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About the Deloitte survey

To understand the outlook and perspectives of organizations across the oil and gas (O&G) industry, Deloitte fielded a survey of 100 US executives and other senior leaders in August 2022. The survey captured insights from respondents in five specific industry segments: exploration and production, oilfield services, midstream, petroleum refining and marketing, and integrated O&G and new energy companies.

Illuminating new possibilities

The crude oil and natural gas (O&G) industry is not new to supply disruptions and price volatility. Over the past seven years, the industry has seen several peaks and troughs, from above \$100/bbl in 2014 to -\$37/bbl in 2020. But the situation is unique today.

A confluence of several economic, geopolitical, trade, policy, and financial factors have exacerbated the issue of underinvestment and triggered a readjustment in the broader energy market.¹ All three components of a balanced energy equation—**energy security, supply diversification, and low-carbon transition**—are under severe pressure or facing a “trilemma” of concerns (figure 1).

The O&G industry has followed the investor mandate for measured investment and financial discipline, but this approach has reduced capital expenditures and contributed to the tight market seen in 2022.²

Meanwhile, the disruption of energy trade between Europe and Russia has driven global gas markets to new highs—reaching six to ten times US Henry Hub prices.³ Furthermore, the shortage of agricultural products for renewable fuels and supply chain challenges for low-carbon technologies have impacted the progress of energy transition.⁴

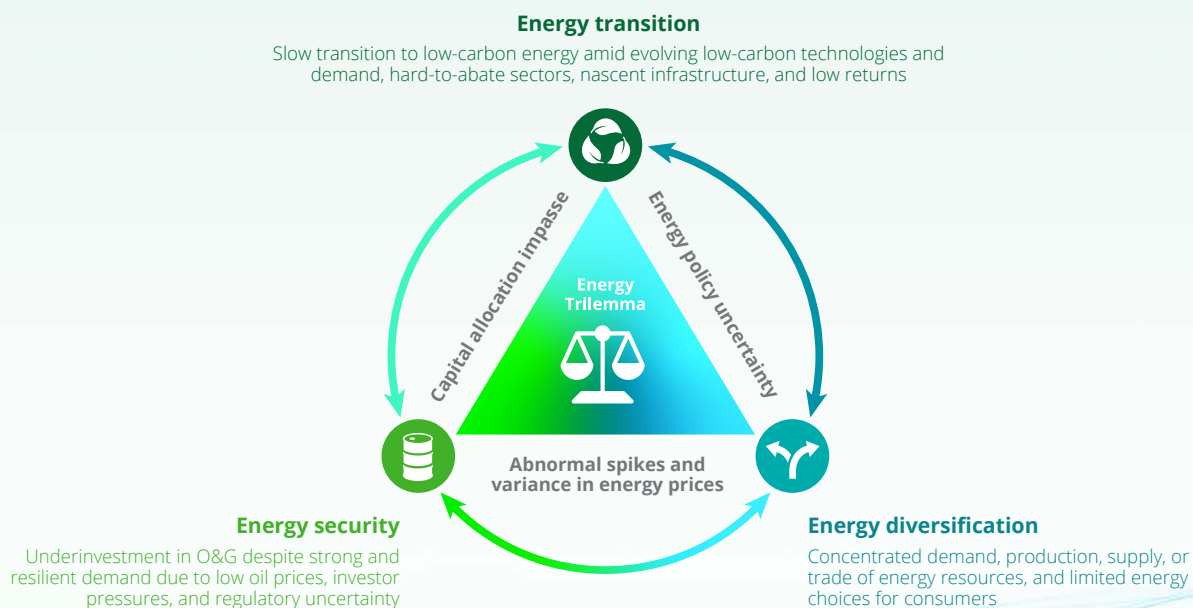
Although the immediate impact of this imbalance is high energy prices and record cash flows for O&G companies,

how and where the industry will invest in the future remains uncertain. The industry's investment trajectory in 2023 will likely be determined by many of the actions and decisions being taken today:

- The balance that O&G producers strike between increasing investment and continuing capital discipline
- The role of O&G companies in accelerating and securing the energy transition
- The dynamics of natural gas demand and the resultant policy environment
- The refining industry's adaptation to the readjustment in energy markets
- The trajectory for deal-making amid the interplay of energy security and transition

The O&G industry will likely enter 2023 with its healthiest balance sheet yet and with continued capital discipline.⁵ This could help companies overcome the energy underinvestment of recent years and help enable an accelerated energy transition. The results of the 2023 outlook survey show that 93% of our respondents remain positive to cautiously positive about the industry in the coming year.

