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# Big Oil's Road to Reinvention

*Restoring Value Creation Through Business Model Revolution*

**By Sylvain Santamarta, Iván Martén, and Esben Hegnholt**

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## AT A GLANCE

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The world's leading international oil and gas companies face a structural—rather than cyclical—crisis of value creation that started before the current slump in oil prices. The steep price decline, which began in mid-2014, has compounded the operators' difficulties and is resulting in the sector's worst peacetime crisis. This crisis may be an opportunity for the sector to revolutionize its business model.

### **A SHIFTING DEFINITION OF VALUE**

For years, investors had been rewarding Big Oil's focus on replacing reserves. Operators with good exploration capabilities, discovery rates, and volume growth consistently created value. Now, deteriorating fundamentals have led the market to reward operators that demonstrate capital discipline and strong cash-flow generation.

### **BIG OIL MUST REINVENT ITSELF**

Large international oil companies operate with a distinctive combination of global reach, technical capability and knowledge, and strong human and physical assets, as well as a unique set of relationships with governments and other owners of national resources. Still, to restore value creation and ultimately survive, these companies must undertake a fundamental and structural redefinition of the Big Oil business model—a radical shift in its culture, operating model, and portfolio.

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**H**ISTORICALLY, BIG OIL HAS been a structurally strong value creator, favored by investors for growing and preserving long-term wealth.<sup>1</sup> Global in reach, massive in scale, and able to manage complexity and mitigate risk, leading oil and gas companies have generated superior shareholder returns across the business cycle. From 1999 through 2004, Big Oil created an annual total shareholder return (TSR) of 6.7%, compared with –2.3% for the broad market. Similarly, from 2004 through 2009, which includes the 2008–2009 oil-price collapse, Big Oil yielded 7.3% yearly to its owners while the S&P 500 returned a mere 0.4%. Since 2009, however, the pattern of returns has eroded. From 2009 through October 2015, Big Oil generated an annual return of 2.9% while the S&P 500 yielded 13.6%. Even before the 2014 oil-price drop in the post-2009 market recovery, Big Oil’s returns trailed the total return of the S&P by more than 10 percentage points annually. (See Exhibit 1.)

## Deteriorating Industry Fundamentals

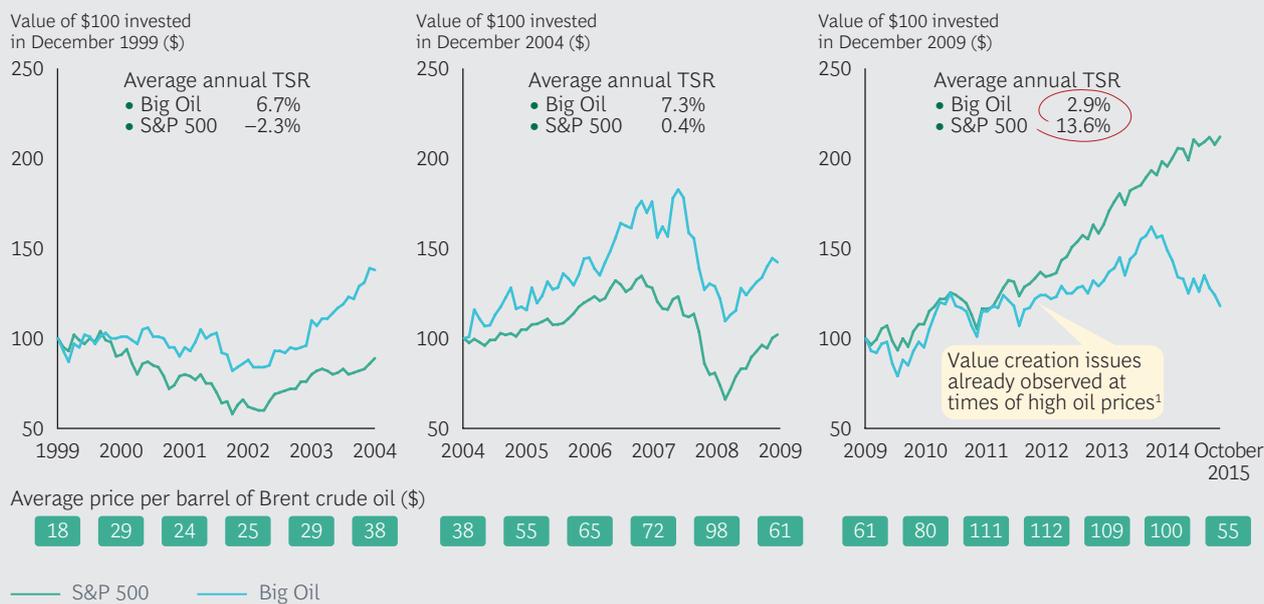
The primary source of Big Oil’s declining shareholder value is deteriorating fundamentals brought on by the growing complexity of its operating model. (See “Killing the Complexity Monster in E&P: Eight Critical Actions for Upstream Oil and Gas Companies,” BCG article, January 2015.) In examining the major oil companies’ operations, we have found evidence of three kinds of intrinsic complexity:

