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O&G Majors : building resilience to navigate the post-COVID19 world

Yet another crisis. It's spring 2020. The oil and gas (O&G) industry is once again in turmoil, a consequence of the combined effects of drastically reduced demand due to the COVID-19 pandemic, likely triggering an economic crisis, and oversupply despite a historic production cut deal within OPEC+.

Demand for crude oil and refined products fell sharply as the world was paused until further notice in order to prevent the virus's spread. The interruption is sending ripples through global supply chains all the way to China, the manufacturing powerhouse of the world and one of the largest consumers of hydrocarbons. At its peak, the reduction in global demand is expected to be as high as 27 million barrels per day[1] in April 2020, for a global supply of 100.7 million barrels per day (2019 Q4).

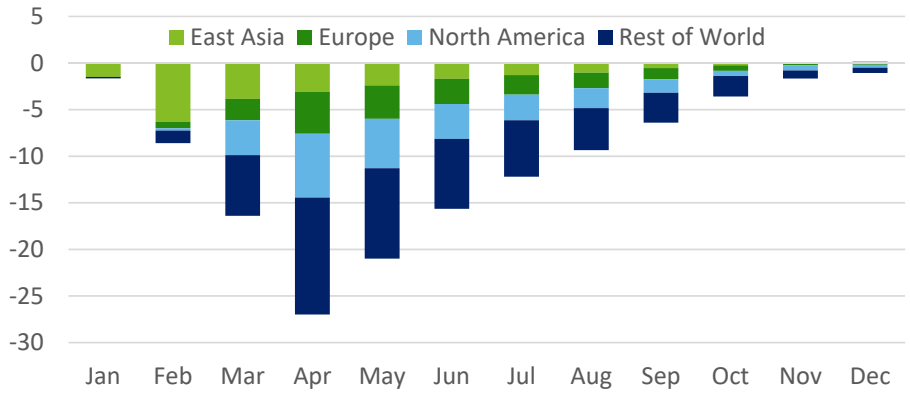
Simultaneously, Russia and Saudi Arabia have been struggling to find common ground in their support of oil prices, triggering unprecedented flooding of Arabian, Russian and American crude into the market to be sold for a bargain. The latest OPEC+ meetings, strongly mediated by the US, halted price falls through a major deal set to cut around 10 million barrels per day globally. The results and stability of this deal depend on (1) the technical feasibility of an unprecedented production shutdown; (2) US ability to steer shale production, either through economic necessity or extraordinary regulatory measures; and (3) the will of all parties involved to respect engagements in the medium-long run. But regardless of the efforts on the supply side, the size of the current glut will inexorably weigh on the markets for the foreseeable future.

1 Source: Rystad Energy

The combination of weak demand and oversupply sent global crude oil prices falling to levels not seen since 2003. Brent prices dipped below $25 and WTI hovered just above $20 per barrel just before bouncing back to levels that are higher, but still far from pre-COVID-19 prices. The situation could become even worse in the next few weeks as global storage (crude and refined) reaches capacity.

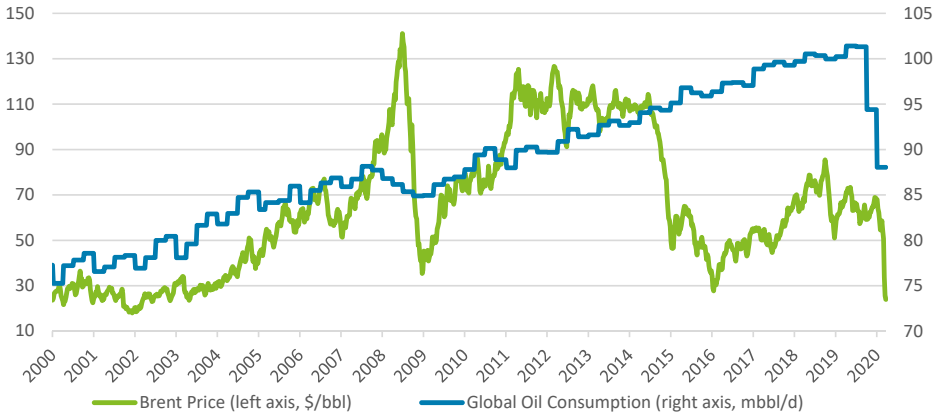
Uncertainty has always been part of the very fabric of the industry, which has seen more than its fair share of booms and busts. However, this time, the consequences of the 2020 crisis are compounding those of the 2015 crisis, from which no player has yet fully recovered. Unsurprisingly, O&G was designated the worst-performing sector of the decade, and the current crisis could be viewed as the nail in the proverbial coffin: in the week of March 8, 2020, the 14 largest publicly traded oil companies lost a whopping 495 billion USD from their aggregated market capitalization. But the battle is not lost yet, as O&G players have historically demonstrated extraordinary ingenuity and adaptability to deal with good and bad times.

