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ARE YOU READY FOR THE NEXT WAVE OF UPSTREAM TRANSFORMATIONS?

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HAVING SUCCESSFULLY NEGOTIATED the extreme price weakness and volatility of the oil and gas markets from late 2014 into 2017, upstream CEOs arguably deserve some downtime to bask in their accomplishments and enjoy the vastly improved macroenvironment. But now is not the time to rest. A number of potentially highly rewarding growth opportunities, as well as several emerging or intensifying threats, will present themselves in the near to medium term. Upstream CEOs must recognize these opportunities and threats and be prepared to act boldly and decisively—in short, to transform their companies yet again.

We see four domains—ways of working, operations, the portfolio, and relationships with ecosystem partners—that CEOs could profitably focus on as they prepare their companies for the industry's next wave of transformations. CEOs who skillfully exploit the opportunities available in one or more of these domains could capture potent competitive advantages. CEOs who don't could find their companies marginalized—or worse.

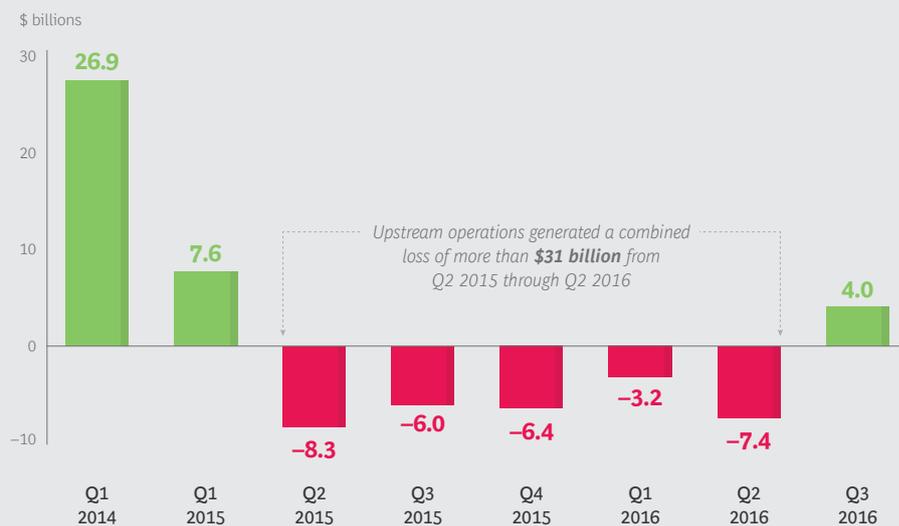
An Extraordinary Challenge Successfully Met

The magnitude of the plunge in oil and gas prices was breathtaking. For more than three years preceding the crash (from February 2011 through early September 2014), the per-barrel spot price of Brent crude oil exceeded \$100, reaching an apex of \$128 in March 2012. In January 2016, the price stood at \$26, a decline of nearly 80% from peak. The decline in natural gas prices was less steep but still dramatic. The average Henry Hub spot price in the first quarter of 2014 was \$5.70 per million Btu; in the first quarter of 2016, it was \$2.00.

The collapse in oil and gas prices took an exceedingly heavy toll on the earnings of energy companies. The majors (BP, Chevron, ExxonMobil, Royal Dutch Shell, and Total) suffered a combined loss of more than \$31 billion in their upstream operations from the second quarter of 2015 through the second quarter of 2016. (See Exhibit 1.) The effects of this drop on the companies' cash flows were sizable. From the first quarter of 2015 through the fourth

EXHIBIT 1 | Upstream Earnings Plunged Along with Oil and Gas Prices

Earnings from upstream operations of the majors



Brent crude oil, average spot price per barrel (\$)	108	54	62	50	44	34	46	46
Natural gas, average Henry Hub spot price per million Btu (\$)	5.2	2.9	2.7	2.7	2.1	2.0	2.1	2.9

Sources: Company financial reports; BCG analysis.

Note: The majors are BP, Chevron, ExxonMobil, Royal Dutch Shell, and Total.

quarter of 2016, the companies spent \$94 billion more than they generated in earnings from their upstream operations. To finance investments and pay dividends, the companies had to borrow \$100 billion.

To limit the damage from the price collapse, most upstream players launched aggressive cost-cutting programs. In our experience—BCG helped 18 international and national oil companies define, structure, and execute cost-optimization programs in 2016 and 2017—companies typically focused first on reducing operating expenditures, before turning their attention to trimming capital spending (including spending on exploration, drilling, and major projects), all while striving to rationalize noncore assets. For most companies, the rigor they brought to the task yielded impressive results. Most businesses pushed down their costs, including breakeven costs, substantially; reductions of 20% to 25% in operating expenditures per barrel of oil equivalent, for instance, were not uncommon.

