

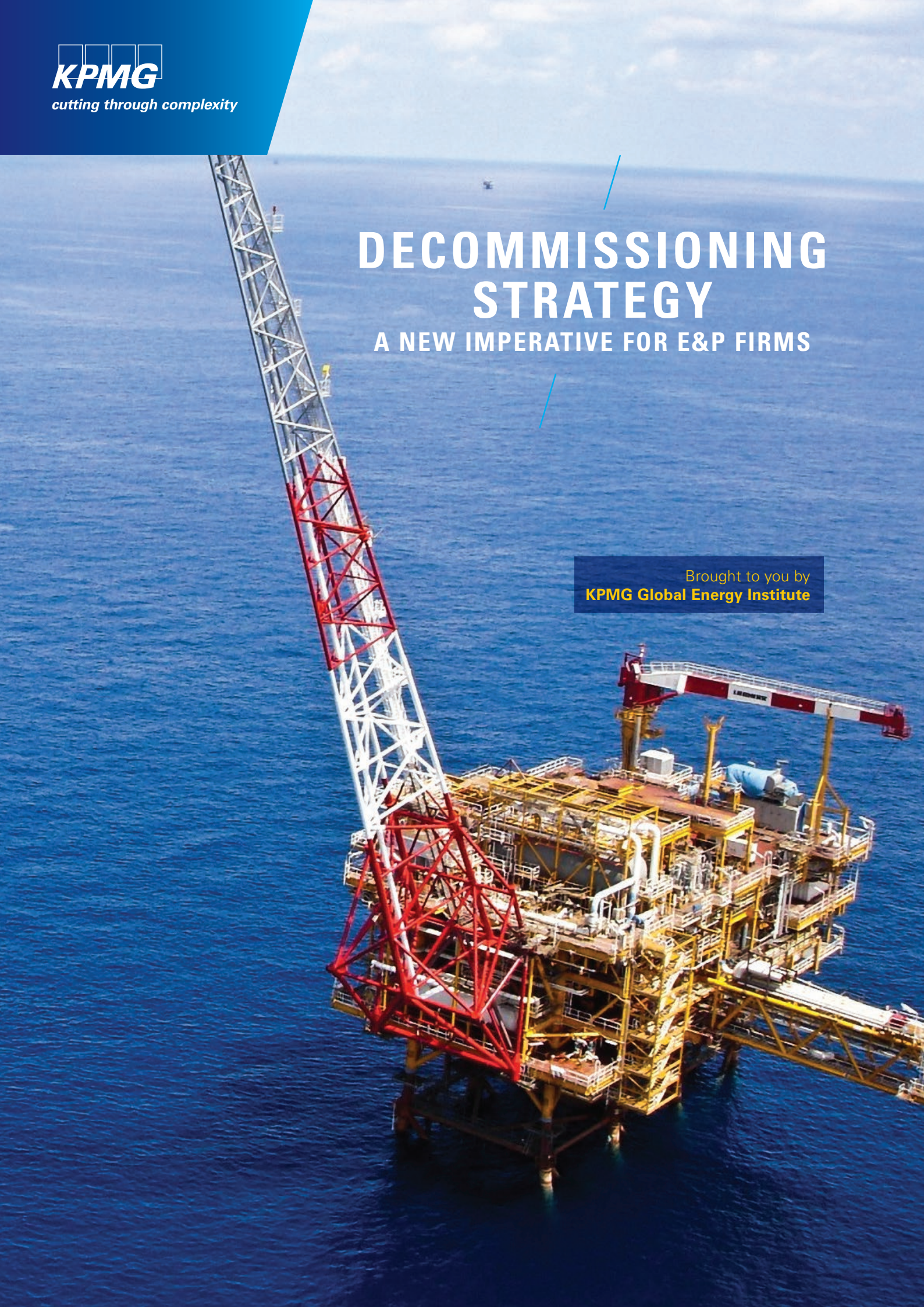


cutting through complexity

DECOMMISSIONING STRATEGY

A NEW IMPERATIVE FOR E&P FIRMS

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INTRODUCTION

E&P firms in mature regions will soon have to grapple with the challenges of decommissioning. As assets reach the end of their useful lives, company resources will become increasingly drawn into the expensive and at times technically complex activities required to cease production, safely remove subsea and surface infrastructure, and ensure that wells are permanently abandoned.

