

# Commentary

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## Investment Challenges Affecting the Oil and Gas Industry

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## The COVID-19 pandemic has made the oil industry's investment problems since 2014 more evident.

### Introduction

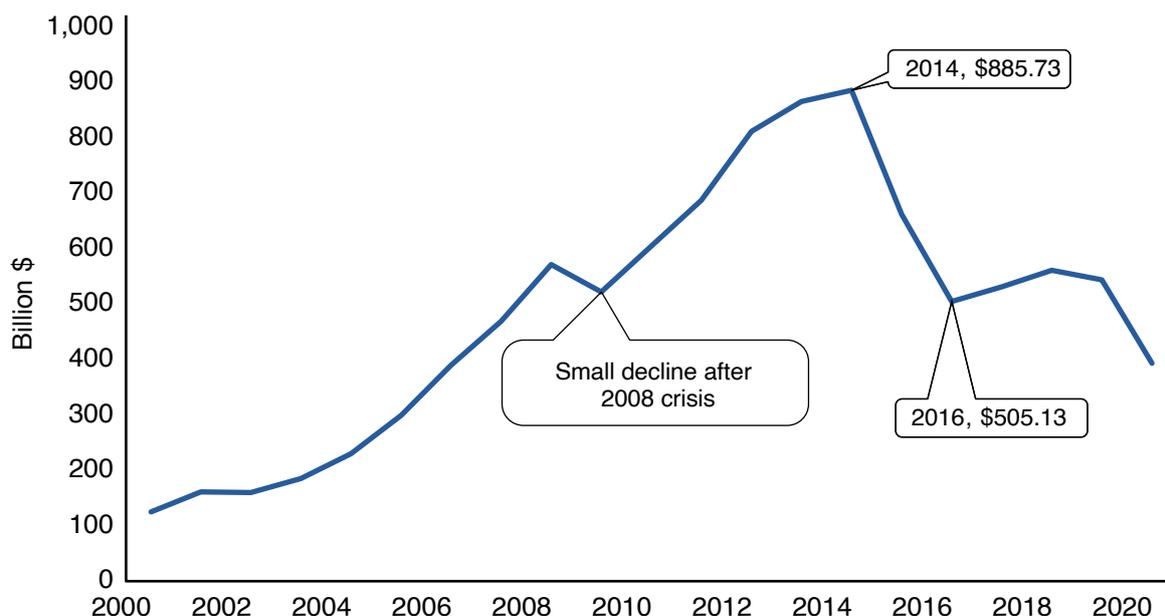
The unprecedented oil price collapse of April 2020, in the wake of a fall of more than 20 million barrels per day (MMb/d) in oil demand, forced producers to reduce their production levels rapidly. However, oil demand has recovered quickly, causing experts to have concerns about energy supply issues in an industry that does not have the flexibility to increase supply quickly. These factors are leading authorities to reconsider their strategies regarding oil and gas stockpiling, spare capacity, or even a ban on fuel exports, among other measures.

Investments in the oil and gas industry have been facing problems since 2014, which produced a significant drop in capital spending in 2016. This drop finally started to recover in 2017. However, the COVID-19 pandemic interrupted that recovery, driving investment levels in 2020 to the lowest in the last decade, and making it more evident how sensitive the market is to crises.

In 2014, oversupply driven by the shale oil and gas revolution, diminished attention to geopolitical risks, and increasing climate change pressure on fossil fuel producers led to one of the largest oil and gas demand and price collapses in modern history (Stocker, Baffes, and Vorisek 2018).

These oil and gas price downfalls reduced the industry's investment attractiveness, resulting in global upstream oil and gas investment cuts of around 43% between 2014 and 2016. Total investment in the oil sector reached a historic peak of close to \$900 billion in 2014, but fell to \$505 billion by 2016 (Figure 1).

**Figure 1.** Historical oil investment 2000-2020, billion \$ (nominal value).



Sources: KAPSARC, UCube Rystad 2021.

Concerns about the significant fall in investment emerged among crucial oil and gas industry players. Coincidentally, in December 2016, OPEC and some non-OPEC countries signed a declaration of understanding (DoU) to form a new alliance that would jointly address market crises for the first time in history. This new alliance marked the beginning of OPEC+ and helped to stabilize the oil market. This new alliance also allowed investors to regain trust in an industry that had been losing its attractiveness due to unstable prices.