Thanks to their cost-cutting successes, most upstream players now find themselves in a strong financial position, especially with oil prices having stabilized above \$70 per barrel. (See Exhibit 2.) (Many companies are now profitable with oil at \$60.) Companies such as BP, Royal Dutch Shell, and Chevron are deploying the cash they are generating in a number of shareholder-friendly ways, including boosting dividends and accelerating share buyback programs.

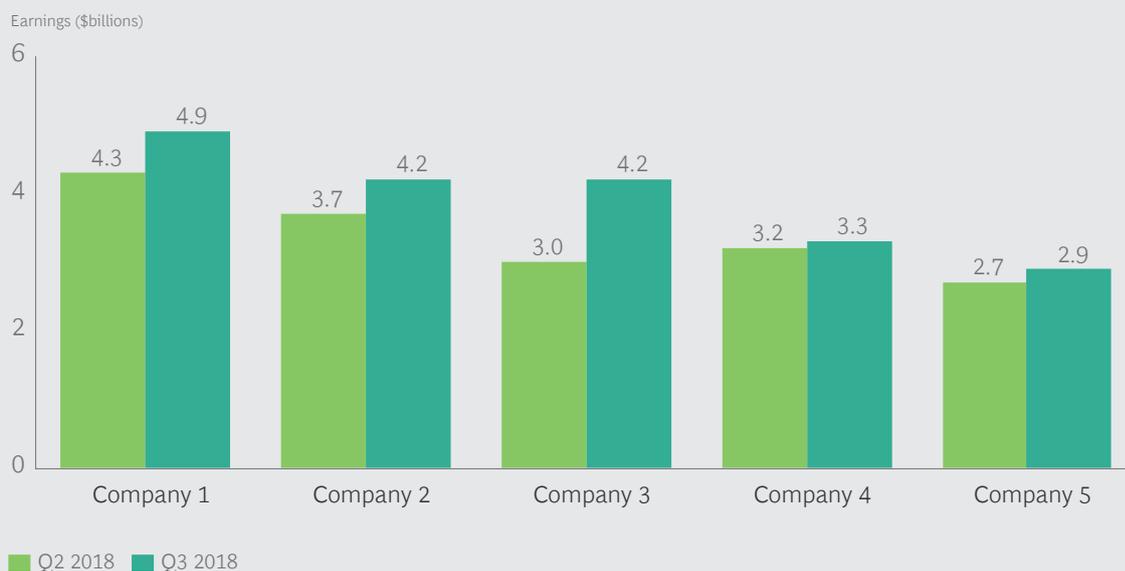
Although the pressure appears to be off upstream companies for now, the landscape continues to evolve. CEOs must do more, potentially much more, to position their companies for longer-term success.

New Opportunities and Critical Hurdles

Upstream players' current financial strength can, in many cases, enable strategic acquisitions—deals that give a company access to a particular asset class or region, for example—that would have been

EXHIBIT 2 | Upstream Earnings Have Rebounded Strongly

Second- and third-quarter 2018 results for upstream operations of the five majors



Source: Company financial reports.

financially prohibitive earlier. Their strong financial position can also facilitate divestitures, given the now deeper and broader buyer pool. Upstream businesses potentially have a host of new opportunities to change their company's profile regarding both portfolio risk and growth trajectory and drivers.

Simultaneously, upstream players face fundamental challenges that will pose risks to the companies and alter the amount of investment necessary to remain viable. These challenges include secular economic and social trends that stand to accelerate or intensify. Prominent among these trends are (1) the world's growing emphasis on decarbonization and renewable energy and (2) changes in mobility patterns and user preferences, including potentially rapid growth in the adoption of electric vehicles. These developments could mute demand for oil—substantially and quickly.

Upstream players also face shorter-term challenges spawned by the companies' reaction to the plunge in oil and gas prices. One challenge is traceable to the companies' relative underinvestment in explora-

tion as they sought to rein in spending; this could lead to a shortfall of supply in the near to medium term, forcing companies to play catch-up. Another, related challenge stems from the companies' pullback from sanctioning new development projects.

To seize the opportunities while navigating the challenges, companies must define an optimized course. We see four domains, in particular, that we believe CEOs and their leadership teams would do well to focus on as they map out a path. (Strong digital capabilities play a critical role in each.)

Gaining the Upper Hand

The domains in which companies can find transformation potential are ways of working, operations, the asset portfolio, and relationships with ecosystem partners. (See Exhibit 3.) The efforts necessary to seize the opportunities inherent in each are non-exclusive; upstream executives could choose to focus on transforming all four domains in parallel.