Figure 1. The energy trilemma



Note: Factors cited internally along the circle denote the impact on energy markets and balance.

Source: Amy Chronis et al., Striking the balance: How and where will oil and gas producers deploy their cash?, Deloitte Insights, August 25, 2022.

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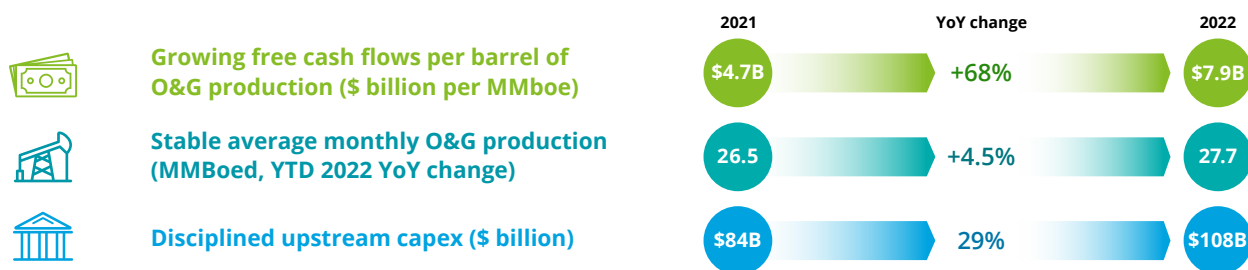
Upstream

Healthy balance sheets create opportunities for oil and gas

Years of underinvestment, rapid recovery in demand, and geopolitical developments have driven oil prices to 2014 highs and upstream cash flows to record levels. In 2022, the global upstream industry is projected to generate its highest-ever free cash flows of \$1.4 trillion at an assumed average Brent oil price of \$106/bbl.⁶ Until now, the industry has practiced capital discipline and focused on cash flow generation and payout—2022 year-to-date average O&G production is up by just 4.5% over the same period last year, while 2022 free cash flows per barrel of production is projected to be higher by nearly 70% over 2021 (figure 2).

But now all eyes are on upstream companies to see if they will continue to prioritize shareholder payouts or increase their hydrocarbon reinvestment rate, driven by the urgency to provide affordable energy to the world.

Figure 2. US upstream balancing both discipline and growth



Sources: US Energy Information Administration, Rystad Energy, Deloitte analysis.

Nearly 40% of surveyed executives selected strengthening their balance sheets through debt repayments and distributing cash back to shareholders as their top cash deployment strategies. Meanwhile, several oil majors and several large E&Ps have already revised their 2022 shareholder payout targets significantly higher.

The industry's capital discipline is likely to be a continuing trend as economic uncertainty grows and energy prices remain highly volatile. Although oil prices are near 2013–2014 levels, upstream capex in 2022 is still expected to be about 40% lower over the period (base case scenario). Through efficiency gains, focus on best acreages and wells, re-fracking of shale wells, and monetization of drilled but uncompleted well (DUC) inventories, the industry has increased production without increasing capex proportionately (figure 2). However, capex and production strategies vary across company groups and regions:

- **Public E&Ps:** Large public E&Ps are deploying a cautious production growth strategy due to continued investor focus and fear of wavering from the disciplined capex strategy based on short-term market cycles.⁷ Additionally, higher operating costs, oilfield service capacity constraints, and labor shortages are adding downward pressure on an already cautious capex strategy for the group.
- **Private E&Ps:** Although most producers will likely ramp up capex to include an approximate 10%–15% inflationary increase into their 2022 capital budgets, maximum production (and capex) growth will likely continue to be driven by private companies and majors. Small and private operators especially will look to add scale and maintain optionality between long-term growth and shareholder returns.
- **US-headquartered majors:** The majors are driving US shale production and capex growth in 2022 by building and leveraging an integrated infrastructure. Although US-headquartered majors have cited shareholder payouts and production growth as their key areas of investment focus, they are also ramping up investment in low-carbon businesses, especially carbon capture and storage, renewable fuels, and hydrogen.⁸
- **Global upstream:** European-headquartered majors will likely divide their cash between hydrocarbon reinvestment, diversification, and payouts to balance energy security and transition. Meanwhile, despite having broader institutional and government obligations to pay dividends, many national oil companies are investing substantially in new low-carbon technologies and solutions to diversify their economy.⁹