As a result, OPEC+ interventions helped to stabilize the market, attracting new investment into the industry. However, despite the increase in global oil and gas investment during that period, capital spending remained below its 2015 levels. The recovery path was also interrupted by the pandemic in 2020, pushing down oil and gas capital expenditure (capex) investment by around 30% in 2020 (Figure 2).

**Figure 2.** Global upstream oil and gas capex.



Sources: IEF, IHS Markit, 2021.

In 2021, oil and gas upstream sector investments recovered marginally, but they remained at \$100 billion, or around 25% below pre-pandemic levels (Hamilton et al. 2021). According to an International Energy Forum and IHS Markit report, “Oil and Gas Investment Outlook,” published in December 2021, the projected investments over the next two years will define an adequate supply of oil and gas in the following years. Other stakeholders have expressed similar statements. For example, Rystad asserts that to guarantee adequate supply by 2030, investments should maintain an average compound annual growth rate (CAGR) between 2020 and 2030 of at least 2%, the same growth experienced during 2010-2020.

**A substantial increase in investment in oil and gas is needed today to guarantee energy security from 2025 and beyond.**

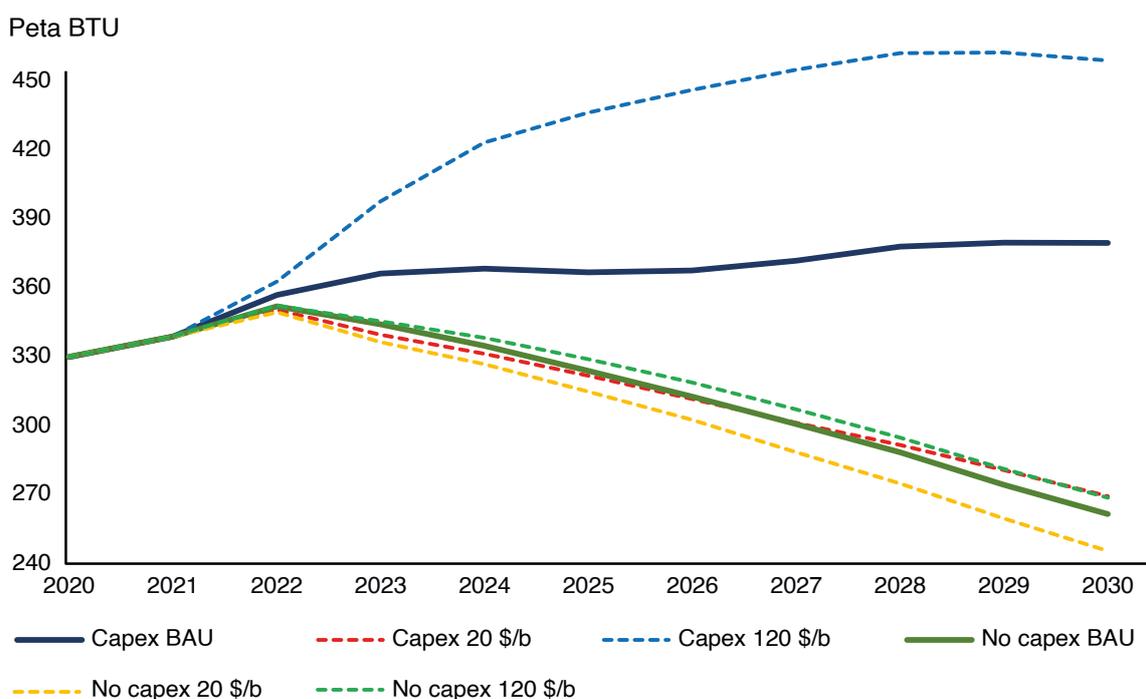
**The oil and gas industry has suffered from external discreditation through climate and social misconceptions, generating stigmas that have affected its investment attractiveness.**

In other words, a substantial increase in investment in oil and gas is needed today to guarantee energy security from 2025 and beyond. The risk of facing oil and gas shortfalls increases significantly if upstream capex does not grow fast enough (Figure 3). Using Rystad UCube, KAPSARC's internal analysis shows the difference between global oil production under the required upstream capex to satisfy demand versus a situation with no upstream capex investment. Each case is analyzed under three different price scenarios. The business as usual (BAU) scenario uses the default price used by Rystad, a second scenario uses an oil price of \$20 per barrel (b), and the third scenario uses an oil price of \$120/b. The results summarized in Figure 3 show a significant drop in oil production if the industry does not get the necessary investment.

