

strategy&

***Oil and Gas
Trends 2018–19***

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**Strategy shaped
by volatility**



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Introduction

After several years of oversupply, the oil and gas industry could very well be moving headlong into a supply crunch. This may seem hard to imagine, given the ramping up of U.S. oil production and the burgeoning sense of optimism that is sweeping the sector. In general, the industry feels much healthier than it did 12 months ago: The price of oil has rebounded. After appearing limited to a range between the mid-\$40s and \$50 per barrel (bbl), Brent crude is now trading above \$70. The industry is thus recovering from the brutal last few years of weak prices, enforced capital discipline, portfolio realignments, and productivity efficiencies.

At the same time, the International Energy Agency (IEA) has been flagging the possibility of a supply crunch since 2016. More recently, the CEOs of Total, Eni, and Saudi Aramco have warned of one by the end of the decade. With oil demand growing, and investment in many major projects having been deferred during the downturn, there is less potential supply available. Oil companies will need to boost their production, and there is a risk that some may struggle to keep up.

The fundamental challenge, of course, is the intrinsic volatility in the sector. Producers need time to address the vagaries of an over- or under-supplied market. They also need to grapple with the pace and magnitude of the transition to energy from non-fossil fuel sources. Facing these uncertainties, oil and gas companies must develop a resilient strategy to mitigate these risks.

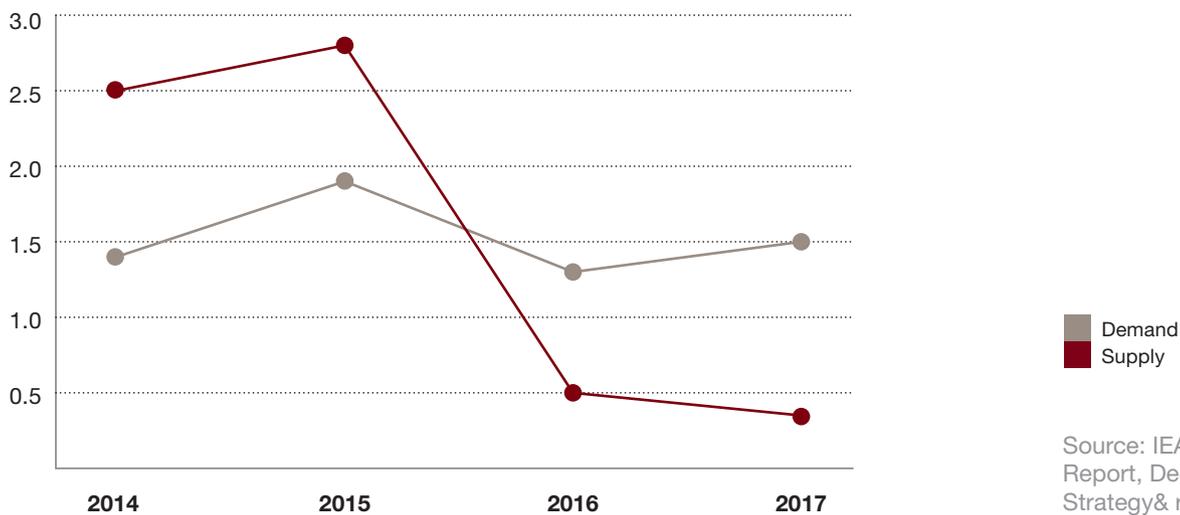
In short, while the supply glut may have ended, its aftereffects will continue. In the short term, companies must maintain capital discipline and the focus on productivity improvements and applying new technology. In the long term, they need to make their portfolios profitable against low break-even prices. Moreover, they'll need to figure out how to future-proof their overall portfolio, and make it secure amid the transition to a lower carbon world.

The challenge in supply

Looking more closely at the recent short-term recovery, it seems to represent a recent rebalancing of market fundamentals, in a way that will make supply more challenging over the next few years. Oil supply growth has eased off, demand is robust, and inventory levels are finally eroding. On the supply side, OPEC has been critical to this adjustment. Its November 2017 decision, made along with non-OPEC members, to cut supply by 1.8 million barrels/day (bbls/d) through 2018 accelerated this rebalancing.