In our view, the decommissioning era has now dawned in mature oil and gas provinces such as the North Sea – worsening economics, deteriorating infrastructure, technical limits on further recovery and regulatory pressure will make change inevitable. Industry forecasts suggest an unprecedented scale and pace of decommissioning activity in the years ahead.

But in the face of this growing challenge many E&P players have failed to recognise that late-life management and decommissioning decision making is fundamentally *strategic* – involving complex decisions and trade-offs about asset portfolios, value realisation, business models, and relationships with partners and suppliers. The decommissioning choices that companies will make are as important – and as complex – as the choices that they make about major development projects and exploration. But all too often, the industry has treated decommissioning solely as a technical and cost challenge, with much of the discussion to date revolving around supplier capacity, tax relief, safety and environmental issues.

KPMG believes that treating decommissioning as a strategic question will improve company decision-making and create a new opportunity for the most agile and flexible players to gain competitive advantage.

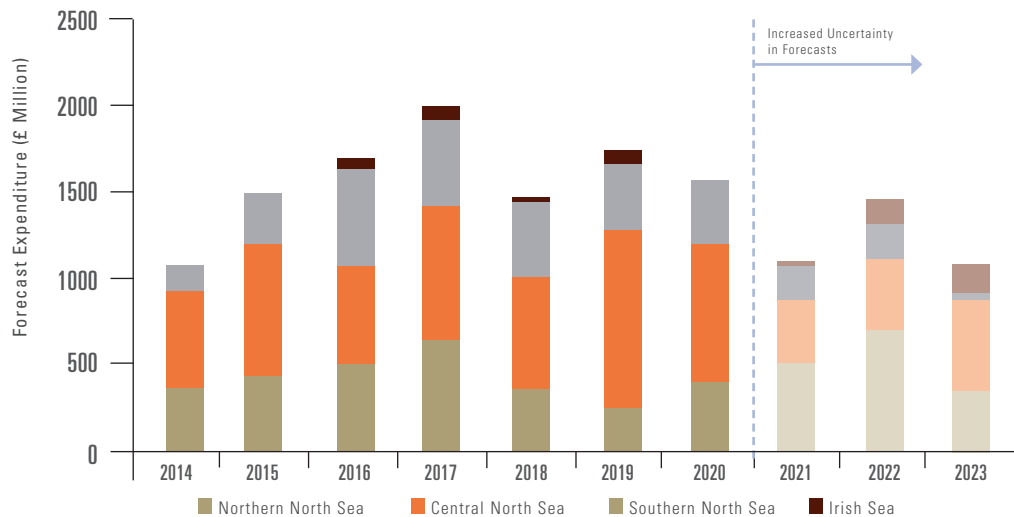
- Given the **scale of the decommissioning challenge** and the impact of falling hydrocarbon prices, companies will need to make fundamental decisions about their late-life assets in the near future.
- Companies have **wider options** for approaching late-life management and decommissioning than they might believe. In addition to the traditional models of asset sales or operating assets through decommissioning, we see potentially attractive options for selling assets while holding future decommissioning liabilities and for industry action to develop a new class of suppliers who can run late-life assets and manage the full decommissioning process.
- Time is of the essence. There could be potential advantages to **early movers** in decommissioning, and if oil and gas firms, suppliers and regulators do not act together, events could put the goal of maximising economic recovery (MER) in the North Sea and other mature regions at risk.
- This means that oil and gas companies should be **asking hard questions** right now about their choices, decommissioning capabilities and approach to cooperation with others.

THE SCALE OF THE DECOMMISSIONING CHALLENGE

In one respect, industry observers are united: the scale of the decommissioning challenge is enormous, and there are complex, industry-wide barriers to success.

Take the UK North Sea, a prime example of a highly mature region where the industry-wide difficulties of decommissioning can seem overwhelming. Forecasts suggest that the coming years will see a rapid build-up of the spending required to execute decommissioning programmes (see figure 1). The recent Wood Report estimates that the total decommissioning cost over the next 30 years could reach £50 billion¹ with a significant proportion falling on the taxpayer.

