MOODY'S
INVESTORS SERVICE

SECTOR IN-DEPTH
24 September 2020

Rate this Research

TABLE OF CONTENTS

Contacts

John Thieroff +1.212.553.7853
VP-Senior Analyst
john.thieroff@moodys.com

Paresh Chari +1.416.214.3837
VP-Senior Analyst
paresh.chari@moodys.com

Sven Reinke +44.20.7772.1057
Senior Vice President
sven.reinke@moodys.com

Steven Wood +1.212.553.0591
MD-Corporate Finance
steven.wood@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Oil & Gas – Cross Region

Responses to emerging risks will determine industry's long-term financial future

» **Among the long-term risks facing oil and gas companies today, access to capital and divestment trends will become increasingly important to their credit quality as energy transition reduces long-term demand for oil and gas.** Some banks are reducing their oil and gas exposure, though they have largely limited their actions to specific, politically sensitive activities. Oil companies face other less-visible long-term risks, including heightened insurance and litigation risk, and limits on their ability to change. In coming years, we will examine how companies adapt to energy transition risk, and monitor key metrics such as production costs and debt/proved developed reserves to help us identify the most vulnerable companies.

» **The availability of insurance for oil and gas operations will become an increasing hazard over time.** Many major insurers have begun reducing their underwriting and investment exposure to fossil fuels, particularly for thermal coal and oil sands mining operations, but also for shale and high-emission producers. We expect that oil sands companies in western Canada will seek to demonstrate to insurers their lower greenhouse-gas intensity and their future emission goals, while also trying to expand the pool of insurers. Companies of greater means could look to self-insure.

» **The strategies that an oil company's leadership employ to adapt to or mitigate energy transition will become more important to our view on credit quality as demand for oil and gas decreases over the long term.** While too early today to know whether one path will be more successful than another, it is vital for us to understand how the company is responding to this risk and measuring its progress, asking questions within a standard framework but targeting issues particularly relevant to the company.

» **Production and reserve data offer valuable insight into energy-transition risk.** We increasingly use this data in our consideration of oil and gas companies' relative risk positioning. While some companies can adjust production costs in an energy-transition scenario, there are limits on their ability to change. Low equity valuations for the majors reflect low oil prices in part, but also skepticism in the equity markets about their longer-term prospects amid energy transition. Two broad categories of metrics appear particularly valuable for this assessment as oil demand begins to shift: production and reserves, and the leverage and interest expense burden.

» **The oil and gas industry's less-visible long-term risks today include heightened litigation risk.** Changing demographics and an absence of national regulation will make litigation a greater risk for oil and gas companies in the future.

Moody's Energy Summit series

Analysts from across Moody's recently met over two days to discuss the future of energy consumption. In a series of reports, we summarize our discussions about overall risk to energy demand and frequently asked investor questions. In this report, we discuss the evolving strategies, capital, insurance, and systemic risks for the independent oil and gas industry. An upcoming report will discuss the response from the perspective of the state-owned national oil companies.

Corporate governance, access to capital increasingly influence our analysis of energy-transition risk

The reduction in oil companies' access to capital and divestment will become increasingly crucial to our view of its credit quality as energy transition reduces demand for oil and gas over the long term. The industry faces other particular, and less-visible, long-term risks today that we examine in our credit analysis, including the strategic direction of an oil company's leadership and heightened insurance and litigation risk. Finally, a company's production data offers some helpful insight into its energy-transition risk, and while some companies can make adjustments in an energy transition scenario, there are limits on their ability to change. In coming years, we will examine how companies adapt to energy transition risk, and monitor key metrics such as production costs and debt/proved developed reserves to help us identify the most vulnerable companies.

Considering the existential threat that energy transition implies for the oil and gas industry, much of what will determine their success or failure depends on how companies in this industry respond and organize themselves to prepare and evolve. It is too early today to know whether one path will be more successful than another, yet the choice is still important, and it is vital for us to understand how the company orients itself on its chosen path and to measure its progress. For this process, we do not use a checklist, but ask questions generally within a standard set of themes targeting issues that are particularly relevant to the company. An oil company's strategies to adapt to or mitigate energy transition will become more and more important to our view on credit quality as long-term demand for oil and gas declines. (For more on energy transition, see our report, "Oil & Gas – Global: Uncertain future demand heightens business and credit risks," 24 August 2020.)