Exhibit 1
Growth in world oil supply and demand

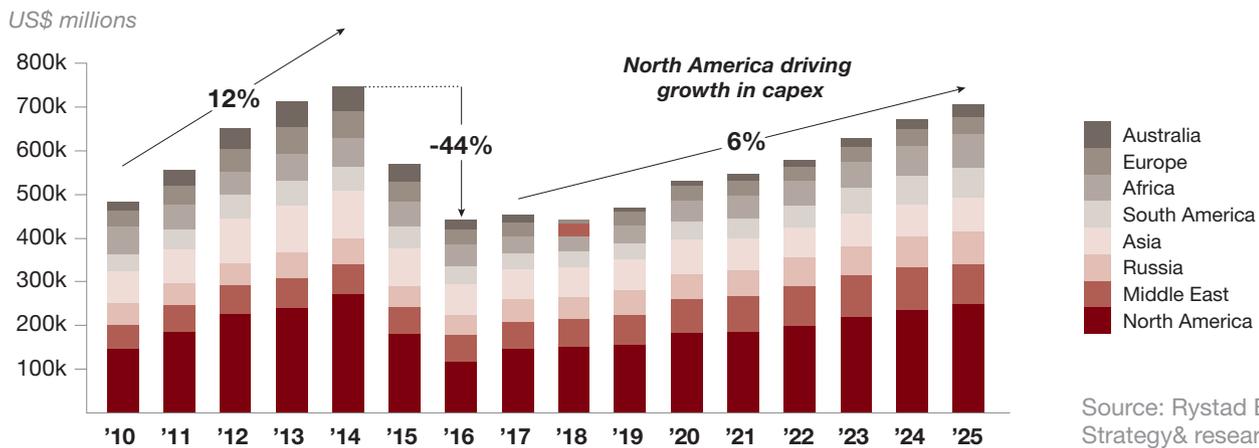
Million barrels/day



More broadly, global upstream capital expenditure, which dropped nearly 45 percent between 2014 and 2016 is now forecast to rise 6 percent year-on-year in the medium term. Oil and gas rig activity levels are rising, driven by the North American market, and major projects are being approved. To name a few examples: BP went ahead with the second phase of Mad Dog, a floating production platform, in the Gulf of Mexico. Shell reached a final decision to invest in the Penguins field redevelopment, its first new staffed installation in the northern North Sea in almost 30 years. Exploration is on the rise again for the first time since the global recession. Numerous companies made bids in the recent Mexican deepwater auction, with Shell winning nine blocks (out of 19) and Eni, Chevron, and Repsol, among others, picking up acreage. In other regions, Tullow won offshore licenses in Peru and Cote d'Ivoire, ExxonMobil entered Ghana and Namibia and offshore Mauritania, and BP with its partner Kosmos, began exploration off the shore of the Cote d'Ivoire.