Figure 1: 2014 Decommissioning Insight UK North Sea Spending Forecast ²



¹ UKCS Maximising Recovery Review: Final Report. Sir Ian Wood, 24 February 2014

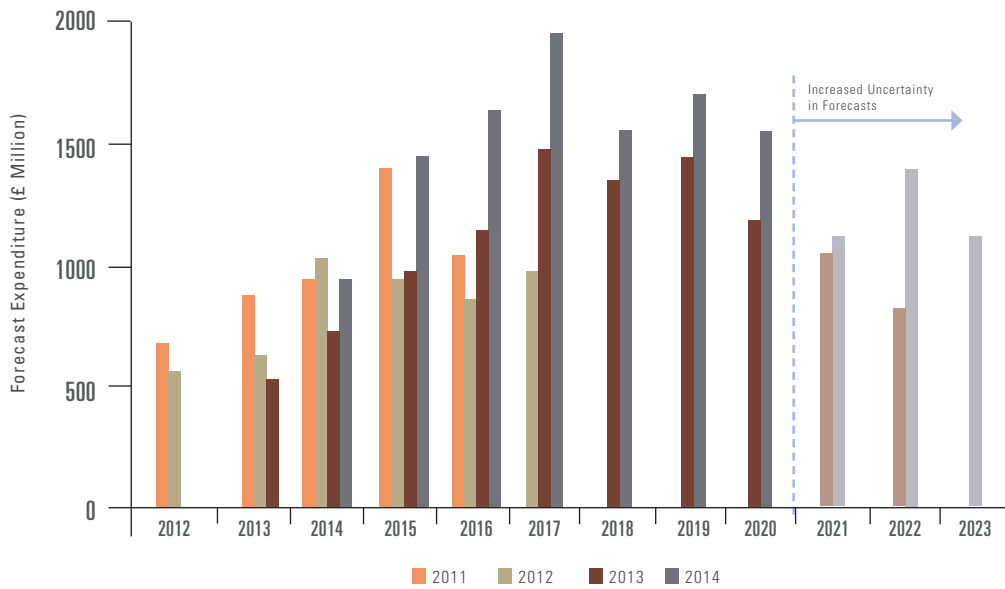
² Decommissioning Insight 2014. Oil and Gas UK

There is great uncertainty about such forecasts, however. Previous forecasts have often assumed that the upcoming decommissioning wave will begin sooner than proved to be the case, and paradoxically, once decommissioning starts in earnest, it may well turn out that things move faster than anticipated (figure 2).

Today's low-price environment may speed decommissioning significantly. Some estimates suggest that at an oil price of \$50/bbl, up to a third of existing North Sea fields could become unprofitable. In the case of some late-life assets, a move into decommissioning could become an attractive choice.³

The lesson is that timing is uncertain, and that uncertainty makes effective decision making crucial.

Figure 2: Decommissioning Insight Historic UK North Sea Decommissioning Forecasts²



Decommissioning will likely not be cheap – the cost overruns, delays and complexity that have plagued more traditional capital projects could make the assumptions used in early decommissioning evaluations look untenable. Decommissioning projects will require as much care, attention and focus as any other projects. In some ways, decommissioning may be even more problematic, given capabilities and supply chain constraints in what is after all a nascent part of the E&P sector.

Strong capabilities are in short supply in decommissioning. Opportunities for learning and experience sharing have been limited in most companies, meaning that they are only now beginning to develop staff who have any hands on experience in the day to day realities of decommissioning project delivery. Compounding the capability gap is the perception that decommissioning is the least glamorous sector in the industry, meaning that young, high-potential staff will potentially seek opportunities elsewhere, making the learning process more difficult.

³ "North Sea oil and gas - Crude realities -The tumbling oil price piles more pressure on a sinking industry," *The Economist*, 24 January 2015.