Ways of Working. As part of their cost-cutting campaigns, many upstream players

EXHIBIT 3 | Upstream Companies Will Find Transformation Opportunities in Four Domains



Source: BCG analysis.

Note: In each domain, digital and data science capabilities can be a key enabler to capture value.

reduced headcount significantly. Reductions in some support functions, such as HR, were as high as 55% at some companies. Cuts in technical functions were, in general, smaller but still significant. Some businesses reduced headcount in their subsurface units, for instance, by as much as 45%.

Despite the magnitude of these cuts, few upstream companies used the occasion to fundamentally rethink and transform the way their organizations approach day-to-day work and workflows. Energy companies are well structured, process-driven companies—but they are far behind pace-setters such as Facebook and Google in optimizing ways of working to generate superior performance.

We believe that there are several distinct thrusts these businesses could emphasize to lift themselves to the next level. One is the adoption of agile ways of working.

Agile has delivered outsized gains—for example, vastly accelerated project delivery (ranging from two to four times as fast as the company's performance before adopting agile) and reductions of 15% to 25% in development costs—for companies in other industries that have deployed it. Critically, agile has also netted many of these companies increased employee engagement and enhanced ability to attract and retain

superior talent. The use of agile could deliver similarly strong advantages to upstream companies.

The second action that could substantially improve upstream companies' ways of working is establishment of a performance-centric culture. Such a culture would be particularly important if the industry's costs start to creep up again. The culture requires several elements. One is an engaged workforce that understands and subscribes to the company's strategy and employees' role in delivering it. Another element is optimized governance and processes, including a relatively flat structure and well designed chains of command. (The global COO of one international oil company has 20 direct reports. This large number of reports allows him to stay close to the front line but forces him to devote substantial time to the administration of these relationships.)

Another necessary element is a company-wide commitment to continuous improvement, reflected in the delivery of leaner processes; a drive to simplify tools, technical standards, and reporting mechanisms; and a push to bring creative solutions to challenges. Spirit Energy's application of an innovative drilling technique on the Norwegian continental shelf is an example of how such a commitment to continuous

improvement can deliver game-changing results.

The third action that could make a meaningful change in companies' ways of working is better use of financial incentives. Many upstream companies use employee incentives that are based on the company's overall performance relative to its competitors, a factor over which individual employees have little influence. As a result, employees are not sufficiently incentivized to excel at the things over which they do have control. Extended across the enterprise, this situation can hurt firm-wide performance. Use of financial incentives that are personalized to each employee (and/or to each division, to foster cooperation) can remedy this. It can also help attract and retain talent in an increasingly competitive work environment; in the talent market, upstream companies compete not only with other upstream players but also with banks, technology companies, consulting firms, and others.

Operations. Many upstream companies have launched initiatives aimed at locking in the gains in operational efficiency they achieved in their cost-reduction campaigns—and potentially improving operational performance further. But few companies have gone on to radically rethink and transform their operations, whether onshore, offshore, or both.

Achieving true step-change operational improvement requires a transformation in the company's operating model. This means viewing day-to-day processes through the lens of strategic objectives—and optimizing the former to deliver on the latter. The right operating model can foster significant improvements in companies' operations from the perspective of health, safety, and environmental (HSE) considerations, for instance. It can allow faster design and implementation of solutions to HSE problems. It can also permit easier customization of mitigation efforts for different HSE activities and facilitate improved coordination between functional teams, such as maintenance and construction. Such benefits can translate into sus-

tainable productivity gains of 10% to 15% among relevant personnel.

A finely tuned operating model can also underpin efforts to boost production efficiency. We have seen companies make good on the objective of cost-effectively "chasing every barrel," for example, by refining and standardizing, across operations, their definition of maximum delivery potential. The companies supplemented this refinement and standardization with systematic identification and root-cause analysis of recurring problems, followed by appropriate remedial actions and the sharing of best practices across business units. Such efforts can deliver improvements in production efficiency of up to 5%.

An optimized operating model is also essential to achieving and sustaining major cuts in operating costs. Reducing such costs by 20% to 50% is possible through the optimization of core processes, such as scheduling and planning, and a strategic reduction in the volume of activities such as painting and topside maintenance.

The Portfolio. As noted earlier, the vastly improved financial condition that most upstream operators find themselves in as a result of their cost-reduction campaigns (coupled with the recovery in oil and gas prices) opens up a range of potential M&A moves that would have been inconceivable a short time ago. Companies have already exploited this situation. Some have made regionally focused moves aimed at strengthening positions in specific basins or at gaining access to unique operating models or key infrastructure. Examples include Total's acquisition of Maersk Oil, Santos's acquisition of Quadrant Energy, and DEA's planned merger with Wintershall. Companies are also making moves as bets on particular asset classes. BP's announced purchase of BHP's US shale assets is an example.