- **Resource Complexity.** Inherently, producers pursue the most readily extractable resources first. As the “easy oil” is exhausted, they push farther offshore into deeper waters, exploring and developing less accessible reservoirs—tighter formations with higher pressures and temperatures.
- **Project Complexity.** As Big Oil pursues increasingly complex resources, the development of those resources increases in complexity as well. Projects grow larger, and the teams managing them grow bigger and incorporate more people from more companies. Such growth, in turn, increases the number of contracts and contractors and makes the project supply chain more intricate.
- **Industry Complexity.** Operators, contractors, and authorities alike have failed to create sector-wide standardization, curbing the benefits of shared learning experiences at the industry level. Each operator typically sets its own technical standards for operations and development. Prior to mid-2014, when oil prices were high, there was an increase in environmental and safety concerns and in local requirements that further compounded complexity.

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## EXHIBIT 1 | Big Oil's Value Creation Has Disappointed Investors for the Past Five Years



Sources: S&P Capital IQ; BCG ValueScience Center; Thomson Reuters; BCG analysis.

Note: TSR = total shareholder return. Big Oil = Chevron, ExxonMobil, Royal Dutch Shell, Total, BP, ConocoPhillips, Statoil, Eni, and Repsol. The Big Oil index uses equally weighted median returns rebalanced monthly and does not equal the average return of all peers shown previously. Statoil is not included in the December 1999–December 2004 index because its initial public offering did not take place until 2001.

<sup>1</sup>December 2009–July 2014 TSRs for Big Oil = 10.3% and for S&P 500 = 15.1%.

This rising complexity and its escalating effect on costs are fundamental to any extraction industry. In 1859, Edwin Drake struck oil at 16 feet in Pennsylvania, but today, companies drill wells as deep as 40,000 feet and as far as 10,000 feet below the ocean's surface. But the growing complexity of extracting less accessible resources is not the sole cause of Big Oil's declining value. Rather, it is the combination of increasing resource, project, and industry complexity that has constrained Big Oil's performance in ways unseen in previous decades.

As industry fundamentals deteriorate, investors expect lower profitability and call Big Oil's business model into question. The model has suffered in three key areas:

- Escalating Costs.** Operating and project costs continue to increase. Typically, costs escalate as oil prices rise, but they do not necessarily fall as quickly when prices decline. Unit operating costs have almost tripled in the past 15 years, increasing by an average of 8% annually. Companies have struggled to create greater efficiencies in frontline operations, often tolerating poor efficiency, high degrees of waste and rework time, and expensive contractor management. Despite the increasing size and automation of facilities, Big Oil's labor intensity per barrel increased 13% during the same period.<sup>2</sup>
- Poor Project Execution.** Perhaps the starkest barrier for value creation has been oil companies' inability to develop new resources in a capital-efficient manner. Historically, Big Oil's core competence was its ability to complete the

most technically complex developments efficiently. Today, cost and time overruns are commonplace in the industry, which used to be the reference for large-capital project development. IHS, a research firm, conducted a survey of projects completed by major oil companies from 2005 through 2010 that showed that a staggering 49% ran over budget and 52% missed deadlines. The median cost overrun was \$2.7 billion, and the median delay was three years and three months. Companies habitually deployed capital to increasingly large, overly costly, and frequently delayed projects, thus eroding shareholder value.