Global oil demand impact analysis during COVID-19, versus pre-virus estimates (million bpd)



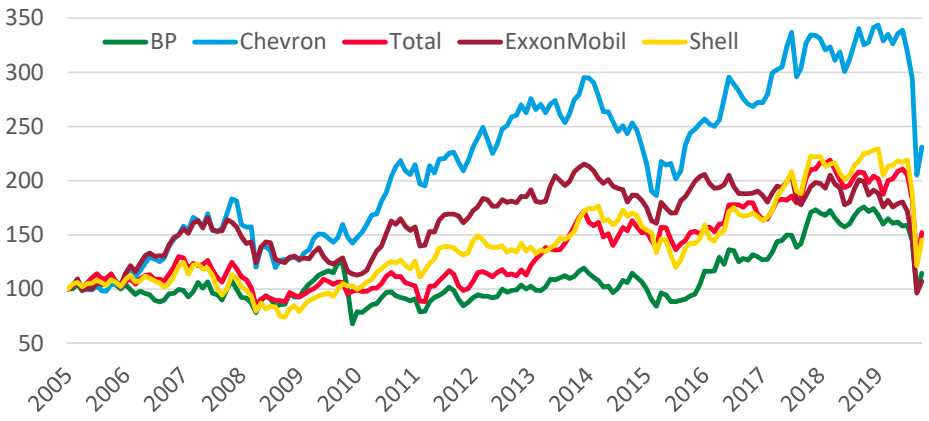
Source: Rystad Energy

Historical Brent crude oil price (left axis) & global oil consumption (right axis)



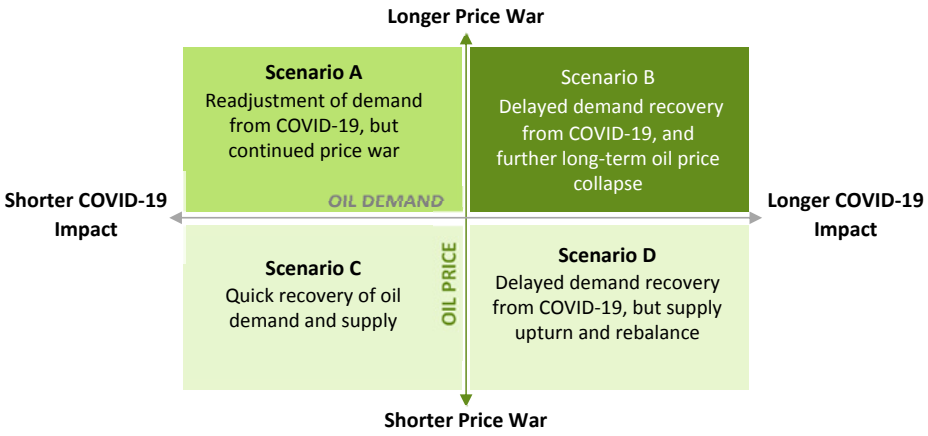
Source: EIA

Adjusted oil majors historical share prices indexed to 2005



Source: Bloomberg; adjusted for dividends and splits

Post-COVID-19 scenarios



Assessing scenarios to build resilience

The most effective way to deal with uncertainty is to consider likely scenarios for how the situation will play out and what might unfold. Assessing one's resilience against those scenarios is key to identifying critical issues and challenges, and to providing precious information about strategic choices to be made now. Building resilience is about hoping for the best, but preparing for the worst.

Although the world learns more about the virus every day, its long-term ramifications for the global economy are yet to be unveiled. One thing is certain: the world as we know it will be profoundly impacted. For O&G players, the road to recovery relies heavily on the respective depths of the disruption resulting from each of the two root causes. How long-lasting will the consequences of the pandemic be? How quickly will demand return to normal? Will the recent OPEC+ agreement deliver the desired results?

The best-case scenario (C) depicts a quick recovery of the balance between oil supply and demand caused by combined shorter impacts of COVID-19 and the OPEC+ price war. In contrast, every other scenario will result in global oversupply, but with varying intensity. A mismatch between supply and demand, however deep, will inevitably lead to dramatic swings in oil prices as resulting upstream investments in developing reserves become inadequate for potential levels of consumption. Scenario planning and rigorous portfolio management are therefore critical to ensure companies are positioned to thrive in the future.

Although a price rebound in the medium term is possible, it would be reckless for O&G players to dismiss the urgency to prepare for varying degrees of pain, given the overarching grim reality that value creation depends entirely on the whims of a few.

The need for a balanced asset portfolio

The true material worth of any O&G player is represented by the combination of assets it owns. The asset portfolio is therefore the best tool a company has to position itself for success. Taking the perspective of O&G majors, portfolios provide them with competitive advantages: their global footprint allows them to immediately benefit from the gradual resumption of activity around the world. Their vertical integration also gives them a natural hedge against crude oil price fluctuations through their exposure to the downstream sector, but only to the extent of an undisrupted consumption of refined products.

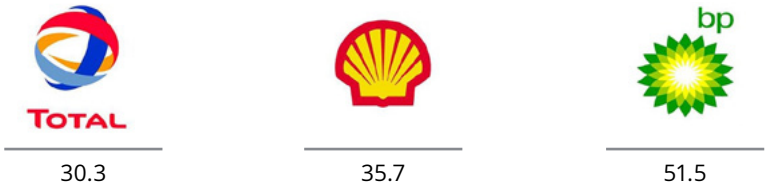
In the not-so-distant past, upstream O&G projects were sanctioned only if they could prove economical at stretch oil prices, often around $40-50 per barrel. Unsurprisingly, the current crude oil price levels, if sustained over a long period of time – as described in the scenarios – will render most projects uneconomical. The related consequences are already visible: CAPEX reductions (expected year-on-year reduction of $100 billion from 2019 levels), investment delays, cancellation of projects and, in some extreme cases, bankruptcies as witnessed in the US unconventional space. Second-order consequences will also critically weigh on the future of the industry, with skilled workers exiting the sector for more stable jobs.

With regard to the upstream asset portfolio, not all players are created equal and the highest quality (read lowest full-cycle costs) assets are in the hands of OPEC+ NOCs. Even when including the post-2015 overhaul of the industry cost structure, in which projects were rationalized, headcount was reduced and service providers were squeezed, Majors and independents still have assets requiring higher full-cycle break-even prices as the era of cheap and easily accessible oil becomes history. Those assets suffer from the highest risk of being uneconomic when demand and supply are disrupted, significantly destroying value in the process.