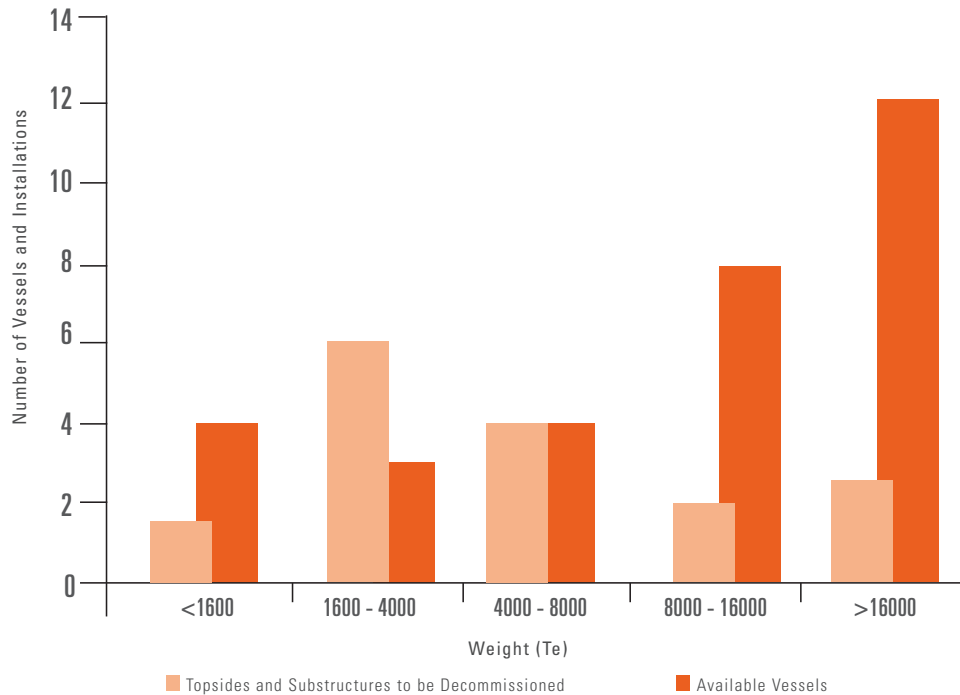
Supply chain constraints could prove equally difficult. Intensive decommissioning will require the plugging and abandonment of large numbers of wells, delivered through a mixture of rigs and specialised vessels. Removing topside facilities will mean engaging specialised lift and transport services, with the need in some cases for specialist heavy lift vessels that are already in short supply (such as the new Allseas Pieter Schelte lift vessel intended for the Brent decommissioning and the future North Sea market). Even in an oil price environment where rig rates are falling and some capacity is entering the system, industry slack could disappear rapidly when a major wave of decommissioning begins, driving up costs and introducing delays and active delivery constraints (see Figure 3).

In summary, then, E&P firms will see a combination of factors that will present real challenges to value delivery:

- **A high pace of industry activity**
- **Great uncertainty about timing and costs**
- **Limited capabilities**
- **Severe constraints in infrastructure and delivery capability**

The implication is that a failure to engage with the decommissioning challenge and to manage the decommissioning process well could prove to be a major drag on E&P company performance.

Figure 3: Forecast of decommissioning capacity constraints, Northern North Sea (October 2014) ⁴



⁴ *Decommissioning in the North Sea: Review of Decommissioning Capacity*, Arup, Decom North Sea, Scottish Enterprise, October 2014



THE DECOMMISSIONING CHALLENGE IS STRATEGIC

Much of the attention that decommissioning issues have received has focused on lessons about project execution, on overcoming potential constraints in the supply chain, and on ensuring that fiscal regimes are fair and drive the right incentives.

In our view, there is an additional question that every E&P company in mature regions should be asking: are they making rigorous strategic decisions about their decommissioning approaches?

We offer a simple assertion: **decommissioning is strategic**. It requires making choices under conditions of uncertainty, and those choices will have a direct impact on shareholder value. In our experience, some industry professionals think of decommissioning decisions mechanically: mature fields produce until it is no longer economic to do so, with decommissioning timing treated as a simple function of recovery vs. remaining reserves.

As the dramatic fall in the oil price from mid-2014 powerfully illustrates, the value of oil and gas assets is variable and uncertain. Decisions about the timing of decommissioning inevitably depend on planning and forecasting assumptions about prices, technology, costs and capabilities.

Furthermore, company capabilities in mature field operations and decommissioning execution vary dramatically, meaning that the decisions companies must make are not just about **when to decommission**, but also about **who is the natural owner of late-life assets** and **what delivery model is the right one**.

For these reasons, late-life management and decommissioning decision-making is no less strategic than decisions about exploration portfolios, capital projects and the approach to managing producing assets. It involves real strategic choices that companies should be actively considering:

- How quickly to move assets into decommissioning, and in what order?
- Sell late-life assets, even in the face of a difficult transactions environment, or keep them?
- How much effort to invest in building internal capabilities and expertise for decommissioning, and how much to rely on outside providers?

Two principles underlie our thinking on strategic decommissioning:

First, E&P firms have a broader **range of choices** about decommissioning approaches than they often believe. There are options for managing late-life assets that the industry has not sufficiently developed or pursued.