- **Disappointing Exploration Results.** Although Big Oil has increased its spending on exploration over the past 15 years, the results have been disappointing. From 2001 through 2014, exploration expenses for all the majors combined quadrupled from \$25 billion a year to almost \$100 billion. Yet discovery levels remained unchanged: about 20 billion barrels of oil equivalent (BOE). From 2001 through 2010, discovered resources tracked spending levels, exceeding 40 billion BOE in 2010 before falling back to 20 billion BOE in 2013 and 2014. Despite more than a decade of technological advances in seismic surveying, interpretation, and reservoir modeling, the full-cycle return rate for exploration has halved, dropping below 10% (based on \$90 per barrel of oil).

As a result, even with high oil prices, company margins eroded. From 2012 through 2014, the average annual net profit margin for Big Oil shrank to 5.2% from 8%, and by October 2015, it had fallen to 0.5% for the preceding 12 months.

## The Changing Recipe for Success

For a long time, investors rewarded Big Oil's focus on reserve replacement and its role as a refuge for reliable long-term returns in turbulent markets. Value was driven by operators' ability to add barrels that would at least maintain, if not increase, their reserve-to-production ratios. Operators with strong exploration capabilities, good discovery rates, and volume growth created value.

From 1999 through 2015, \$0.97 of every new cash-flow dollar was plowed into capital expenditures and used to replenish reserves. At the same time, keeping up with depletion rates has become more difficult. From 2009 through 2014, every dollar's worth of depleted assets required \$1.80 of investment to maintain the reserve base, compared with \$1.60 from 2008 through 2010.

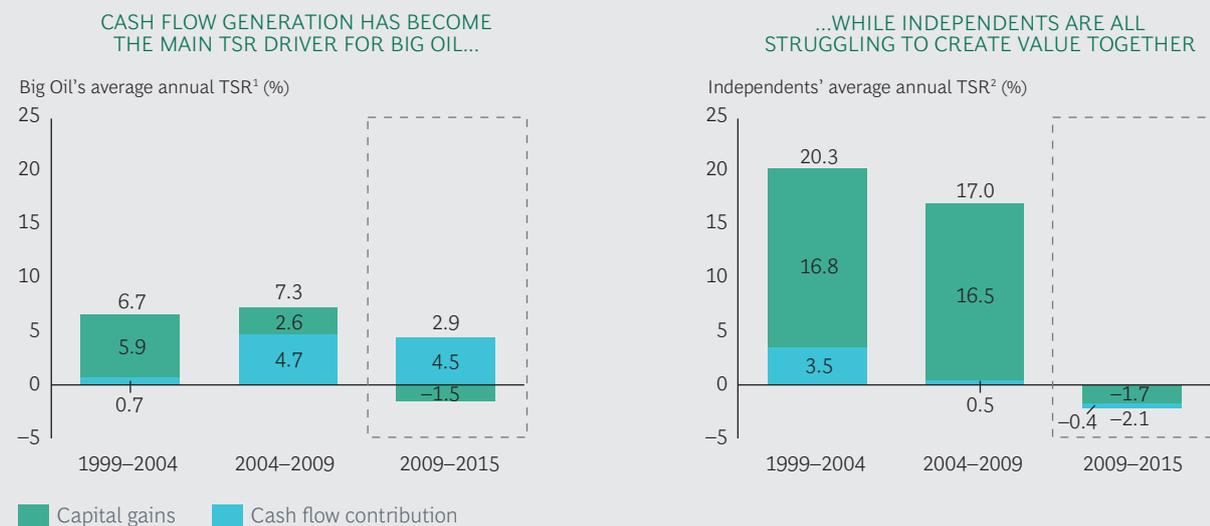
In the new era of declining profitability and increasing complexity, investors have shifted their focus to cash flow generation. They have lost faith in the ability of Big Oil to invest its free cash flow efficiently, and they recognize that returns will be driven mostly by operators' ability to return cash to them. Investors have essentially shifted their focus from *volume* to *value*. (See Exhibit 2.)

From 1999 through 2004, Big Oil's annual TSR was 6.7%, with 5.9% from capital gains and 0.7% from cash flow. From 2009 through October 2015, annual TSR fell to 2.9%, with capital gains accounting for -1.5% and cash flow generating 4.5%.