To weather the immediate storm, O&G players must again scrutinize their costs and identify actionable levers, such as operational efficiency and M&A consolidation. Operational efficiency gains through digitalization started slowly post-2015. However, they undoubtedly remain one of the few underused levers though requiring the entire ecosystem (EPC and OFS companies) to rapidly follow suit if said gains are to be capitalized on in a timely manner. In the last few years, majors have made promising strides towards digitalization, albeit at various speeds, but massive efforts are required to significantly transform the industry.

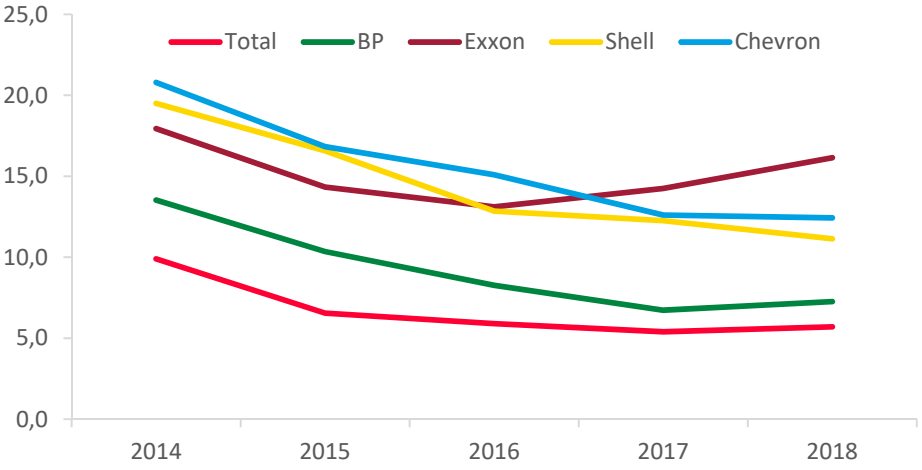
In addition to those short- and medium-term actions, each O&G player should step back and rigorously reflect on its portfolio. Will it withstand the scenarios considered? How can it be shaped to be more resilient for an uncertain future? Will stranded assets become a reality?

European oil majors 2019 full-cycle break-even crude oil price for current production ($/bbl)



Source: Companies' annual reports, includes DD&A, calculated as (upstream revenue minus upstream EBIT) divided by total production in barrels of oil equivalent

Oil majors' production costs ($/boe, 2014-2018)



Source: Companies' annual reports

"In 2019, demands for urgent action on climate change grew ever louder... Shell shares this sense of urgency. We continue to take climate action on many fronts, including tackling our own emissions and helping customers reduce theirs by expanding the choice of lower-carbon products we offer. We are working hard to play our part in the global transition by providing more and cleaner energy."

Ben van Beurden
Shell CEO
Shell Sustainability Report 2019

Long-term challenges ahead

The current crisis, as disruptive and severe as it is, should not overshadow the much larger challenge of climate change, which will put millions of human lives and trillions of USD at stake in the coming decades. As Mark Carney, the governor of the Bank of England, said in his famous speech 'Breaking the Tragedy of the Horizon' in 2015, 'the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix... In other words, once climate change becomes a defining issue for financial stability, it may already be too late'. The next decade will therefore be particularly crucial for making the right investment decisions and avoiding any lock-in effect. Every dollar invested in the coming years to prevent temperature rise will count, as impacts scale quickly and likely exponentially. Indeed, at temperature increases of 3-4 degrees Celsius, tipping points are likely to be reached, with irreversible changes in ecosystems and climate patterns jeopardizing the world's ability to adapt. And no cure or vaccine will fix it.

O&G players are likely to be under growing pressure and exposure to the physical risks of climate change, including direct damage to their infrastructures; to liability risks as illustrated by recent legal disputes; and to transition risks with stricter regulatory requirements, growing expectations from stakeholders and societal evolutions that call traditional business models into question.

Adjusting the course: now is the best time to accelerate the transition

O&G players, and especially majors in Europe, are expected to become part of the solution and play an important role in the transition, not just from regulatory bodies that require compliance with international agreements (COP21, etc), but also from capital markets that are increasingly putting a premium on ESG.

In the present battle to overcome the COVID-19 crisis, the sanitary, economic and environmental elements intersect as stakeholders call for economic stimuli that account for more sustainability, in line with existing efforts such as the European Green Deal. More precisely, coordinated actions and initiatives that massively reduce GHG emissions (carbon and methane) are mandatory to ensure global temperature rise stays below 1.5 degrees Celsius. The world needs to collectively take advantage of this opportunity to reinvent how energy is produced and consumed, thereby avoiding a much larger crisis later. O&G majors can act now by intelligently redirecting capital towards more efficient and future-proof portfolio investments, in the form of a larger share of gas in

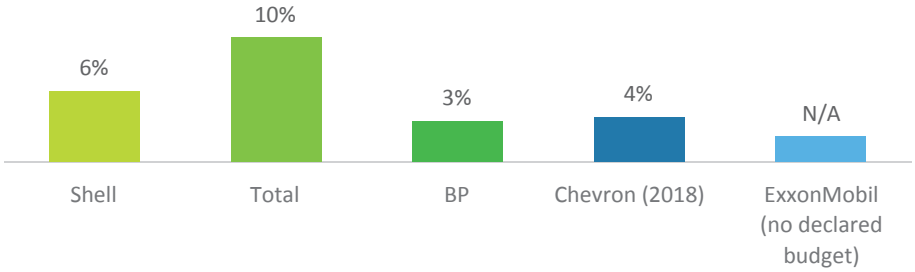
portfolios (already underway), through O&G acquisition and divestiture opportunities that balance exposure to carbon-emitting and methane-leaking assets, and by accelerating investments in cleaner energies. Asset portfolio resilience and, by extension, company resilience, is achieved through the right investments in the right assets, and above all by ensuring that the choices made today will become right in the future.