Unfortunately, these projections are not very optimistic. Rystad estimates that global oil and gas investment, including midstream and downstream, will increase by just \$26 billion this year (Rystad 2022). This is low compared with the more than \$140 billion increase needed in upstream capex by 2025.

The oil and gas industry has also suffered from external discreditation through pressure on it from advocates of climate change and social issues. The stigmas this has generated have affected the investment attractiveness of the industry, discouraging investors from financing upstream projects. Furthermore, the market experienced short-term oversupply in January 2022, leading to a buildup in inventories while also reducing incentives to invest in the industry (Browning 2022). High oil prices can result in stocks being released quickly, however.

**Figure 3.** Oil and gas production capacity in different oil price scenarios with and without capex.



Sources: KAPSARC, Rystad 2021.

In general, four key challenges in the oil and gas industry are generating concerns among policymakers and investors regarding the industry's investment attractiveness. They are 1) price volatility, 2) uncertainties due to significantly diverging long-term forecasts, 3) increasing climate change concerns, and 4) the lack of regulation on environmental, social, and governance (ESG), making it unclear. This report provides a deep insight into those challenges, providing an analysis that will facilitate an understanding of different perspectives on the investment situation in the oil and gas industry.

## Price volatility

As mentioned before, unless industry investment increases during the next two years, the world risks a significant deficit of oil and gas supply by 2025 and beyond, with a high probability of continued three-digit oil prices for a prolonged period.

The oil and gas market has recovered from the lows of April 2020 when oil was \$20/b to more than \$90/b in February 2022. This 400% increase has given investors optimism. At the same time, it has generated an unstable and volatile price environment for long-term investors.

Typically, a commodity with high price volatility is not the first option among value investors looking for steady gains or short-term wins. Financial participants are more likely to invest their capital in commodities with prices that experience low price fluctuations. In a volatile, upward trending market, prices are likely to rise fast, but they are also susceptible to rapid drops. Analysts are split in their oil and gas price outlooks for 2022. Some experts, looking at the fundamentals of the oil market, suggest that an oversupply of oil and saturated inventories will make the oil price fall far below current levels. Other experts forecast high oil and gas prices, based on the assumption that they will be affected by high prices for other commodities.

In any case, during the past two years, high volatility combined with backwardation in crude oil futures has led investors to shy away from investing. Before COVID-19, OPEC+ interventions, including declaring their production/cut targets following meetings, managed to bring stability to the market. This is supported by data from both the CBOE Volatility Index (VIX) and CBOE Crude Oil ETF Volatility Index (OVX). Their averages declined by 20% and 10%, respectively, after OPEC+ signed its DoU in December 2016 (Table 1). Pierru et al. (2021) also confirmed that the management of OPEC's spare capacity has significantly reduced the monthly oil price volatility.

**Table 1.** VIX and OVX for oil prices.

Date	VIX	OVX
Pre COVID-19 2010 average	17.9	34.3
Pre COVID-19 2017 average	14.4	30.8
COVID-19 (February 1 – March 8, 2020)	23.2	41.9
OPEC-Russia disagreement	40.7	113.8
Post-June 2020	21.7	39.6

Source: CBOE, 2022.

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**OPEC+ interventions helped market predictability, thus providing some comfort for investors.**

As noted in the previous table, OPEC+ interventions helped market predictability, thus providing assurances to many investors. However, the ability of OPEC+ to bring stability to the market and ease investors' decisions for long-term investments has been limited by several factors. These include non-OPEC producers' behavior, such as shale producers producing without limits, COVID-19, and the geopolitical agenda against the use of fossil fuels.