We are hearing more often of banks reducing their oil and gas exposure, though so far they have largely limited their actions to specific, politically-sensitive activities, with major banks pulling away from oil sands production, Arctic development, and to a much lesser extent shale and fracking activity. And while Artic development is extremely costly and unlikely to proceed absent much higher than expected oil prices, a reduction in funding for fracking and shale development would be far more significant, affecting a large swath of the E&P sector.

Today it can be difficult to see how much a retreat in capital has already meant for the oil industry. Energy returns have been lackluster even before the coronavirus pandemic and a production standoff upset oil prices in early 2020. Yet the financing of fossil fuel industries continued unabated during 2016-19, with 35 banks providing some $2.8 trillion in financing for fossil fuel activities over that period, including politically sensitive fracking activities.

Divestment is not yet a significant factor for oil and gas companies. Divestment pledges are growing steadily, with declining investment in oil and gas from state and local governments and universities representing some $14 trillion in assets, largely through pension funds, but many of these investors have never represented significant sources of capital for oil and gas companies. Meanwhile, divestment alone would not halt oil and gas financing, since companies continue to seek out large-scale investors for financing needs. Oil demand will continue for many decades, regardless of when it peaks, and companies will still seek capital, even if their financing costs rise.

Spreads for oil and gas companies will offer some further indications about financing during a period of energy transition. Despite cyclicality, the patterns for investor sentiment regarding energy transition and oil and gas companies will become visible over time. Widening spreads on longer-term debt would suggest that investors are departing from oil and gas, but to date we have seen no discernible difference in spreads for oil and gas issuers that we would identify with energy transition. Investors in several recent

investment-grade deals have asked for more 30-year bonds, and in at least one case in early 2020 an energy company issued a 40-year bond. For the most part, the bigger integrated oil and independent E&P companies stand out for the amount of debt maturities beyond 2030, but at some point long-dated maturities may lack adequate asset coverage if the underlying assets become stranded.

Insurance risk emerging as increasing energy-transition liability

Insurance risk in oil and gas has become an increasing hazard for oil and gas companies, with many major insurers reducing their underwriting and investment exposure to fossil fuels, particularly for thermal coal and oil sands mining operations. A number of insurers, including some of the world's largest, have already made public statements about reducing exposure to fossil fuels, including Munich Re (Aa3 stable), Zurich Insurance (Aa3 stable), AXA (A2 stable), Swiss Re ((P)A2 stable), Axis Re (A2 negative) and Hartford (Navigators) (Baa1 stable).

All insurers have long aimed to limit their exposure and investments to coal, but some are now also retreating from oil sands and oil shale, while others will also refrain from insuring Arctic oil and gas exploration. Insurers can implement such exclusions more easily in their primary insurance portfolios than their reinsurance businesses, because reinsurers have limited visibility over the client's sources of revenue. Swiss Re says it is phasing out involvement in the world's 10% most carbon intensive oil and gas producers by 2023, while Axis Re is the first US-based insurer to restrict insurance and investment for coal and oil sands mining companies.

To ease their risks, we expect that oil sands companies operating in western Canada are looking to demonstrate to insurers the lower greenhouse-gas intensity per barrel and their future emission goals, while also trying to expand the pool of insurers. Oil sands producers could also change the kinds of insurance they carry, moving toward catastrophic insurance, and away from interruptible insurance contracts.

Companies of greater means will likely take on the risk of self insuring if outside insurance no longer makes economic sense. The major integrated companies currently insure themselves; their size allows it, but comprehensive insurance is also not generally available for their needs.

ESG factors will start affecting coverage for oil sands companies, a pullback that we expect could extend toward Arctic and high-emission production, and possibly even to spread to other parts of the oil and gas industry, such as the midstream and refining sectors.

Boardrooms will shape future investment strategies as energy transition proceeds

Starting with governance considerations, we would examine a company's board in light of its structure, expertise, means and willingness to address climate and energy-transition risks. We would look for whether some percentage of executive compensation ties to energy transition-related goals, for example, or what the targets themselves would be—both in terms of company benchmarks and executive compensation. We also want to see how closely a given company monitors its own physical risks from climate change.