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## EXHIBIT 2 | Investors Now Favor Big Oil for Cash Flow



**Sources:** S&P Capital IQ; BCG ValueScience Center; Thomson Reuters; BCG analysis.

**Note:** TSR = total shareholder return. The contribution of each factor is shown in percentage points of average annual TSR. Statoil is not included in the December 1999–December 2004 index because its initial public offering did not take place until 2001. Shareholder returns are for December to December except for 2015, which ends with October. Because of rounding, not all numbers add up to the totals shown.

<sup>1</sup>Weighted average of Chevron, ExxonMobil, Royal Dutch Shell, Total, BP, ConocoPhillips, Statoil, Eni, and Repsol.

<sup>2</sup>Weighted average of Hess, Marathon Oil, Anadarko Petroleum, Inpex, MOL Group, Apache, Tullow Oil, Occidental Petroleum, Noble Energy, Murphy Oil, and Lundin Petroleum.

As difficult as this change has been for Big Oil, it has hit independent producers even harder. Because they do not benefit from the natural price hedge inherent in downstream operations, they were more exposed than many of the majors when oil prices dropped in 2014 and 2015. Also, having traditionally focused more on exploration and growth than the majors, they were more exposed to declining value, and total TSR fell from 20.3% to –2.1%. Their traditional business model is effectively challenged. (See the sidebar, “Total Shareholder Return.”)

### Lower Oil Prices Have Created a Cash Squeeze

While increasing complexity and declining profitability are structural issues that emerged when oil prices exceeded \$100 per barrel, the current price level has exacerbated the industry’s challenges. For Big Oil, cash flow came under pressure long before oil prices started to fall. From 2009 through 2011, cash flow per barrel dropped as low as \$2 from as high as \$9 per barrel. Now, with oil prices well below \$50 per barrel, the numbers have gone negative. Free-cash-flow yield, or free cash flow relative to market value, averaged 5.9% from 2004 through 2009, 0.8% from 2009 through 2014, and –5.3% for the 12 months that ended in October 2015.

In fact, Big Oil’s combined-enterprise free cash flow—defined as operating cash flow minus expenses, taxes, and changes in investments and net working capital—fell to –\$30 billion in 2013 from \$30 billion three years earlier, even though oil prices remained above \$100 per barrel. (See Exhibit 3.)

## TOTAL SHAREHOLDER RETURN

Total shareholder return (TSR) is the most effective measure of the value of a particular company's stock to investors. TSR comprises a company's stock price appreciation as well as any dividends paid. In simple terms, if a company's shares are trading at \$10, the stock rises by \$1 during the holding period, and the company pays a \$0.20 per share dividend, then the TSR is 12% (\$1 plus \$0.20 divided by \$10).

As a result, TSR is a preferred method of valuation used by funds and other institutional investors in assessing their equity investments.

TSR is delivered through capital gains and cash flow contributions. Capital gains reflect profit growth, which management can influence through increases in revenues and profit margin, as well as changes in the valuation multiple, which is affected by such factors as growth and profitability expectations, performance consistency, investors' confidence in management, financial policies, and risk factors. Cash flow contributions can be affected by capital expenditures, working-capital needs and dividends, share repurchases, debt, and cash.

### EXHIBIT 3 | Big Oil Is Squeezed for Cash and Unable to Fund Dividends



Sources: BCG ValueScience Center; BCG analysis.

Note: Enterprise free cash flow = operating cash flow minus expenses, taxes, changes in net working capital, and changes in investments.

<sup>a</sup>For 2015, net profit shown is for the 12 months ending in October 2015.

<sup>b</sup>Dividend coverage was calculated as the sum of enterprise free cash flow divided by the dividend payout from Big Oil companies, including Chevron, ExxonMobil, Royal Dutch Shell, Total, BP, ConocoPhillips, Statoil, Eni, and Repsol.

Conscious of investor focus on cash generation, all but two of the majors have maintained their dividends, although they have been forced to sell assets to keep making payments. From 2010 through 2014, Big Oil sold about \$30 billion in assets annually—three times as much as it sold during the first ten years of this century.