In the short term, price volatility is the most critical investment challenge in the oil and gas market. However, there are other factors to consider in the long term, such as the 2040 outlook projections discussed in the next section or the actions of environmental defenders that tarnish the reputation of the oil and gas industry, combined with new ESG practices that are not standardized. The latter also affects the attractiveness of the sector for potential financiers.

### **Increasingly diverging long-term demand projections**

One of the most important uncertainties impacting oil investment is the significant difference between medium- and long-term oil outlooks. The divergence of views between these forecasts has been ongoing for years, and it is expanding in recently published outlooks by organizations and international oil companies, as depicted in Figure 4.

Long-term oil outlooks use assumptions based on specific scenarios. They range from including the full achievement of climate policies to no climate policies at all. They also have a new lexicon that describes the future of oil and gas forecasts, including carbon budgets, unburnable carbon, energy transitions, peak demand, and stranded assets, among other items.

However, the big gap within oil outlooks could bring investment scarcity and instability to the oil and gas market. The energy transition is just starting, and high oil and gas demand will still need security of supply for decades and a permanent injection of capital to keep it running. Diminished financing for exploration and production will result in supply crises.

Many of the current outlooks presented by different stakeholders represent scenarios under idealistic assumptions that do not reflect current trends. They aim to reach a desired endpoint, such as net-zero emissions by 2050. According to the Institute of Energy Economics, Japan (IEEJ) and OPEC, under more realistic assumptions, oil demand will continue growing for at least ten more years unless extreme actions are taken. This is, in part, due to the growing energy needs of emerging nations.

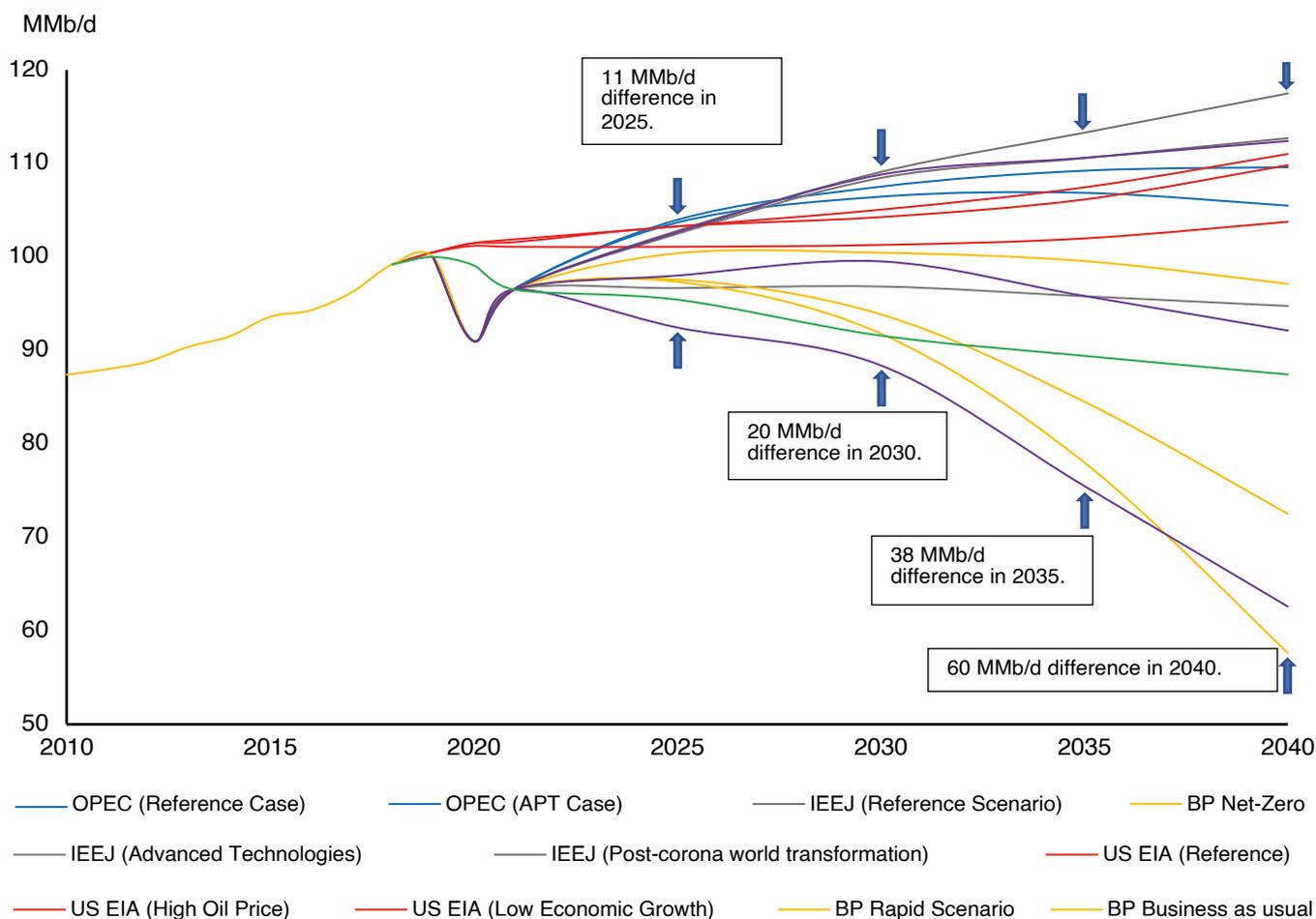
**Many of the net-zero assumptions are conditional on the extensive and successful implementation of climate policies.**