We also look at the different scenarios that a company uses to predict the effects of energy transition, especially for larger, integrated oil groups, whose large capital bases position them well to invest in new technologies that would allow them to transition successfully. We study the scope and the basic assumptions of those corporate scenarios, such as shifts under the Paris climate agreement or the pace of adoption of electric vehicles, carbon capture technology, or renewables. The scenarios might be a part of the company's capital investment or operational plans. The company's assumptions about time horizons, pace of change, carbon pricing, and commodity price assumptions under its scenarios also help inform its decision-making.

The path of investments around energy transition will vary from company to company. Some will make small or moderate investments in new technologies and businesses before knowing which have the greatest likelihood of success, while others will do less to acknowledge the ongoing shift. Certain carbon-capture approaches might provide a part of a company's successful long-term transition, but a strategy heavily based on carbon capture is a doubling down on the existing business, and depends on technological advancements and scalability that may be decades away. We seek to understand the strategy and competencies brought to bear of companies investing significantly in activities such as offshore wind or battery technologies that diverge from their original businesses. We also look for any differences between a company's public stance on energy transition and its private strategy and commitment to technological investment. A company's five-year capital investment plan can indicate its willingness to devote meaningful resources to adjust to climate change.

A company's mitigation and measurement plans can also influence its future credit quality, especially in the oil and gas industry, where some 80% of emissions would be classified as Scope 3—emissions tied to the product's consumption, rather than its production, whether directly (Scope 1) or indirectly (Scope 2). While an oil company may be able to reduce Scope 1 emissions—reducing its flaring of natural gas, for example—it has little control over Scope 3 emissions. Yet the long-term fate of the industry hinges on Scope 3 emissions, and the steps companies take to prepare for widespread adoption of electric vehicles and vastly increased use of renewable energy sources. The company's view of natural gas's role in the transition can also be instructive.

Investor pressure on a company to adjust to energy transition represents another factor in governance considerations, including the tone and extent of the board's debate with shareholders, and whether the company perceives that pressure as a threat. Investor pressure can complicate banking relationships and even the financing of certain elements of a company's business. How a company assesses its future legal and regulatory considerations can also influence its energy transition strategy and its spending. We review the energy-transition positions a company takes and for which it advocates, including through any associations with industry and trade groups, and whether those positions are contradictory.

Finally, we examine a company's preparations for incorporating and minimizing the physical risks it might face from climate change—including its exposure to both acute events such as storms and wildfires, and more gradual events such as temperature stress and rising sea levels. Our assessment of a company's risk depends in part on how its actions to mitigate the physical effects of climate change compare to those of its closest competitors, how it insures itself against climate-related risks, and how it views the timeline and the dangers of those risks.

Parallel evolution process underway for oil company financial metrics

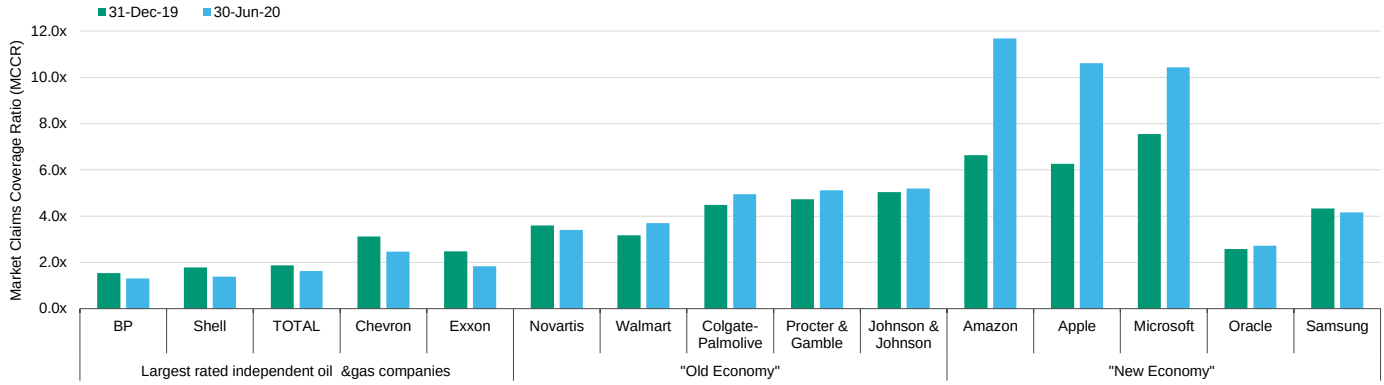
Production data from exploration and production (E&P) and integrated oil companies offer some of our best insight into its energy-transition risk, and we are increasingly using certain energy-transition data in our assessment of these companies relative positioning for this risk. While some companies can adjust their production costs and move forward in an energy transition scenario, there are limits on their ability to change.