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Clean energy

New policies expected to accelerate the clean energy transition

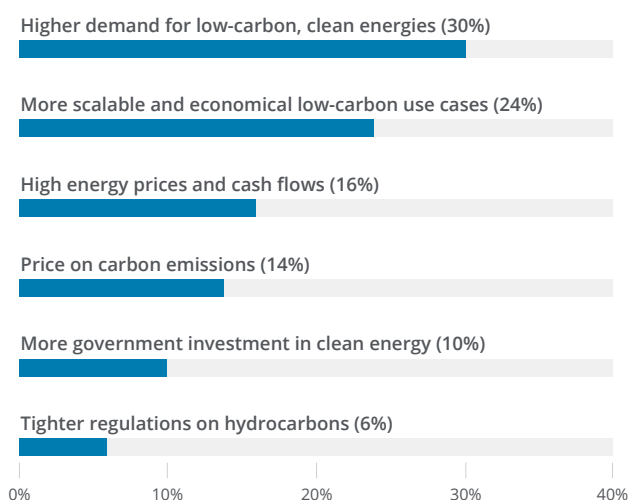
High commodity prices and growing concerns over energy security are creating urgency for many to diversify supply and accelerate the energy transition. As a result, clean energy investment by O&G companies has risen by an average of 12% each year since 2020¹⁰ and is expected to account for an estimated 5% of total O&G capex spending in 2022, up from less than 2% in 2020.¹¹

Supportive policies, in combination with higher O&G cash flows in 2022, have enabled O&G companies to increase investment in clean energy:

- **United States:** Passed the Infrastructure Investment and Jobs Act (IIJA);¹² and the Inflation Reduction Act between 2020 and 2022.¹³ Together, these provide for about \$450 billion of clean energy and related investments.¹⁴ Moreover, the US Securities and Exchange Commission (SEC) has proposed rules mandating the disclosure of emissions for companies in their SEC filings. If finalized this year, some of these rules could begin to be phased in as early as fiscal year 2023.
- **Europe:** The European Commission passed the Fit for 55 climate package¹⁵ and Europe's REPowerEU plan.¹⁶ Together, the committed provisions for the clean energy transition and emissions reduction are close to €300 billion.¹⁷
- **Other:** Over the last two years, more than a dozen other countries published hydrogen strategies.¹⁸

Investment is expected to continue increasing in 2023. However, when asked what factors would enable increased investment in clean energy, about 30% of respondents in our survey selected higher demand for low-carbon clean energies, and 24% selected more scalable and economical low-carbon use cases (figure 3). So, a larger acceleration of clean energy investment may require more time for demand to develop and technologies to mature.

Figure 3. Factors that could accelerate respondents' O&G investment in clean energy



Note: Respondents were asked to share their top three options in the declining order of importance. A final score for each option was ascertained using the number of respondents and the rank order as weights.

Source: Deloitte analysis.

Several factors could influence the pace of investment or shift the clean energy focus in 2023:

- **The relative price of fuels:** Sustained high natural gas prices could make green hydrogen and biomethane more attractive to future investments relative to blue hydrogen. In fact, the levelized cost of green hydrogen dropped lower than natural gas prices in several EU nations in July 2022.¹⁹
- **Food versus fuel concerns:** The production of biofuels often relies on the production of grains and vegetable oils. Supply chain issues and high commodity costs have increased concerns over food inflation, and public opposition could rise to crops being used for fuel rather than food.
- **Challenges to new infrastructure:** Several US LNG projects; carbon capture, utilization, and storage (CCUS) projects in the United States and Australia; and hydrogen projects in Europe are expected to move into the financing and permitting stages in 2023.²⁰ The speed and ease of permitting the infrastructure could impact how costs and timelines are treated in planning and financing future projects.

3

Natural gas and LNG

Natural gas plays a new role in the clean energy transition

Energy policy in the United States and Europe began to pivot in 2022, following Russia's invasion of Ukraine. Consequently, momentum has shifted from phasing out natural gas to reducing emissions from natural gas while cleaner alternatives are developed and deployed. Increases in natural gas investment are expected in 2023, including investments that reduce the greenhouse gas (GHG) intensity of natural gas and related infrastructure.