Based on the IEEJ and OPEC outlooks, it is necessary to consider that the oil and gas market will need significant (upstream) investment to satisfy future demand. Under financing will lead to supply deficits, generating higher fuel prices and causing inflation in many commodities.

Many of the net-zero assumptions are contingent on the extensive and successful implementation of climate policies. Those scenarios aim to guide what needs to be done instead of actual energy outlooks. For example, the IEA's "Net-Zero by 2050" report published in 2021 (IEA 2021)

suggested that for their scenario to happen, it would require the “equivalent [of] installing the world’s current largest solar park roughly every day.” That is highly unlikely to happen. Such scenarios have been developed to show if current climate policies might achieve the desired climate targets. However, these scenarios do not necessary reflect a realistic future, but a desired future which challenges the oil and gas market’s reputation, driving away investment from the sector.

**Figure 4.** Diverging results from different global oil demand outlooks.



Source: KAPSARC based on OPEC, IEEJ, EIA, BP, Equinor, and Shell.

Note: Due to copyright policies, this report presents the results of reports publicly available. However, similar results were obtained after comparing them with other sources such as IHS, Wood Mackenzie, Rystad, the IEA, etc.

## Evolving government climate regulations

The world could celebrate 2021 as the year when fossil fuel-dependent economies and stakeholders decided to act. Countries such as Saudi Arabia, India, Russia, and several others set long-term targets when they entered into climate change negotiations to help the world reach carbon neutrality. Nevertheless, the transition to net-zero carbon needs to be addressed responsibly to avoid an energy supply crisis and underinvestment in the sector.

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**Companies with long-life conventional portfolios, such as Aramco, have lower corporate upstream emission intensities than those with other production mechanisms.**

**The private sector is the most vulnerable to climate change stakeholder pressure and will probably be the first to succumb to rapid transitions and cuts to production and exploration investment.**

In November 2021, a crucial step was reached by fossil fuel consumers and producers at the 26<sup>th</sup> United Nations Climate Change Conference of Parties (COP 26) meeting in Glasgow. At the end of the conference, their interventions managed to bring calls for the ‘phasing down’ rather than ‘phasing out’ of coal and for governmental support for renewables rather than all sources of energy. The calls highlighted many issues that climate experts had not considered when suggesting eliminating fossil fuels. A recent example of this was European coal usage during the winter of 2021-22. During that time, gas prices in Europe reached historical highs, pushing many European regions to go back to coal. The compromise at COP 26 was only possible because, in 2021, large economies agreed to bring their carbon emissions to net-zero. During COP 26, India announced that it would reach net-zero emissions by 2070. A few weeks before that, China, Russia, and Saudi Arabia pledged to achieve net-zero carbon emissions by 2060, joining a large number of OECD countries that had promised to be carbon neutral by 2050.

National oil companies (NOCs) have also aligned with their country’s initiatives, setting long-term net-zero targets. For example, Saudi Aramco announced its ambition to achieve net-zero Scope 1 and Scope 2 greenhouse gas emissions by 2050. In December 2021, Russia’s largest oil producer, Rosneft, joined the list of companies setting net-zero targets by 2050.