Low equity valuations for the oil majors, while partially reflecting very weak oil prices and industry fundamentals, also reflect skepticism in the equity markets about their longer-term prospects because of energy transition, and possibly also rising litigation risk (see next section). The equity markets have appeared skeptical for some time about the prospects of the large independent oil majors. Claims coverage ratios compare a company's balance-sheet liabilities, including its pension deficit, with the sum of those liabilities plus the market value of its equity. A ratio of 2x indicates an equity market value identical to the company's balance-sheet liabilities; higher ratios indicate that the equity market value better covers those liabilities. Claims coverage ratios for the oil majors reveal low equity-market capitalizations in terms of their liabilities—not only compared with some of the most prominent technology stocks which have a high market capitalization reflecting strong growth prospects, but even companies such as as Walmart (Aa2 stable) or Procter & Gamble (Aa3 stable)—large, highly rated companies in lower-growth sectors (see Exhibit 1).

Exhibit 1

Oil majors have low equity market capitalizations in terms of their liabilities

Claims coverage ratios as of 31 December 2019 and 1 September 2020



Note: Information on balance-sheet liabilities from latest audited annual reports. Share-price information as of 31 December 2019 and 1 September 2020.
Source: Moody's Financial Metrics™

Two broad categories of metrics appear particularly valuable for this assessment as oil demand begins to shift: production and reserves, and the leverage and interest expense burden.

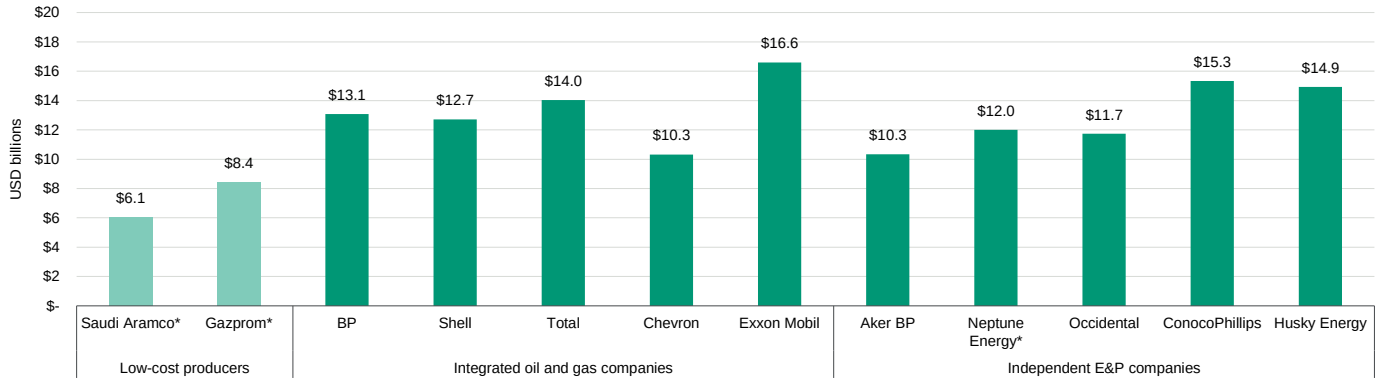
Production and reserves

» **Total E&P production costs:** Most integrated and E&P companies have significantly reduced their production costs in recent years, but the difference remains high between higher-cost producers and the lowest-cost producers that are mainly in the Middle East and Russia (see Exhibit 2). Since the gap in costs is largely structural, any significant additional cost savings appear unlikely. If oil demand falls by around 40% by 2040 under the rapid-transition SDS scenario, it is valuable to identify the 40% highest-cost producers, whose operations risk becoming uneconomical.

Exhibit 2

Most integrated and large independent E&P companies are not low-cost producers

Total E&P production and G&A costs per barrel of oil equivalent (boe), including production taxes



Note: * All data are as of LTM ended June 2020, except for Saudi Aramco, Neptune Energy (December 2019) and Gazprom (March 2020).
Source: Moody's Financial Metrics™

» **Natural gas/oil balance of production:** Companies must finance investment to adjust their businesses to the energy transition by using their operating cash flow generation. Natural gas does not contribute as much as oil to profit and cash flow today, but high gas production will be more favorable in the longer term, with peak gas demand at least a decade behind peak oil demand. We see a high gas/oil production split as positive in the longer term, but today gas is less profitable than oil.