Europe and the United States announced several policies in 2022 to incentivize natural gas investment while ensuring emissions reductions. For instance:

- **EU taxonomy:** EU's taxonomy now considers natural gas an environmentally sustainable economic activity, provided that new natural gas projects replace coal units, achieve emissions reductions, and fully convert to renewable or low-carbon gases by 2035.²¹
- **Joint statement between the United States and European Commission on European energy security:** The agreement outlined commitments to increase US LNG exports to Europe through 2030 and to undertake efforts to reduce the GHG intensity of new LNG infrastructure.²²
- **The Inflation Reduction Act:** This act increases offshore oil and gas lease sales in the United States. It also puts fees on excess methane emissions and offers grants to O&G companies to monitor and reduce methane.²³

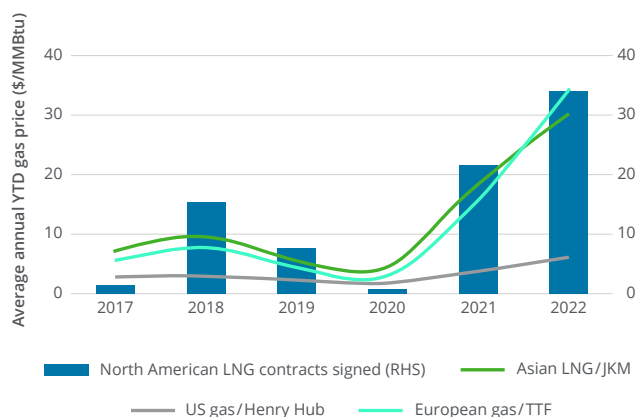
In 2023, natural gas markets are expected to remain tight with European and Asian demand absorbing the incremental LNG export volumes coming online. Around 45% of surveyed companies noted that an unfavorable regulatory environment and significant capital investments have held back more investment in natural gas production.²⁴ These conditions are expected to improve in 2023 and investment in natural gas infrastructure made in 2022–2023 could balance the market later this decade. Possible signs of rising investment in the natural gas market include the following:

- **North American** LNG developers signed nearly 34 million tons per annum (MTPA) of long-term LNG contracts in 2022, representing a 68% increase over the last record set in 2021 (figure 4). Most of these contracts anchor new or expanded liquefaction projects that aim to reach financial investment decisions in late 2022 and 2023.²⁵

- **Eight floating storage** regasification units (FSRUs) are expected to become operational in several European countries in late 2022 through 2023, increasing total import capacity by more than 20%.²⁶
- **Around 103 LNG** vessels were ordered globally during the first seven months of 2022, which is the highest ever recorded.²⁷
- Several natural gas exporting countries have announced that they are boosting natural gas production, including Qatar and Israel via Egypt.²⁸ In the United States, natural gas-directed rigs are at their highest level since September 2019.²⁹

But in the United States, more natural gas is being produced with a view to reducing carbon and methane emissions. The volume of natural gas certified as low carbon increased 100 times in the last year.³⁰ LNG exporters have signed contracts with suppliers of certified natural gas to export “cleaner” LNG. Moreover, at least three proposed US liquefaction projects have announced plans to build CCS facilities to produce lower-carbon LNG cargoes. Certified natural gas and lower-carbon LNG are expected to continue increasing momentum in 2023.

Figure 4. Rising demand for LNG as European gas prices reach record levels



Sources: US Energy Information Administration (EIA), “Natural Gas Spot and Futures Prices (NYMEX),” accessed Aug 31, 2022; CME Group, “Dutch TTF Natural Gas Futures,” accessed Aug 31, 2022; CME Group, “LNG Japan/Korea Market (Platts) Futures,” accessed Aug 31, 2022; GIIGNL Annual Report 2022, May 2022; various company press releases.

4

Downstream

Refiners respond to shifting energy demand

The refined product market rebounded strongly with high oil prices, robust demand, and five-year lows in inventory levels pushing petroleum product prices to record levels in the first half of 2022. US gasoline and distillate prices crossed \$5 per gallon and \$6 per gallon, respectively, in early June 2022.³¹

Prices also rose due to a decline in global refining capacity in 2021 coupled with sanctions-led disruption to refinery feedstocks, such as Russian vacuum gas oil, that have tightened the market.³² The result: Petroleum demand and the industry's profitability diverged in 2022.