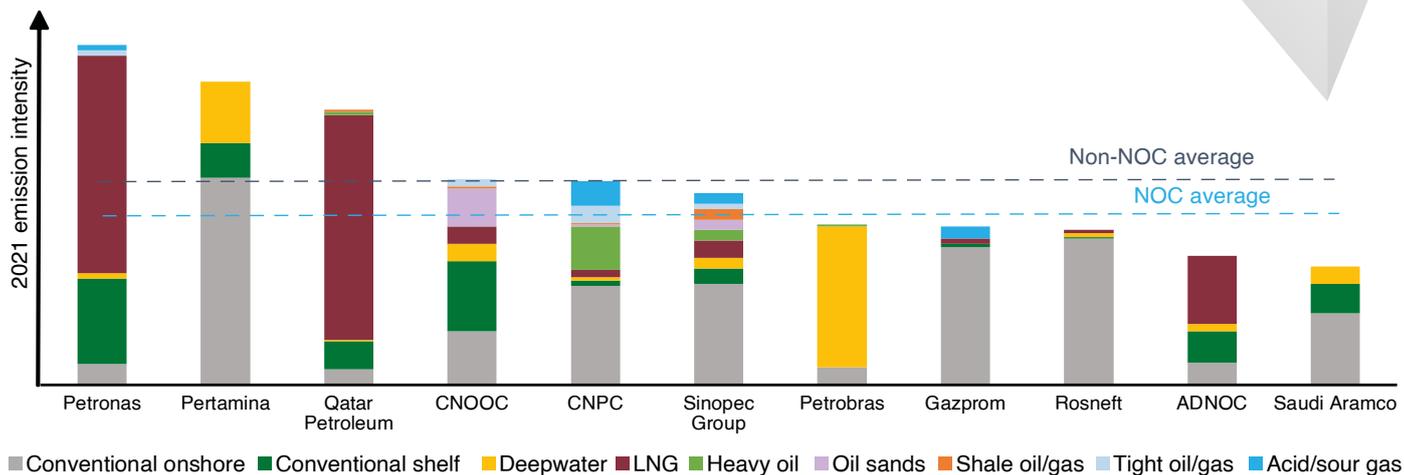
Any actions taken by NOCs will significantly impact the oil and gas market. In 2021, NOCs controlled 50% of petroleum liquids production and 48% of gas production (Yates 2021). Companies with long-life conventional production portfolios, such as Aramco, have lower corporate upstream emission intensities than those with other production mechanisms such as shale producers (Figure 5). In other words, companies with conventional production generate fewer carbon emissions, resulting in lower budgetary requirements to reach net-zero emissions, especially Scope 1 and Scope 2 emissions. This is mostly because conventional production is less energy-intensive than alternative production techniques.

The pressure to implement net-zero targets has not only been felt by the NOCs of oil-producer governments. Interventions from activist shareholders and environmentalists also pushed most big IOCs to set net-zero targets during 2021 or even before. Top managers from Exxon Mobil and Chevron had to deal with new stringent climate and environmental demands from their investors. After losing a landmark court case (Bouso 2021), Royal Dutch Shell cut its emissions target much more steeply than planned. Chevron and Exxon suffered shareholder rebellions from environmentally minded investors pushing them to lower their emissions (Mellor 2021). These interventions, which are becoming frequent in the industry, force IOCs to reconsider their long-term production plans.

In addition to the environmental pressure that IOCs are under, there is another reason why IOCs are accelerating into the transition compared with NOCs. The average profit per barrel of oil equivalent (boe) generated by IOCs in 2021 was \$6.60/boe, compared with the \$8.20/boe generated by NOCs (Yates 2021). Profits are still high. However, environmental and climate pressure from internal and external stakeholders will reduce the

IOCs' profits faster than the NOCs'. IOCs need to find alternatives to satisfy the public as they do not count on governmental support. IOCs are more exposed to public discontent.

**Figure 5.** NOCs with large conventional portfolios have lower corporate upstream emissions than many of their peers.



Source: Yates (2021).