Exhibit 2
Expanding investments in oil and gas exploration

Global oil and gas capital expenditures

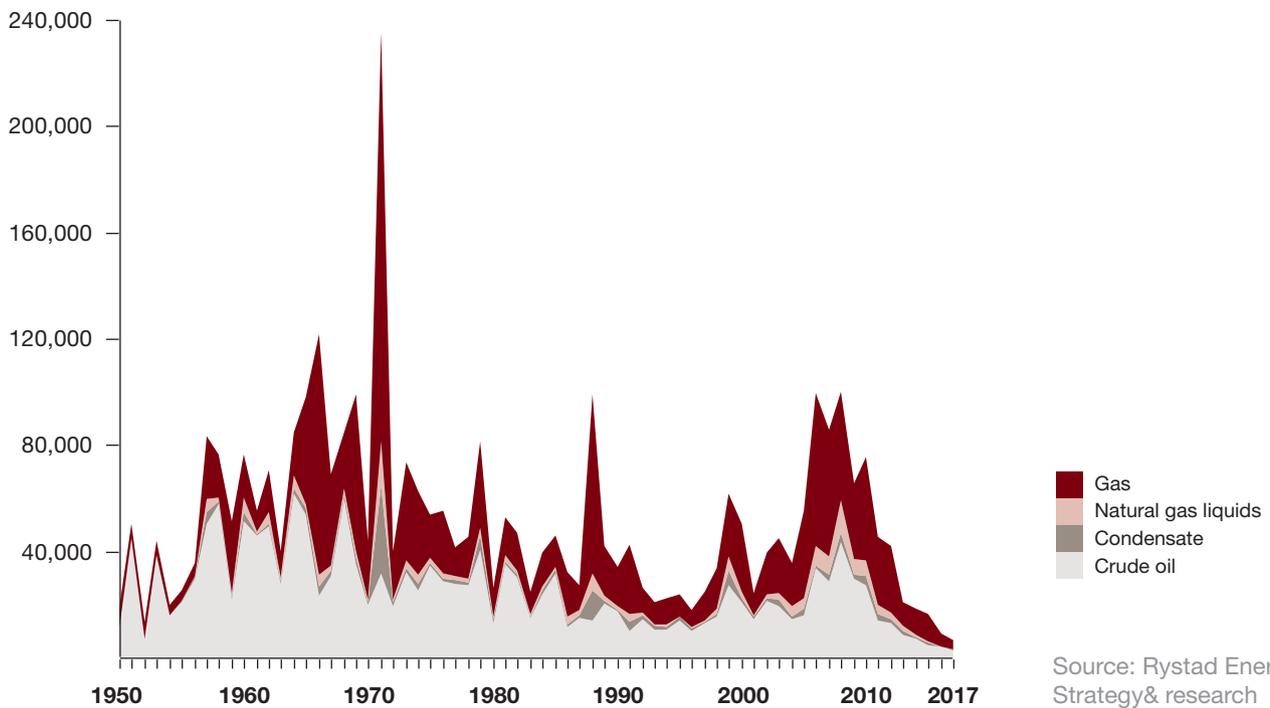


Despite these signs of a renaissance, the sector faces a number of supply-related challenges. First is an ongoing decline in new discoveries. By the end of 2017, the volume of new oil and gas discoveries, was at its lowest since the early 1950s. To put this into perspective, only 3.5 billion barrels of liquids (crude, condensate, and natural gas liquids) were discovered in 2017, which was enough to meet only 10 percent of demand. The reasons for this decline are simple: It's getting harder to find the large discoveries known as “elephants,” and most prospective areas have already been explored.

Exhibit 3
The long decline in new oil and gas discoveries

Global volumes of new discoveries in oil and gas

Millions of barrels



Source: Rystad Energy;
 Strategy& research

This contraction was exacerbated by a second challenge: the slowness of the rise in exploration spending since it fell with the price collapse of 2014–16. Globally, spending fell by more than 60 percent, from a high of US\$153 billion in 2014 to about \$58 billion in 2017. It is forecast to recover modestly over the near term at a 7 percent compound annual growth rate. The investment slump in traditional supply sources looks like it will continue to have an effect on new production.

As a result of these two challenges, we currently have what the IEA calls a “two-speed oil market.” Although U.S. tight oil, or shale oil, is a dynamic new source of supply, investment in more conventional sources of output has dropped and, as a result, “the world needs to find an additional 2.5 million bbls/d of new production each year, just for conventional output to remain flat,” according to the IEA World Energy Outlook 2017. Given that it takes about three to six years from project sanctioning to coming onstream, the decline in investment approvals during the price slump could continue to hurt the sector if financial investment decisions remain constrained.

A third big challenge the industry confronts is supply disruption. In existing oil fields, production is declining — and this decline rate is accelerating by about 4 percent per annum. Current spending increases elsewhere are insufficient to ensure discovery of enough new fields to replenish this decline.

In some countries, the supply disruption is related to geopolitical issues. For example, with the economic distress in Venezuela, production there is currently down to some 1.5 million bbls/d, a 40 percent decrease from the 2.5 million bbls/d this country was producing in early 2015. If the country were to suffer an economic collapse, almost 2 million bbls/d of oil supply could come offline. In Libya, current output is around 990,000 bbls/d, which is well off from the 1.5m bbls/d this country was producing in 2012. It’s not clear yet how this production would be replaced. Because of its reserve cutbacks, OPEC’s spare capacity at the end of 2017, according to the U.S. Energy Information Administration (EIA), was 2.1 million bbls/d, almost half of the 4 million bbls/d it had in 2010.

A fourth issue constraining the global oil production system is deferred maintenance. Some operators have put off noncritical spending in recent years to reduce costs. In the U.K. continental shelf, for example, the average number of person-hours in backlog per installation for corrective and deferred safety critical maintenance rose 25 percent between Q1 2016 and Q4 2016 (according to the Health and Safety Report 2017 by Oil & Gas UK). Although important everywhere, maintenance is critical in basins with aging asset infrastructure. The recent crack in the North Sea Forties pipeline, which disrupted production in the region, highlighted the challenges for an asset