- **Profitability surged:** The US Gulf Coast 3:2:1 crack spread reached \$60/bbl in June 2022, driven by strong distillate demand and five-year-low product inventories (June distillate inventory was at 23% below the five-year average levels) with average refinery utilization over 90% in 2022 (figure 5).³³ Although the crack spread fell to \$35/bbl in September, it is still twice as high compared to the 2021 average.
- **Demand tumbled:** Due in part to high prices, gasoline demand tumbled in Q3 2022 to 8.5 million barrels per day (mbpd) in early September—about 0.9 mbpd lower than the same period last year. In fact, excluding the pandemic year, demand in 2022 has been the lowest in a decade.³⁴
- **Margins diverged:** High natural gas prices are limiting European refiners to process-advantaged, medium-grade crudes to conserve hydrogen use, increasing their operating

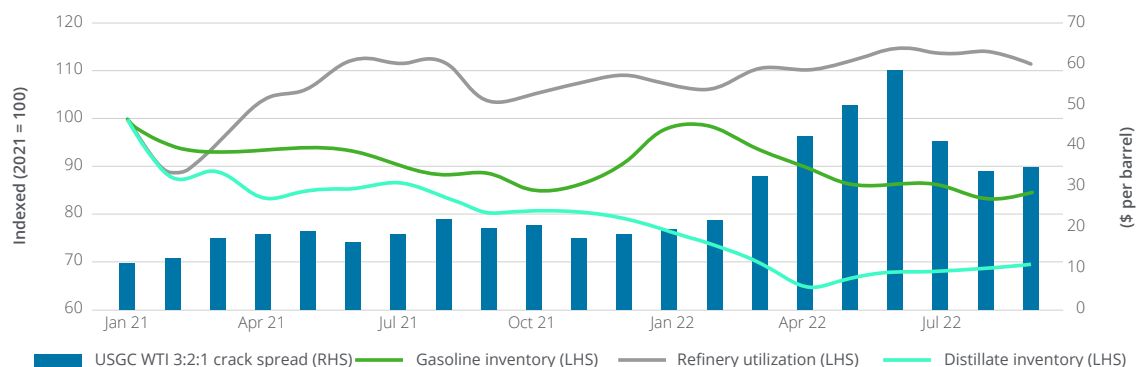
costs by \$3–\$5/bbl.³⁵ Meanwhile, select Asian refiners are buying heavily discounted Russian crude creating margin divergence within and across regions.³⁶

In the coming year, refineries could grapple with weakening demand, recession worries, and a projected 1.6 mbpd increase in global refining capacity.³⁷ Notably, US-headquartered refiners are not expected to increase capacity as they prioritize financial health, shareholder payouts, and investments in refinery optimization projects.

Faced with uncertain demand and volatile prices, refiners are rethinking their investment strategies to include altering product yields toward high-margin petroleum and chemical products while also repurposing infrastructure for clean energy options such as renewable diesel. With the high prices of renewable identification number (RIN) compliance credits, spurred by the rising cost of agricultural feedstocks (corn and soybean) and the supply-demand imbalance, the demand for renewable diesel is expected to grow by more than 50% year over year in 2022.³⁸

In fact, nearly 40% of our surveyed O&G executives view refinery modification for low-emission fuels, such as renewable diesel and hydrogen, as crucial to maintaining growth over the next few years.³⁹ However, switching to renewable fuels could be challenging due to food shortages (e.g., soybeans and corn), supply chain logistics (e.g., used cooking oil), and low returns compared to conventional processing of crude oil.

Figure 5. Rising margins led by falling inventory levels despite high refinery utilization



Note: The US Gulf Coast 3:2:1 crack spread refers to the difference in margins between WTI crude oil, US Gulf Coast conventional gasoline, and US Gulf Coast ultra-low sulfur diesel.

Source: US Energy Information Administration (EIA).

5

Mergers and acquisitions

Deal-making reflects wider trends in the market

After a strong recovery in the second half of 2021, O&G M&A was off to a strong start in early 2022 due to rising oil prices, improving cash flows, and a robust recovery in demand. But recent geopolitical developments and economic uncertainty have significantly tapered the momentum. In the first nine months of 2022, O&G M&A fell by about 27% year over year despite oil prices averaging above \$100/bbl and the upstream industry's financial health reaching an all-time best.⁴⁰ An uncertain environment seems to have made potential buyers more cautious and altered their buying strategies.