Transforming portfolios through the inclusion of natural gas

In the fight against climate change, majors quickly understood that natural gas had a critical role to play in their portfolios. With by far the least amount of carbon emitted per energy unit produced among the fossil fuels, natural gas earned its place as the best fuel to meet the ever-increasing needs for electrification around the globe, offering until recently the perfect combination of growth, competitive financial return and lower carbon footprint. Unsurprisingly, majors are including more and more natural gas in their portfolios in the form of upstream gas assets and LNG capacity for Asian exports secured through long-term contracts.

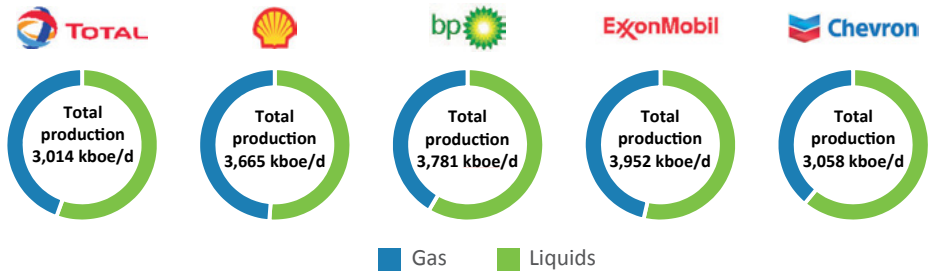
The natural gas market has drastically evolved in recent years. The American shale revolution supported gas supply and reduced prices significantly. At the same time, improvements in liquefaction and regasification and the growth of the LNG global maritime fleet provided liquidity in a market historically limited by production-destination distances. However, as pricing is still mostly indexed on Brent, the absence of a global gas price inextricably links its course to that of crude oil. Furthermore, recent entry in the LNG space by multiple players resulted in short-term oversupply which, in combination with demand cuts caused by the current crisis, is creating market conditions negatively impacting gas prices. As a result, returns and therefore incentives to invest in future natural gas projects both plunged.

Percentage of CAPEX dedicated to low-carbon investments in 2019



Source: Companies' 2019 annual reports and sustainability reports; low-carbon investments do not include gas

Daily production split between liquids and gas for majors

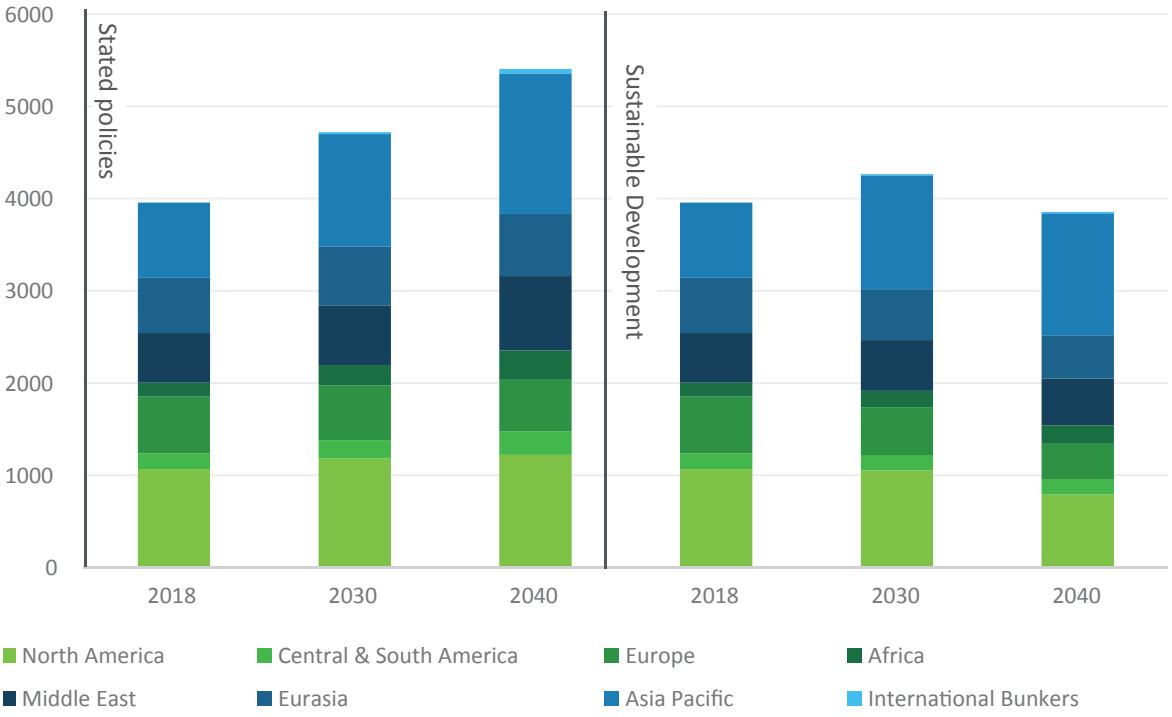


Source: Companies' annual reports, Deloitte Global Market Intelligence 2020 analysis

"Our clearly stated ambition is to become the responsible energy major. To do that, we are integrating the climate challenge into our strategy and our operations. This is not just an environmental challenge — it impacts business and strategy as well. There are risks ahead, obviously, because climate change calls for a more diversified business model, but it is also a fantastic source of opportunity."