Second, **timing** is critical. In contrast to the past, delay will not always be the best approach and early movers may acquire tangible advantages over those that choose to postpone decommissioning decisions for as long as possible.

STRATEGIC DECOMMISSIONING DECISION MAKING: KEY CHOICES AND OPTIONS

We believe that strategic late-life management and decommissioning decision making involves choices across *two fundamental dimensions*, with the additional requirement for a *strategic view of timing*.

1. Ownership. Companies operating or holding non-operated equity shares in late-life assets can choose to maintain their ownership of the assets through the end of their useful lives and the transition into decommissioning, or they can seek to sell the assets to others who see value in late-life assets, and are prepared to take on operatorship and/or ownership through decommissioning. Thus, for a late-life asset, there are two notional ownership choices: **own the asset or sell it.**

2. Liability. Companies can retain the liability for decommissioning, or they can transfer the liability to others. It is critical to recognise that the liability decision is strategically distinct from the ownership decision. Even in the event of a traditional sale, the transfer of liability under UK law is provisional, returning to the original owner in the event that the new owner proves financially unable to carry out its decommissioning obligations. As we will see, viewing liability as separate from ownership widens the number of strategic options that companies have available. Thus, for a late-life asset, there are two notional liability choices: **maintain the liability or transfer it.**

Combining these two dimensions illustrates the fundamental strategic options available to companies running late-life assets nearing decommissioning (see figure 4)

1. THE TRADITIONAL SALE

The first available option is the preferred choice of many E&P firms: to sell late-life assets to third parties, transferring the decommissioning liability as part of the deal.

The attractions of the traditional sale are obvious. The seller avoids the complexities and demanding requirements of very late-life asset operations, putting the assets into the hands of operators who have the skills, expertise or appetite to extract additional value through mature-asset production. The seller escapes the need to execute a decommissioning programme, freeing resources to devote to more traditional projects. The seller also receives either cash or a swap for an alternative asset that is a better fit for its capabilities and chosen focus areas. It is no wonder that until recently, there has been an active sellers' market using the traditional framework.

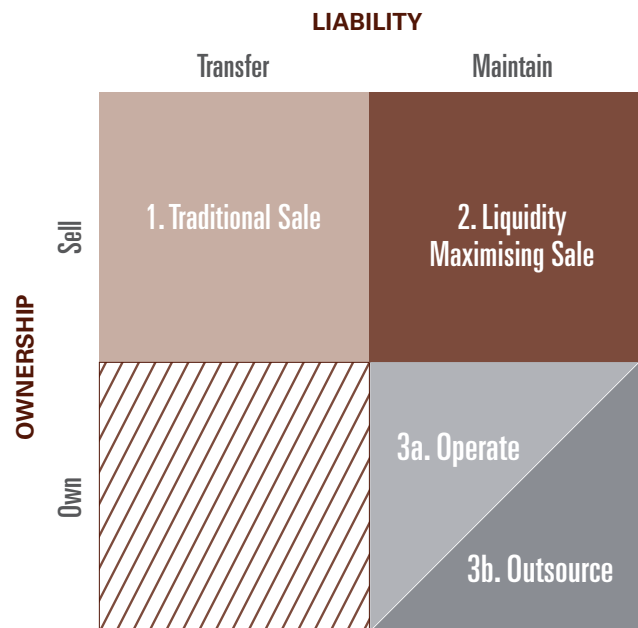
For many players, this option is now proving difficult to realise in practice. This is because potential buyers are becoming choosier and field economics have often worsened. Traditionally, sellers often succeeded in moving very late-life, marginal assets by including them in a package that included other, potentially more attractive fields. But there are growing signs that buyers are less willing to accept such deals. For example, Marathon recently offered a package that included a mix of very late-life North Sea assets (principally Brae), combined with the sweetener of a range of potentially more attractive Norwegian assets. However, in this case, no buyers were prepared to accept the combined package and Marathon ultimately sold its Norwegian assets in a separate deal with Det Norske Oljeselskap. As of the date of this publication, it still holds its late-life UK position.