The significant pressure that climate policies have on governments, NOCs, and IOCs is evident. The private sector is the most vulnerable and will probably be the first to starting transitioning to cleaner fuel and making cuts to its production and exploration investments (i.e., BP, Equinor, etc.). It is expected that NOCs will not shift rapidly, but will try to avoid investment deficits (IEA 2020).

Climate challenges, however, are just a part of a new wave for the energy transition. Oil and gas companies have been obliged to incorporate environmental, social, and governance (ESG) strategies in their agendas to become attractive to new investment.

### The lack of regulations makes environmental, social, and governance (ESG) unclear

During the energy transition, climate issues are not the only concerns that oil and gas companies must consider. Today, organizations are called to incorporate environmental, social, and governance (ESG) values and metrics that, in combination with financial profit, will define the success of a sustainable institution that is in harmony with society.

As mentioned before, some long-term outlooks, with BAU scenarios, suggest that the world will still need substantial amounts of oil in the coming decades. However, oil and gas investors and stakeholders demand social and environmental actions linked to their investments and contributions. Indeed, the cases of Exxon and Shell have been mentioned earlier, and BlackRock<sup>1</sup>

**Oil and gas investors and stakeholders demand social and environmental actions linked to their investments and contribution.**

<sup>1</sup> BlackRock is the world's largest investment manager, holding \$10 trillion of assets, \$255 billion of which is in oil and gas investments, and \$36 billion in coal.

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**Attracting and retaining human talent in the oil and gas industry is an issue that needs to be managed today.**

has declared that it will not support companies that “are not making sufficient progress on sustainability-related disclosures and the business practices and plans underlying them” (Fink 2020). The message is clear: lacking an ESG plan will mean less attractive terms attached to capital access (e.g., higher fees, etc.).

As mentioned before, a consideration of climate change issues is just part of a company’s environmental (E) plan. But to become environmentally responsible, the approach should consider its natural resource utilization, including water and land usage, and the effects of a company’s operations on biodiversity and its surroundings. Environmental concerns go beyond carbon emissions; they also include waste and other contaminants, and the depletion of limited natural resources.

The social (S) approach considers employment practices, community engagement, worker safety, equality, diversity, and inclusion, customer satisfaction, safety, security programs, and data security. For governance (G), the company needs to review and implement new policies, assigning related ESG rights and responsibilities to all participants and stakeholders. Governance aims to incentivize and adhere to guidelines, strengthening the board’s commitment to reach E and S targets. These ‘G’ targets incorporate incentives, compensation, etc., for participants of the ESG transformation process (Rushton 2021).

ESG strategies in the oil and gas industry have focused mainly on environmental, not social issues. Additionally, ESG strategies require extra workloads, which are easy to implement in big oil and gas firms such as Shell, BP, and Chevron, etc. However, the industry has many small independent companies with a limited number of workers who have no time to implement ESG in their companies. For example, the Institute of Petroleum Association of America (IPAA 2022) estimates that “there are about 9,000 independent oil and natural gas producers in the United States. These companies operate in 33 states and offshore and employ an average of just 12 people.” An ESG strategy for 12 employees seems excessive.

Given the size of the oil and gas industry, it has a critical role in creating wealth for governments, supporting local content, investing in education and infrastructure, and generating tax revenues (Turner, Milborrow, and Del Maestro 2021). Historically, the industry has fulfilled that role adequately, constantly interacting with and generating benefits for society (Jaffe, Wilson, Baker, and Soligo 2007). The industry will likely continue reacting well to a community that becomes more and more demanding over time. However, there are a few cases where some companies have caused problems for the surrounding community, either by accident or by bad management.

