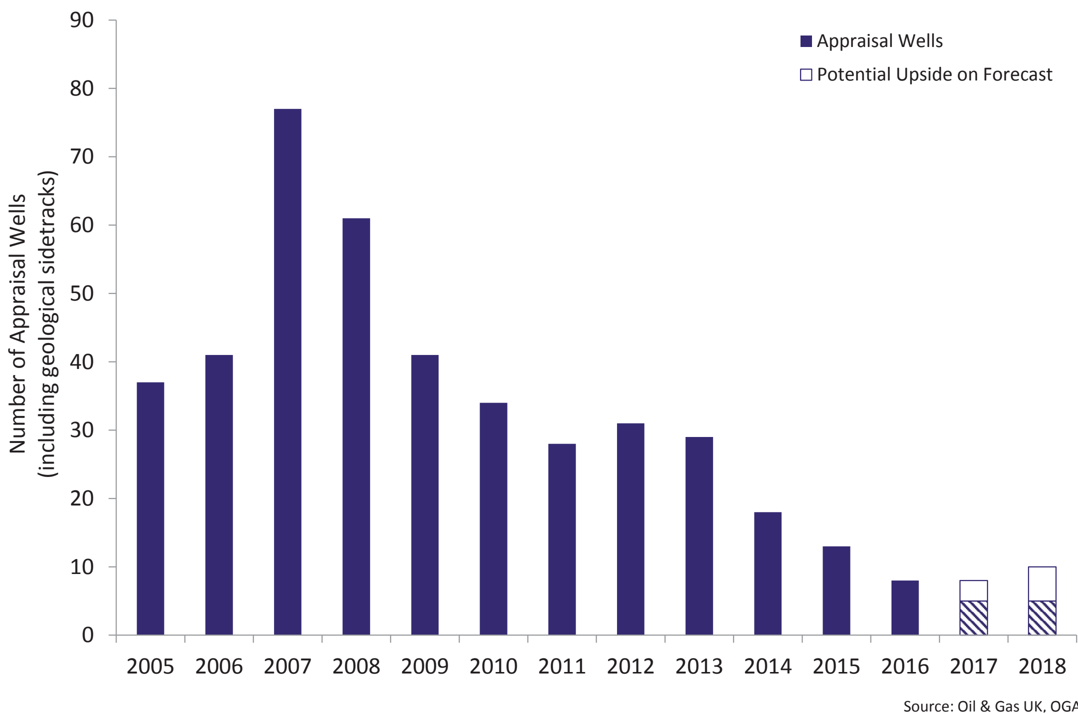
Figure 15: Exploration Drilling



Source: Oil & Gas UK, OGA, Wood Mackenzie

Appraisal activity also remained at a record low with only eight wells drilled in 2016. The outlook over the near term is not expected to improve with between five and eight wells expected in 2017. This is, in part, because pre-development costs for smaller prospects are being reduced by limiting the number of appraisal wells drilled and companies are also less likely to risk appraising marginal discoveries unless well costs come down or until the commerciality of the discovery is improved. Furthermore, the lack of exploration activity over recent years has meant that there have simply been fewer new opportunities to appraise.