» **Reserve life, based on proved developed reserves:** A long reserve life is desirable today from a credit perspective, measuring how many years a company could produce at the same pace without running out of its ever-depleting assets. But if oil demand declines rapidly under an SDS scenario, a long reserve life could become a credit liability, leaving the company with stranded assets—unless the company could rely on non-stranded, low production-cost assets to pay down debt. For those reasons a proved developed reserve life significantly longer than 10 years would not necessarily enhance an oil company's credit quality. The drop in oil prices in early 2020 shows the difference price makes in the value of a company's reserves, even without all the implications of our energy-transition scenarios. Each company tests its assets' economic viability at different prices. BP's (A1 negative) recent $20 billion writedown reflects oil prices that render about 10% of its proved developed assets uneconomical to produce.

Leverage and interest expense burden

» **Interest/barrel of oil equivalent (boe):** As energy transition progresses, even companies that adjust their production asset quality and costs appropriately might still struggle with high leverage and high interest burdens, especially if their access to capital and cost of capital become more difficult. The interest expense/boe metric helps identify the most vulnerable producers.

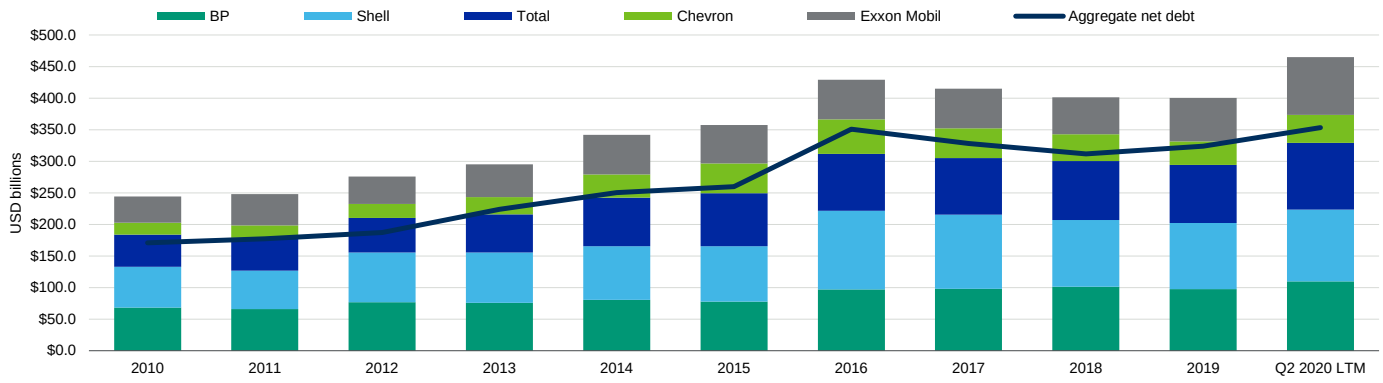
» **Debt/proved developed reserves:** As demand for oil declines at some point, companies with large reserves may no longer be able to reduce debt simply by increasing production or monetizing the asset base itself. If production starts to decline in an energy transition, even a modest level of debt per boe of proved developed reserves would risk becoming a greater burden. The integrated producers have businesses outside of oil and gas production such as refining, chemicals and marketing operations that support their debt capacity, so their metrics are not directly comparable to E&P companies, which cannot serve some of their debt with earnings from other businesses.

» **Gross adjusted debt:** In a period of energy transition, it is more critical to know whether a company's debt levels appear sustainable, or whether the firm must strategize more to cut debt. Under the SDS scenario, production would likely begin declining as soon as 2025 for some companies, implying a greater need for even the highest-rated oil companies to adopt financial policies that allow for absolute debt reduction. The five largest independent oil majors did not reduce their overall debt much during 2017-19, when oil prices were relatively stable around $60/bbl, partially because the majors maintained high dividends. Their combined gross adjusted debt reached an all-time high of $465 billion as of June 2020, while their combined net debt is now back around the previous 2016 peak of about $350 billion (see Exhibit 3). However, the industry has begun to recognize that a secular low-growth environment, or even a longer-term contraction, requires new financial policies. Shell and BP have cut their dividends materially, indicating that the move is not just a temporary measure to protect their finances during the COVID crisis.