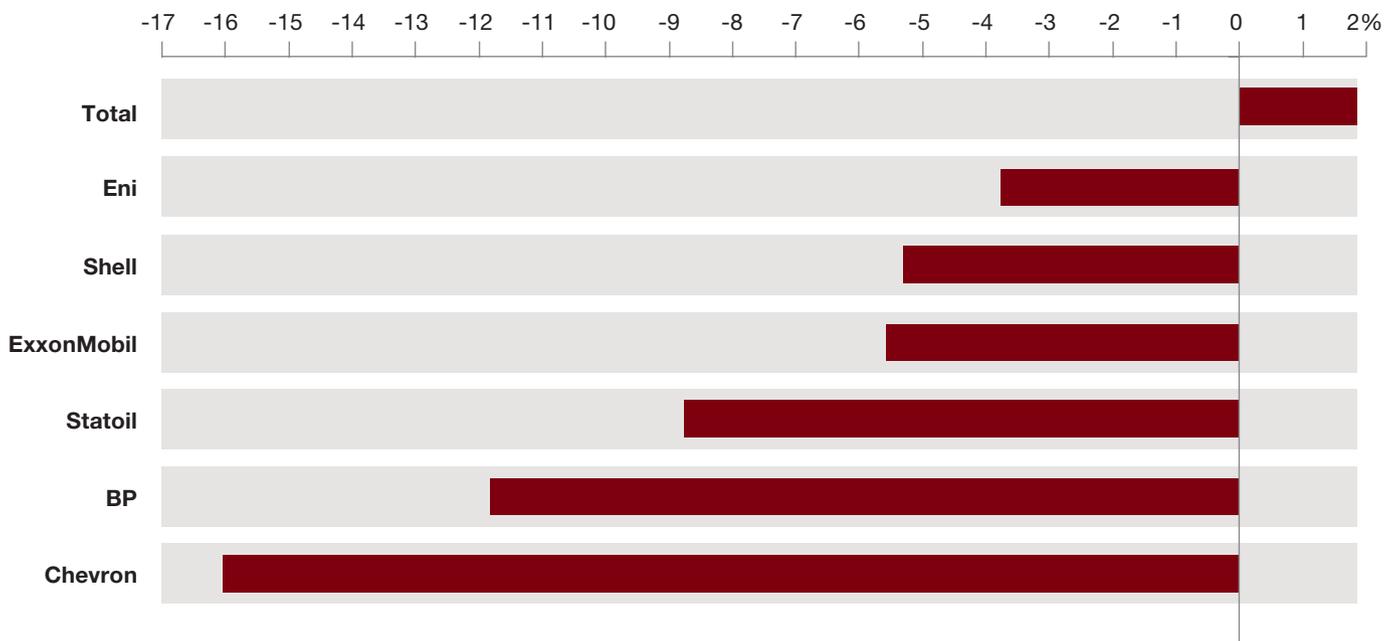
Although important everywhere, maintenance is critical in basins with aging asset infrastructure.

that is more than 40 years old (it was inaugurated in 1975) with an original design life of some 25 years.

A fifth challenge for operators involves the gap between the expanded capabilities they need, and the diminished capabilities they have. Workforce reductions made during the downturn to save money resulted in lost technical skills and damaged the industry's ability to attract new talent. This is on top of the coming "great crew change," a demographic shift that will be ushered in over the next decade as a large proportion of the sector's aging workforce retires.

Exhibit 4
Global head count for selected oil companies

Change in number of employees around the world, 2016 versus 2014



Source: Annual accounts;
Strategy& research

Finally, the industry has the broader challenge of dealing with the overall momentum to build a lower-carbon world. The growing electrification of transport, the possible plateauing of oil demand by the 2030s (highlighted by BP in its [2018 Energy Outlook](#) publication), and the deployment of smart technologies to better manage supply and demand will require business models throughout the energy industry to evolve.

As for U.S. oil (including tight oil), output has ramped up considerably in the past few years, and current production is over 10 million bbls/d, exceeding the peak last reached in 1970. But it's unclear if the U.S. can plug any future shortfalls in global supply. From a financial perspective, U.S. tight oil operators are under mounting pressure from investors to shift from an "all-out production growth" model to more profitable operations. From an operations perspective, it is worth noting that the new-well oil production per rig measurement in the prolific Permian basin has begun to taper off, according to the EIA's Drilling Productivity Report, after having risen aggressively in early 2017.

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A “future-proof” strategy

Faced with the uncertainties of a potential supply crunch and the energy transition, what should companies do? The strategic principles laid out below will sustain your business, “future-proofing” it, regardless of short-term volatility.

Continue to manage the overall portfolio with a much lower break-even price, whatever actual oil prices are

Big players are already doing this. In May 2017, Shell divested the majority of its Athabasca oil sands business on the grounds of poor economics in a lower oil price world (and perhaps with an eye to the future, given the higher emissions produced by this unconventional source). In January 2018, BP announced it would only approve new projects that were profitable at less than \$40/bbl. In order to maintain this type of portfolio, companies must undertake regular portfolio reviews to weed out assets that do not comply. This portfolio approach should resonate with companies of all sizes, including the smaller independents, some of whom focus too much on the technical challenge of discovering exciting new plays, rather than on commercial viability.