Figure 16: Appraisal Drilling



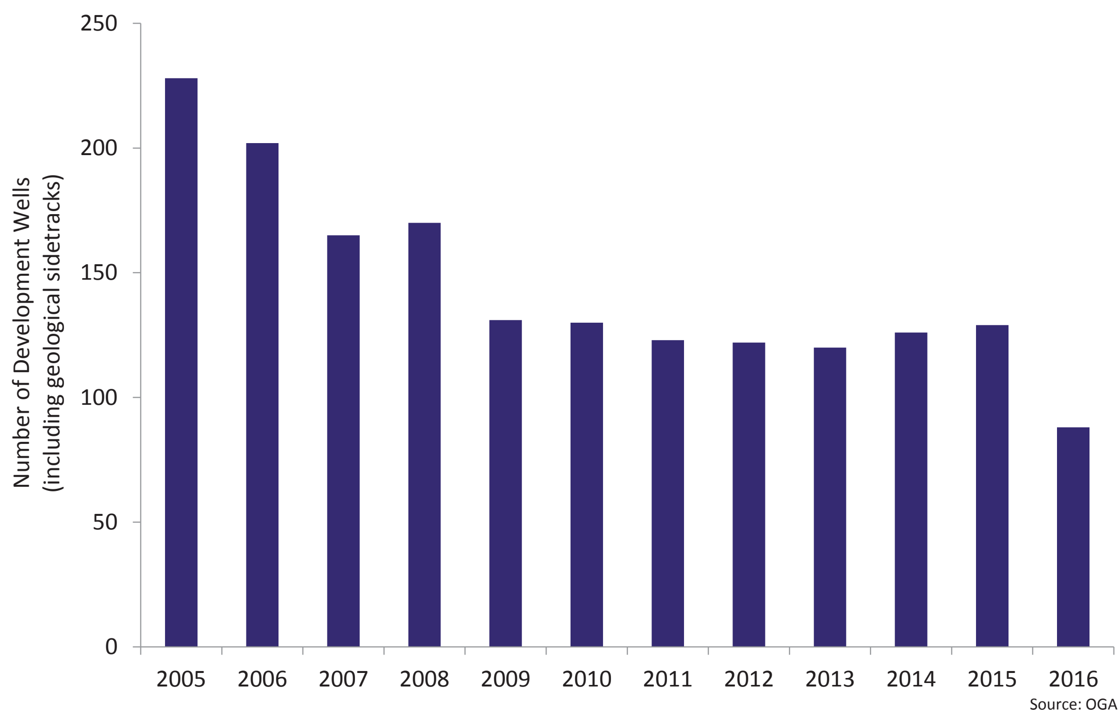
Source: Oil & Gas UK, OGA

Development Drilling

Historically, there has been a strong correlation between the rate of development drilling and production rates, with the rate of drilling generally being a good indicator of future production output. In 2016, development drilling fell by almost one third to 88 wells after having plateaued at around 120-130 wells per year for the last seven years. The indications are that this downturn will be sustained for the immediate future at least, with no signs of any increase in the rate of development drilling over the next two years. The impact of this on the production outlook is a cause of concern. While the wave of new field developments in recent years will support production in the immediate future, there is a risk of a rapid fall in production post-2020.

Action taken now can help to avoid a potential decline in production. The pipeline of opportunities must be continually replenished. While the business environment has begun to improve and well costs are lower than they were three years ago, it will take time to see an improvement in drilling activity. In the short term, there is a need for commercially attractive in-fill targets to be identified and matured to boost activity. Over the longer term, the drop in development drilling activity further emphasises the need to improve the rate of exploration and ensure that discoveries can rapidly gain investment sanction. Industry working together will help make the UKCS among the most competitive mature basins for attracting new investment.

Figure 17: Development Drilling

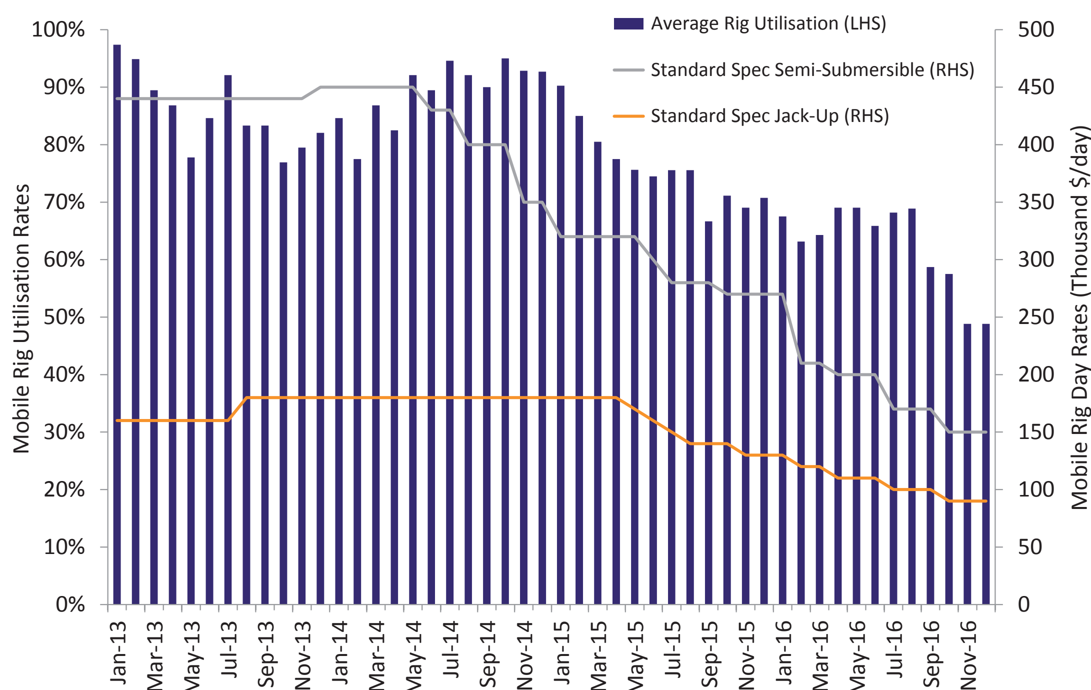


Mobile Drilling Rig Market

Figure 18 outlines the trend in drilling rig usage and day-rates since 2013. Due to the record low drilling activity and subsequent low demand for rigs, day-rates have fallen by around two thirds for semi-submersible rigs and around 50 per cent for jack-up rigs since the mid-2014 peak. Overall, by the end of 2016, less than 50 per cent of mobile drilling rigs based in the UK were in use. As a result, rigs are being taken off-line or stacked.

In January 2017, 24 rigs were idle on the UKCS (12 jack-ups and 12 semi-submersibles)[19], with 11 of these cold stacked and 13 warm stacked[20]. This raises concern around the industry's ability to meet demand in the event of an upturn in drilling. Work scopes of greater than nine months are most likely required to justify the costs of reactivating a rig. With most individual operator work scopes being relatively short, there is an opportunity for companies to work together to share rigs and ensure that they remain active in the longer term.

Figure 18: Mobile Rig Utilisation and Day Rates



Source: North Sea Reporter

[19] Source: IHS Markit

[20] Cold stacked rigs are those that have been completely shut down. Warm stacked rigs are idle but maintained in an operational state.

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