Other companies are taking advantage of current circumstances to reduce or eliminate particular types of exposure—including, in at least one case, the elimination of upstream exposure altogether. Engie, BHP,

and Centrica are prominent examples of companies that have completely changed the nature of their upstream exposure.

Having supported more than 600 post-merger integrations and carve-outs, many of them in the upstream sector, we have identified some common characteristics among the most successful deals. The companies that create the most value normally conduct a thorough preparation phase, one that begins well before the announcement of the deal. They also deploy a consistent execution methodology. And, in the case of a merger or acquisition, they keep a relentless focus on realizing the deal's targeted synergies, paying particular attention to the cultural integration.

Opportunities remain abundant, and we expect to see additional mergers, acquisitions, and divestitures over the next 12 to 18 months. (In fact, we would be surprised if literally every CEO in the upstream space were not contemplating a major move.) Participants will include fast-moving, private-equity-backed entities seeking the assets made available through divestitures by larger players. Chrysaor's purchase of a large portion of Shell's North Sea assets is an example of this dynamic.

Relationships with Ecosystem Partners. For most companies, capturing opportunities in the relationships domain will be harder than doing so in other domains, because it entails forging alignment on objectives with parties that have substantially different sets of priorities. But achieving alignment is often possible, and the rewards can be significant.

Start with relationships with suppliers. Upstream players squeezed suppliers hard in their cost-cutting campaigns; suppliers responded by cutting costs materially. Providers of seismic acquisition services and supply vessels, for example, had to reduce their rates by as much as 60%. But the nature of the working relationship between upstream companies and their suppliers remained essentially unchanged for most companies. There was little thought given to how the parties might collaborate better

to jointly bring down costs or work in partnership to continuously improve the quality of delivered services.

This lack of attention to the relationship represents a lost opportunity. Other industries, including the automotive industry, for which continuous improvement in service cost and quality is a high priority, have demonstrated that a different kind of relationship between companies and suppliers, one in which suppliers are much more empowered and the two parties work in genuine partnership toward shared objectives, can be a win-win. Sought-after cost and quality goals are reached; innovation is continuous; transparency is high; and both parties feel valued. Upstream companies could take a page from the automakers' book.

Relationships with host governments are also ripe for an overhaul. Many governments of oil- and gas-producing nations suffered mightily during the pullback in oil and gas prices; greatly reduced revenues from hydrocarbons forced them to make steep budget cuts. Now might be an opportune time for upstream companies to forge new, long-term deals with these governments—agreements that are mutually beneficial, encompass the entire spectrum of activities, from exploration to abandonment, and entail financial commitments from both sides. Such deals could do much to foster mutual trust and mitigate risk for both parties.

Finally, relationships with non-operated partners—that is, the management of externally operated assets—are due for renewed focus. (Externally operated assets can account for as much as half of large upstream players' production and expenditures.) Most CEOs of upstream companies are dissatisfied with the management of these assets, and for good reason: resource allocation is typically suboptimal, value creation is rarely measured accurately, and data on projects, operations, and costs is rarely collected and passed on to the company's internal management, where it could be used to advantage. (This last problem is one that very large international oil companies, which are on a seemingly

constant search for suitable benchmarks for their internally managed assets, suffer from disproportionately.) Upstream companies should make it clear to the external teams how they want these assets to be managed. Getting it right can translate into better performance of the externally managed assets. It can also yield large bodies of useful performance information for the upstream company.

Another lever that upstream companies have for getting better returns on externally managed assets is to encourage greater collaboration among parties that work in relatively close proximity, such as in the same basin. This type of collaboration can spur such efficiency-boosting measures as the pooling of logistical resources, including helicopters, supply vessels, and warehouses. Eventually, it can lead to broader, more ambitious initiatives, such as the creation of rig clubs, the establishment of

joint ventures in decommissioning, and the launch of electronic platforms for trading unused equipment.

UPSTREAM CEOS ONCE again have a weighty must-do task ahead of them: rethink how to do business in an environment that is going to change yet again, whether the company is ready or not. The urgency to act is perhaps not quite as great as it was during the price collapse and its immediate aftermath. But the ultimate consequences of inaction or bad choices could be severe. Companies must quickly determine where they need to be and begin to make the moves that will get them there. The next 12 to 18 months could determine the industry's pecking order for the next several years, perhaps longer. Where do you want your company to be when the dust settles?

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