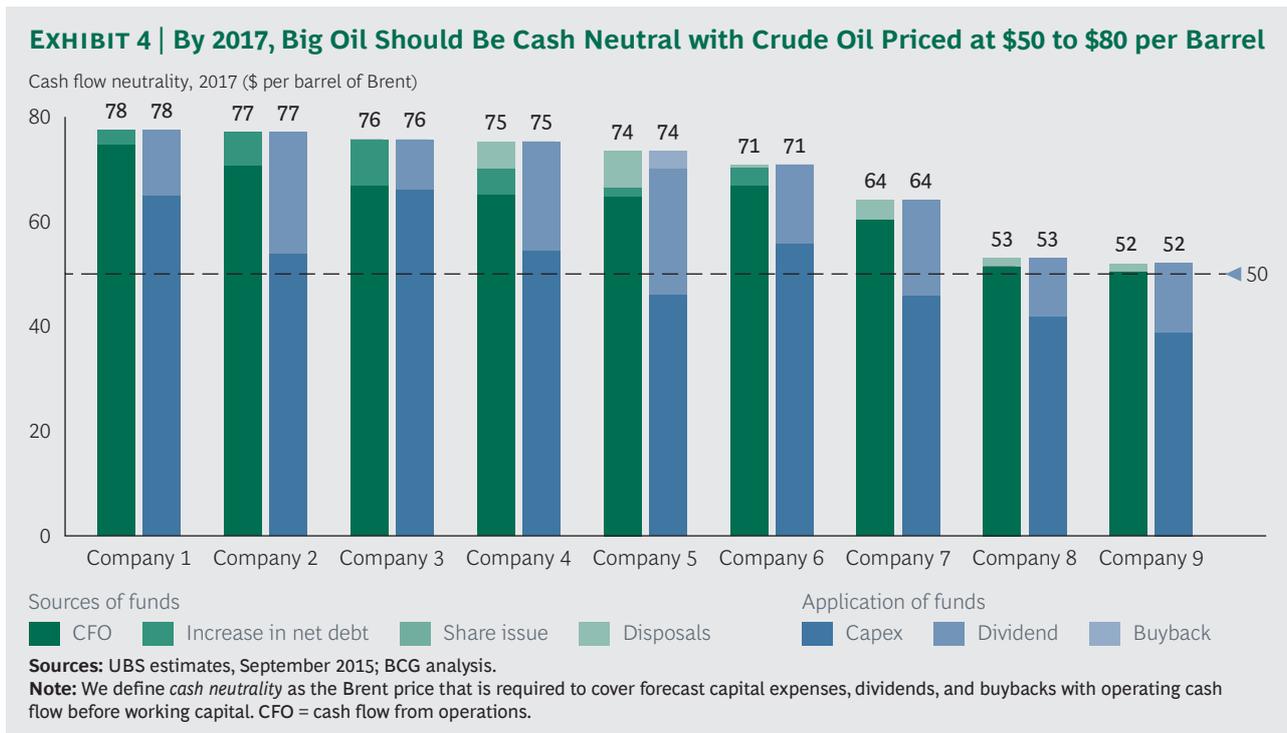
Clearly, this situation is not sustainable, and the majors may be forced to change their dividend policies if oil prices remain at their current level for a prolonged period.

For the next three years, companies will be cash neutral if oil prices are between \$50 and \$80 per barrel, well above their current level. Most companies are planning capital expenses on the basis of \$40- to \$60-per-barrel oil prices in 2017, which do not reflect stock buybacks and dividends equaling \$10 to \$15 per barrel. (See Exhibit 4.)

### Big Oil Is Responding

To protect their profitability and maintain cash returns to shareholders, Big Oil companies have drastically cut costs and made other adjustments to their business models in hopes of easing the current cash-flow squeeze. The initiatives that started even before the oil price crisis include the following:

- Reduced Exploration Spending.** Producers are scrutinizing prospects more carefully, selecting only the most promising opportunities. Companies also are eschewing high-cost projects such as arctic and ultradeepwater development. Since 2013, the 18 largest producers have cut their drilling investments in half, from \$58 billion to an estimated \$29 billion. Unit costs have also fallen dramati-



cally—for example, costs for seismic and drilling services have declined 30% to 50% or more since 2013—allowing operators to negotiate better terms and get more for their limited exploration budget.