E&P firms have a broader range of choices about decommissioning approaches than they often believe



Figure 4: The Strategic Options for Decommissioning



The UK tax system increases the barriers to traditional sales substantially. For most assets, decommissioning costs are deductible against tax up to a maximum of 50% of tax liabilities. Costs above current tax liabilities can be applied retrospectively, meaning that the UK government will fund a substantial proportion of the decommissioning bill. However, companies who purchase such assets can enjoy these benefits only if they have a long-standing and large scale UK tax history. Without this, they will have no historic tax bill to charge their decommissioning costs to and so will bear twice the decommissioning cost as existing operators. In practice, this means that small, specialised late-life operators cannot acquire assets for which they should be the natural operators.⁵ The introduction of Decommissioning Relief Deeds mitigated the impact of the additional barrier presented by the demand by existing operators for substantial letters of credit covering future decommissioning liabilities, but did not address the more fundamental challenge posed by the tax system. This might change, however: in December 2014, the Treasury signalled that it will explore ways to make the decommissioning tax regime more attractive to new entrants.

In an environment of falling oil prices, continued uncertainty about the UK fiscal regime and a diminished appetite by Asian and Middle Eastern NOCs for volume-led acquisitions, we believe that the traditional sales route will become increasingly difficult to realise.

2. THE LIQUIDITY MAXIMIZING SALE

As an alternative to the traditional sale, KPMG believes that E&P firms should explore an option that is much less common to date, but potentially very attractive: *selling late-life assets while maintaining the decommissioning liability*.

Many companies will resist this option, but there are several strong arguments in its favour:

- In the case of many late-life assets, the traditional sales route simply won't be available. This means that decommissioning is in effect a sunk cost. Companies will bear that cost regardless
- The number of potential buyers for such assets will be far higher than is the case in a traditional sale
- Selling prices should be far higher, allowing sellers an immediate cash injection that they can roll into other value-creating investments
- Finally, sellers will be able to run their remaining assets more effectively. Divesting late-life assets will allow reductions in support costs and overheads. Sales will make possible greater specialisation, as the sellers focus their technical and commercial capabilities where they have the greatest impact.

This option does have some clear downsides. Decommissioning liabilities will remain on company balance sheets, requiring careful investor messaging. Companies will need to invest in and maintain decommissioning capabilities (although as we shall see shortly, there may be an alternative option for this) and invest in the creation and provision of detailed technical specifications, drawings, and records, while also ensuring that staff with a working knowledge of assets remain available. There will also undoubtedly be complex and difficult to manage legal issues arising between the new and previous owners.

However some precedents already exist. For example, when BP and ConocoPhillips sold the Thistle and Deveron assets to DNO in 2002 (with a subsequent transfer to Lundin/Enquest), BP retained a 1% share and made a commitment to retake the operatorship for decommissioning, even though it expected decommissioning to begin much earlier than has ultimately proved to be the case. Our conversations with a number of North Sea operators suggest that others are now considering selling assets while retaining decommissioning liabilities.

⁵ Assets subject to Petroleum Revenue Tax are treated differently and most Sale and Purchase Agreements for such assets allow purchasers to acquire retrospective tax advantages.

3A. OPERATED DECOMMISSIONING

If we assume that there is not the logical possibility of “selling” the decommissioning liability in the absence of an asset sale, the remaining options for owners are about approaches to maintaining both ownership and decommissioning liabilities ⁶.

For many E&P firms, the preferred option will be to run assets until the end of their lives, and then execute decommissioning using internal capabilities and traditional contracts with suppliers and service companies.

The challenges and complexities of this option are not a secret. For many operators, substantial moves into decommissioning will be an enormous ask, with a substantial risk of under performance, for a number of reasons:

- Even before the cessation of production (COP), many current operators will struggle to maximise the value of very late-life assets. Effective late-life operations requires an intensive operating approach, seamless execution of maintenance and reliability strategies, deep capabilities in complex drilling and EOR programmes, and above all else, a continued willingness to invest both resources and management attention in delivery.
- Decommissioning skills and capabilities are rudimentary in many operators. Industry-wide experience in the practical realities of decommissioning execution is limited, and most operators will face a steep and troublesome learning curve, with costly mistakes along the way.
- There are likely to be substantial discrepancies between drawings and records, and the actual condition of equipment offshore, resulting in unexpected challenges and unpleasant surprises, which will drive delays and cost inflation.
- Finally, an environment in which supplier bandwidth and capacity is limited (as discussed earlier in this document), combined with operator inexperience and an already sorry record of timing and budget control in traditional projects, means that there will be a substantial risk of poor cost control, frictions between operators and suppliers, growing safety and environmental risk, and delays in execution.