Patrick Pouyanné
Total CEO
'Integrating Climate into our Strategy'

Gas demand by region and scenario, 2018-2040



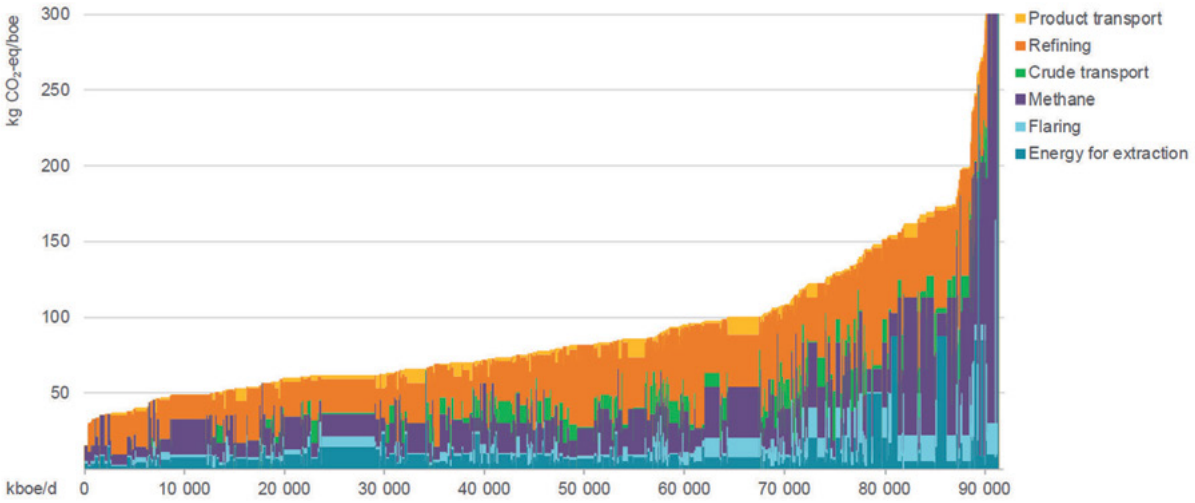
Source: IEA World Energy Outlook 2019

In the medium-to-long term, the perspective for natural gas development remains strong as all sources of consumption present better outlooks than those of crude oil, either in the current energy consumption scenario or in a sustainable development one. First, continuous electrification in various industries – including but not limited to ground transportation with the electric vehicles boom – is set to cut demand for selected refined oil products (namely gasoline and diesel) and boost demand for electricity. As renewable energies scale up and smart grids fill the gaps between production and consumption, natural gas earns its place in the energy mix as an adequate substitute for coal and other high-emission fuels to produce electricity while keeping pace with growing global demand.

Second, industries with lower electrification potential, such as maritime transportation, shy away from oil-derived products. The global fleet of tankers and cargo and passenger ships is among the top sources of emissions and demand for oil products. Today, the fleet is gradually shifting to LNG-powered vessels. These are considered more economical and resilient because they are less affected by ever-stricter maritime regulations such as the potential implementation of carbon taxes, currently under discussion within main global hubs. IMO2020 is a clear example of fuel oil's unsustainability: the recent restrictions on sulphur levels in fuel oil doubled bunkering prices for vessels and increased the gap with LNG-powered ones. As the life cycle of vessels spans decades, gradual decommissioning and fleet additions in the coming years will pave the way to bunker fuel-to-LNG transition, thus bolstering future demand for natural gas.

With diverging long-term demand outlooks, oil and gas markets are set to face several challenges and evolutions. O&G majors are well positioned to thrive as long as their portfolios increasingly focus on low-cost natural gas assets.

Global 2018 natural gas flared volume by country (Bcm)



Notes: kg CO_2/boe = kilogrammes of CO_2 per barrel of oil equivalent; kboe/d = thousand barrels of oil equivalent per day. One tonne of methane is assumed to be equivalent to 30 tonnes of CO_2 (the 100-year "global warming potential"). Although not strictly an oil refining process, NGL fractionation is included within refining since it converts liquids into usable oil products.

Source: Worldbank Global Gas Flaring Reduction Partnership

High-grading crude oil assets in portfolios

The large variety of assets in O&G players' portfolios results in an equally large disparity in performance – be it financial or environmental – through carbon emissions. Majors can enhance the quality of their portfolios by emphasizing the importance of emissions as an additional criterion for performance, getting ahead of any potential future carbon pricing enforcement.

Analysis of the scope 1 and 2 emissions demonstrates that assets in the worst-performing decile will emit much more than three times the amount of carbon emitted by the top-performing decile for the same amount of oil production. The disparity is largely driven by flaring and direct methane emissions, which are almost fully within the control of by upstream operators, and by their refining footprint, as heavier crude oil requires more energy-intensive processing.

Though the larger carbon intensity and more generally the environmental footprint of crude oil production does not always directly correlate with higher development and lifting costs, O&G players should be wary of assets that combine both. Such assets will undoubtedly suffer the most from the current economic context and the potential tightening of environmental regulations in various jurisdictions.