- **Reduced Capital Expenses.** Companies have drastically reduced capital spending to preserve cash and safeguard return levels, and they have embraced greater investment discipline. In 2013, Big Oil typically screened projects at \$80 to \$90 per barrel. Today, the threshold is \$50 or less. As a result, in 2015, Big Oil trimmed capital budgets, cutting 2014 spending by 25%, and the spending declines are expected to continue for the next five years. Most projects that were in the planning phase are being postponed or canceled, and projects that are already under way are facing revisions and spending cuts. Meanwhile, producers have been able to renegotiate contracts by taking advantage of an oversupply of rigs, steel, and manpower.
- **Reduced Operational Costs.** As margins were shrinking, Big Oil was reducing operating costs. Such reductions typically come in waves, starting with relatively straightforward cuts in supplier expenses and procurement, which yield savings as high as 10% to 15%. In the next wave, operators increase offshore productivity through lean strategies, and they invest in improved planning to reduce waste and rework, typically saving another 5% to 10%.
- **Portfolio Adjustment.** Some companies are beginning to reshape their portfolios. Big Oil's traditional business model—excelling in highly complex and costly frontier resources—is challenging the industry's ability to generate healthy cash flows. Many transactions are being considered, but M&A activity has been modest given the estimated \$200 billion worth of assets for sale globally, one-third of which are in North America. Sellers and buyers still disagree on valuation, but persistently low oil prices should lead to more transactions. Meanwhile, integrated majors are likely to continue selling off refining and marketing assets to unlock for investors the value of these businesses, whose margins are buoyed by low crude prices.
- **Adjustment of the Operating Model.** Operators committed to cost reductions at the 20% level have started to simplify their operating philosophy and requirements and to intensify supplier collaboration to optimize the full value chain.

Some companies undertook these measures before the 2014 price collapse. Statoil and Total, for example, adopted comprehensive rationalization efforts when the oil price was more than \$100 per barrel. Nevertheless, the scope and depth of change have not been sufficient. To restore value creation, bolder moves are needed.

## Big Oil Must Reinvent Itself

Large international oil companies must structurally and fundamentally redefine their business model. They need a revolution. Breaking free of the current situation requires a radical shift in Big Oil's culture, operating strategy, and approach to competition. To restore value creation to historic levels, Big Oil needs five revolutions.

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Big Oil's traditional business model—excelling in highly complex and costly frontier resources—is challenging its ability to generate healthy cash flows.

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We anticipate project development with more flexible and specialized operating models and support systems adjusted to each type of project.

- **A Cultural Revolution to Instill Cost and Continuous Improvements as Priorities.** Historically, the industry has not focused on costs and efficiency. In the current price environment, however, these two factors will become key measures of competitiveness. They will require new capabilities of senior management and a shift in attitude. Like companies in the automotive industry, oil and gas companies must create a relentless drive to pursue productivity and reduce costs.
- **A Project Development Revolution Based on Better Standardization and Supplier Collaboration.** The industry’s project-delivery performance has been poor. The processes, organization, and approach to supplier engagement were designed for smaller and simpler projects. As complexity increased, projects outgrew the systems and approaches meant to handle them.

We anticipate project development with more flexible and specialized operating models and support systems adjusted to each type of project. With specialization comes the opportunity to standardize design and engage with suppliers in new ways. In ultradeepwater drilling plays, for example, operators must overhaul their approach to planning, selecting, designing, and executing projects. The processes should promote the early involvement of suppliers of core subsea facilities, ensuring involvement in lean designs that are easier and cheaper for suppliers to deliver. The select and define phases should use modular tools and thinking, enabling conceptual and front-end engineering design to maximize standardized concepts and facilities. Procurement processes and approaches also must be refocused. Today, procurement typically values a contractor’s ability to meet operator specifications as cheaply as possible. In the future, producers may need to offer incentives that encourage contractors to influence design early, dramatically reducing complexity and costs. Big Oil’s universal approach to project delivery has to be overhauled because different types of projects require different combinations of approaches and people.

- **An Operating-Model Revolution.** The specifics of the assets and a relentless focus on lean operations should drive the organization setup and the operating processes. Large, global operators have had a natural—and, in many ways, sound—inclination to create operating models that can be replicated across assets. Big Oil has been functioning on the belief that similar asset structures increase its ability to replicate processes, maximize learning, and deploy people and expertise. While this logic holds, it should not be applied in all cases.

For Big Oil, further tailoring of projects to reflect their type and their region will allow it to organize and design operating processes that minimize waste, boost productivity, and maximize value creation. Mature assets in the North Sea, for example, may require a distinct organization with a strong focus on production. These organizations may need swift decision-making authority to identify and fast-track smaller investments that support these “barrel chasing” activities.