At a sectoral level, O&G M&A saw the following changes during the first nine months of 2022:⁴¹

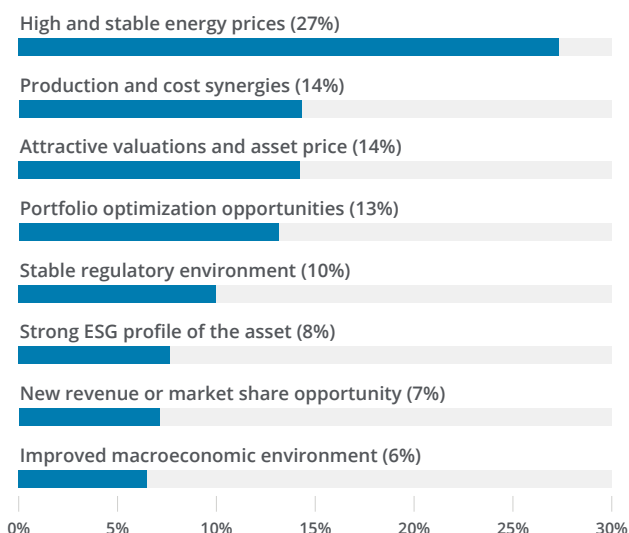
- **Upstream M&A** lost some momentum, but it still accounted for nearly 60% of deals by value.
- **Oilfield services M&A** deal value remained below \$10 billion as upstream clients restrained spending.
- **Midstream M&A** saw renewed interest in order to alleviate infrastructure constraints, accounting for a quarter of the deals by value.
- **Downstream M&A** fell by 57% due to the rising risk of demand destruction.

At an asset or resource level, O&G M&A saw the following changes during the first nine months of 2022:⁴²

- **PE players** cashed out their shale investments, comprising six out of the top 15 deals.
- **Midsize players** acquired producing acreage to benefit from high prices.
- **Majors divested** their high-carbon assets to retain a low-carbon portfolio.
- **Buyers** picked up oil tankers and LNG carriers to overcome supply disruption.
- **Drilling rigs** became the most favored assets as drilling activity is poised to increase.
- **Investor** interest shifted further downstream toward distribution and retailing.

What's in store for 2023? While projected record cash flows and renewed interest in resource industries bode very well for O&G M&A, capital discipline and an uncertain economic environment will likely keep M&A in check in 2023. According to our recent survey, 27% of executives highlight high and stable energy prices as key to sustaining the M&A momentum in 2023 (figure 6).⁴³

Figure 6. Factors respondents expect to drive O&G M&A momentum in 2023



Note: Respondents were asked to share their top three options in declining order of importance. A final score for each option was ascertained using the number of respondents and the rank order as weights.

Source: Deloitte analysis.

Four trends are expected to play out in the coming year:

- **Leveraging the momentum on energy security** for acquisitions in natural gas assets and resilient midstream infrastructure.
- **Accelerating energy transition** spurs investment in joint ventures and alliances to commercialize new clean energy technologies such as CCUS and clean hydrogen.
- **Reducing operational emissions** through the acquisition of assets having a strong ESG profile.
- **Mitigating inflationary pressures** across the oilfield services sector through vertical integration.

Industry proving resilient amid uncertainty

The O&G industry earned record profits in 2022, providing ample cash flow to fund strategies in 2023. And while O&G companies recognize trade restrictions and macroeconomic uncertainty in the year ahead, they have also been given a clear mandate to secure supply in the short term while transitioning to cleaner energy in the long term.

Factors that could facilitate or impede the O&G industry's energy transition in 2023:

- **Hydrogen/CCUS hub development:** Significant federal funding has been earmarked for hydrogen and CCUS hubs, and so far, the US Department of Energy has allocated nearly \$1.5 billion in loans for two major hydrogen projects.⁴⁴ Additionally, several CCUS hubs have also been announced in the United States, but the permitting process and regulatory approvals will determine the speed of development.
- **Regulatory lag:** The timeliness and content of new regulations could be impacted by the upcoming elections. Regulations that impact cash flows from traditional O&G investments could decrease the capital available for clean energy investments in the future.
- **Supply chain constraints:** The clean energy transition will require significant investments in infrastructure (e.g., pipelines, storage, biofuel refineries) and technology (e.g., carbon capture materials, electrolyzers, fuel cells). Current supply chain issues are making securing materials slow and expensive. Resolving these issues will be vital to moving projects forward in 2023.
- **Grid expansion and modernization:** Increasing electrification and renewable energy's market share will require a massive grid expansion. Continued progress, despite the short-term challenges such as supply chain issues and labor shortages, would most likely incentivize additional investments in renewable energy by O&G companies.
- **Macroeconomic headwinds:** Volatile prices, recessionary fears, and uncertain demand growth present challenges to long-term planning. However, economic stability coupled with sustainable long-term financing could help guide clean energy investment decisions.

Let's talk



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