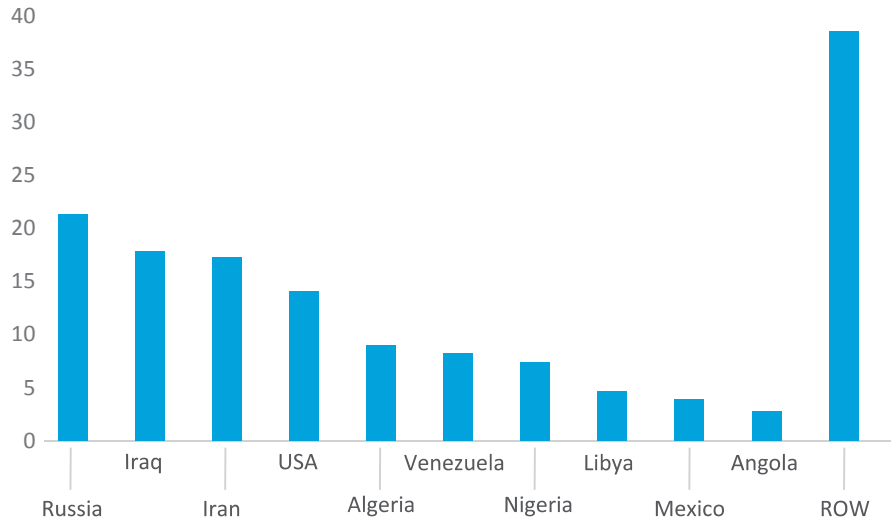
Even if not all acreage is created equal, US shale could fall into this category. This type of play requires wells to be completed with water-intensive hydraulic fracturing and can be the source of large volumes of gas flared or vented to the atmosphere. For instance, in the US in 2018, the Bakken Shale play accounted for 30% of the country's flared volume, but only 11% of the domestic production[2], resulting in a flaring intensity of 0.32 Mcf per barrel of oil produced – more than double the global average of 0.14[3]. More generally, while a wide range exists, average break-even price for an operator to drill and complete a shale well ranges from $48 to $54 (WTI prices) based on the play[4], essentially destroying value at current prices.
But US shale plays are not the only offenders. More broadly, 75% of the volume flared around the world in 2018 can be traced back to 10 countries, in most of which O&G majors own assets.

"We came away with one inescapable conclusion. BP has to change, and faster than ever, because the world is changing fast, and so are society's expectations of us. At the same time, I think it is important to say that BP wants to change. Not only is it the right thing to do, it is a tremendous business opportunity for us."

Bernard Looney
BP CEO
BP Sustainability Report 2019

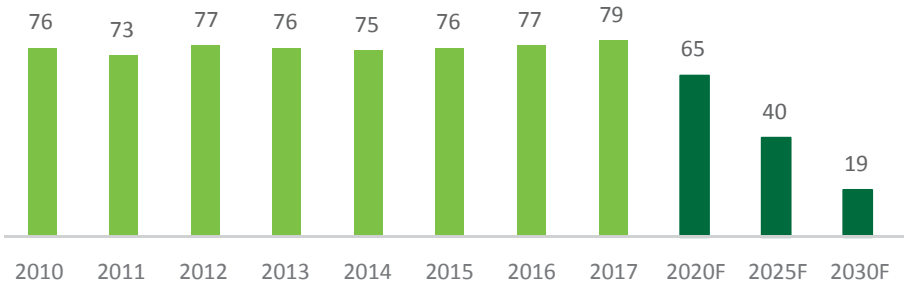
2 Source: EIA
3 Source: Worldbank Global Gas Flaring Reduction Partnership
4 Federal Reserve Bank of Dallas 2019

Global 2018 natural gas flared volume by country (Bcm)



Source: Worldbank Global Gas Flaring Reduction Partnership

Global methane emissions caps for the O&G sector in the IEA SDS scenario



Source: IEA, Deloitte Global Marketing Intelligence 2020

The collective effort required to reduce global methane emissions is tremendous. The stretch scenario depicted by IEA in its Sustainable Development Scenario requires strict caps imposed on the O&G industry as it accounts for 24% of current anthropogenic methane emissions to the atmosphere.

In addition to efforts geared towards reducing flaring and direct methane emissions, O&G players should allocate capital investment spend and assess O&G acquisition and divestiture opportunities through the same lens in order to reinforce their license to operate.