The success of US shale oil and gas is another example. The successful operating model for shale was created not by Big Oil but by niche specialists and entrepre-

neurs with distinct capabilities. This approach allows producers to quickly deploy relatively small, mobile facilities, pursuing even marginal opportunities quickly. Decision making is fast, mobilization time is short, and the continuous push to standardize operations and create outdoor factories is astonishing. Operators and service companies alike have created customized capabilities—from reservoir modeling to directional drilling and hydraulic fracturing. The world’s largest and most advanced operators would have been unlikely to respond with the speed that smaller companies showed in turning US shale into a business producing 14 million BOE per day. As the majors entered shale, they wisely chose to run these units as autonomous companies. Could the same thing be done in deepwater projects, mature shallow-water projects, or other assets that require a unique competitive advantage?

- **A Portfolio Revolution to Ensure That the Asset Base Sustains Attractive Cash Generation.** The ability to move the technical frontier of oil production into deeper, harsher, and more difficult environments has been at the heart of Big Oil’s operating model. Difficult resources requiring cutting-edge technologies and leading project-management approaches gave Big Oil a real competitive advantage. These capabilities are still relevant as companies pursue more difficult resources, such as ultradeepwater assets.

However, Big Oil’s asset portfolio must be rebalanced with less exposure to the right-hand side of the cost curve—even if that means less overall volume and a different set of exposures. Operators may need to accept more country and political risk to gain access to lower-cost reserves. In some cases, they may want to enter fee-for-service agreements.

While these agreements provide no economic upside for operators, they can create a steady base of lower-cost barrels that protects cash flow when markets turn sour. Finally, operators could find value in creating clear, coherent clusters of resources in their portfolios, allowing them to tailor operating models to develop and produce from those clusters.

- **An Institutional Revolution to Change the Nature of Collaboration Among Oil Companies, Legislators, and Petroleum Agencies.** Historically, such interaction has been predominantly transactional. Legislators have sought to maximize local content, safety, and the government’s share of production, and petroleum agencies have increased safety measures for workers and the environment. While some friction between resource owners and oil producers is unavoidable, we see the potential for a smoother and more collaborative type of engagement. This is becoming particularly important as new global climate initiatives challenge Big Oil’s traditional operating model. Technical and safety requirements should be better aligned internationally, allowing the industry to gain real scale. Local-content requirements should focus on building local capabilities with the oil company as a long-term partner, helping to define those requirements. At the same time, government take should have a transparent, stable, and constructive framing, particularly when oil prices are as low as they are now. (See “Government Take in Upstream Oil and Gas,” BCG Perspective, December 2015.)

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**B**IG OIL FACES daunting challenges: as complexity and costs increase and value creation erodes, the sustainability of its traditional business model is under pressure.

Companies are reacting, making cuts to capital and operating expenses and adjustments to their portfolios. But we believe that a more fundamental, ambitious, and faster-paced revolution of Big Oil's business is needed. Such a revolution requires oil executives to aggressively transform the fundamentals of their business model. It requires them to set new expectations for their employees and to change the way they operate and engage with contractors and governments.

#### NOTES

1. We define Big Oil as the nine major oil companies: Chevron, ExxonMobil, Royal Dutch Shell, Total, BP, ConocoPhillips, Statoil, Eni, and Repsol.
2. See *Big Oil: Toughen It Out or Business Model Reboot?* BCG and Morgan Stanley report, June 2015.

## About the Authors

**Sylvain Santamarta** is a partner and managing director in the Oslo office of The Boston Consulting Group and leader of the upstream-strategy topic. You may contact him by e-mail at [santamarta.sylvain@bcg.com](mailto:santamarta.sylvain@bcg.com).

**Iván Martén** is a senior partner and managing director and the global leader of the firm's Energy practice. You may contact him by e-mail him at [marten.ivan@bcg.com](mailto:marten.ivan@bcg.com).

**Esben Hegnsholt** is a principal in BCG's Copenhagen office. You may contact him by e-mail at [hegnsholt.esben@bcg.com](mailto:hegnsholt.esben@bcg.com).

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## For Further Contact

If you would like to discuss this report, please contact one of the authors.

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