Exhibit 3

Largest integrated oil companies did not reduce debt during period of low oil prices

Debt as of 30 June 2020, including our standard adjustments



Source: Moody's Financial Metrics™

Threat of litigation rises as regulatory responses to climate change languish

The oil and gas industry's less-visible long-term risks today include heightened litigation risk. Changing demographics and an absence of national regulation will increasingly make litigation a greater risk for oil and gas companies. Climate change has emerged as a top priority for millennials (people born roughly 1981-96) and Generation Z (roughly 1997-2012), whose priorities about the environment and energy consumption largely lean toward an accelerated transition. Today some 60% of the world's population is aged 40 or younger, according to the UN.

While environmental regulations are getting weaker in key jurisdictions, the absence of national regulations opens the door for civil legal actions and public interest litigation, especially from the US states. We would anticipate a noticeable increase in litigation against the oil and gas industry in coming years, unless a new US administration takes office in 2021 and begins reversing the Trump administration's rollback of rules on greenhouse gas emissions, pollution, fuel efficiency, exploration, and other areas that have benefited the industry. Litigation in the US tends to fall into federal statutory claims, based largely on legislation from the 1960s-70s, involving long-term frameworks. State impact assessment claims makes up the majority of cases filed at the state level. Litigants have favored filing at the state level, where they believe they have a better chance of succeeding in court. Conversely, oil companies have fought to move claims into the federal court system, where decisions have tended to run more in their favor.

Litigation has become an overwhelming factor for various industries in the past, including tobacco and asbestos. The oil industry may eventually have to reckon with a wave of legal actions concerning such areas, including the Endangered Species Act and other wildlife protection statutes; the Clean Air Act and Clean Water Act; public trust claims; challenges to offshore licensing rounds; challenges over administrative regulations written during the Trump administration; and preventing future activity for non-climate-related reasons to achieve the same curtailment of oil and gas activity. Oil companies will likely resist efforts to make them responsible for physical damage and for improving infrastructure to mitigate future risk, although we expect continuing legal efforts to require them to do so.

Moody's related publications

Sector in-depth reports:

- Oil & Gas – Global: Uncertain future demand heightens business and credit risks, 24 August 2020
- Oil & Gas – Global: FAQ on how carbon transition risk informs our credit views on the sector, 24 August 2020
- Oil & Gas – Global: COVID sparks shift across industry toward lower growth and consolidation, 24 August 2020
- Oil and Gas – Cross Region: Frequently asked investor questions, 10 June 2020
- Exploration & Production – US: Weak oil and natural gas prices will lead to lower borrowing bases, reducing liquidity, 28 May 2020
- Nonfinancial corporates – North America: Heat map: Worsening coronavirus outbreak means broader negative credit effects, 3 April 2020
- Oilfield Services and Drilling – North America: Stressed sector faces high refinancing risk with $32 billion maturing during 2020-24, 18 March 2020
- Corporates – Latin America & Caribbean: Coronavirus will most hurt airlines, lodging, and any companies with weak liquidity, 17 March 2020
- Oil & Gas – Cross Region: Commodity prices, access to capital, regulation rank among top risks for 2020, 6 January 2020

Outlooks:

- Oilfield Services and Drilling – Global: Outlook remains negative amid severe drop in EBITDA through 2021, 14 September 2020
- Exploration & Production – Global: Producers eyeing protracted recovery amid weak global demand and low prices, 10 September 2020
- Integrated Oil & Gas – Global: Outlook turns stable on nascent recovery from deep Q2 trough, 9 September 2020

Sector comments:

- Oil and Gas – Global: Downgrades dominate in first half 2020 as COVID crushes oil demand and prices, 30 July 2020
- Oil & Gas – Cross Region: Medium term oil prices trend lower as industry focuses on lowest-cost reserves, 27 May 2020
- Oil & Gas – Global: Recession and uncertain demand recovery weigh on oil prices in 2020-21, 28 April 2020
- Oil and Gas – North America: Limits of physical market deepen oil-price decline, accelerating production shut-ins, 21 April 2020
- Credit Conditions – Global: Coronavirus and oil price shocks: managing ratings in turbulent times, 17 March 2020

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

REPORT NUMBER 1244312

MOODY'S
INVESTORS SERVICE