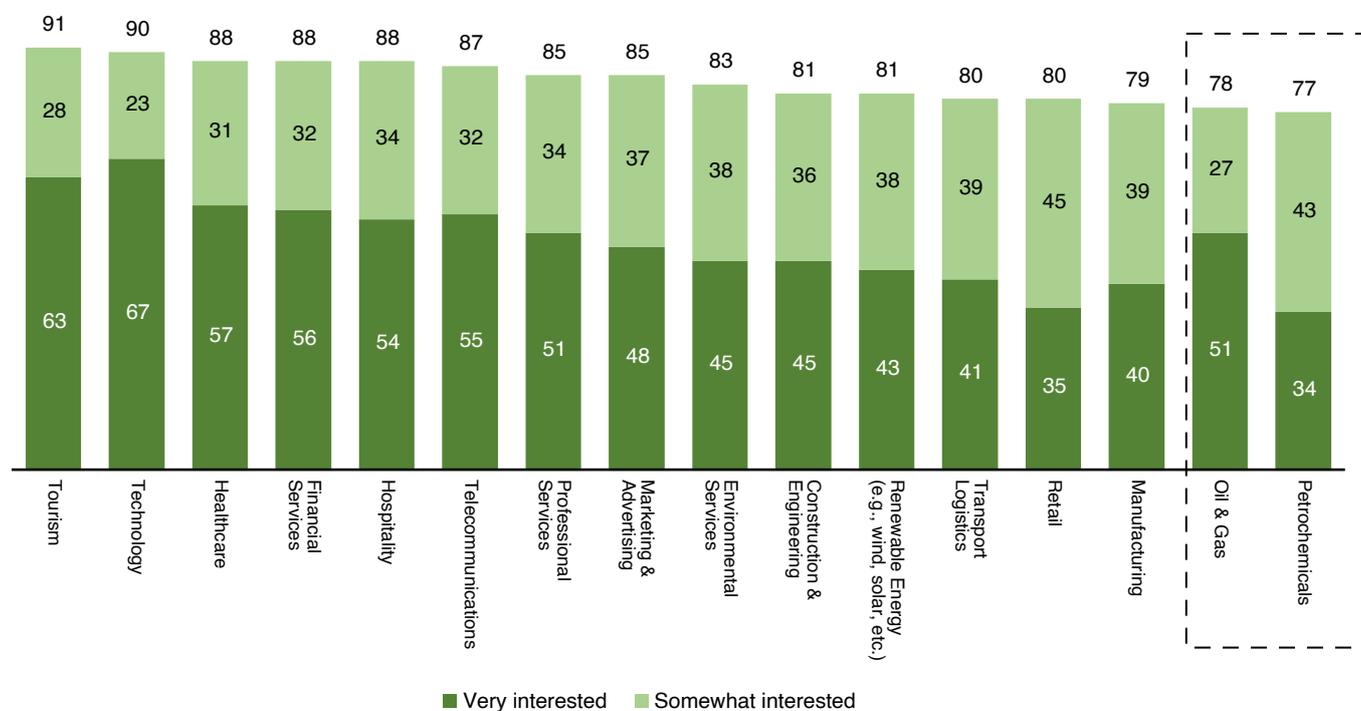
The industry has faced another problem lately. Attracting and retaining human talent is an issue that needs to be managed today. PricewaterhouseCoopers’ (PwC’s) “Upskilling Hopes and Fears Survey” showed that 75% of workers want to work for an organization that contributes positively to society (Turner 2021). Unfortunately, the industry’s

reputation makes it difficult for oil and gas companies to attract workers. Moreover, younger generations do not view this industry favorably. According to a YouGov Survey for Barclays in April 2019, 62% of 18- to 24-year-olds perceived the industry negatively (Unsted 2021).

In Saudi Arabia, Vision 2030 and the new opportunities in technology and tourism are transforming the career preferences of younger generations. A survey prepared by the Red Sea Development Company showed that young Saudis are more interested in careers related to technology or tourism than traditional industries such as oil and gas or petrochemicals. These traditional industries have fallen to the bottom of young Saudis' career preferences (Figure 6).

To summarize, the divergent ability between big and smaller oil firms to implement ESG strategies is expanding the existing competition gap. This will make the future for small, independent companies even more challenging. In addition, the increasing lack of specialists in the oil and gas field implies an expensive future workforce. The industry needs to work on standardized strategies that will help small, independent companies survive and, at the same time, transform the sector into an attractive one for future generations. Investors will not invest in companies they think will disappear in the medium term. However, society needs the products those companies produce. Non-standardized ESG strategies will reduce the amount of investment going into the industry.

**Figure 6.** Prospective employees' views on sectors in which to work in Saudi Arabia (%).



Source: The Red Sea Development Company (2021).

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