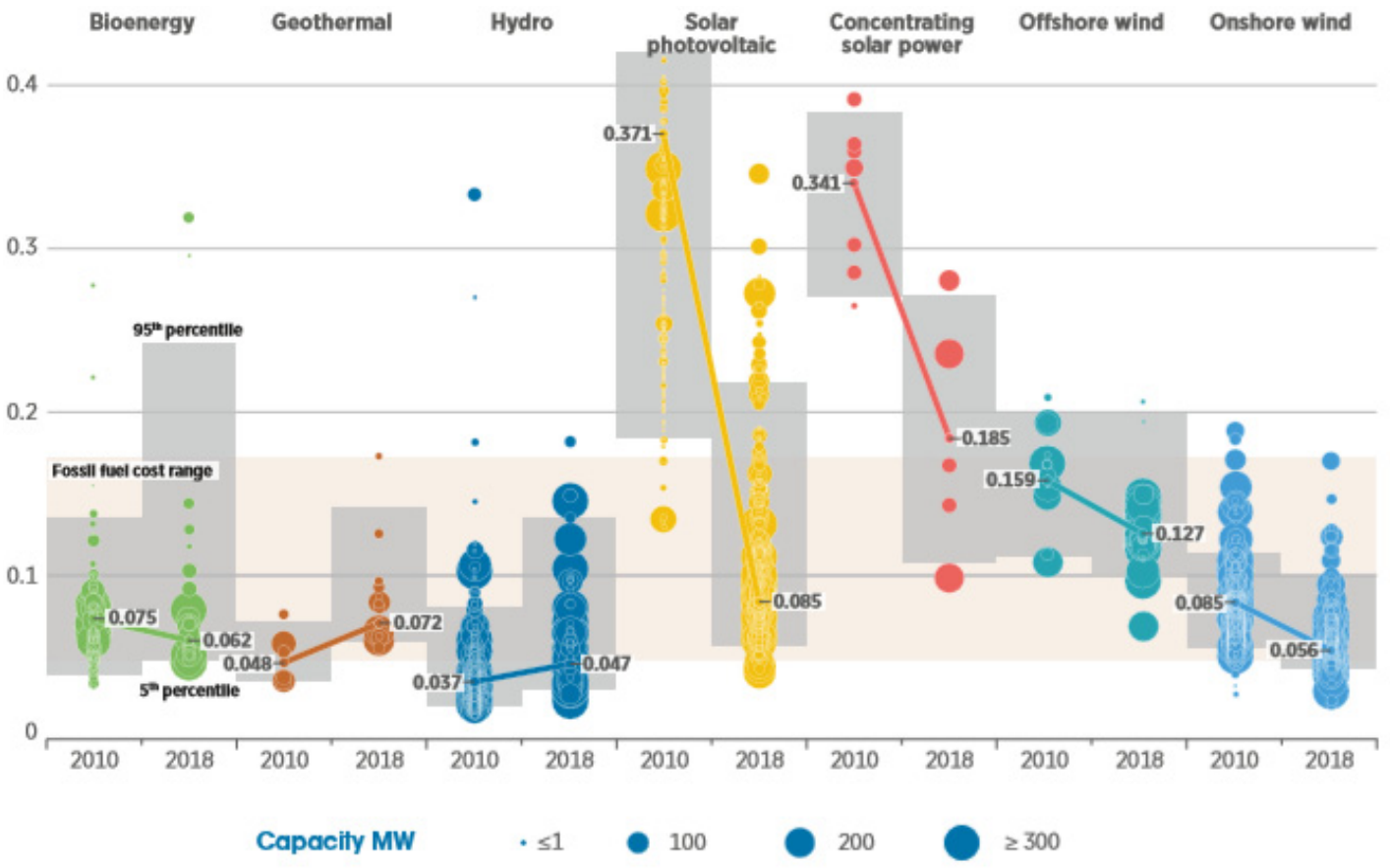
Future-proofing portfolios with renewables and clean energy

In the pursuit of the ideal asset combining growth, competitive financial return and lower carbon footprint, can majors turn to renewables and clean energy technology today?

The global trend of increasing electrification as countries become wealthier points to the power sector as a source of significant future growth. Majors recognize these trends and seek to shed their pure-play O&G historical role in order to become energy companies. However, the majors' historical investments towards the transition through non-O&G projects have represented only a small fraction of their total investment. As discovering and developing new reserves becomes more expensive, O&G projects in the post-COVID world are becoming less attractive. At the same time, projects related to new energies are becoming more competitive, as economies of scale and technological advancement bring down costs. For instance, according to IRENA[5], the global weighted-average cost of onshore wind projects fell from $85/MWh in 2010 to $56/MWh in 2018, while the weighted-average cost of utility-scale solar dropped from $371/MWh in 2010 to $85/MWh in 2018. Solar and wind now represent 80% of new investment in the renewable sector. Bioenergy, geothermal, hydropower, PV, and onshore and offshore wind projects are now within the range of fossil fuel-fired power generation costs. Similarly, the cost of lithium-ion batteries has fallen by 85% in a decade though, thus accelerating the potential development of these technologies in the transportation and energy sectors.

5 https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/May/IRENA_Renewable-Power-Generations-Costs-in-2018.pdf

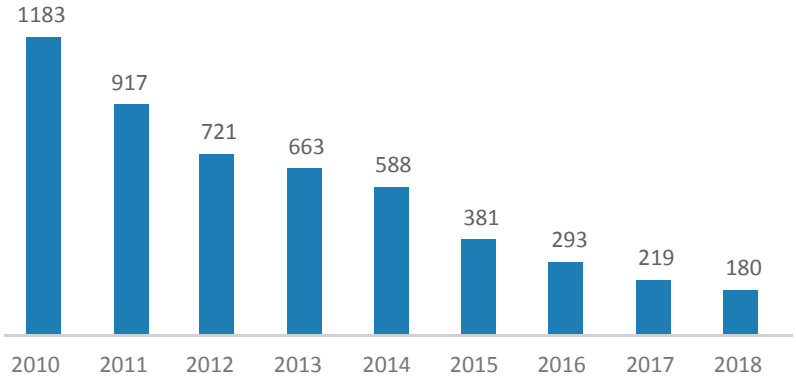
Global LCOE of utility-scale renewable power generation technologies, 2010-2018