For all of these reasons, we could see the emergence of E&P firms that act as *specialist mature field and decommissioning operators*. Given the complexities of both late-life operations and decommissioning, the operated decommissioning option ought logically to be an area in which specialisation and focus is the preferred value-creation model. Those firms that choose to play in this space must have the flexibility, lean operating models, and deep experience to extract greater value at lower cost than their generalist firms can manage.

Given the infancy of the overall decommissioning sector and the current tax-related barriers to asset sales to smaller players, the emergence of specialist operators will take time and those companies that do not sell their late-life assets will need to bear the organisational and monetary costs of execution – unless a fourth strategic option emerges.

⁶ There is one theoretical way to achieve a full transfer of decommissioning liability without a transfer of ownership: a government decision to take 100% responsibility for decommissioning funding, above and beyond current tax incentives, with the creation of a sector-wide public decommissioning execution entity. However that option lies in the realm of public policy rather than E&P firm strategic choice, and there may be strong resistance to nationalising such assets.



E&P firms should explore an option that is much less common but potentially more attractive: selling late-life assets while maintaining the decommissioning liability



3B. OUTSOURCED DECOMMISSIONING

The fourth option is an under-explored and under-utilised approach that could create a genuine win-win value creation opportunity for both E&P firms and service companies: *the outsourcing of ultra-late-life operations and decommissioning execution to service firms.*

This model has not yet emerged in the UK North Sea, although there was some early experimentation around this approach in the Gulf of Mexico, led by Cal Dive / Helix Energy Solutions.

If the model could be made to work, the attraction is obvious:

- Oil and gas UK has forecasted that decommissioning management overheads could reach 8% of spend. Combining multiple decommissioning projects under specialised management teams could reduce this cost substantially.
- An outsourcing model would minimise disruptions to operators' organisations, allowing them to focus on development and operation of value-adding assets.
- In addition to economies of scale through the joint contracting of key services (e.g. drilling rigs and heavy lift vessels), a service provider acting at scale could get up the learning curve faster than individual operators. Current estimates of savings from one decommissioning project to the next are 10-15%⁷, and dedicated providers could achieve these benefits quickly.

Our conversations with service firms have indicated that there is potential interest in offerings that would encompass late-life operations, plugging and abandonment, and facilities removal. The model for the offering could involve either a service contract or even taking a ~1% equity share and a transfer of operatorship.

However the outsourced oil and gas late-life/ decommissioning model remains a theoretical one in the UK for the moment, and the industry will have to overcome substantial barriers to deliver it, such as varying company standards in plugging and abandonment and facilities disposal standards, a multiplicity of asset designs and types that will be a barrier to learning, difficulties in contracting for risks and liabilities between operators and service providers, and the risks involved for service companies in investing in capabilities and infrastructure before a fully-fledged market has emerged.

Our conversations with oil and gas firms suggest that they could be receptive to an outsourced model, but are very aware that the risks, responsibilities and incentives would have to be crystal clear and well thought out.

As one executive put it: "I need to know that any service firm will not compromise good operating practice and I don't want to write a blank check."

For these reasons, we see the sponsorship of a joint industry effort to develop a new service company model as potentially one of the highest-value actions that the emerging UK regulator (the Oil and Gas Authority) could take in the spirit of making the Wood Report recommendations on decommissioning a reality, working through industry forums such as Decom UK.



Combining multiple decommissioning projects under specialised management would reduce costs substantially



⁷ Offshore Decommissioning Conference – Keynote Speech by Gordon Ballard, VP Industry Affairs and Chairman, Schlumberger UK Wednesday 8th October 2014





A STRATEGIC VIEW OF TIMING AND DECOMMISSIONING APPROACH

Regardless of the strategic option that each E&P player chooses, it will be critical to make effective, value-adding decisions about the timing of the transition for late-life operations into decommissioning, and then the approach needed to undertake that decommissioning.

As discussed earlier in this document, the timing of the move into decommissioning is not simply a technically-driven one. Firms will face increasing internal trade-offs among the cost, complexity and managerial efforts needed to run late-life assets and need to actively balance the desire to continue production to the bitter end against the huge opportunity costs involved.

We believe that although the default industry approach has been to delay decommissioning decision making for as long as possible, we are now entering a period in which early movers could realise significant advantages, creating severe tensions with other firms and a regulator committed to MER.

This is true for three reasons.