Hold on to the mantra of capital discipline

If the oil price rises, stay the course on cost reduction, standardization, and collaboration to make sure inefficiencies do not creep back in. Ensure all operational decisions — including new country entry, production optimization, and acquisitions and divestments — are reviewed under the lens of full-cycle project economics. All spending needs to reflect the focus of a company’s core and differentiated capabilities.

Supporting a high level of free cash flow will be critical for oil and gas operators. Capital will flow to companies that deliver positive returns in any type of commodity price environment. Since success in the market correlates with financial returns as opposed to production volume, the entire company will benefit.

Refocus investment and efforts on asset maintenance

As oil prices rise, operators may be tempted to push their equipment harder to produce more. But given the age of many assets, oil and gas companies need to ensure adequate funds are available to keep supply infrastructure in good repair. This is especially true for companies that deferred maintenance beginning in 2014. As rising levels of activity put stress on production equipment, unplanned outages will harm the industry. Thus, planned maintenance should account for the majority of activity going ahead.

Replace the “owner-operator” model with an “owner”-only approach where returns are the priority

Many oil exploration and production companies believe they need to build capabilities across the entire value chain, when in reality shareholders and the providers of capital simply want a return on their investment. In a dynamic market, the owner-operator model is a handicap; the costs incurred under this construct outweigh the value generated. Companies need to parlay their own exceptional capabilities into true partnerships with other best-in-class companies to stitch together an ecosystem of expertise. This shift away from operations will help them replace fixed costs with variable costs, and construct commercial terms that balance risk, reward, and roles. Companies in many other industries that went through similar downturns were forced to evolve and now are healthier, more agile, and more likely to win in volatile markets.

Double down on digitization

Now is the time to transform operations by leveraging advanced digital technology to drive efficiencies and to open up new opportunities. Doing so might involve so-called digital twins (virtual simulations of assets) that can improve the efficiency of predictive maintenance. It might also take the form of using drones to inspect offshore platforms, which reduces workers' exposure to hazardous tasks; data analytics to optimize production and reserves; or other new processes and practices. Oil and gas companies need to drive this innovation across their businesses.

Develop talent for a new era of technology

The industry's talent profile is changing. Traditional disciplines such as subsurface and surface engineering are still important, but they must be

balanced against new demand for expertise in digital operations. As companies build their capabilities in software engineering and data science for example, senior executives in talent management will need to figure out the right weighting of technical (engineers) versus technological (data scientists and software engineers) staff and how the sector can attract the latter. Moreover, as companies become more efficient through the application of digital solutions and the likelihood of sustained lower oil prices, it is unclear if head counts return to pre-2014 levels.

Consider how the overall business should evolve

In the longer term, given the mega trends shaping the sector, companies must focus on finding and executing the most resilient future-proof strategy for their own unique capabilities. Entry into new types of energy operations may be one avenue. For example, Dong has used its legacy upstream oil and gas business to fund its growth segment in wind energy. In 2017, Dong exited the oil and gas business to focus on low-carbon plays, subsequently rebranding itself Orsted. Engie similarly divested its upstream assets to focus on power and renewables. Some of the European oil majors are also investing in low-carbon plays, which range from traditional renewable energy (such as wind and solar power generation) to more recent acquisitions involving electric vehicle infrastructure.

Shifting portfolios to further favor natural gas is another option. There is a growing school of thought in the market that oil-focused upstream companies have perhaps 10 to 15 years of potential growth opportunity. For producers who share this view, natural gas becomes the bridging fuel to a low-carbon economy.

Conclusion

Many people in the industry continue to neglect the supply side of the global energy situation and assume an overconfidence in supply. Demand continues to exceed annual forecasts, inventories are being reduced, and reserves are not being replaced. Market values — for example, backwardation (in which futures prices trade below expected market prices) and forward pricing curves — reflect a belief that supply is easy to increase and demand will flatten. Nonetheless, the world remains dependent on oil and gas. The need to find more of both resources will become more pressing over the short to medium term.

Volatility is also likely to continue in market fundamentals, thus affecting oil prices. As operators assess the impact of various scenarios from supply constraints to low carbon, they need a plan of action. Portfolios have to be resilient, innovation needs to thrive, and productivity and capital efficiency must remain the bedrock of operations. Looking further out, companies will need a robust strategy for hydrocarbon weighting: a strategy that will serve them no matter what the future brings. Only those companies who can do all this will prevail.

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