Source: IRENA 2019, Renewable Power Generation Costs in 2018

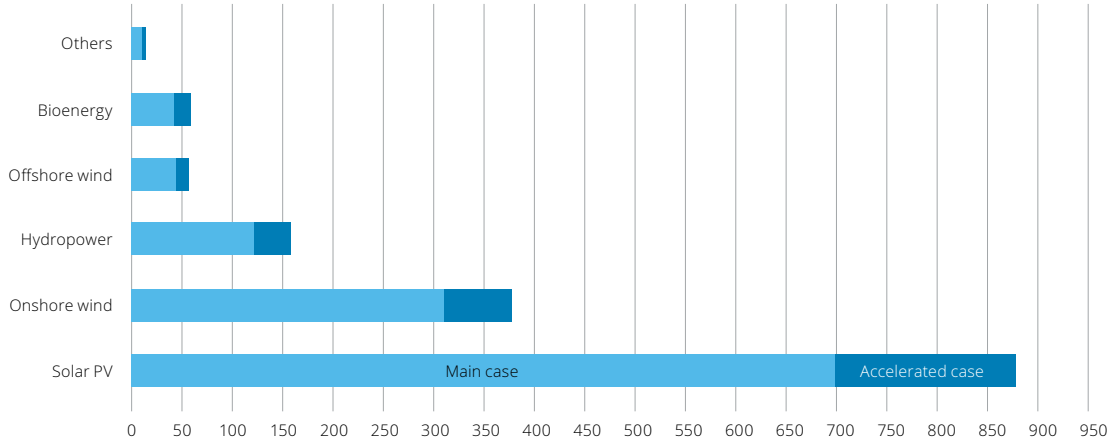
Momentum for the development of renewable energy has never been greater. Renewable power capacity is set to expand by 50% between 2019 and 2024, the equivalent of the current total installed power capacity in the US (1200 GW). PV will lead the way, with almost 60% of the expected growth, and onshore wind will represent one-quarter (according to the International Energy Agency). O&G players can play a significant role in developing renewable energy technologies and removing technical and financial barriers. In addition, they can help scale up emerging technologies, such as hydrogen, power-to-gas or Carbon Capture Utilization and Storage (CCUS), by redirecting R&D investments to these technologies.

Lithium-ion battery pack price (real 2019 $/kWh)



Source: Bloomberg New Energy Finance

Renewable capacity growth between 2019 and 2024 by technology

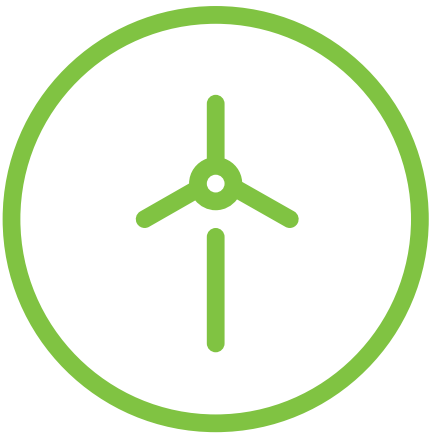


Source: IEA

However, this trend should not hide the significant technical, economic and environmental challenges that still lie ahead for the renewable energy sector. In particular, intermittence remains a key issue while energy storage is still maturing and faces its share of environmental concerns. Furthermore, distribution issues call for considerable efforts to develop smart grids and require a deep understanding of supply-demand mechanics through computing power and forecasting methods. The challenge is even greater in remote and less densely populated areas that nevertheless increase their demand for power every year.

As the COVID-19 crisis paralyzes the global economy with the known consequences to fossil fuel prices, the crisis may also significantly affect clean technologies, especially solar, wind and storage systems. Indeed, solar demand in 2020 is expected to drop from 121-152 GW to 108-143 GW, making 2020 the first down year for solar capacity addition since the 1980s. Wind installation forecasts are similarly subject to considerable downside risk, with a reduction degree linked to the swiftness of Chinese suppliers' return from isolation and the severity of delays for component deliveries in the US. According to another study by Wood Mackenzie, in 2020, new wind installations could fall by 6.5% globally. Battery demand will not be spared, as 3-9 GWh is expected to be shaved off the 74 GWh initially planned, mainly due to a sharp contraction of the automotive market.

Beyond investment in renewable energies, O&G players, particularly majors, can diversify their activities and business models towards opportunities that deliver higher returns in a low-price oil world. For instance, Total bought electricity supplier Direct Energie in 2018 to enter the French retail electricity market; it also announced the acquisition of G2mobility, which provides electric vehicle charging solutions. In early 2020, new BP CEO Bernard Looney announced an ambitious target to shrink the oil firm's carbon footprint to net zero by 2050: 'The direction is set. We are heading to net zero. There is no turning back.' To this end, BP expects to invest more in low-carbon businesses and less in fossil fuels over time.

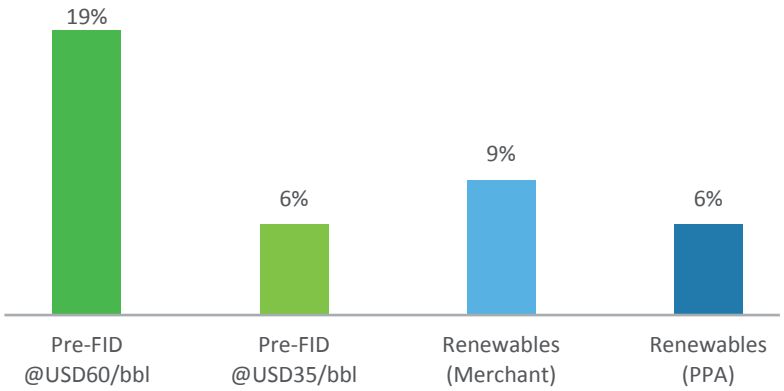


6 Bloomberg NEF, March 2020

It's up to the majors, through their ability to think, create and develop business opportunities, to become the vanguard in delivering solutions that fit the triple bottom line. To this end, O&G majors can draw from their deep investment capabilities, their critical ability to deliver complex projects with adequate human resources, and their decades of experience in creating strategic partnerships and alliances when capabilities are complementary, to collaborate with players in adjacent industries and offer innovative value propositions. Concerted efforts with governments and regulatory bodies will also be required to identify and lift potential regulatory roadblocks by adapting existing frameworks and creating new ones, providing the necessary space to ensure collective progress and work towards energy independence.

Beyond taking steps to manage the current crisis, O&G leaders should seize the opportunity to accelerate their journey towards the transition and become owners of the narrative rather than having to endure it. Preparing for the eventuality of this new normal should become a priority.

Typical energy projects IRR



Source: Wood Mackenzie, Deloitte Global Market Intelligence 2020

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