1. Many players are poorly suited to long-term late-life operations, and are finding that the cost of supporting deteriorating assets with declining production are greater than individual field economics might suggest, given the need for large support organisations and the call on both managerial time and technical expertise.
2. Some industry forecasts suggest that there will be a large wave of simultaneous decommissioning activity in the early 2020s. Depending on broader market conditions, this could contribute to an escalation of costs and increasing supplier power. Those players who move earlier may avoid the worst of this.
3. Potentially most worryingly for the industry as a whole, we see a real danger to late movers who share infrastructure such as tied-in facilities, pipelines and terminals. In a situation where a single asset that is part of a broader infrastructure system moves into decommissioning, the fixed cost for all the remaining players must increase. The implication is that in some areas, a single decommissioning decision could throw other companies' assets into negative economics, leading to a chain reaction of further decommissioning. In these circumstances, the results for late movers could be problematic.

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In game theory terms, this situation could be viewed as a “prisoners’ dilemma,” in which the fears about other players’ choices suddenly incentivises each player to move quickly and decisively, reversing the inertia that the industry has seen to date, but potentially creating a suboptimal outcome.

These infrastructure-related issues are likely to be an active concern for DECC (and will be for the OGA), as they could lead to very difficult dilemmas about achieving Maximised Economic Recovery (MER) for basins without forcing current asset operators into losses related to maintaining operations for infrastructure facilities that would otherwise enter decommissioning.

These circumstances could lead to heightened tensions between infrastructure operators, E&P companies using that infrastructure, and the OGA, and it is not difficult to imagine that there will be pressure on the OGA to reject decommissioning proposals that are justified from the perspective of an operator, but threaten to limit MER and other companies’ interests.

In addition, it is going to be important to agree the extent to which decommissioning is to be carried out as this will have a substantial impact on costs. For example, leaving platform legs in the sea and capping them will reduce costs significantly relative to removing the whole structure, and important precedents are about to be set in the way the Brent field is decommissioned.

In this environment, early and deep cooperation among operators, investors, suppliers and the OGA and wider government will be critical.





CONCLUSION: IMPLICATIONS OF STRATEGIC DECOMMISSIONING FOR THE E&P SECTOR

Although most industry attention to date has focused on the supply chain, execution, and public policy challenges of decommissioning, KPMG's view is that E&P firms must recognise that decommissioning is above all else a *strategic challenge*.

We believe that E&P players operating in mature areas such as the UK North Sea should actively engage with the challenge of decommissioning today, bringing the same degree of management focus and strategic clarity they bring to decision making on other fundamental portfolio and operational questions.

In thinking about decommissioning from a strategic perspective, upstream companies should recognise that there are more potential choices for their late-life assets than they may assume, with a wide range potential options available for both facilitating the sale of late-life assets before decommissioning and for those who retain ownership, delivering decommissioning following the cessation of production.

In contrast to the received industry wisdom that decommissioning should be delayed as long as possible, we believe that we are now entering an era where there may be significant advantages for players who move earlier than their competitors and that this dynamic could create regulatory dilemmas and complicate the pursuit of MER.

In our view, there are five questions that every E&P firm operating in the UK North Sea and other mature regions should be prepared to answer in addition there are a number of questions that the various government bodies involved in UK decommissioning should also be prepared to answer:

Key Questions For E&P Firms In Mature Regions

- 1 Do you have a realistic view of the **future economics of your assets** (including the impact of wider infrastructure costs)?
- 2 Do you have a clear **decommissioning strategy**, covering timing, sequencing, infrastructure dependencies and decision points?
- 3 Have you explored all **potential sales options** for your late-life assets, including **flexibility on decommissioning liabilities**?
- 4 Have you decided on a **contracting/ownership model** for execution of decommissioning activities (including **potential outsourcing options**) or are you waiting for others to move first?
- 5 Do you understand what other operators around your assets are doing, and **the potential implications of their decommissioning decisions for your assets**?

Key Questions For UK Government Bodies

- 1 What is the appropriate tax regime for decommissioning?
- 2 How much leverage will the OGA have on operators' co-operation to avoid the domino effect of individual decisions to decommission assets having a knock-on effect on other operators?
- 3 Is the UK government regime for oil and gas decommissioning consistent with other technologies such as Renewables or Nuclear and are there alternative approaches for the Oil and Gas sector which may be more appropriate?

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